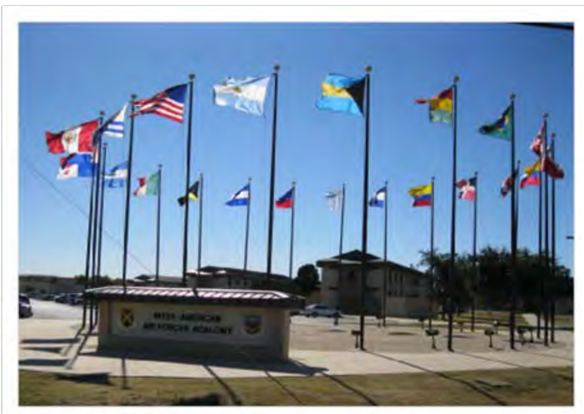
DRAFT

ENVIRONMENTAL ASSESSMENT
OF
INSTALLATION DEVELOPMENT
AT
JOINT BASE SAN ANTONIO-LACKLAND, TEXAS



NOVEMBER 2012

ACRONYMS AND ABBREVIATIONS

502 ABW	502d Air Base Wing
802 CES	802d Civil Engineering Squadron
AAFES	Army and Air Force Exchange Service
ACC	Ambulatory Care Center
ACHP	Advisory Council on Historic Preservation
ACM	asbestos-containing material
ADP	Area Development Plan
AETC	Air Education and Training Command
AFB	Air Force Base
AICUZ	Air Installation Compatible Use Zone
AFI	Air Force Instruction
AFOSH	Air Force Occupational and Environmental Safety, Fire Protection, and Health
AFOSI	Air Force Office of Special Investigations
AFPD	Air Force Policy Directive
AOC	area of concern
APZ	accident potential zone
AQCR	air quality control region
AST	aboveground storage tank
AT/FP	Anti-Terrorism/Force Protection
ATC	Airman Training Complex
BASH	Bird/Wildlife Aircraft Strike Hazard
BCAMP	Base Comprehensive Asset Management Plan
BCE	Base Civil Engineer
bgs	below ground surface
BMP	Best Management Practice
BMT	Basic Military Training
BRAC	Base Realignment and Closure
BX	Base Exchange
CAA	Clean Air Act
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
CGP	Construction General Permit
CLOMR	Conditional Letter of Map Revision
CO	carbon monoxide
CO_2	carbon dioxide
CPSB	City Public Service Board of San Antonio
CVIA/ECP	Commercial Vehicle Inspection Area and Entry Control Point
CWA	Clean Water Act
CZ	clear zone
dBA	A-weighted decibel
DFIRM	Digital Flood Insurance Rate Map
DLIELC	Defense Language Institute English Language Center
DNL	day-night average A-weighted sound level
DOD	Department of Defense
EA	Environmental Assessment
EIAP	Environmental Impact Analysis Process
EIS	Environmental Impact Statement
EISA	Energy Independence and Security Act
EO	Executive Order
EPAct	Energy Policy Act
EPF	Environmental Planning Function
ERP	Environmental Restoration Program
ESA	Endangered Species Act
ESCP	erosion-and-sediment-control plan
FAA	Federal Aviation Administration
FEMA	Federal Emergency Management Agency
FONPA	Finding of No Practicable Alternative
FONSI	Finding of No Significant Impact
FPPA	Farmland Protection Policy Act
ft^2	square feet
FUB	Facilities Utilization Board
FY	fiscal year
GHG	greenhouse gas
HAP	Hazardous Air Pollutant
HUD	U.S. Department of Housing and Urban Development
HAZWOPER	Hazardous Waste Operations and Emergency Response
IIAFA	Inter-American Air Forces Academy
ICRMP	Integrated Cultural Resources Management Plan
INRMP	Integrated Natural Resources Management Plan

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IDEA	Installation Development Environmental Assessment
IICEP	Interagency and Intergovernmental Coordination for Environmental Planning
JBSA-Lackland	Joint Base San Antonio-Lackland
LBP	lead- based paint
LOMR	Letter of Map Revision
$\mu g/m^3$	micrograms per cubic meter
mg/m^3	milligrams per cubic meter
MBTA	Migratory Bird Treaty Act
MEC	munitions and explosives of concern
MGD	million gallons per day
MILCON	military construction
MMRP	Military Munitions Response Program
MS4	Municipal Separate Storm Sewer System
MSA	Metropolitan statistical area
MSAI	Metropolitan San Antonio Intrastate
MSL	mean sea level
MSW	municipal solid waste
MWD	Military Working Dog
NAAQS	National Ambient Air Quality Standards
NAGPRA	Native American Graves Protection and Repatriation Act
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
NO_x	nitrogen oxides
NO_2	nitrogen dioxide
NOA	Notice of Availability
NPDES	National Pollutant Discharge Elimination System
NRCS	Natural Resources Conservation Service
NRHP	National Register of Historic Places
O_3	ozone
OSHA	Occupational Safety and Health Administration
PA	Programmatic Agreement
Pb	lead
PCB	polychlorinated biphenyl
percent g	percentage of the force of gravity
pCi/L	picocuries per liter
$PM_{2.5}$	particulate matter equal to or less than 2.5 microns in diameter
PM_{10}	particulate matter equal to or less than 10 microns in diameter
PPE	Personal protective equipment
ppm	parts per million
PSD	Prevention of Significant Deterioration
psi	pounds per square inch
PVC	polyvinyl chloride
QD	quantity-distance
RCRA	Resource Conservation and Recovery Act
ROI	Region of Influence
SAWS	San Antonio Water System
SHPO	State Historic Preservation Office
SIP	State Implementation Plan
SO_2	sulfur dioxide
SOP	Standard Operating Procedure
SPCC	Spill Prevention Control and Countermeasures
SRM	Sustainment, Restoration and Modernization
SWPPP	Storm Water Pollution Prevention Plan
TAC	Texas Administrative Code
TANG	Texas Air National Guard
TCEQ	Texas Commission on Environmental Quality
TMDL	Total Maximum Daily Load
TPDES	Texas Pollutant Discharge Elimination System
TPWD	Texas Parks and Wildlife Division
tpy	tons per year
TSA	Transportation Security Administration
UFC	Unified Facilities Criteria
USAF	U.S. Air Force
U.S.C.	United States Code
USEPA	U.S. Environmental Protection Agency
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
UST	Underground storage tank
UXO	Unexploded ordnance
VOC	volatile organic compound

COVER SHEET

DRAFT
ENVIRONMENTAL ASSESSMENT OF INSTALLATION DEVELOPMENT
AT
JOINT BASE SAN ANTONIO-LACKLAND, TEXAS

Responsible Agencies: U.S. Air Force (USAF), Air Education and Training Command (AETC), 502d Air Base Wing (502 ABW), Joint Base San Antonio-Lackland (JBSA-Lackland), Texas.

Affected Location: JBSA-Lackland

Proposed Action: Implementation of Selected Installation Development Projects

Report Designation: Draft Environmental Assessment (EA)

Abstract: JBSA-Lackland uses numerous 502 ABW-approved plans to project installation development requirements. These plans propose demolition, construction, infrastructure improvement, and natural infrastructure management activities intended to ensure that the installation can sustain its current and future national security operations and mission-readiness status. These projects include installation development projects contained in the Lackland Air Force Base (AFB) General Plan, Base Comprehensive Asset Management Plan (BCAMP), and the community of all other existing Wing-approved development and resource management plans. JBSA-Lackland seeks to improve its understanding of the potential environmental consequences associated with the continuing installation development process by evaluating in a single Environmental Assessment (EA) selected projects from those projects proposed in the JBSA-Lackland Wing-approved community of plans for installation development, called the Installation Development EA (IDEA). The Proposed Action is to implement a range of selected projects, such as demolition of aging facilities, new facility construction, facility upgrades, facility repair and renovation, utilities upgrades, community living upgrades, infrastructure improvement, recreational upgrades, natural infrastructure management and other environmental projects that would be among those proposed to be completed or implemented during the next 6 fiscal years (FYs), FY 2013 to FY 2018. The IDEA uses the fenceline-to-fenceline approach, capturing and addressing the selected projects within the installation boundary that have been proposed by host and tenant agencies in accordance with Interservice Support Agreements. The intent of the IDEA is to address the Proposed Action of implementing installation development actions for continuing development on JBSA-Lackland to ensure that future mission and facility requirements are met. The scope of the IDEA includes a detailed analysis of the selected projects, an evaluation of alternatives applicable to the projects and the various categories of projects, and an analysis of the cumulative effects on the natural and man-made environment of the other currently identified projects from the installation development and resource management plans.

Through the IDEA, JBSA-Lackland provides a constraints-based environmental impact analysis of installation development actions for the projects selected from those projected over the next 6 years and thus helps to identify environmental concerns that could exist throughout the installation especially if the selected projects involve analysis of specific or unique areas of the installation. The analysis draws from the knowledge gained from extensive recent evaluations for similar types of projects to determine the direct, indirect, and cumulative effects of projects that would be completed as part of the installation's development.

The IDEA has been prepared to evaluate the Proposed Action and alternatives, including the No Action Alternative. Resources considered in the impacts analysis are noise, land use, air quality, geological resources, water resources, biological resources, cultural resources, socioeconomic resources and environmental justice, infrastructure, hazardous materials and waste, and safety.

Written comments and inquiries regarding this document should be directed to the JBSA-Lackland Public Affairs Office, 1701 Kenly Avenue, Suite 102, Lackland AFB, Texas 78236. Telephone calls can be directed to (210) 221-1099 and email comments should be addressed to oscar.balladares@us.af.mil. Anyone wishing to provide comments on this document should contact Mr. Nicholas Smith within the next 30 days.

PRIVACY NOTICE

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

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ENVIRONMENTAL ASSESSMENT
OF
INSTALLATION DEVELOPMENT
AT
JOINT BASE SAN ANTONIO-LACKLAND, TEXAS

802D MISSION SUPPORT GROUP
802D CIVIL ENGINEER SQUADRON
1555 GOTT STREET
LACKLAND AFB, TEXAS 78236

NOVEMBER 2012

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ENVIRONMENTAL ASSESSMENT OF INSTALLATION DEVELOPMENT
AT
JOINT BASE SAN ANTONIO-LACKLAND, TEXAS

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1. Purpose, Need, and Scope

Joint Base San Antonio-Lackland (JBSA-Lackland), Texas, seeks to improve its understanding of the potential environmental consequences associated with the continuing installation development process by evaluation in a single Environmental Assessment (EA) selected projects from the complete list of proposed projects contained in the JBSA-Lackland Wing-approved community of plans for installation development and resource management. The 502d Air Base Wing (502 ABW) at JBSA-Lackland and Air Education and Training Command (AETC) believe a comprehensive U.S. Air Force (USAF) Environmental Impact Analysis Process (EIAP) document would improve the continuing activity of installation development and facilitate compliance with the National Environmental Policy Act (NEPA) documentation process and requirements. As a result, the 502 ABW and AETC have initiated an evaluation in the EA of the selected projects from the programmed and reasonably foreseeable projects identified for the next 6 fiscal years (FYs), FY 2013 to FY 2018.

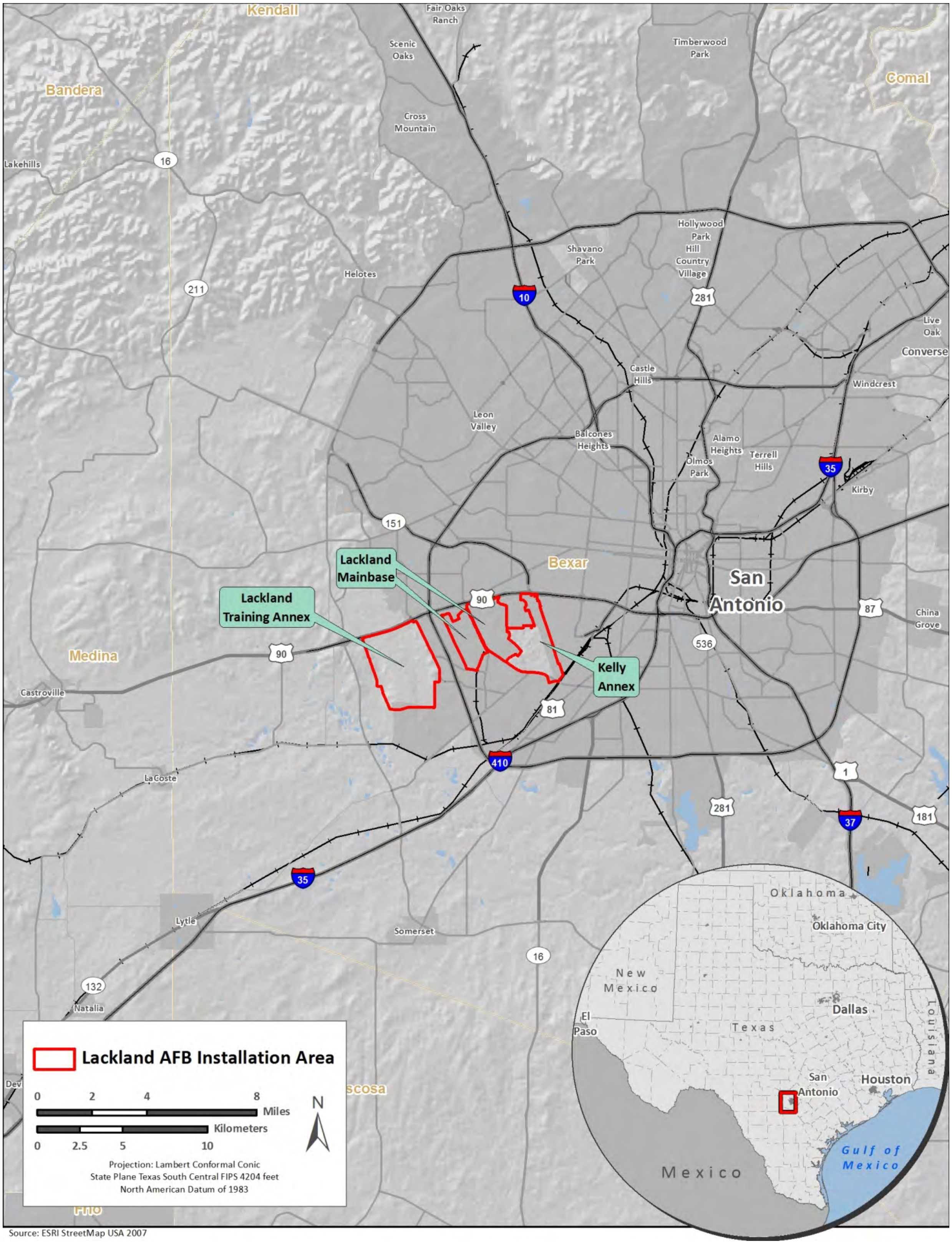
This document constitutes an Installation Development Environmental Assessment (IDEA). The intent of the IDEA is to address the Proposed Action of implementing selected installation development actions as found in the community of all current 502 ABW-approved plans on JBSA-Lackland. The projects identified in the various sections of this IDEA are a compilation of installation development activities as described in the General Plan, Base Comprehensive Asset Management Plan (BCAMP), and the community of all other existing Wing-approved development and resource management plans (i.e., Integrated Natural Resources Management Plan [INRMP] and Integrated Cultural Resources Management Plan [ICRMP]). These plans provide for future development of the installation to accommodate future mission and facility requirements, include projects for transportation improvements and airfield and utility infrastructure enhancements, address natural and cultural resources management, and consider development constraints and opportunities and land use relationships. Since the establishment of JBSA-Lackland, as with all other USAF installations, development of the installation has occurred continuously.

The community of development plans is linked to individual funding programs, such as Base Realignment and Closure (BRAC); Military Construction (MILCON), Military Family Housing; Sustainment, Restoration, and Modernization (SRM); Anti-Terrorism/Force Protection (AT/FP); Nonappropriated Funds; and others. The JBSA-Lackland community of plans was examined to provide a list of projects that are planned and programmed over the next 6 FYs (FY 2013 to FY 2018) for the continued physical development of the installation to support AETC missions and other readiness training and operational assignments. This IDEA evaluates the selected projects in detail and serves as a baseline for future environmental analysis of mission and training requirements. Alternatives applicable to the projects and to the various categories of projects are provided. An analysis of the potential cumulative effects associated with the other projects from the installation development plans is also included in the cumulative impacts section of this IDEA.

This section of the IDEA includes background information on the location and mission of JBSA-Lackland, a statement of the purpose of and the need for the Proposed Action, an overview of the scope of the analysis, and a summary of key environmental compliance requirements.

1.1 Location and Mission

JBSA-Lackland is in Bexar County, in the south-central portion of Texas, approximately 8 miles southwest of downtown San Antonio, Texas (see **Figure 1-1**). The installation encompasses approximately 8,856 acres. In 1995, the BRAC Commission recommended the closure of the adjacent



1 **Figure 1-1. JBSA-Lackland and Surrounding Area**

Kelly Air Force Base (AFB) and realigned the runway and some USAF functions to JBSA-Lackland. Subsequently, the main portion of the former Kelly AFB aircraft maintenance depot and logistic functions was closed, and the land and facilities were transferred to the San Antonio Port Authority. In July 2001, selected portions of the former installation were realigned to JBSA-Lackland as the Kelly Field Annex. Currently, JBSA-Lackland consists of the Lackland Main Base, Kelly Field Annex, and Lackland Training Annex (formerly the Medina Annex), which are part of the 502 ABW (DOD 2009, LAFB undated a). Installation support functions and services are managed by the 802d Mission Support Group.

JBSA-Lackland is home to more than 120 Department of Defense (DOD) and associate organizations, including the 37th Training Wing, which is the largest training wing in the USAF. The Draft IDEA covers the development activities of these groups and other major tenants at JBSA-Lackland, including the 802d Civil Engineering Squadron (802 CES); 737th Training Group; 37th Training Group; Inter-American Air Forces Academy; Defense Language Institute English Language Center; Instrument Flight Center; Cryptologic Systems Group; 433rd Airlift Wing; 59th Medical Wing; Air Force Intelligence, Surveillance, and Reconnaissance Agency; 543d Intelligence Group; 24th Air Force; 688th Intelligence Operations Wing; 67th Network Warfare Wing; the Texas Air National Guard (TANG) 149th Fighter Wing; 802d Logistics Readiness Squadron; 802d Operations Support Squadron; 802d Security Forces Squadron; and 802d Forces Support Squadron (LAFB undated a).

1.2 Purpose of and Need for the Proposed Action

The purpose of the Proposed Action is to complete selected construction, demolition, infrastructure improvement, and natural infrastructure management projects from among those identified as necessary to ensure that future mission and facility requirements are met. The analysis in this IDEA of the selected projects from the installation's development plans will facilitate an understanding of the potential environmental consequences associated with the continuing installation development process; facilitate the NEPA review and compliance process; eliminate project fractionation and segmentation; improve the coordination of land use planning; expedite project execution by using early planning; reduce installation, reviewing agency, and major command workloads; provide cost savings; help better evaluate potential cumulative environmental impacts; assist in maintaining a baseline for future analysis; support strategic basing decisionmaking; and encourage agency coordination.

The need for the Proposed Action is to meet current and future mission requirements and national security objectives associated with JBSA-Lackland. This involves meeting ongoing mission requirements that necessitate repairing and upgrading installation utilities, pavements, and facilities; improving the efficiency and effectiveness of forces with the capability to expand; replacing older, substandard facilities with new buildings that are on a par with workplaces outside the gate; and providing reliable utilities, quality housing, and an efficient transportation system to support JBSA-Lackland. In addition, morale and welfare projects that are a critical part of supporting the JBSA-Lackland mission are addressed. Continued development of infrastructure at JBSA-Lackland must take into account future facility construction, demolition, renovation, transportation needs, airfield alterations and enhancements, utilities improvements, land use planning, energy requirements, and development constraints and opportunities.

Contributions by JBSA-Lackland to national security dictate that the installation implement planning for the next 6 FYs (FY 2013 to FY 2018). To ensure complete readiness at the installation for any tasks assigned, infrastructure improvement projects must take into account—and be capable of supporting—all functions inherent to a USAF installation. These include aircraft operations and maintenance activities, security, administration, communications, billeting, supply and storage, training, transportation, and community quality of life.

1.2.1 Purpose of and Need for Proposed Demolition Actions

The DOD has called for significant transformation in all services to strengthen U.S. warfighting capabilities and to operate more efficiently. A key element of USAF transformation is embodied in the goal "20/20 by 2020." The "20/20 by 2020" term describes a major goal of USAF Civil Engineering to achieve offsetting efficiencies to ensure that installations remain capable of enabling USAF missions. The purpose of the proposed demolition actions is to remove excess, obsolete, deteriorating, and underutilized facilities and pavements throughout the installation to improve mission capability, meet security objectives, and comply with the USAF's "20/20 by 2020" goal. The need for the proposed demolition actions is for USAF Civil Engineering to reduce the amount of the physical plant that it spends money on by 20 percent by the year 2020. USAF Civil Engineering currently manages more infrastructure than is necessary and must focus limited time and funding on only the infrastructure needed to perform the USAF mission. In order to achieve this goal, the USAF must divert its resources away from excess, obsolete, and underutilized infrastructure, and implement processes to increase consolidation and demolition, optimize space allocation and utilization, and promote other emerging initiatives. Therefore, AETC has worked for the past year to align its consolidation/demolition plan with the 2009 through 2013 USAF Civil Engineer Strategic Plan to develop sustainable AETC installations by implementing asset management principles for built and natural assets. As a result of this alignment, AETC's target is to reduce the building footprint at all AETC installations.

1.2.2 Purpose of and Need for Proposed Construction Actions

The purpose of the proposed construction actions is to provide state-of-the-art facilities to accommodate current and future mission and facility spacing requirements, while meeting national security objectives. The need for the proposed construction actions is because fundamental support of mission requirements is not being met by existing facilities. In addition, proposed construction projects are needed to improve mission efficiency by consolidating mission functions currently housed in multiple, older, and undersized facilities into more modern facilities with sufficient space; to incorporate life safety and handicapped accessibility requirements; and to meet modern AT/FP measures. The proposed construction projects are also needed to enhance morale and wellness for active and retired military members and their dependents. Further, the proposed construction projects are needed to improve operational efficiency to contribute to the greenhouse gas reduction goals outlined in Executive Order (EO) 13514, *Federal Leadership in Environmental, Energy, and Economic Performance*. Individual purpose and need statements for each of the selected construction projects are provided in **Section 2.1.4**.

1.2.3 Purpose of and Need for Proposed Infrastructure Improvement Actions

The purpose of the proposed infrastructure improvement actions is to remove and replace excess, obsolete, and deteriorating utilities; improve the installation's parking and transportation systems; improve troop walk, sidewalk, parade grounds, and mission display pavements; improve and maintain airfield pavements and supporting infrastructure; and enhance existing communications systems. The need for the infrastructure improvements is to improve mission efficiency and effectiveness, improve ground and airspace safety, incorporate life safety and handicapped accessibility requirements, address parking limitations, and provide the installation with state-of-the-art utilities and communications systems to enhance and improve the installation's mission and meet security objectives. Individual purpose and need statements for each of the selected infrastructure improvement projects are provided in **Section 2.1.5**.

1.2.4 Purpose of and Need for Proposed Natural Infrastructure Management Actions

The purpose of the natural infrastructure management actions is to enhance airspace management, improve water quality, improve species habitat, enhance outdoor recreation opportunities, and implement projects for the protection and enhancement of the installations' natural and historic resources as identified in the JBSA-Lackland INRMP (LAFB 2007) and ICRMP (LAFB 2002a). The need is to develop a sustainable installation by implementing asset management principles for built and natural resource assets. Other needs for the proposed natural infrastructure actions are to comply with Federal, state, and local regulations to limit downstream water quality degradation by reducing erosion, which causes sedimentation to accumulate and disperse in the installation's waterways; to improve or maintain safe aircraft takeoff and landing conditions; to protect and enhance cultural resources; and to comply with the Migratory Bird Treaty Act (MBTA) of 1918 and other laws designated to protect migratory birds, threatened and endangered species, wetlands, and other natural resources while balancing the requirements of the military mission. In addition, the need for the proposed natural infrastructure actions is to comply with the Federal Noxious Weed Act (7 United States Code [U.S.C.] 2801 et seq.) and EO 13112, *Invasive Species*, which require Federal agencies to control noxious weeds on Federal properties by removing noxious and invasive species throughout their installations. Individual purpose and need statements for each of the selected natural infrastructure management projects are provided in **Section 2.1.6**.

1.3 Scope of the Analysis

JBSA-Lackland seeks to improve its understanding of the potential environmental consequences associated with the continuing installation development process by evaluating in a single EA selected projects proposed in the JBSA-Lackland Wing-approved community of plans. The complete list of all identified proposed installation development and resource management projects from these plans, presented in **Appendix A**, was developed from the projects identified in the General Plan, BCAMP, and other Wing-approved plans using a fenceline-to-fenceline approach to capture projects within the installation boundary as proposed by host and tenant agencies in accordance with Interservice Support Agreements.

This IDEA evaluates the potential environmental impact of selected projects involved in modernizing and upgrading JBSA-Lackland to meet future requirements in each of the following categories: demolition, construction, infrastructure improvement, and natural infrastructure management. These four categories were identified for use in this IDEA because they allow the grouping of development initiatives by generally common elements of their activity and the nature of their expected potential environmental impacts. These categories and the selected projects are described in detail in **Sections 2.1.3** through **2.1.6** of this IDEA. The individual projects analyzed in this IDEA should be considered independent of each other and the USAF could eventually choose to implement all, none, or any combination of these projects. This would be the case even if a finding of no significant impact (FONSI) is reached based on the analyses in this IDEA.

From the list of proposed projects identified in **Appendix A**, projects were selected for detailed analysis in this IDEA based on two independent criteria. First, projects were selected that are expected to have the greatest potential to impact the natural and man-made environment. They are typical of the types of projects that are proposed at JBSA-Lackland. They were selected based on geographic setting, project size, acreage disturbed, amount of air emissions, increases in impervious surfaces, vegetation disturbed, and other relevant factors associated with environmental and socioeconomic resources. Second, projects were selected for detailed analysis if they have the potential to result in impacts on sensitive resources, such as 100-year floodplains, wetlands, protected cultural resources, or species protected under the Endangered Species Act (ESA). Such projects were selected because it is believed that they, as a group, frame the range of potential impacts that reasonably could be expected from other projects within the category and consequently are subject to detailed analysis in this IDEA. The projects selected for analysis in this IDEA are described in **Sections 2.1.3** through **2.1.6**.

The remaining other projects from the installation development and resource management plans (see the "Other Projects" portions of the tables presented in **Appendix A)** are considered in the cumulative impacts analysis of this IDEA. This IDEA does not represent NEPA documentation for projects other than the selected projects. Projects listed in the "Other Projects" inventory will be reviewed individually to determine the necessary environmental analysis needed to make a decision on whether or not to approve each of these projects, which are outside the scope of this IDEA.

The Proposed Action includes numerous projects selected from those listed in **Appendix A**, such as the demolition of aging facilities, new facility construction, facility upgrades, facility repair and renovation, utilities upgrades, quality of life upgrades, infrastructure improvement, recreational upgrades, natural infrastructure management and other environmental projects that would be completed or implemented during the next 6 FYs (FY 2013 to FY 2018). The assessment compiles information on constraints that might inhibit development or dictate courses of actions affecting development, improve the facility planning process, and capture the Wing Commander's vision of the facility and infrastructure improvements necessary to support the installation's ongoing mission.

The scope of this IDEA includes an evaluation of actions that have the potential to impact the 100-year floodplain or wetlands. Because it has been determined through the analysis contained in this IDEA that the preferred alternative of several projects would involve construction in the 100-year floodplain or wetland areas, a Finding of No Practicable Alternative (FONPA) and approval from AETC would be required. In accordance with 32 CFR 989, if it is determined that the alternative selected could be located in the floodplain or wetlands, a FONPA must accompany the FONSI to discuss why no other practicable alternative exists to avoid impacts. Floodplain and wetland impacts would be reduced to the maximum extent practicable through project design and the implementation of environmental protection measures. In addition, appropriate permits would be obtained from applicable regulatory agencies to address impacts on wetland areas and to determine potential mitigation, if required.

In accordance with EO 11988, *Floodplain Management*, and EO 11990, *Protection of Wetlands*, JBSA-Lackland would consider alternatives to proposed actions in the floodplain or wetlands and would develop in floodplains or wetlands if there is no practicable alternative. New construction within the floodplain would apply acceptable floodproofing and flood protection, including planning and constructing the elevation of structures above the base flood level. Direct impacts on wetland areas would be avoided through design. If impacts cannot be avoided, environmental protection measures, such as flagging the boundary of the wetland area and ensuring construction vehicles and workers remain outside the boundary would be implemented. If direct impacts cannot be avoided, adverse effects would be minimized through techniques such as phasing construction activities to minimize the potential for erosion, installing sedimentation basins and detention or retention ponds, and limiting construction activities to drier periods of the year.

This IDEA could include projects that might have direct or indirect impacts on historic properties. All projects that could impact historic properties that could be eligible for listing in the National Register of Historic Places (NRHP) are subject to the consultation requirements of Section 106 of the National Historic Preservation Act (NHPA) of 1966. Projects have been included in the selected projects for the IDEA if the consultation process under Section 106 of the NHPA has been recently completed for properties potentially eligible for listing in the NRHP; however, if new or additional consultation would be required and would not be completed by the finalization of the signed FONSI, such projects might have been excluded from the IDEA analysis. Further, projects undergoing consultation under Section 106 of the NHPA would not break ground until the consultation process and any agreed upon mitigation measures are completed. **Appendix C** includes the status of State Historic Preservation Office (SHPO) concurrence for facilities that will be 50 years in age or older by 2018.

It is intended that the projects contained in the IDEA generally will be reviewed on a 5-year rotational basis and that an additional NEPA document might need to be prepared to accommodate changes in development plans, mission objectives, laws and regulations, or land use plans. During the course of the next 6 FYs (FY 2012 to FY 2017), if significant new circumstances or information relevant to environmental concerns are discovered or the scope or proposed siting of any of the selected projects associated with the Proposed Action change enough to be outside the coverage of the analysis provided in the IDEA, the specified projects would no longer be covered by the NEPA analysis represented by the IDEA, but this would not affect other projects originally included in the IDEA.

This IDEA examines potential effects of the Proposed Action and alternatives on 11 resource areas: noise, land use, air quality, geological resources, water resources, biological resources, cultural resources, socioeconomic resources and environmental justice, infrastructure, hazardous materials and wastes, and safety. These resources were identified as being potentially affected by the Proposed Action and include applicable elements of the human environment that are prompted for review by EO, regulation, or policy.

After a FONSI is signed (if applicable), and as funding becomes available, each project would be reviewed by the Environmental Planning Function (EPF) prior to implementation to ensure that it has been sufficiently analyzed in this IDEA and that there has not been a substantial change in the installation mission or project scope, there are no significant new circumstances or information relevant to environmental conditions, and that there have not been new or modified environmental regulations promulgated that warrant reevaluation of potential environmental consequences. If the project has not been analyzed sufficiently or there has been a change in scope, conditions, or regulations, JBSA-Lackland would complete additional environmental documentation for the project, as applicable.

1.4 Summary of Key Environmental Compliance Requirements

1.4.1 National Environmental Policy Act

NEPA of 1969 (42 U.S.C. Section 4321–4347) is a Federal statute requiring the identification and analysis of potential environmental impacts associated with proposed Federal actions before those actions are taken. The intent of NEPA is to help decisionmakers make well-informed decisions based on an understanding of the potential environmental consequences, and take actions to protect, restore, or enhance the environment. NEPA established the Council on Environmental Quality (CEQ) that was charged with the development of implementing regulations and ensuring Federal agency compliance with NEPA. The CEQ regulations mandate that all Federal agencies use a prescribed structured approach to environmental impact analysis. This approach also requires Federal agencies to use an interdisciplinary and systematic approach in their decisionmaking process. This process evaluates potential environmental consequences associated with a proposed action and considers alternative courses of action.

The CEQ-established process for implementing NEPA is codified in Title 40 of the Code of Federal Regulations (CFR), Parts 1500–1508, Regulations for Implementing the Procedural Provisions of the *National Environmental Policy Act*. The USAF's implementing regulation for NEPA is *Environmental Impact Analysis Process*, 32 CFR Part 989, as amended, which provides a framework for how to implement the CEQ regulations and achieve the goals of NEPA. Air Force Policy Directive (AFPD) 32-70, *Environmental Quality*, states that the USAF will comply with applicable Federal, state, and local environmental laws and regulations, including NEPA. AFPD 32-70, *Environmental Quality*, states that the USAF will comply with applicable Federal, state, and local environmental laws and regulations, including NEPA. The USAF's implementing regulation for NEPA is *Environmental Impact Analysis Process*, 32 CFR Part 989, as amended.

1.4.2 Integration of Other Environmental Statutes and Regulations

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

As noted in **Section 1.3**, this IDEA examines potential effects of the Proposed Action and alternatives on 11 resource areas. These resources were identified as being potentially affected by the Proposed Action and include applicable elements of the human and natural environments required by specific laws, regulations, EOs, or policies.

1.4.3 Interagency and Intergovernmental Coordination for Environmental Planning (IICEP), Native American Tribal Consultation, and Public Involvement

IICEP. NEPA requirements help ensure that environmental information is made available to the public during the decisionmaking process and prior to actions being taken. The premise of NEPA is that the quality of Federal decisions will be enhanced if proponents provide information to the public and involve the public in the planning process. The Intergovernmental Coordination Act and EO 12372, *Intergovernmental Review of Federal Programs*, require Federal agencies to cooperate with and consider state and local views in implementing a Federal proposal. Air Force Instruction (AFI) 32-7060, *Interagency and Intergovernmental Coordination for Environmental Planning*, requires the USAF to implement the IICEP process, which is used for the purpose of agency coordination and implements scoping requirements.

Through the IICEP process, JBSA-Lackland notifies relevant Federal, state, and local agencies of the Proposed Action and alternatives and provides them with sufficient time to make known their environmental concerns specific to the action. The IICEP process also provides JBSA-Lackland the opportunity to cooperate with and consider state and local views in implementing the Federal proposal. IICEP materials related to this action are included in **Appendix B**, and will be expanded throughout the EIAP process.

Native American Tribal Consultation. EO 13175, *Consultation and Coordination with Indian Tribal Governments* (6 November 2000) directs Federal agencies to develop a government-to-government relationship with Native American tribal governments whose interests might be directly and substantially affected by activities on federally administered lands. To comply with legal mandates, federally recognized tribes that are affiliated historically with the JBSA-Lackland geographic region are invited to consult on all proposed undertakings that have a potential to affect properties of cultural, historical, or religious significance to the tribes. Because many tribes were displaced from their original homelands during the 19th and early 20th centuries, tribes with cultural roots in an area might not currently reside in the region where the undertaking is to occur. Effective consultation requires identification of tribes based on ethnographic and historical data and not simply a tribe's current proximity to a project area. The tribal coordination process is distinct from NEPA consultation or the IICEP processes and requires separate notification of all relevant tribes by JBSA-Lackland. The timelines for tribal consultation are also distinct from those of intergovernmental consultations. The JBSA-Lackland point-of-contact for Native American tribes is the Installation Commander. The JBSA-Lackland point-of-contact for consultation with the Texas SHPO and the Advisory Council on Historic Preservation (ACHP) is the Cultural Resources Manager.

The goal of the developing a government-to-government relationship is not simply to consult on a particular undertaking but rather to build constructive relationships with appropriate Native American tribes. Consultation should lead to constructive dialogs in which the Native American tribes are active participants in the planning process. As such, consultation regarding specific proposed projects must begin very early in the process and is outside the scope of this IDEA. The list of Native American tribal governments with whom coordination for the IDEA occurred is included in **Appendix B**.

Public Involvement. Once the Draft IDEA and FONSI/FONPA are ready for public review, a Notice of Availability (NOA) will be published in the *San Antonio Express-News* and the Draft IDEA will be made available to the public for a 30-day review period. The NOA will be issued to solicit comments on the Proposed Action and involve the local community in the decisionmaking process. Public and agency comments on the Draft IDEA will be considered prior to a decision being made as to whether or not to sign a FONSI/FONPA. In addition, a public meeting will be held in association with the Alamo Area Council of Governments to present details and answer questions regarding the Proposed Action. This meeting will be held at 1:30 pm on 29 November 2012 at the Alamo Area Council of Governments.

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2. Description of the Proposed Action and Alternatives

This section presents information on the Proposed Action of implementing selected installation development projects, as drawn from the relevant JBSA-Lackland Wing-approved installation development and resource management plans. **Section 2.1** describes the Proposed Action at JBSA-Lackland. **Section 2.2** summarizes the activities proposed under the Proposed Action. **Section 2.3** identifies alternatives to the Proposed Action. **Section 2.4** discusses the No Action Alternative. **Section 2.5** identifies the decision to be made and the Preferred Alternative.

2.1 Proposed Action

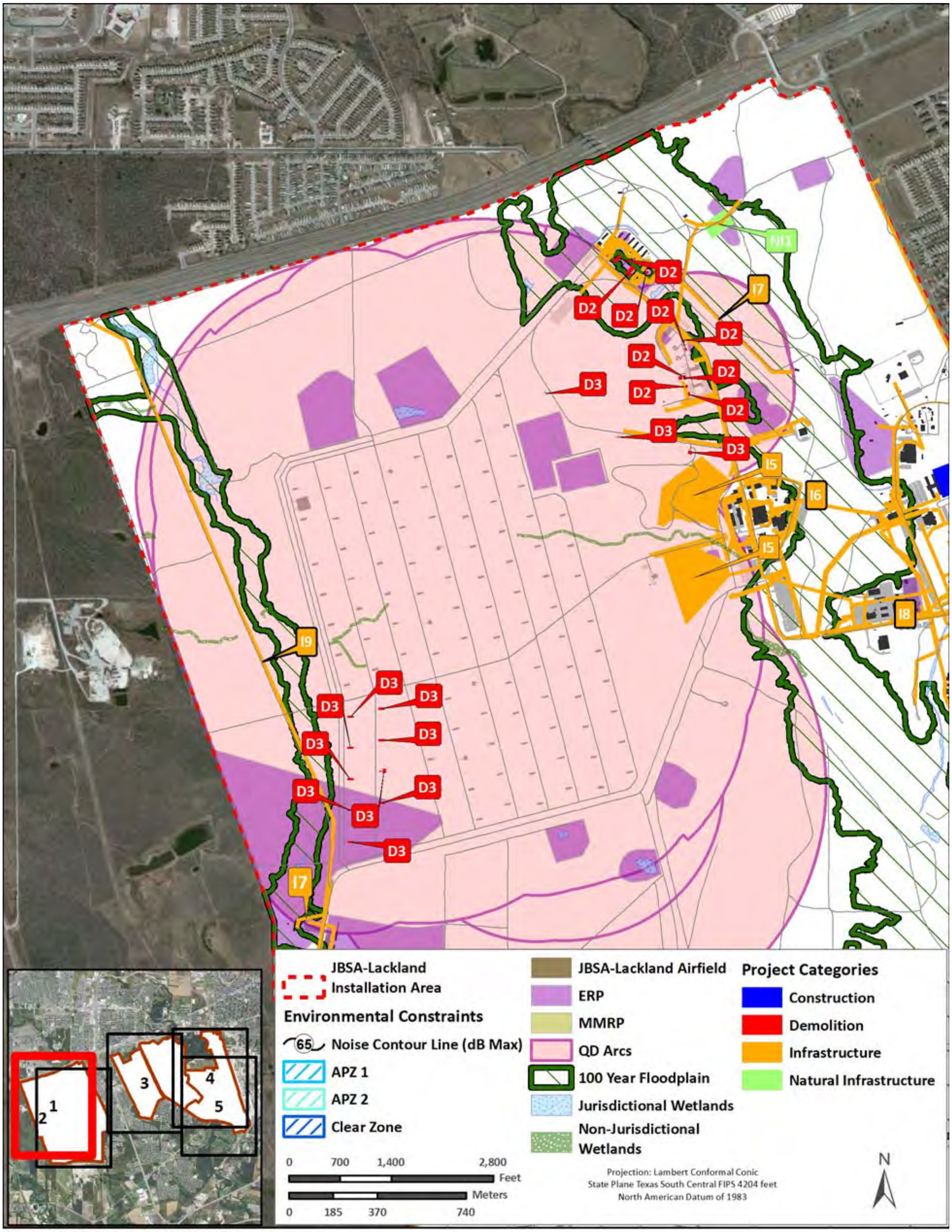
As noted in **Section 1.3**, the Proposed Action is to implement a range of selected installation development projects drawn from projects contained in the community of all current 502 ABW-approved plans on JBSA-Lackland. The projects selected for analysis in this IDEA are described in **Sections 2.1.3** through **2.1.6** and would meet the selection standards presented in **Section 2.3**. Each of the projects has been assigned a project identification number, corresponding to the category to which they belong. **Figures 2-1** through **2-5** show the proposed potential locations of all mapable projects associated with the Proposed Action relative to known constraints at JBSA-Lackland. The remaining other projects that have been drawn from the applicable Wing-approved development plans, which are listed in **Appendix A** under the "Other Projects" portions of the tables, are considered in the cumulative impacts analysis of this IDEA.

2.1.1 Project Considerations

Each selected project is intended to be sited in a manner compatible with JBSA-Lackland's surrounding land uses. The analyses provided in this IDEA address the selected projects and evaluate their siting anywhere within the improved or semi-improved areas of the installation that are within compatible land use areas of the installation. They are not assessed for a site-specific location within that area of compatible land use because the environmental impacts would be essentially the same no matter where the project is specifically located in that land use area unless there are sensitive or constrained areas within the land use, as described in **Section 2.1.2**. There are 13 land use categories at JBSA-Lackland: administrative, aircraft operations and maintenance, community-commercial, community-service, housing accompanied, housing unaccompanied, industrial, medical, open space, outdoor recreation, runway/taxiway/apron, training indoor, and training outdoor. **Figures 2-6** through **2-8** show the locations of JBSA-Lackland's existing land use categories.

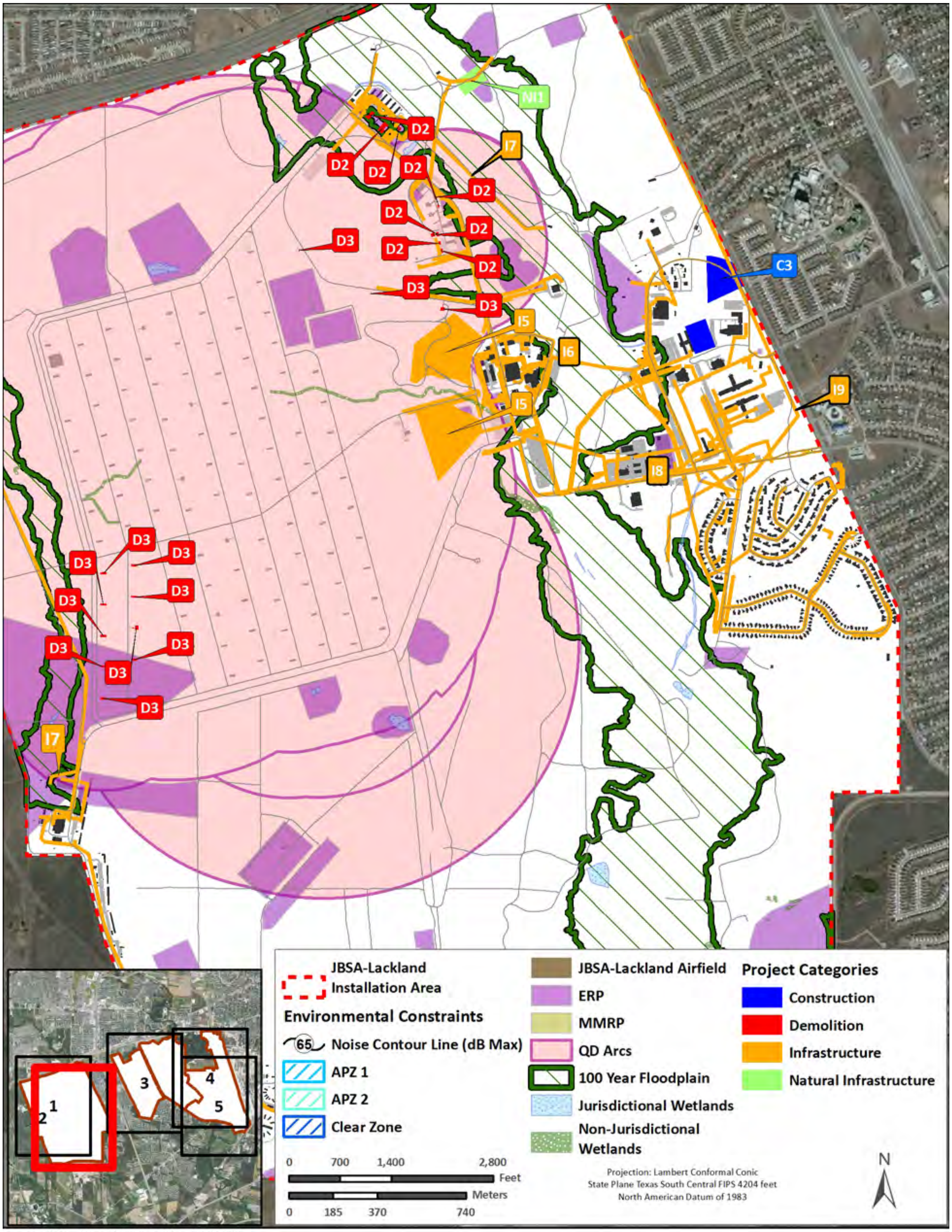
Projects would avoid sensitive or constrained areas (see **Figures 2-1** through **2-5**) to the maximum extent practicable. Sensitive areas include wetlands, Environmental Restoration Program (ERP) sites, Military Munitions Response Program (MMRP) sites, floodplains, nesting and foraging areas for species of special concern, migration and breeding habitat areas, habitat for threatened and endangered species, and known archaeological sites, including NRHP-eligible structures or districts. Constrained areas include airfield and airspace clear zones (CZs) and accident potential zones (APZs), areas within safety quantity-distance (QD) arcs, areas inside the 65+ A-weighted decibel (dBA) noise contours, and areas restricted per AT/FP and other mission requirements.

The exterior and interior design of new facilities would follow the design guidelines outlined in the *U.S. Air Force Architectural Compatibility Guide (*USAF 2007). This guidance and consultation with the installation architect would ensure a consistent and coherent architectural character throughout JBSA-Lackland.



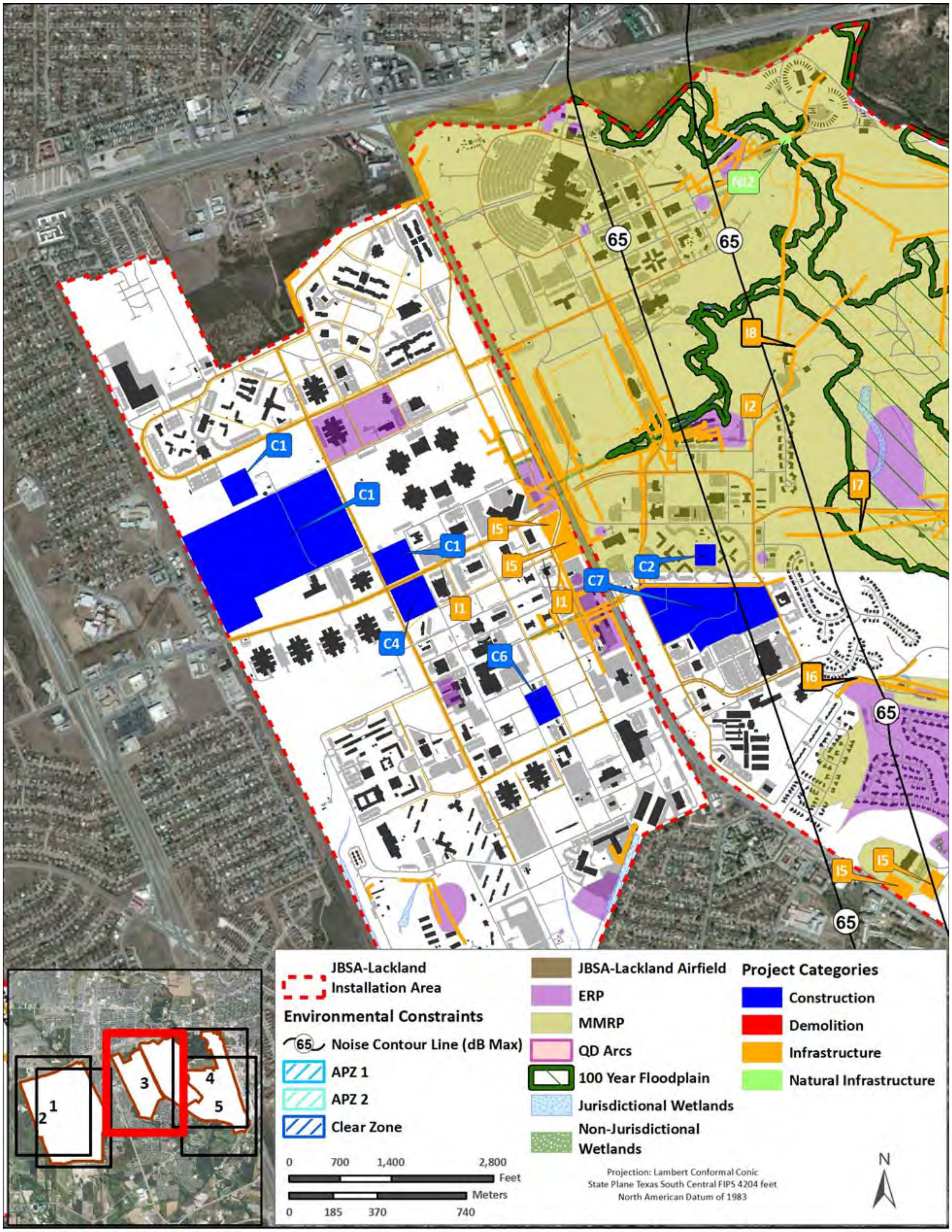
Source: ESRI StreetMap USA 2007, Bing Maps Hybrid 2010

Figure 2-1. Possible Locations and Environmental Constraints Associated with Selected Projects



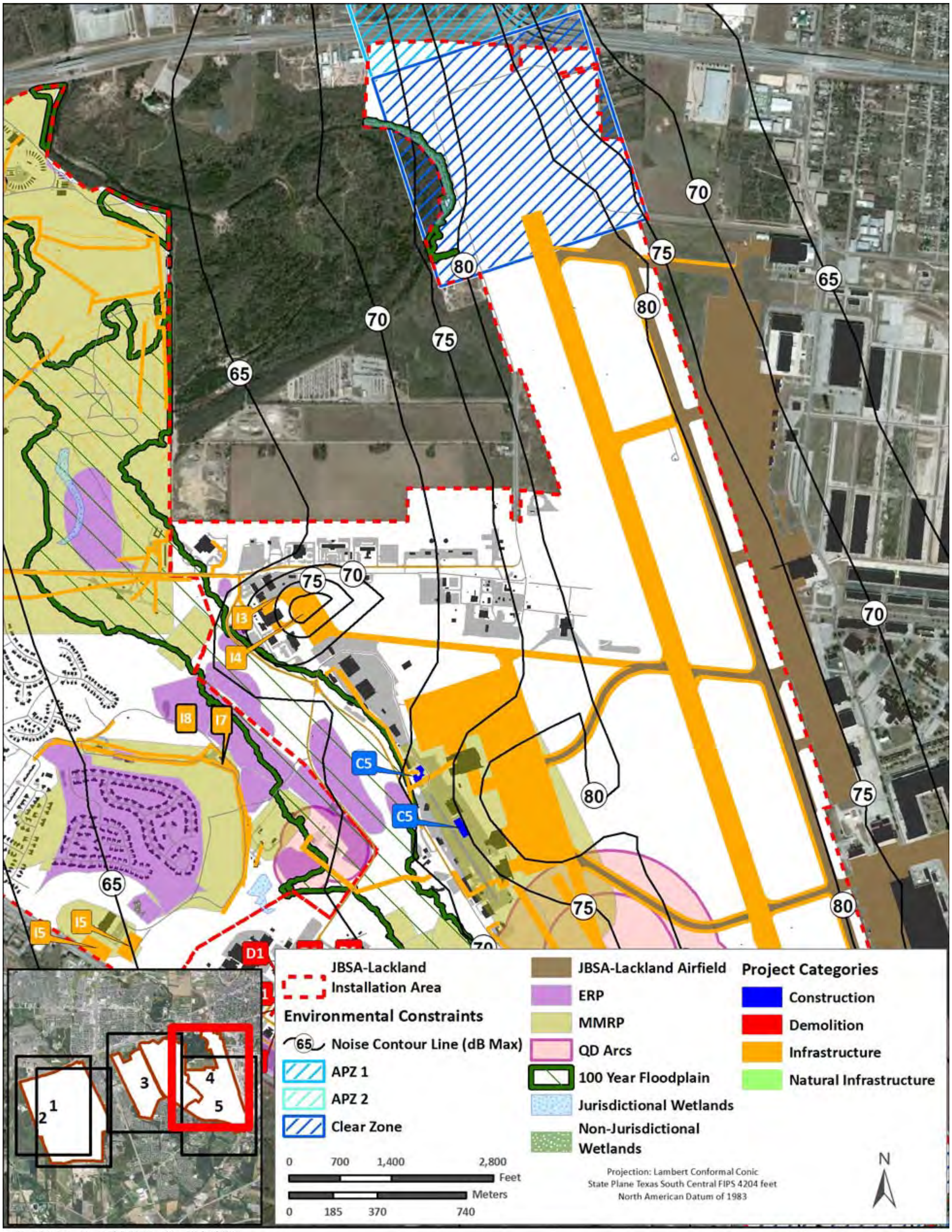
Source: ESRI StreetMap USA 2007, Bing Maps Hybrid 2010

Figure 2-2. Possible Locations and Environmental Constraints Associated with Selected Projects



Source: ESRI StreetMap USA 2007, Bing Maps Hybrid 2010

Figure 2-3. Possible Locations and Environmental Constraints Associated with Selected Projects



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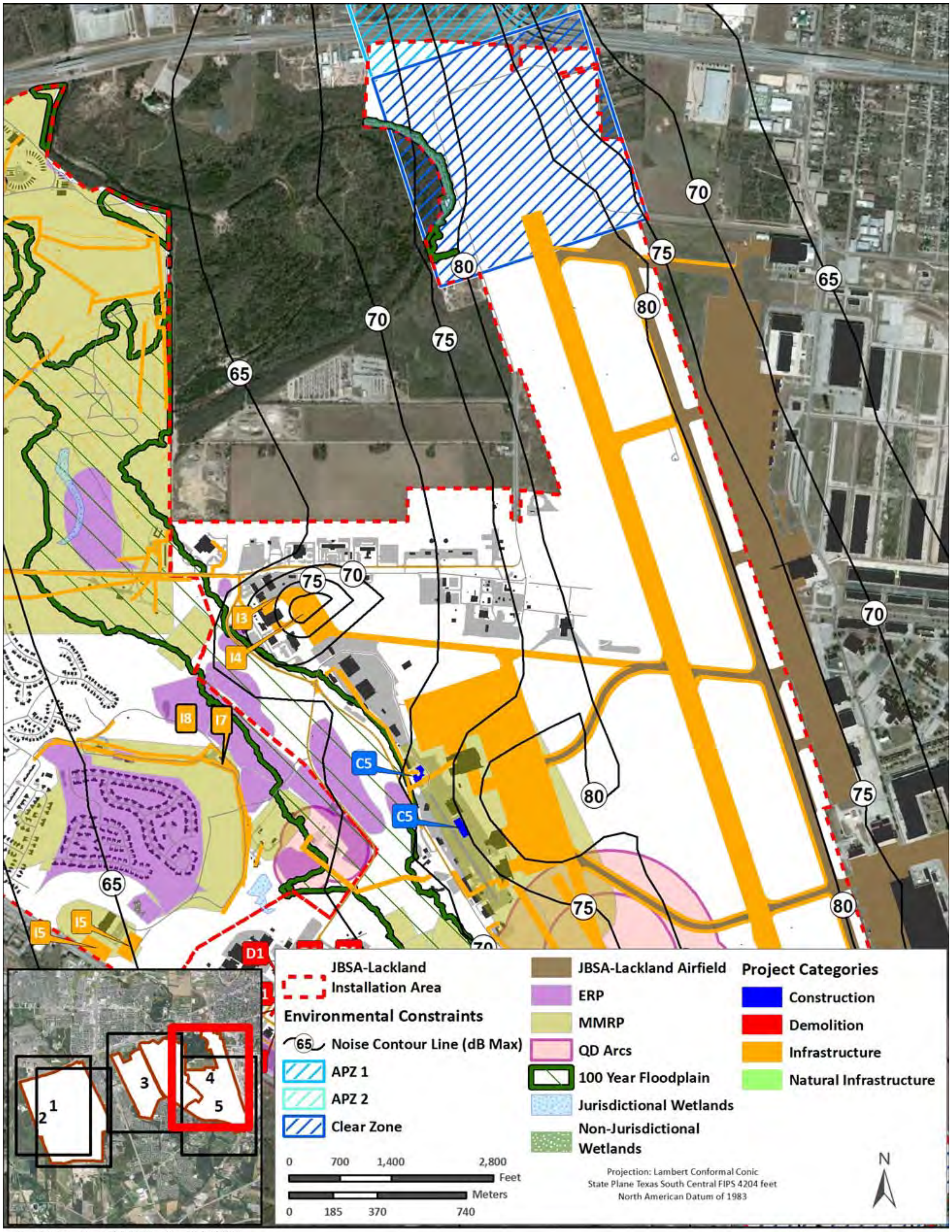
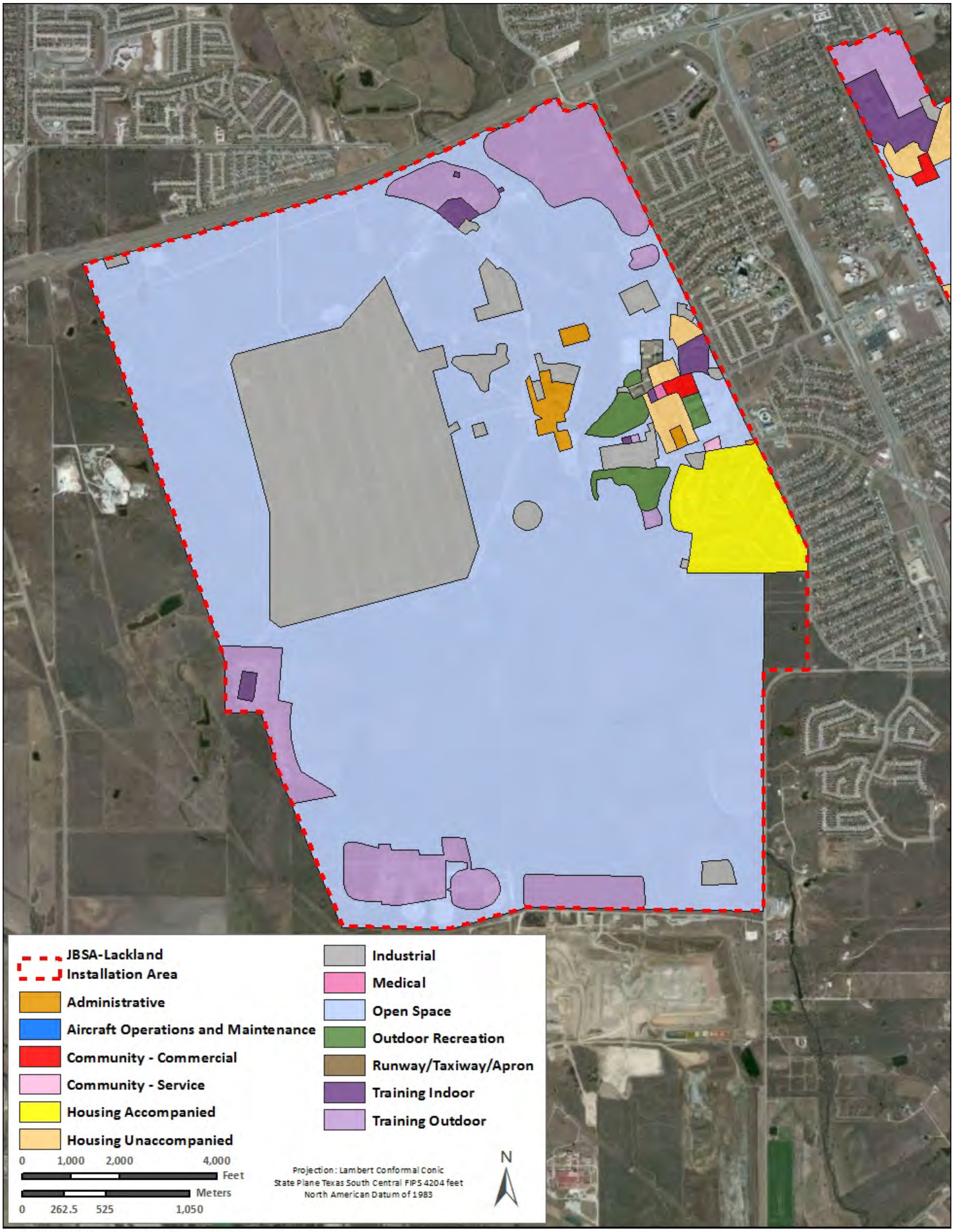
2 **Figure 2-4. Possible Locations and Environmental Constraints Associated with Selected Projects**



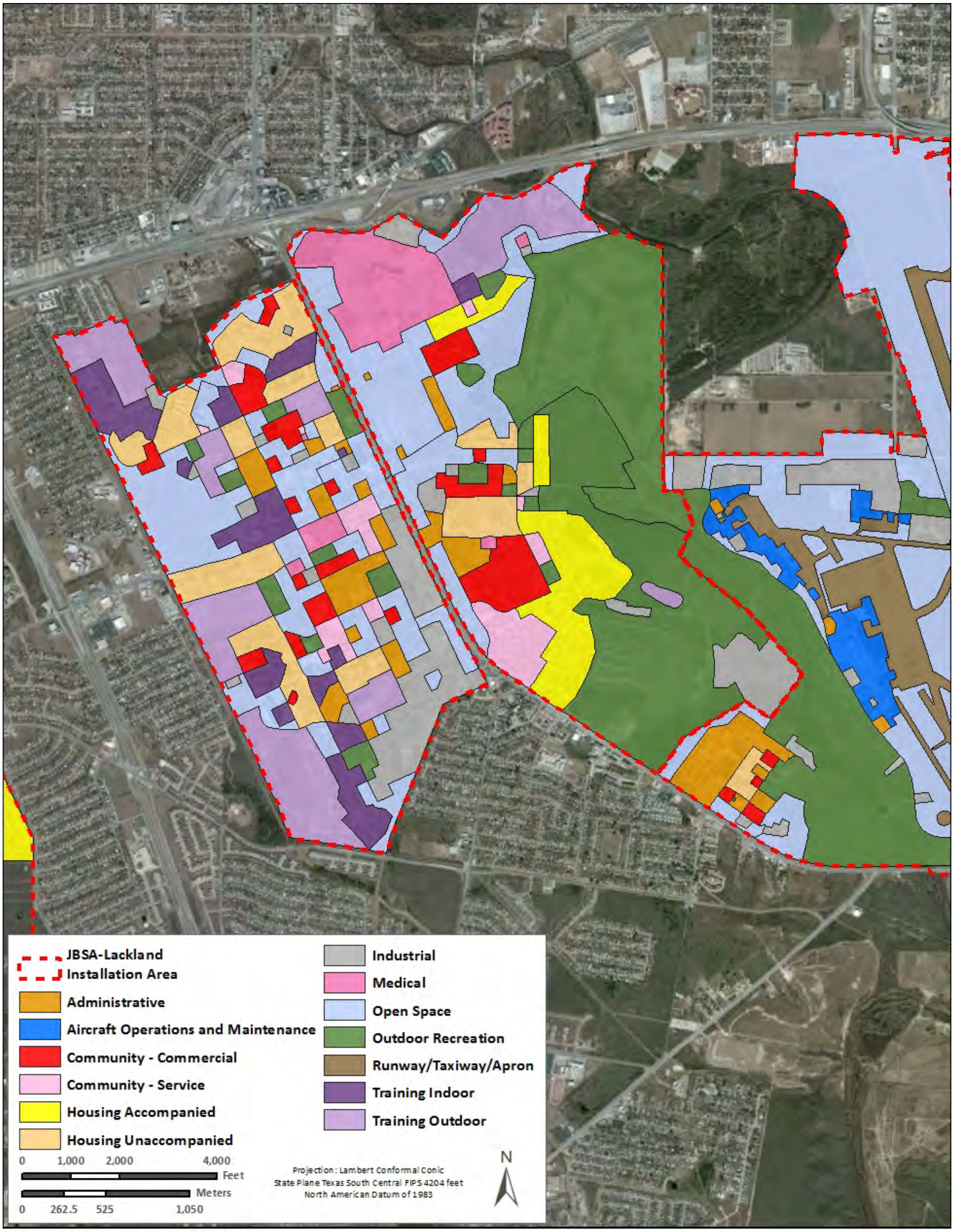
Source: ESRI StreetMap USA 2007, Bing Maps Hybrid 2010

Figure 2-5. Possible Locations and Environmental Constraints Associated with Selected Projects

1


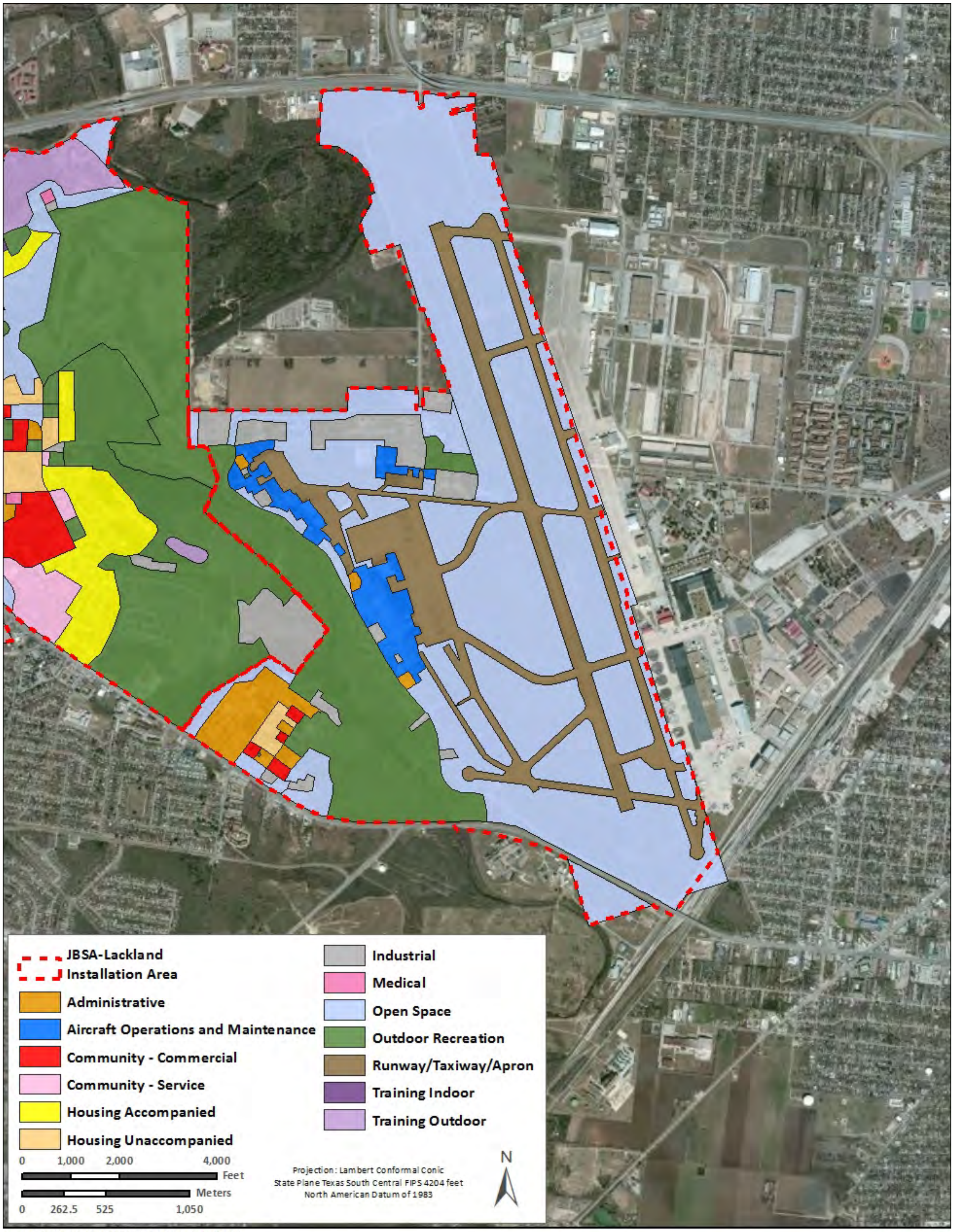
Source: ESRI StreetMap USA 2007, Bing Maps Hybrid 2010

2 **Figure 2-6. JBSA-Lackland Existing Land Use Categories**



Source: ESRI StreetMap USA 2007, Bing Maps Hybrid 2010

Figure 2-7. JBSA-Lackland Existing Land Use Categories



1 Source: ESRI StreetMap USA 2007, Bing Maps Hybrid 2010

2 **Figure 2-8. JBSA-Lackland Existing Land Use Categories**

Landscaping would be used to provide an attractive and professional-looking installation by using plants, shrubs, and trees to blend with the surrounding environment. Landscape designs would use regionally appropriate plant species that would minimize adverse effects on natural habitats while reducing maintenance inputs in terms of energy, water, manpower, and equipment. In addition, the landscape designs would choose plant species that are adapted to local environmental conditions and that have the potential to reduce the need for irrigation and fertilization or pesticide use. Landscaping would conform to the Lackland AFB INRMP (LAFB 2007) requirements regarding suggested and prohibited plants.

Force protection measures would be incorporated in accordance with the Unified Facilities Criteria (UFC) 4-010-01, *DOD Minimum Antiterrorism Standards for Buildings*, 9 February 2012 (DOD 2012). All construction would comply with applicable building, fire, and safety codes. The proposed construction projects would be implemented using sustainable design concepts and would be designed to Leadership in Energy and Environmental Design Silver standards. Sustainable design concepts emphasize state-of-the-art strategies for site development, efficient water and energy use, and improved indoor environmental quality.

2.1.2 Major Installation Constraints

To incorporate selection parameters for the siting of projects, this IDEA has been prepared using a constraints-based analysis. This approach enables a comprehensive evaluation of environmental concerns throughout the installation and also those concerns unique to specific areas of JBSA-Lackland. This analysis uses information layers from the installation's Geographical Information System database (also called the GeoBase system) and the information obtained from extensive recent EIAP evaluations for similar types of projects to determine the direct, indirect, and cumulative effects of projects that would be completed as part of the installation's development plan.

There are a number of land use, regulatory, and mission-related constraints within the boundaries of JBSA-Lackland that influence and limit future development at the installation. The major constraints on JBSA-Lackland are depicted in **Figures 2-1** through **2-5.** The electronic mapping data from JBSA-Lackland's Geographical Information System database were used to quantify the major installation constraints to development, unless another source of information is identified. Some constraint areas overlap, and, therefore, the acreages listed in the following bulleted items do not equal the total acreage of JBSA-Lackland. The acreage calculations do not include any portions of the constraint areas that extend off the installation. The major constraints are discussed in the following bulleted paragraphs.

- ***Noise Zones (1,625 acres).*** Aircraft operations are a dominant component of the noise environment at JBSA-Lackland. USAF, Federal Aviation Administration (FAA), and the U.S. Department of Housing and Urban Development (HUD) criteria specify that noise levels in noise-sensitive land use areas are normally considered unacceptable where they exceed the 65 dBA day-night average sound level (DNL). The USAF recommends restricting development to compatible uses when noise levels exceed 65 dBA DNL. A total of 1,625 acres of JBSA-Lackland property are inside the 65 dBA noise contour generated by the JBSA-Lackland runway.
- ***Airfield Infrastructure, Clear Zones, and Imaginary Surfaces (2,065 acres).*** The airfield at JBSA-Lackland includes pavement, runways, overrun, aprons, ramps, and arm/disarm pad, and totals approximately 560 acres. CZs, APZs, and imaginary surfaces are areas where nonairfield development is constrained or discouraged for airfield safety. These areas would allow only airfield improvements and projects directly associated with airfield operations. All projects within this area must be approved by the Facilities Utilization Board (FUB) and airfield management prior to commencing any construction-related activities. For the runway at

JBSA-Lackland, the CZs measure approximately 413 acres, APZ I measures approximately 689 acres, and APZ II measures approximately 963 acres.

- ***QD Arcs and Safety Distances (3,900 acres).*** There are several areas that are constrained for safety reasons at JBSA-Lackland. The QD arcs are the minimum prescribed distance between munitions site handling and storage areas and inhabited areas. QD arcs on JBSA-Lackland are located at the airfield and within the Lackland Training Annex in the munitions storage area.
- ***Environmental Restoration Program Sites (658 acres).*** JBSA-Lackland has 70 ERP sites and 27 areas of concern (AOCs) (LAFB 2011a). New facilities might be constructed within certain ERP and AOC sites depending upon the level of contamination, clean-up efforts, and land use controls present. Approval of new construction within ERP sites must be obtained from the FUB and coordinated with the 802 CES. In addition, an *ERP Waiver to Construct* must be reviewed and approved by AETC in order to construct on an open ERP or AOC site.
- ***Military Munitions Response Program Sites (1,409 acres).*** JBSA has 20 MMRP sites. New facilities might be constructed within certain MMRP sites depending upon the level of contamination, clean-up efforts, and land use controls present (LAFB 2011a).
- ***Wetlands (39.6 acres).*** In accordance with EO 11990, construction of new facilities within areas containing wetlands is avoided, where practicable. JBSA-Lackland has wetland areas covering approximately 39.6 acres. Wetland impacts would be reduced to the maximum extent practicable through project design and implementation of environmental protection measures. However, some projects might have minimal direct impacts on wetland areas. In accordance with EO 11990, a FONPA must be prepared and approved by AETC for all projects requiring construction in a wetland. In addition, appropriate permits must be obtained from applicable regulatory agencies to address impacts on wetland areas and to determine potential mitigation, if required.
- ***100-Year Floodplain (1,478 acres).*** In accordance with EO 11988, conducting actions or constructing new facilities within the 100-year floodplain is avoided in order to protect the functions of floodplains, minimize the potential damage to facilities, and ensure the safety of working personnel. Should activities within the 100-year floodplain be considered, a FONPA must be obtained and the project must be approved by AETC.
- ***Threatened and Endangered Species and Associated Habitats.*** JBSA-Lackland could provide habitat for Federal- and state-listed threatened or endangered species; however, the U.S. Fish and Wildlife Service (USFWS) has not designated any of JBSA-Lackland as critical habitat for any listed species (LAFB 2007).
- ***Cultural Resources, Historic Buildings, and Archaeological Sites.*** The 2002 ICRMP identified 171 resources that are NRHP-eligible or potentially eligible at JBSA-Lackland. These include 125 resources found within the Lackland Training Annex, 2 resources found within Lackland Main Base, and 44 resources found within the Kelly Field Annex. Activities potentially affecting cultural resources must be coordinated with the FUB and the 802 CES Cultural Resources Manager who will coordinate with the SHPO (LAFB 2002a).
- ***AT/FP Setback Requirements.*** Minimum AT/FP design standards for new construction have been specified by the DOD and would increase the land area required for individual facilities. Design standards for new construction are contained in UFC 4-010-01, DOD *Minimum Antiterrorism Standards for Buildings*, 9 February 2012, (DOD 2012), and augmented by USAF instructions. JBSA-Lackland has numerous existing road, parking, and perimeter setback issues that do not meet current AT/FP standards.

Installation constraints are an important parameter in the siting of projects and the development of reasonable alternatives for all projects proposed at JBSA-Lackland. As a general practice, JBSA-Lackland seeks to avoid, wherever possible, any disturbance to sensitive or constrained areas. This effort to avoid sensitive and constrained areas limits the number of feasible alternatives for projects. However, avoiding or restricting future development within the constrained acreage might not be practical and could limit the installation's ability to accomplish its missions successfully. When these resources cannot be avoided and actions result in moderate to major environmental impacts, separate and additional NEPA documentation would occur and consultation and coordination with the appropriate regulatory agencies would be completed prior to initiating the action. All construction or other activities that would occur within AOCs would comply with the requirements of various Federal, state, and local policies and regulations that govern such resources, and the appropriate environmental protection measures would be instituted.

2.1.3 Demolition Projects

Of the demolition projects proposed for the next 6 FYs (FY 2013 to FY 2018) (as identified in **Appendix A)**, three projects were identified for detailed analysis as selected projects to be addressed in this IDEA. The other remaining proposed demolition projects not addressed in detail are considered in the cumulative impacts analysis section of this IDEA. The selected demolition projects would remove an estimated 148,589 square feet (ft^2) of facilities of an estimated 771,367 ft^2 of demolition projects proposed over the next 6 FYs (FY 2013 to FY 2018). These demolition projects would contribute to the goal of reducing the physical plant footprint on the installation according to the "20/20 by 2020" initiative of making space available for future development. In accordance with AFI 32-1032, *Planning and Programming Appropriated Funded Maintenance, Repair, and Construction Projects*, it is USAF policy to replace a facility when the estimated repair cost exceeds 100 percent of the replacement cost. All facilities proposed for demolition have either been deemed to be unusable or too costly to repair or renovate to meet future mission requirements of JBSA-Lackland by 802 CES and other installation personnel. **Section 2.3.1** provides an overview of this determination process and **Section 2.3.2** further discusses issues considered for the evaluation of individual demolition projects.

Projects within this category primarily include the demolition of structures, but could also include demolition of parking lots and other pavements. The demolition of old or outdated facilities would minimize the area of undisturbed land required for new facilities and reduce labor costs associated with maintenance and repair of these excess facilities. **Table 2-1** identifies the selected demolition projects to be evaluated in detail in this IDEA. **Figures 2-1** through **2-5** show the locations of the selected demolition projects relative to known constraints at JBSA-Lackland.

The four selected demolition projects are believed to encompass the upper range of potential impacts on the natural and man-made environment from such projects in the demolition category and thus frame the upper limits for potential impacts that reasonably could be expected from the demolition projects proposed at the installation. For example, Project D1 would consist of demolishing a large complex of eight buildings and adjacent parking and sidewalks and would generate a large quantity of demolition debris. The other proposed demolition projects not analyzed in detail are considered in the cumulative impacts analysis of this IDEA.

All demolition projects that could impact properties listed in or adjacent to historic districts or that could be eligible for listing on the NRHP would be subject to consultation with the Texas SHPO as per 36 CFR 800. **Appendix C** includes a list of facilities on JBSA-Lackland scheduled for demolition within the next 6 years. **Appendix D** includes documentation on NRHP eligibility evaluations, SHPO concurrences, and

Table 2-1. Selected Demolition Projects Analyzed in this IDEA

Project Identification Number and Title	Installation Project Number	FY	Land Use	Description	Potential Constraints	Project Area (ft^2)*	Change in Impervious Surface (ft^2)
D1. Security Hill Dormitory Complex Demolition	N/A	2016	Housing Unaccompanied, Administrative, Community-Commercial	Demolish vacant Buildings 2009, 2012, 2013, 2014, 2015, 2018, 2020, 2022 and 2041.	Noise	100,321	-100,321
D2. Atomic Energy Commission Facilities Demolition	N/A	2016	Training Indoor, Industrial	Demolish Buildings 424, 425, 426, 427, 433, 442, and 443.	Cultural Resources (NHPA Section 106 Consultation), QD Arc, ERP Site	13,625	-13,625
D3. Demolish Munitions Storage Igloos	N/A	2015	Open Space, Industrial	Demolish Igloos 402, 403, 404, 584, 585, 586, 587, 595, 596, 597, 598, and 599.	QD Arc, ERP Site	34,643	-34,643
					Total Square Feet	**148,589**	**-148,589**

Note: *Project area in this context refers to the footprint of the project and includes other impervious surfaces such as sidewalks and parking lots, as appropriate; building square footage is a separate number and is discussed in the project description for each project, as appropriate.

Key:

ERP = Environmental Restoration Program

ft^2 = square feet

FY = Fiscal Year

NHPA = National Historic Preservation Act

QD = quantity-distance

Memorandums of Agreement (ACHP 2006a, ACHP 2006b, LAFB 2011b). All required NRHP consultations (if applicable) with the Texas SHPO regarding the effects on historic properties would be completed prior to signature of a FONSI. In addition, all fill used for post-demolition activities would be obtained from an approved borrow pit and screened to ensure it contains no cultural resources or hazardous substances. Greater detail on each of the selected demolition projects is given in the following paragraphs.

D1. Security Hill Dormitory Complex Demolition

The Security Hill Dormitory Complex, consisting of the buildings presented in **Table 2-2**, would be demolished following construction of new permanent party dormitories at JBSA-Lackland. All buildings scheduled for demolition would be vacant and would no longer be required to support the mission at JBSA-Lackland. Demolition would include termination of utilities, demolition of supporting infrastructure southeast of Hall Street and northwest of Kirknewton Street, and restoration of the site to match the surrounding area. Demolition would result in a reduction of impervious surfaces of approximately 100,321 ft^2, including sidewalks, parking, and other infrastructure.

Table 2-2. Buildings Scheduled for Demolition under Project D1

Building Number	Building Footprint (ft^2)
2009	11,643
2012	10,579
2013	11,955
2014	1,674
2015	10,431
2018	11,682
2020	10,590
2022	4,685
2041	10,361

D2. Atomic Energy Commission Facilities Demolition

Project D2 would consist of demolition of the buildings presented in **Table 2-3**. All of the buildings proposed for demolition are beyond their useful life and are no longer needed to support the mission at JBSA-Lackland. Demolition would include termination of utilities, demolition of supporting infrastructure, and restoration of the site to match the surrounding area. Demolition would result in a reduction of impervious surfaces of approximately 13,625 ft^2, including sidewalks and other infrastructure. Demolition of buildings under Project D2 would require JBSA-Lackland to consult with the SHPO, as appropriate, to resolve adverse effects.

Table 2-3. Buildings Scheduled for Demolition under Project D2

Building Number	Building Footprint (ft^2)
424	2,593
425	2,082
426	1,582
427	2,160
433	2,222
442	937
443	2,049

D3. Demolish Munitions Storage Igloos

Munitions Storage Igloos 402, 403, 404, 584, 585, 586, 587, 595, 596, 597, 598, and 599 would be demolished as part of the overall effort to consolidate munitions storage at JBSA-Lackland. The igloos were constructed in the 1950s and would be demolished as part of an overall reduction in mission munitions storage requirements. Demolition would require adjusting the existing QD arcs**. Table 2-4** presents the site footprints for each igloo scheduled for demolition. Demolition would include restoration of the site to match the surrounding area. It would result in a reduction in impervious surfaces of 34,643 ft^2.

2.1.4 Construction Projects

Of the construction projects proposed at JBSA-Lackland over the next 6 FYs (FY 2013 to FY 2018) (identified in **Appendix A)**, seven were selected for detailed analysis under the Proposed Action. The other proposed construction projects not analyzed in detail are addressed in the cumulative impacts analysis of this IDEA. The selected construction projects would add an estimated 2,715,716 ft^2 of facilities, new pavements, and site improvements of an estimated 3,949,592 ft^2 of construction projects proposed over the next 6 FYs (FY 2013 to FY 2018). Projects within this category primarily include new facility construction and additions to existing facilities, but could also include renovations, repairs, alterations, parking areas, and other pavements when these elements are a large relevant component of a facility construction project. The construction of new facilities would be sited in accordance with appropriate land use categories in order to continue or enhance compatibility with currently designated land use areas. **Table 2-5** identifies the selected construction projects to be evaluated in detail in this IDEA, and **Figures 2-1** through **2-5** show the possible locations of the selected construction projects relative to known constraints at JBSA-Lackland.

Table 2-4. Munitions Storage Igloos Scheduled for Demolition under Project D3

Igloo Number	Igloo Footprint (ft^2)
402	476.56
403	577.07
404	3,159.33
584	2,543.94
585	3,026.12
586	3,587.17
587	2,594.96
595	2,587.19
596	2,587.18
597	2,555.80
598	2,587.18
599	2,587.18

The selected construction projects are believed to encompass the upper range of potential impacts on the natural and man-made environment from such projects in the construction category and thus frame the upper limits for potential impacts that reasonably could be expected from the construction projects proposed at the installation. For example, Project C1 would consist of constructing the Airman Training Complex (ATC) West Campus, which would consist of four dormitories, two classroom/dining facilities, a central utility plant, and the Interfaith Religious Center. The other construction projects listed in **Appendix A** are considered in the cumulative impacts section of this IDEA.

All fill used for construction activities would be obtained from an approved borrow pit and screened to ensure it contains no cultural materials or hazardous substances. All ground disturbed during construction activities that does not include site improvements would be reseeded with appropriate groundcover in accordance with the INRMP. All MILCON projects would be constructed to the U.S. Green Building Council's Leadership in Energy and Environmental Design Silver standard (HQ USAF 2007). Greater detail on each of the selected construction projects is given in the following paragraphs.

C1. Airman Training Complex West Campus. Project C1 entails the construction of the ATC West Campus and the Interfaith Religious Center. The purpose of Project C1 is to provide recruits with facilities conducive to proper housing, dining, and training. The project is needed because existing facilities are deteriorating, undersized, have exceeded their useful life, and require near constant maintenance which interferes with their functionality.

Construction of the ATC West Campus would include four dormitories, two classroom/dining facilities, and one utility plant. Each dormitory would be approximately 285,641 ft^2 and would house a Basic Military Training (BMT) Squadron consisting of 1,248 recruits. At each dormitory, a drill pad, running track, exercise area, war skill training area, and a pavilion for weapons cleaning and storage, and latrines would be constructed. One dormitory and associated facilities would be constructed each year between 2014 and 2017. Each dining/classroom facility would be approximately 105,680 ft^2 and would

Table 2-5. Selected Facilities Construction Projects Analyzed in this IDEA

Project Identification Number and Title	Installation Project Number	FY	Land Use	Description	Potential Constraints	Project Area (ft^2)*	Change in Impervious Surface (ft^2)
C1. Airman Training Complex West Campus	MPLS083737 MPLS083006	2014 to 2017	Open Space, Industrial, Training Outdoor, Training Indoor, Outdoor Recreation	Construction of the ATC West Campus and the Interfaith Religious Center and demolition of Buildings 9020, 9028, 9121, 9140, 9142, 9144, and 9255.	None	1,842,848	+1,758,348
C2. Permanent Party Dormitory	MPLS083008	2013	Housing Unaccompanied	Construction of a 144-room, permanent party dormitory for unaccompanied enlisted personnel.	MMRP Site	13,640	+13,640
C3. Battlefield Airman Aquatic Training Complex	MPYJ043895 MPYJ043895A MPYJ043895A1	2013	Housing Unaccompanied, Industrial, Open Space, Training Indoor	Construction of an enclosed aquatic training facility with a swimming pool, deck, and bathhouse to train up to 60 students and demolition of Building 146.	None	134,159	+104,464
C4. Reid Medical Clinic	MPLS123014	2015	Open Space	Construction of a new Reid Medical Clinic.	None	243,936	+243,936
C5. 433rd Airlift Wing Building Additions and Renovations	KELL060005B KELL083012	2016	Aircraft Operations and Maintenance, Administrative	Construction of an addition to and renovation of Building 828 and Building 898.	MMRP Site, Noise	15,768	+15,768

Project Identification Number and Title	Installation Project Number	FY	Land Use	Description	Potential Constraints	Project Area (ft^2)*	Change in Impervious Surface (ft^2)
C6. AFOSI Administrative Support and Headquarters Facilities	MPLS113003 MPLS123015	2014 to 2015	Industrial, Community-Commercial, Open Space	Construction of a Headquarters Building and an Administrative Support Facility for the AFOSI.	Adjacent to NRHP-eligible resources	Support Facility: 61,899 Headquarters Facility: 87,866	Support Facility: +61,899 Headquarters Facility: +87,866
C7. AAFES BX Project	MPLS125004	2017	Administrative, Medical, Community-Commercial, Housing Unaccompanied, Open Space	Construction of a new BX and Satellite Pharmacy.	Noise	315,600	+315,600
					Total Square Feet	**2,715,716**	**2,601,521**

Note: *Project area in this context refers to the footprint of the project and includes other impervious surfaces such as sidewalks and parking lots, as appropriate; building square footage is a separate number and is discussed in the project description for each project, as appropriate.

Key:

AAFES = Army and Air Force Exchange Service
AFOSI = Air Force Office of Special Investigations
BX = Base Exchange
ft^2 = square feet
FY = Fiscal Year
MMRP = Military Munitions Response Program
NRHP = National Register of Historic Places

serve two dormitories (approximately 2,500 recruits). The ground floor of each facility would consist of a serving area, kitchen, and dining area. The second and third floors would consist of classroom facilities. The dining/classroom facilities would replace dining hall and classroom facilities that are currently found in the Recruit Housing and Training buildings. The first classroom/dining facility would be constructed in 2014 and the second in 2016. The utility plant would be approximately 39,363 ft^2 and would house the boilers and chillers needed to provide heat and air conditioning to the dormitories and dining room/classroom facilities. It would be constructed in 2014. Emergency backup power would be provided by a 300 kilowatt generator at each dormitory and a 600 kilowatt generator at the central utility plant. **Figure 2-9** presents the proposed layout for the ATC West Campus. Storm water detention ponds would be constructed as part of the ATC West Campus to account for any changes in storm water discharge that would occur from construction of the complex. The exact size and location of the detention ponds would be determined during design. Construction of the ATC West Campus would require demolishing Buildings 9121, 9140, 9142, 9144, and 9255 in 2014. Together, these five buildings have a footprint of approximately 9,521 ft^2. Prior to demolition, the functions housed in these facilities would be moved to other appropriate facilities on the installation. Demolition would include termination of all utilities.

The Interfaith Religious Center would be a one-story building consisting of 94,344 ft^2 of building space devoted to worship areas for 17 different faith groups and education and administrative areas. The center would provide worship space for the approximately 95 percent of all BMT recruits who attend weekly services and would replace existing inadequate facilities. It would be constructed in 2017 and would be located to the south of the proposed ATC West Campus to provide BMT recruits easy walking access to religious facilities. Construction of the Interfaith Religious Center would require demolishing Buildings 9020 and 9028 in 2017. Building 9020, constructed in 1968, and Building 9028, constructed in 1962, are currently being used as temporary administrative space. Prior to demolition, the functions housed in these facilities would be moved to other appropriate facilities on the installation. Building 9020 has 36,854 ft^2 of building space with a site footprint of 16,693 ft^2. Building 9028 has 36,854 ft^2 of building space with a site footprint of 16,036 ft^2. Demolition would include termination of all utilities.

C2. Permanent Party Dormitory. Project C2 would entail construction of a 144-room, 34,102 ft^2 permanent party dormitory for unaccompanied enlisted personnel. The purpose of Project C2 is to provide a portion of the unaccompanied enlisted personnel living off-installation with on-installation housing, which would contribute to improved morale. The project is needed because JBSA-Lackland currently has a deficit of bed spaces for enlisted personnel. These airmen are forced to live off-installation with commutes of up to 30 minutes due to a lack of suitable housing near JBSA-Lackland. The project would include bedrooms, multi-purpose rooms, mechanical equipment, parking areas, and site landscaping. No emergency backup generators would be required for this project. **Figure 2-10** presents a conceptual drawing of the proposed permanent party dormitory.

C3. Battlefield Airman Aquatic Training Complex. Project C3 would include construction of a classroom building and a pool facility. The purpose of the project is to provide properly configured facilities for aquatic training activities. The project is needed because water survival skills are currently taught to Battlefield Airmen at public swimming pools around JBSA-Lackland, which are not properly configured for the training mission nor do they have the capacity to handle the number of personnel requiring training. The 35,500-ft^2 pool facility would consist of construction of an enclosed aquatic training facility with a swimming pool, deck, and bathhouse to train up to 60 students at one time. The 55,000-ft^2 classroom building would consist of classrooms and offices for administrative functions. Construction of the classroom building would require demolition of Building 146, which currently serves as housing for technical training students. Prior to demolition, the functions housed in these facilities would be moved to other appropriate facilities on the installation. Building 146 has a footprint of approximately 29,695 ft^2. Demolition would include termination of all utilities. Emergency backup power would be provided by one 300 kilowatt generator. **Figure 2-11** presents the proposed layout for the Battlefield Airman Aquatic Training Complex.

Figure 2-9. Proposed Layout for Project C1, Airman Training Complex West Campus

Figure 2-10. Conceptual Drawing for Project C2, Permanent Party Dormitory

C4. Reid Medical Clinic. Project C4 would entail construction of a new Reid Medical Clinic. The purpose of the facility is to provide easily accessible medical facilities for BMT recruits. The project is needed because the existing Reid Medical Clinic (Building 6612) was constructed in 1967 and is undersized to handle its current mission. The patient population increased by 38 percent between 2008 and 2011 and the facility has approximately half of the space needed to handle current patients. Typically, the medical clinic is forced to divert patients to other medical facilities. The facility would be approximately 76,994 ft^2 and would consist of a clinic, reception area, exam rooms, administrative space, and waiting areas. Emergency backup power would be provided by a 400 kilowatt generator. Following construction of the new clinic, the existing clinic (Building 6612) and parking lot would be demolished, which is included in the cumulative impacts analysis of this IDEA. **Figure 2-12** presents a possible location for the Reid Medical Clinic.

C5. 433rd Airlift Wing Building Additions and Renovations. Project C5 would entail constructing an addition to and renovating Building 828 and Building 898. The purpose of the building additions and renovations would be to centralize the maintenance functions of the 433rd Airlift Wing. The addition to and renovations of Building 828 are needed because Building 828 (the 68th Airlift Squadron Operations Building) is outdated, interior finishes are deteriorating, and, as the mission of the 433rd Airlift Wing has expanded, additional building space has not been provided. The addition to Building 898 is needed to house the functionalities currently housed in Building 825, which is isolated on the installation from the other functionalities of the Maintenance Squadron. The 9,550-ft^2 addition to Building 828 and building renovations would provide additional space to accommodate mission requirements and would contribute to improved efficiency and readiness. The 6,218-ft^2 single-story addition to Building 898 would be constructed to house the avionics shop and the Maintenance Squadron Commander. Currently, both functionalities are housed in Building 825. No emergency backup generators would be required for this project. **Figure 2-13** presents the locations of the proposed additions.

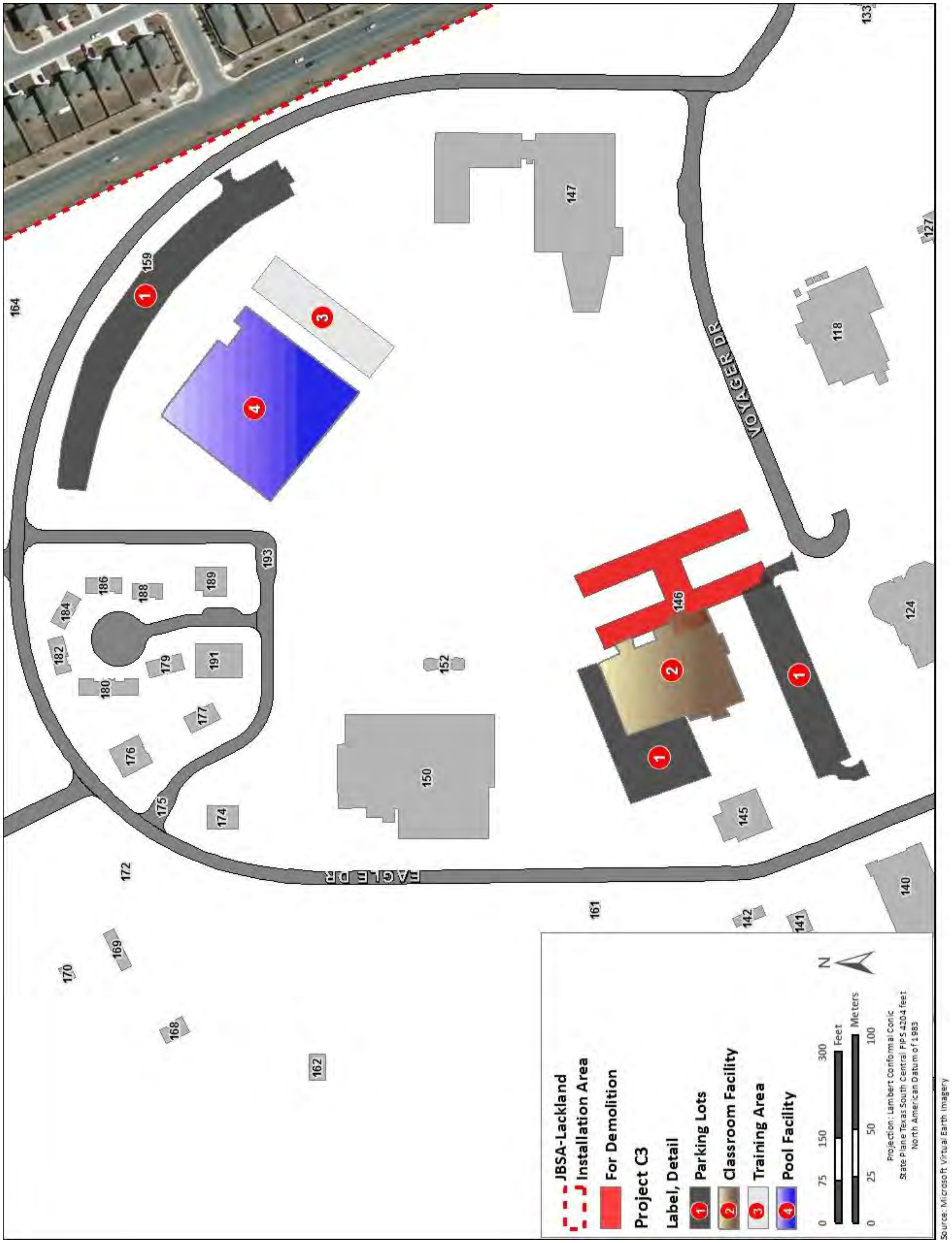


Figure 2-11. Proposed Layout for Project C3, Battlefield Airman Aquatic Training Complex

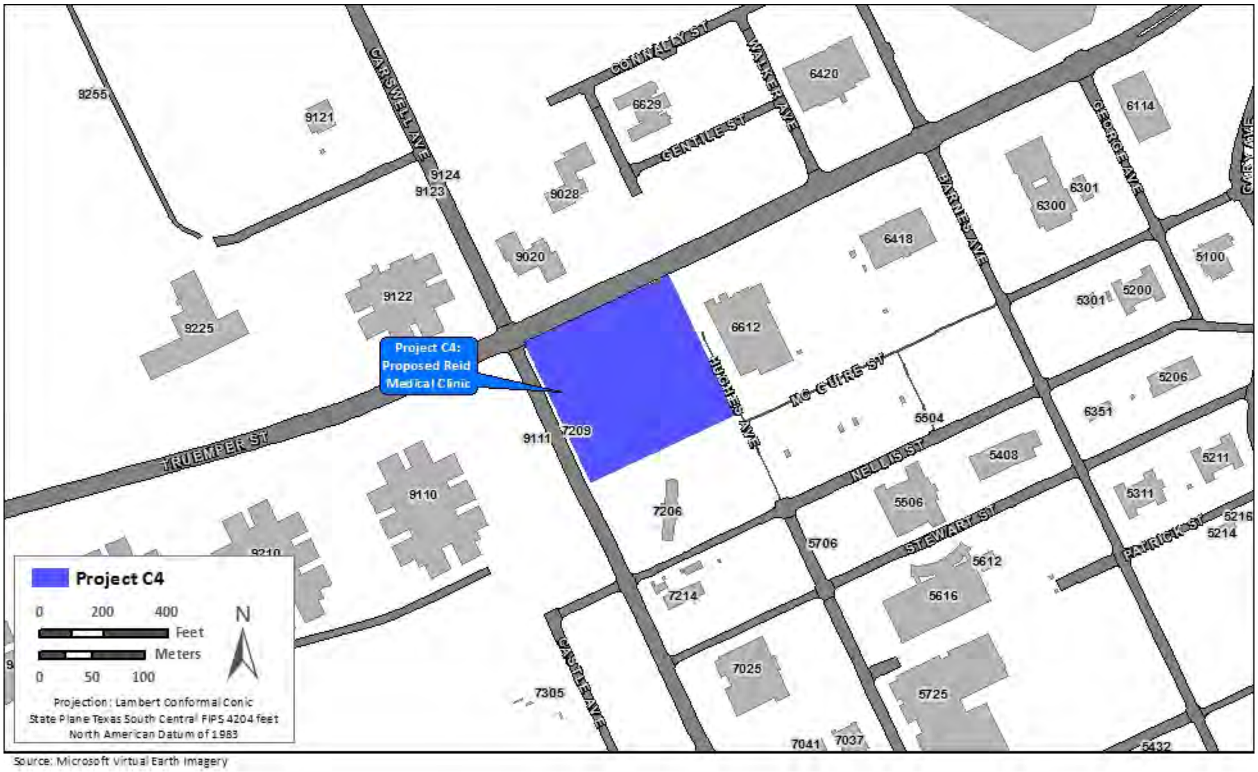


Figure 2-12. Possible Location for Project C4, Reid Medical Clinic

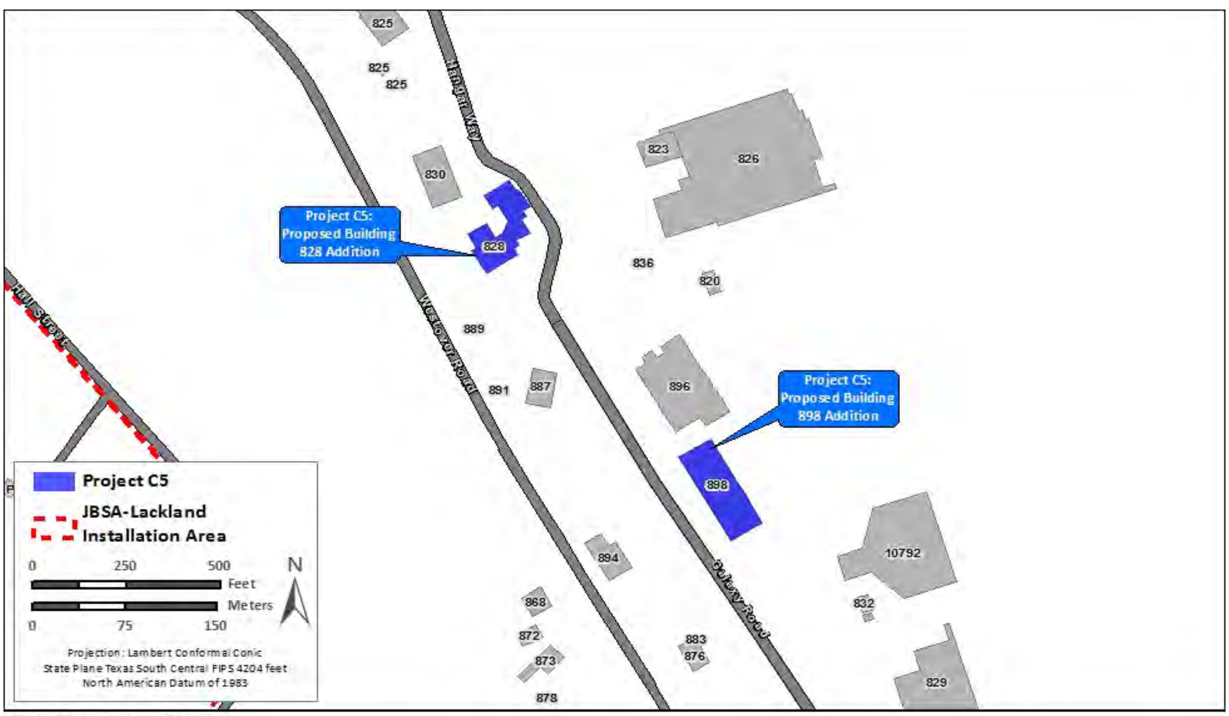


Figure 2-13. Proposed Locations for Project C5, 433rd Airlift Wing Building Additions and Renovations

C6. AFOSI Administrative Support and Headquarters Facilities. Project C6 would entail construction of two buildings for the Air Force Office of Special Investigations (AFOSI). The purpose of the facilities would be to provide properly configured and centralized facilities for the AFOSI. The project is needed because the existing facilities housing AFOSI are beyond their service life and require extensive maintenance to keep them habitable. The AFOSI Administrative Support Facility would be approximately 30,000 ft^2 and would house approximately 30 to 40 personnel. It would be constructed in 2015 and would consist of administration offices, weapons and secure storage vaults, conference rooms, showers, and other support areas. The AFOSI Headquarters Facility would be approximately 40,000 ft^2 and would be constructed in 2014. It would consolidate AFOSI units that are currently stationed in various locations around the City of San Antonio into a single location. Emergency backup power would be provided by a 300 kilowatt generator at each facility. **Figure 2-14** presents the proposed location for the AFOSI facilities.

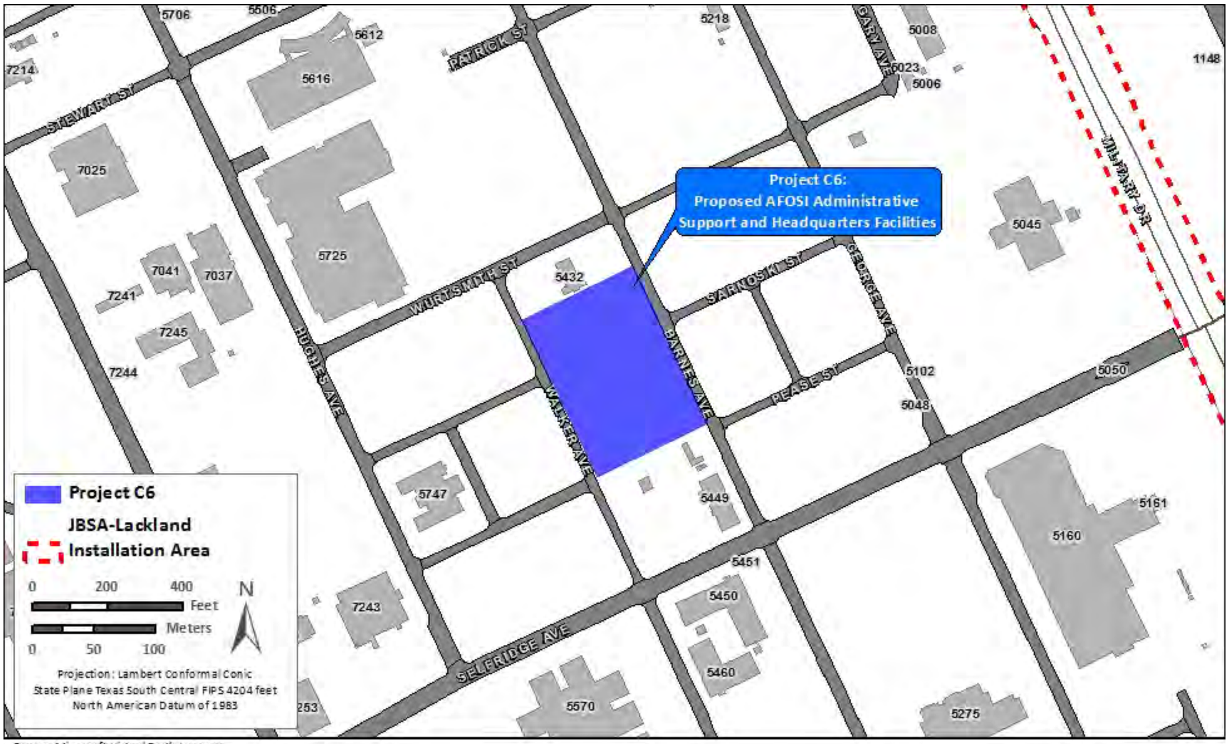
C7. AAFES BX Project. Project C7 would entail construction of a new Army and Air Force Exchange Services (AAFES) Base Exchange (BX) and Satellite Pharmacy for Wilford Hall. The purpose of the BX and Satellite Pharmacy would be to provide soldiers, families, military retirees, and eligible civilian personnel with upgraded facilities and a destination for shopping and dining to improve morale. The project is needed because the current BX is undersized to meet current on-installation shopping demands. The 260,000-ft^2 facility would include sidewalks, parking areas, access roads, and all necessary utilities. The Satellite Pharmacy would be a drive-through pharmacy attached to the BX. It would be approximately 3,000 ft^2 and would alleviate demand on the existing pharmacy at Wilford Hall. Emergency backup power would be provided by a 300 kilowatt generator. **Figure 2-15** presents the proposed location for the AAFES BX project. Following completion of the new BX, the existing BX (Building 1385) would be demolished as addressed in the cumulative impacts analysis of this IDEA.

2.1.5 Infrastructure Improvement Projects

Of the infrastructure improvement projects proposed at JBSA-Lackland over the next 6 FYs (FY 2013 to FY 2018) (as identified in **Appendix A)**, nine were selected for detailed analysis as selected projects under the Proposed Action. The selected infrastructure improvement projects could disturb as much as 33,611,138 ft^2 of land from an estimated 34,299,066 ft^2 of infrastructure improvement projects proposed over the next 6 FYs (FY 2013 to FY 2018). Projects within this category include the removal, installation of, or upgrades to paved roadways, troop walks, sidewalks, parking lots, ceremonial areas, display areas, and utilities. **Table 2-6** identifies the selected infrastructure improvement projects to be evaluated in detail in this IDEA, and **Figures 2-1** though **2-5** show the possible locations of the selected infrastructure improvement projects relative to known constraints at JBSA-Lackland.

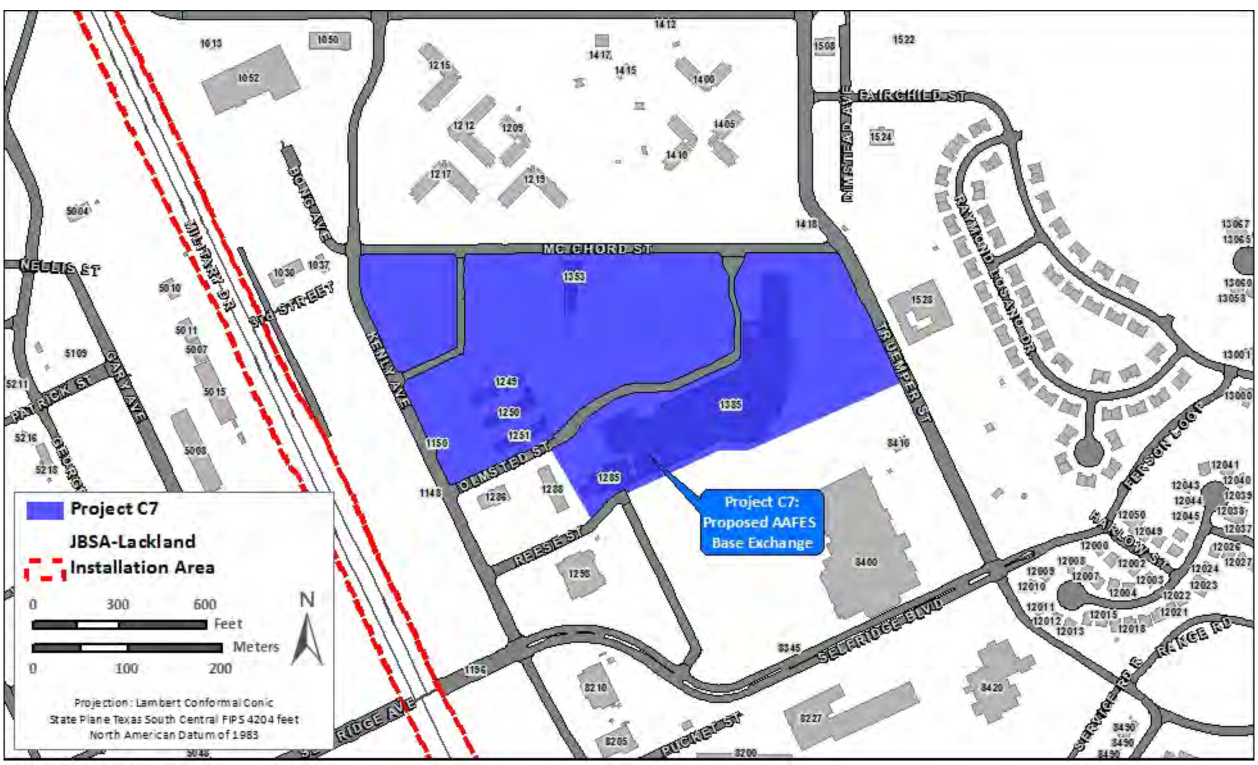
The selected infrastructure improvement projects are believed to encompass the upper range of potential impacts on the natural and man-made environment from such projects in the infrastructure improvement category and thus frame the upper limits for potential impacts that reasonably could be expected from the projects proposed at the installation. For example, Project I5 would entail construction of up to six new parking lots, which would add up to approximately 1.54 million ft^2 of impervious surfaces. The other infrastructure improvement projects identified in **Appendix A** but not selected for detailed analysis in this IDEA are considered in the cumulative impacts analysis.

All fill used for infrastructure improvement activities would be obtained from an approved borrow pit and screened to ensure it contains no cultural materials or hazardous substances. All trees and vegetation impacted from infrastructure improvement activities would be replaced or relocated, as applicable. All ground disturbed during construction activities that does not include site improvements would be reseeded with appropriate groundcover. Greater details on each of the selected infrastructure improvement projects are given in the following paragraphs.



Source: Microsoft Virtual Earth Imagery

Figure 2-14. Proposed Location for Project C6, AFOSI Administrative Support and Headquarters Facilities



Source: Microsoft Virtual Earth Imagery

Figure 2-15. Proposed Locations for Project C7, AAFES BX Project

Table 2-6. Selected Infrastructure Improvement Projects Analyzed in this IDEA

Project Identification Number and Title	Installation Project Number	FY	Land Use	Description	Potential Constraints	Project Area (ft^2)*	Change in Impervious Surface (ft^2)
I1. Pavements Projects	XX-1010, where XX is the year that the project is to be awarded	2013 to 2018	Various	Project would include expansion of roadways by two additional lanes; installation of a dedicated bike lane; installation of new troop walks and sidewalks; and construction of plazas, memorials, and displays.	MMRP Sites, ERP Sites, Noise. Non-Jurisdictional Wetlands: 0.02 acre. 100-year Floodplain: 6.7 acres.	Roads: 16,088,659 Troop walks: 608,781 Sidewalks: 2,249,280 Plazas, Memorials, Displays: 40,000 Total: 18,986,720	+18,986,720
I2. Golf Cart Path Upgrades	MPLS105009A	2014	Outdoor Recreation, Industrial	Upgrade the golf cart paths at the Lackland Gateway Hills Golf Course.	ERP Site, MMRP Site, Noise, Adjacent to NRHP-eligible resources. Jurisdictional Wetlands: 10 ft^2. 100-year Floodplain: 1.7 acres.	400,190	+200,095
I3. Airfield Lighting Upgrades	KELL069001	2015	Runway/ Taxi/ Apron, Open Space, Aircraft Operations and Maintenance	Replace the edge lighting and cabling along the runway and adjacent taxiways.	Noise, QD Arcs, MMRP Sites.	11,302,077	No Change

Project Identification Number and Title	Installation Project Number	FY	Land Use	Description	Potential Constraints	Project Area (ft^2)*	Change in Impervious Surface (ft^2)
I4. TANG Apron Repair	KELL070646	2014	Runway/ Taxiway/ Apron, Aircraft Operations and Maintenance, Open Space	Repair TANG Aprons A15B, A98C, and A99C.	Noise.	408,592	+9,800
I5. Parking Lot Installation	N/A	2013 to 2018	Industrial, Open Space, Outdoor Recreation	Construction of up to six parking lots installationwide.	QD arcs, ERP Sites, MMRP site, Noise.	1,542,024	+1,542,024
I6. Natural Gas Line Upgrades	MPLS0609038	2013 to 2018	Various	Upgrade all natural gas lines.	MMRP Sites, ERP Sites, Noise, QD Arcs. Jurisdictional Wetlands: 0.02 acre. Non-Jurisdictional Wetlands: 0.09 acre. 100-year Floodplain: 5.3 acres.	340,578	No Change
I7. Electrical Distribution System Upgrades	MPLS110082	2015	Various	Replacement of all overhead electrical distribution lines with underground lines.	MMRP Sites, ERP Sites, Noise, QD Arcs. Jurisdictional Wetlands: 0.01 acre. Non-Jurisdictional Wetlands: 0.25 acre. 100-year Floodplain: 4.36 acres.	198,963	+198,963

Project Identification Number and Title	Installation Project Number	FY	Land Use	Description	Potential Constraints	Project Area (ft^2)*	Change in Impervious Surface (ft^2)
I8. Main Water Lines Upgrades	MPLS090014	2013 to 2018	Various	Upgrade all main water lines.	MMRP Sites, ERP Sites, Noise, QD Arcs. Jurisdictional Wetlands: 0.02 acre. Non-Jurisdictional Wetlands: 0.04 acre. 100-year Floodplain: 3.62 acres.	227,574	No Change
I9. Sanitary Sewer Lines Upgrades	MPJY069206	2013 to 2018	Various	Replace sanitary sewer lines at the Lackland Training Annex.	ERP Sites, QD Arcs. Jurisdictional Wetlands: 0.02 acre. Non-Jurisdictional Wetlands: 0.01 acre. 100-year Floodplain: 1.9 acres.	204,420	No Change
					Total Square Feet	**33,611,138**	**+20,937,602**

Note: *Project area in this context refers to the footprint of the project and includes other impervious surfaces such as sidewalks and parking lots, as appropriate; building square footage is a separate number and is discussed in the project description for each project, as appropriate.

Key:

ERP = Environmental Restoration Program

ft^2 = square feet

FY = Fiscal Year

MMRP = Military Munitions Response Program

QD = quantity-distance

TANG = Texas Air National Guard

I1. Pavements Projects. This project would entail installation of a variety of pavement-related projects at JBSA-Lackland, including the following:

- Widening of selected, existing on-installation roadways by two lanes and a bike lane
- Installation of troop walks and sidewalks
- Installation of plazas, displays, and memorials.

The purpose of roadway widening lane would be to expand on-installation roadways and install a bike lane. The project is needed to help ease on-installation traffic congestion and promote safe bike passage around the installation. Approximately 16.93 miles of roadways are proposed for expansion. Each asphalt roadway would be expanded on one side by a single lane of 12 feet and on the other by a single lane of 12 feet plus a bike lane of 3 feet. Roadway expansion would occur between 2013 and 2018, with a maximum of 1/6, or approximately 2.8 miles, of the roadways expanded in any single calendar year. **Figure 2-16** presents the locations of roadways proposed for expansion.

The purpose of the troop walks would be to support BMT training activities. The new troop walks are needed to provide adequate space for BMT training activities and to improve BMT recruit safety. Each troop walk would be asphalt and would be 12 feet wide. Approximately 9.6 miles of troop walks are proposed for construction. Troop walks would be constructed between 2013 and 2018, with a maximum of 1/6, or approximately 1.6 miles, of troop walks constructed in any single calendar year.

The purpose of constructing new sidewalks is to promote a pedestrian-friendly campus. The new sidewalks are needed to improve pedestrian safety. 6-foot-wide, concrete sidewalks are proposed adjacent to approximately 60 percent of all primary, on-installation roadways. Approximately 71 miles of sidewalks are proposed for construction. Sidewalks would be constructed between 2013 and 2018, with a maximum of 1/6, or approximately 11.8 miles, of sidewalks constructed in any single calendar year. Where needed, pathway lighting would also be constructed adjacent to the new sidewalks. Lighting would be solar-powered wherever electric hook-ups are unavailable.

The purpose of constructing plazas, displays, and memorials would be to improve installation aesthetics. The plazas, display and memorials are needed to promote USAF history and support installation beautification. Up to 20 plazas, displays, and memorials are proposed for construction in previously disturbed areas of the installation. Each display would be up to 2,000 ft^2. Plazas, displays, and memorials would be constructed between 2013 and 2018, with a maximum of 4 constructed in any single calendar year.

Portions of Project I1 would involve construction within the 100-year floodplain and wetlands. Although it is USAF policy to avoid activities within the 100-year floodplain or construction in wetlands (AFI 32-7064, *Integrated Natural Resources Management*, EO 11988, and EO 11990), construction within approximately 6.7 acres of the floodplain and 0.02 acre of non-jurisdictional wetlands would be unavoidable; therefore, a FONPA would be obtained and the project would need approval by AETC. **Figure 2-16** presents the proposed locations of the blanket pavement projects.

I2. Golf Cart Path Upgrades. This project would entail upgrading the golf cart paths at the Lackland Gateway Hills Golf Course. The purpose of this project would be to provide upgraded cart paths to improve safety and decrease maintenance costs. The project is needed because the current golf cart paths are deteriorating and prone to flooding and erosion issues. The existing 6-foot-wide golf cart paths would be demolished and 33,349 feet (6.32 miles) of 12-foot wide, 4-inch-thick concrete paths would be installed. Portions of the upgrades would occur within the 100-year floodplain and wetlands. Although it is USAF policy to avoid activities within the 100-year floodplain or construction in wetlands (AFI 32-7064, *Integrated Natural Resources Management*, EO 11988, and EO 11990), construction

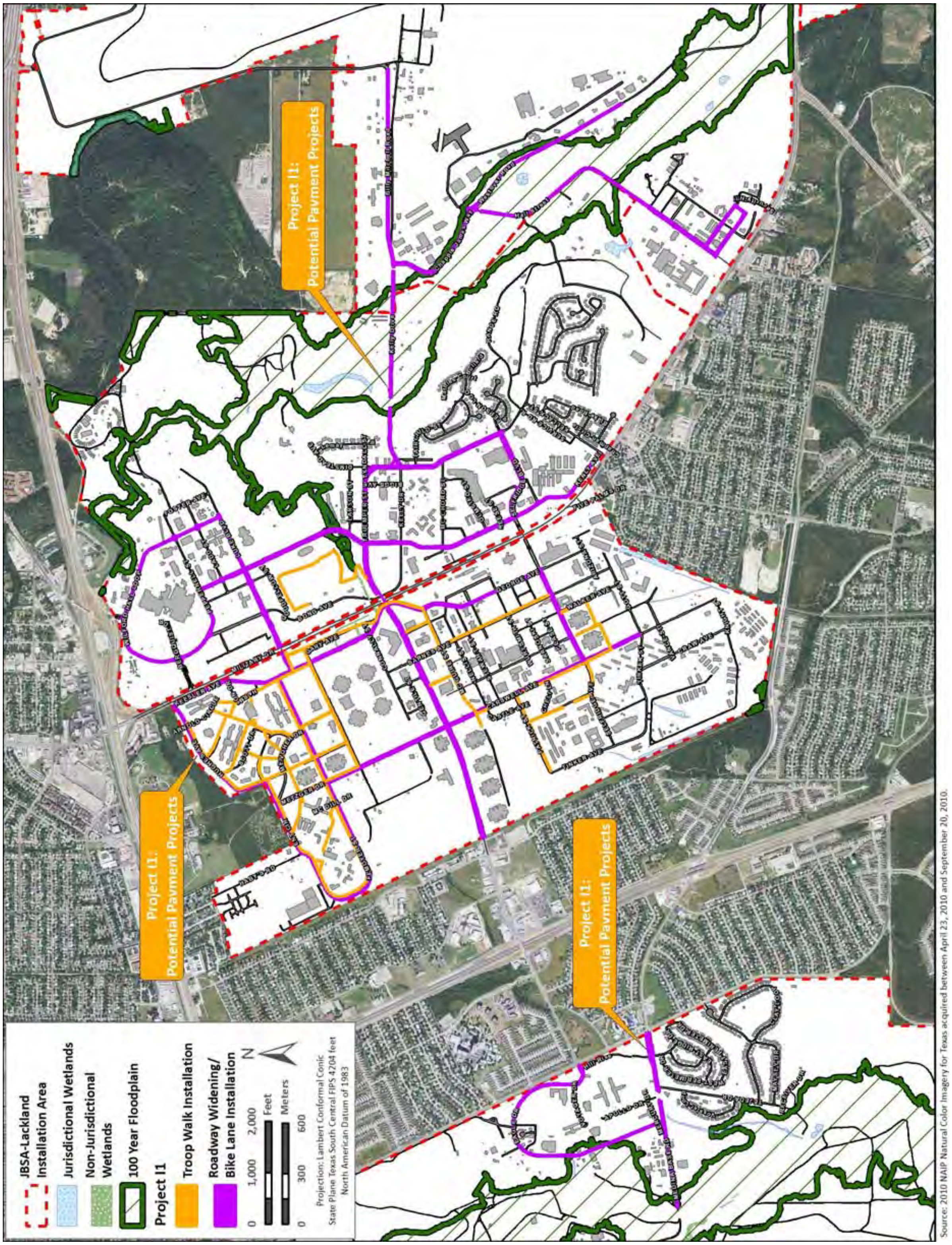


Figure 2-16. Proposed Locations for Project I1, Pavements Projects

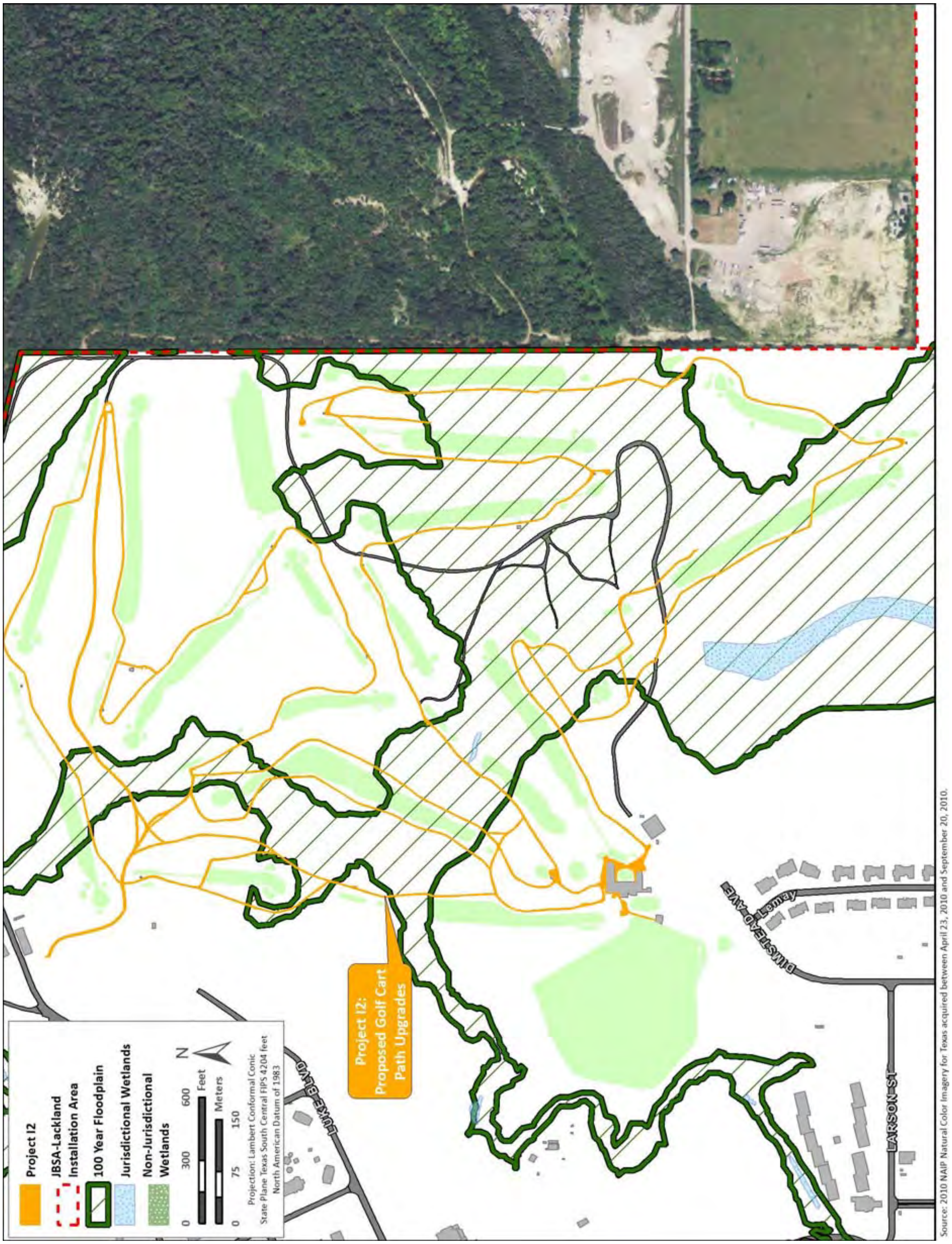


Figure 2-17. Proposed Locations for Project I2, Golf Cart Path Upgrades

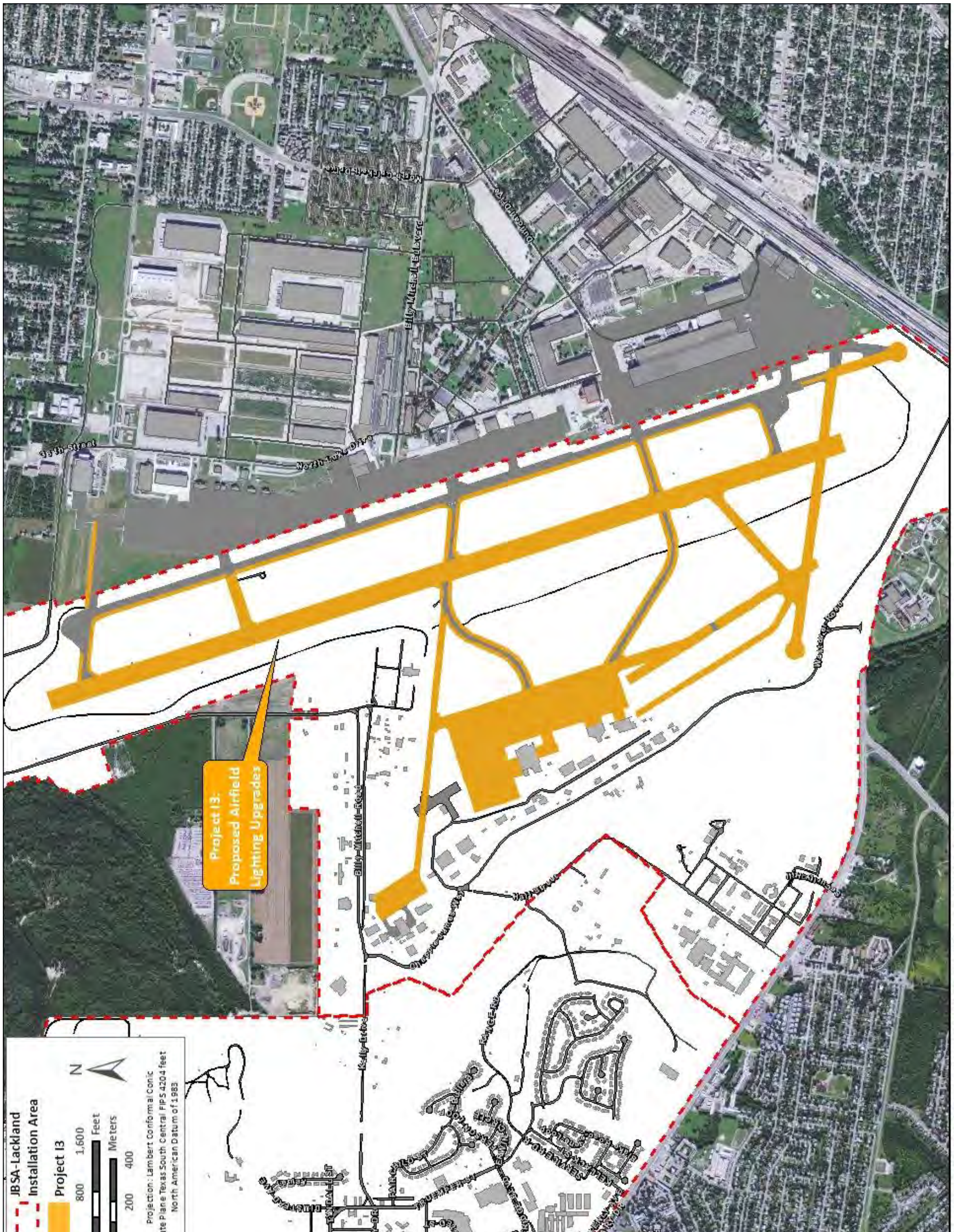
within 1.7 acres of the floodplain and 10 ft^2 of jurisdictional wetlands of would be unavoidable; therefore, a FONPA would be obtained and the project would need approval by AETC. **Figure 2-17** presents the locations for proposed golf cart path upgrades.

I3. Airfield Lighting Upgrades. This project would entail replacing the edge lighting and cabling along Runway 15/33, aprons, ramps, Taxiways A through L, and into the APZs at either end of the runway. The purpose of this project is to upgrade the airfield lighting system so they meet USAF, DOD, and UFC standards and requirements for airfield lighting. The project is needed because the present airfield lighting and power systems are between 25 and 60 years old and do not meet these criteria. Upgrading the system would require replacing all existing cabling and grounding systems; repairing broken and leaking manholes; removing all unnecessary and redundant wiring; upgrading all navigational aids such as strobes, markers, and signage; and updating all systems so they meet USAF, DOD, UFC, and USAF AT/FP standards and requirements. Lighting and ductwork along the runway would have to be relocated to inside 75 feet of the centerline; lighting and ductwork along the taxiways and apron would be replaced in its current location. Construction would last up to 6 months, but would be completed in phases and coordinated with the 802d Mission Support Group to minimize any potential conflicts with airfield operations. **Figure 2-18** presents the locations proposed for airfield lighting upgrades.

I4. TANG Apron Repair. This project would entail replacing and expanding the existing parking aprons for the TANG. The purpose of the project is to repair the aprons to improve airfield safety. The project is needed because deteriorating surfaces that have become cost-prohibitive to patch and have caused aircraft and personnel safety issues due to elevated levels of foreign object damage. Approximately 414,000 ft^2 of concrete at Aprons A15B, A98C, and A99C would be replaced. Approximately 9,800 ft^2 of new apron would be added to meet requirements that the taxiway centerline be 25 feet from the apron edge. Additionally, 3,600 ft^2 of asphalt along the shoulder would be replaced with concrete. During construction, all aircraft would have to be temporarily relocated to another aircraft parking apron on the airfield; the exact apron would be determined prior to construction. **Figure 2-19** shows the portions of the TANG apron that are proposed for repair.

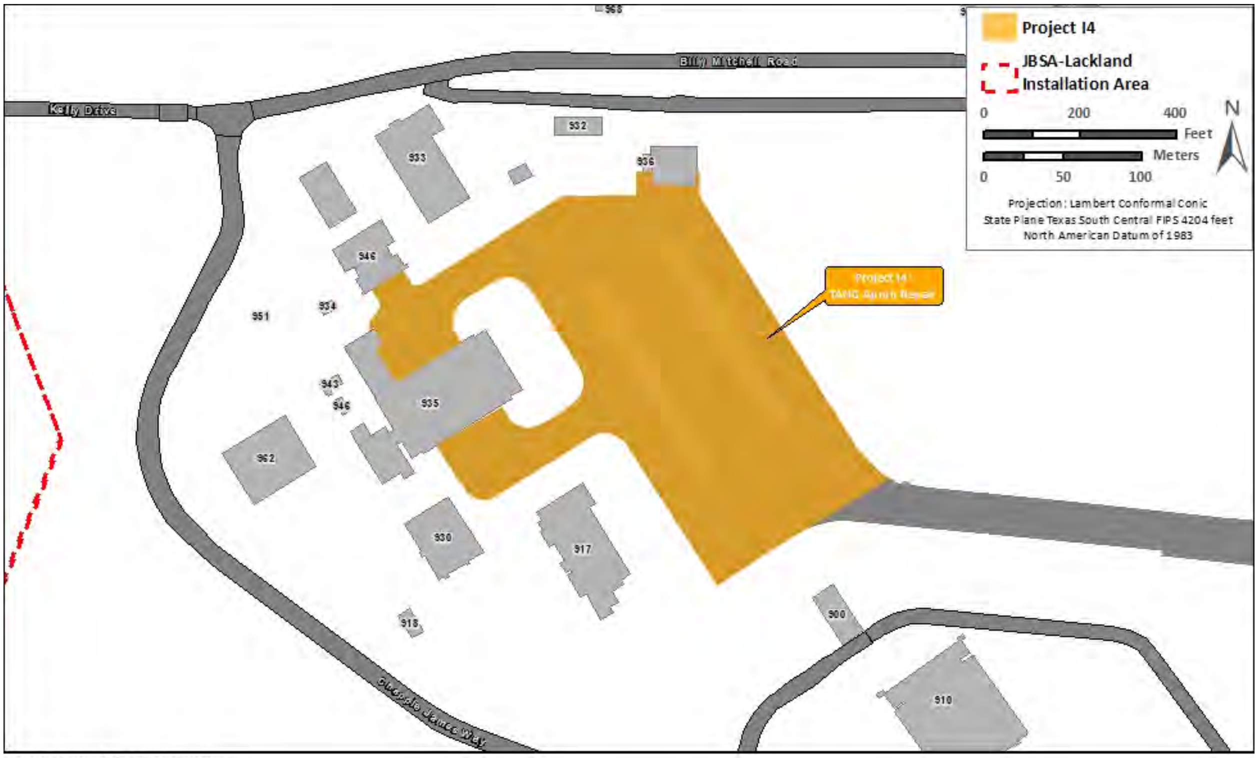
I5. Parking Lot Installation. This project would entail construction of up to six new parking lots. The purpose of this project would be to construct new parking areas to alleviate stress on the current parking system. The project is needed because the existing parking infrastructure on JBSA-Lackland is insufficient to meet the installation’s parking needs. These new parking lots would be strategically placed across JBSA-Lackland to help alleviate stress on the existing parking system. The new parking lots would range in size from 1.5 acres to 14.3 acres and would be paved with asphalt. The total size of the six new parking lots would be 35.4 acres. The parking lots would be constructed between 2013 and 2018, with one parking lot constructed in each calendar year. **Figure 2-20** presents the potential locations of the six parking lots proposed for construction.

I6. Natural Gas Lines Upgrade. This project would entail replacing JBSA-Lackland’s natural gas distribution system and associated regulator stations. No new natural gas lines are proposed. The purpose of the project is to upgrade the natural gas system to improve system reliability. The project is needed because the current natural gas distribution system is deteriorating, unreliable, and requires constant repair. Further, the current state of the system is unsafe and presents a health and safety risk for tenants, employees, and visitors. This IDEA will only analyze the portions of the natural gas distribution system located within and adjacent to ERP sites, wetlands, jurisdictional waters of the United States, and the 100-year floodplain. This IDEA analyzes removal of the existing infrastructure and installation of up to 113,526 linear feet of natural gas lines within existing rights-of-way. The natural gas system would be upgraded between 2013 to 2018, with a maximum of 1/6, or 18,876 linear feet, installed in any given calendar year. Portions of Project I6 would involve construction within the 100-year floodplain and



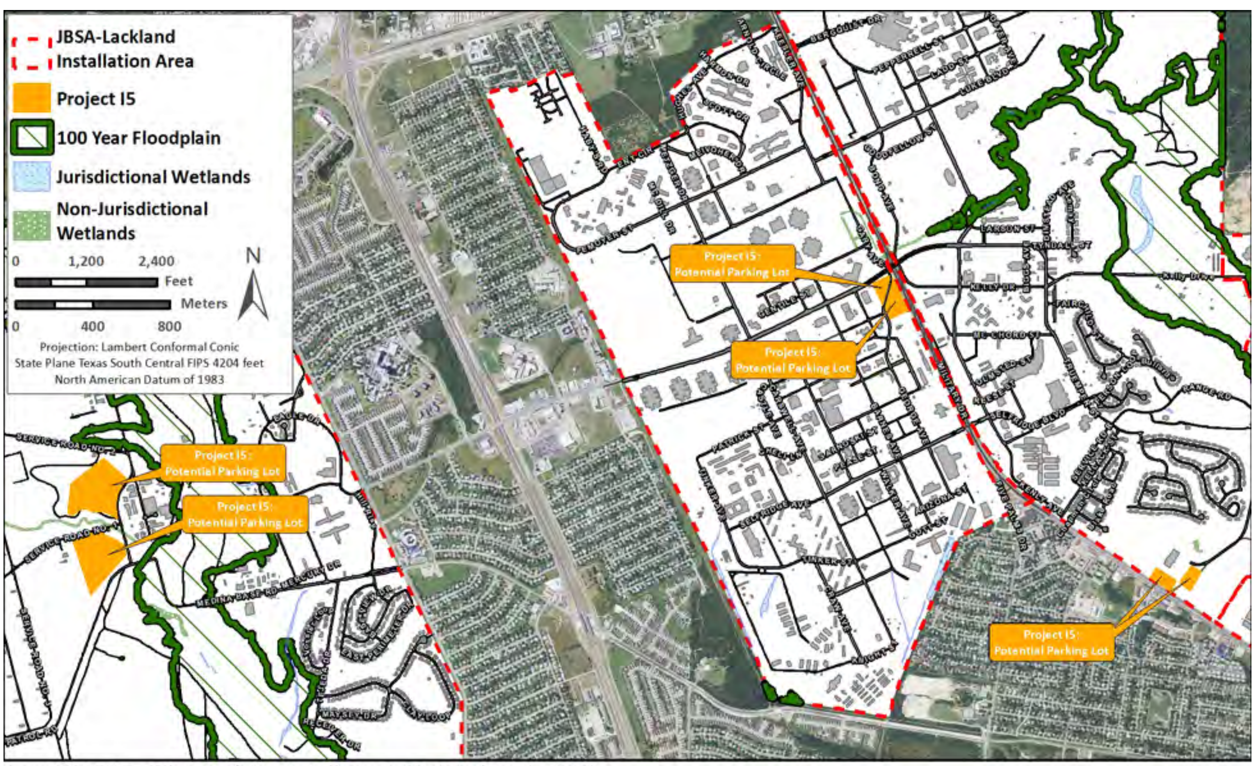
Source: 2010 NAIP Natural Color Imagery for Texas acquired between April 23, 2010 and September 20, 2010.

Figure 2-18. Proposed Locations for Project I3, Airfield Lighting Upgrades



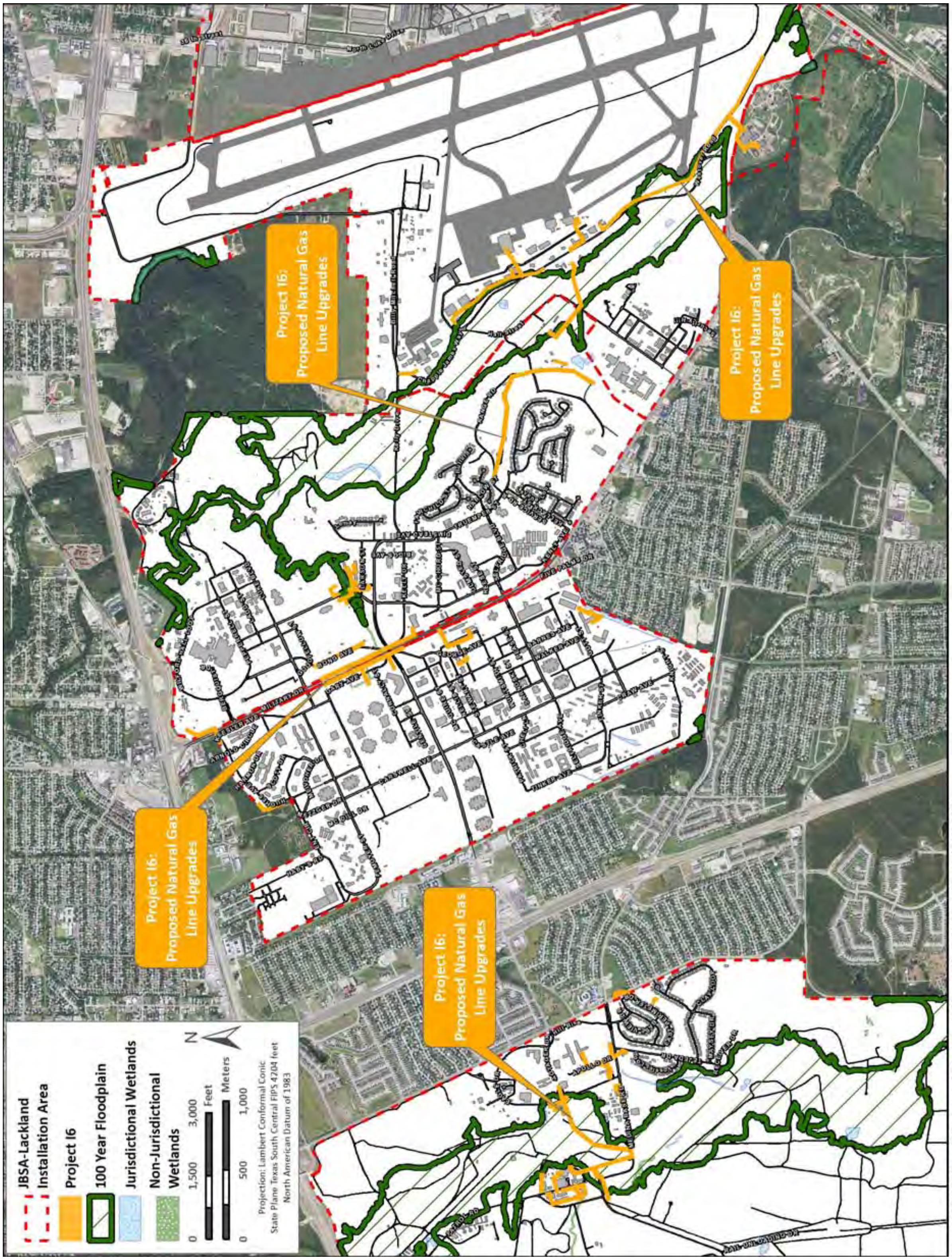
Source: Microsoft Virtual Earth Imagery

Figure 2-19. Proposed Locations for Project I4, TANG Apron Repair



Source: 2010 NAIP Natural Color Imagery for Texas acquired between April 23, 2010 and September 20, 2010.

Figure 2-20. Proposed Locations for Project I5, Parking Lot Installation



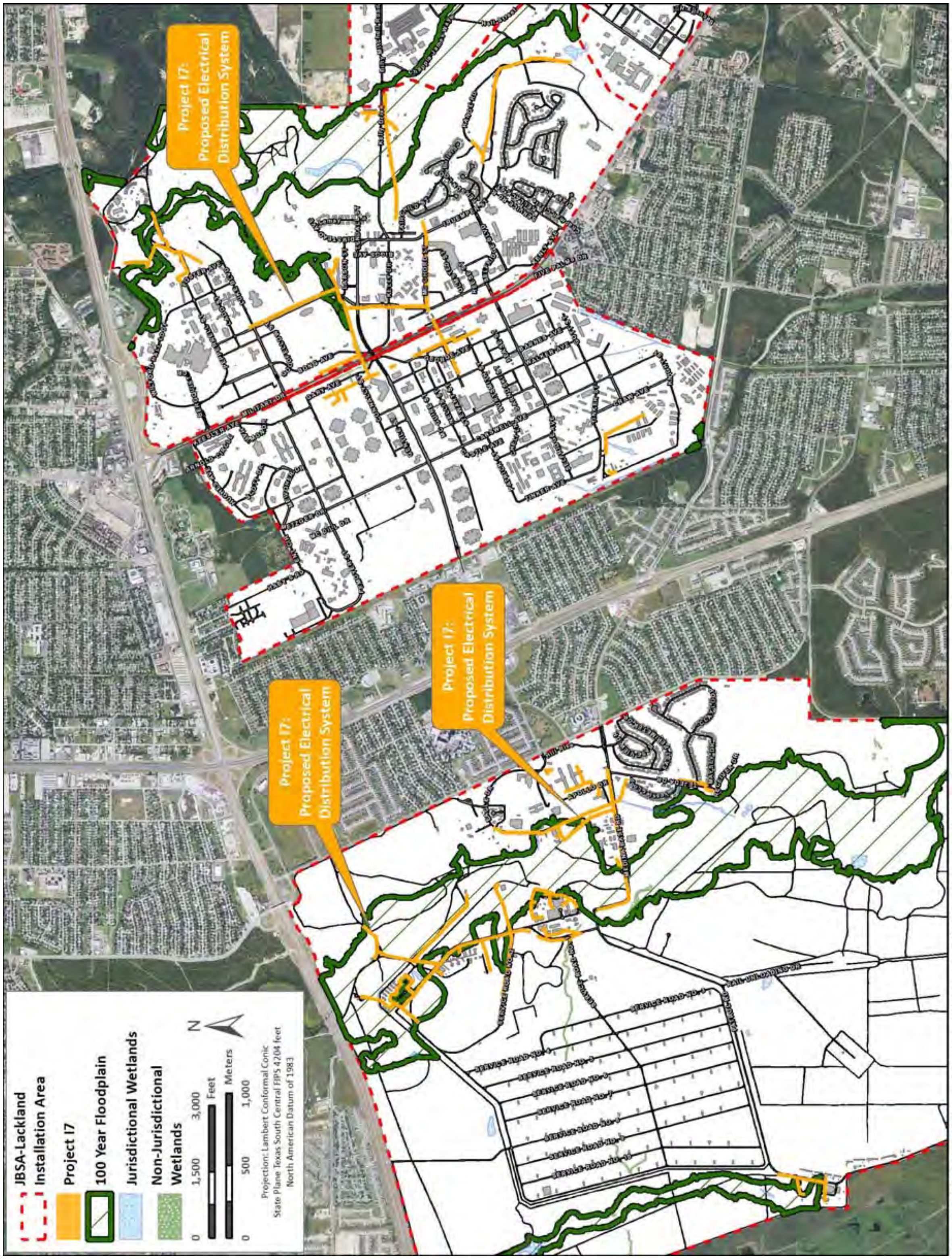
Source: 2010 NAIP Natural Color Imagery for Texas acquired between April 23, 2010 and September 20, 2010.

Figure 2-21. Proposed Locations for Project I6, Natural Gas Lines Upgrade

wetlands. Although it is USAF policy to avoid activities within the 100-year floodplain or construction in wetlands (AFI 32-7064, *Integrated Natural Resources Management*, EO 11988, and EO 11990), construction within approximately 5.3 acres of the floodplain, 0.02 acre of jurisdictional wetlands, and 0.09 acre of non-jurisdictional wetlands would be unavoidable; therefore, a FONPA would be obtained and the project would need approval by AETC. **Figure 2-21** presents the proposed locations of the natural gas lines to be upgraded. The portions of the natural gas distribution system requiring upgrade that are located outside of sensitive areas may be covered by a Categorical Exclusion. The determination of the applicability of a Categorical Exclusion will be made in the future when project needs and potential impacts become known.

I7. Electrical Distribution System Upgrades. This project would entail replacing the existing overhead electrical distribution system with a modernized underground distribution system. The purpose of the project is to upgrade the electrical distribution system to improve system reliability. The project is needed because the current system is deteriorating, unreliable, and requires constant repair. Further, the current state of the system is unsafe and presents a health and safety risk for tenants, employees, and visitors. This IDEA will only analyze the portions of the electrical distribution system located within and adjacent to ERP sites, wetlands, jurisdictional waters of the United States, and the 100-year floodplain. The existing overhead system would be demolished, including removing power poles, pole-mounted transformers, and overhead cables. For the new underground system, trenches would be dug and 4-duct, 6-inch and 2-duct, 4-inch duct banks would be installed. Pad-mounted transformers would be installed to replace existing pole-mounted transformers. Additionally, 15 ground-level transformers across the installation would be replaced. This IDEA analyzes installation of 66,231 linear feet of underground electrical lines within the existing right-of-way. Portions of Project I7 would involve construction within the 100-year floodplain and wetlands. Although it is USAF policy to avoid activities within the 100-year floodplain or construction in wetlands (AFI 32-7064, *Integrated Natural Resources Management*, EO 11988, and EO 11990), construction within 4.36 acres of the floodplain, 0.01 acre of jurisdictional wetlands, and 0.25 acre of non-jurisdictional wetlands would be unavoidable; therefore, a FONPA would be obtained and the project would need approval by AETC. **Figure 2-22** presents the proposed locations of the electrical system to be upgraded. The portions of the electrical distribution system requiring upgrade that are located outside of sensitive areas may be covered by a Categorical Exclusion. The determination of the applicability of a Categorical Exclusion will be made in the future when project needs and potential impacts become known.

I8. Main Water Lines Upgrades. This project would entail replacing JBSA-Lackland's water distribution system. No new water lines are proposed. The purpose of the project is to upgrade the water distribution system to improve system reliability. The project is needed because the current water distribution system is deteriorating, unreliable, and requires constant repair. Further, the current state of the system is unsafe and presents a health and safety risk for tenants, employees, and visitors. This IDEA will only analyze the portions of the water system located within and adjacent to ERP sites, wetlands, jurisdictional waters of the United States, and the 100-year floodplain. The existing water distribution system is approximately 60 years old and consists of a mix of cast iron, asbestos cement, or polyvinyl chloride (PVC) piping. These existing pipes have deteriorated to the point of requiring near constant repair or replacement. The existing water main pipelines would be demolished and all pipelines containing asbestos would be disposed of in accordance with the installation's asbestos management and hazardous materials management plans. Any areas of demolition would be backfilled, as appropriate. New piping would be installed and would be sized for current use and address future water requirements. This IDEA analyzes replacement of 78,858 linear feet of main water lines within the existing right-of-way. The water distribution system would be upgraded between 2013 to 2018, with a maximum of 1/6, or 13,143 linear feet, installed in any given calendar year. Portions of Project I8 would involve construction within the 100-year floodplain and wetlands. Although it is USAF policy to avoid activities within the 100-year floodplain or construction in wetlands (AFI 32-7064, *Integrated Natural Resources*



Source: 2010 NAIP Natural Color Imagery for Texas acquired between April 23, 2010 and September 20, 2010.

Figure 2-22. Proposed Locations for Project I7, Electrical Distribution System Upgrades

Management, EO 11988, and EO 11990), construction within 3.62 acres of the floodplain, 0.02 acre of jurisdictional wetlands, and 0.036 acre of non-jurisdictional wetlands would be unavoidable; therefore, a FONPA would be obtained and the project would need approval by AETC. **Figure 2-23** presents the proposed locations of the main water lines to be upgraded. The portions of the water distribution system requiring upgrade that are located outside of sensitive areas may be covered by a Categorical Exclusion. The determination of the applicability of a Categorical Exclusion will be made in the future when project needs and potential impacts become known.

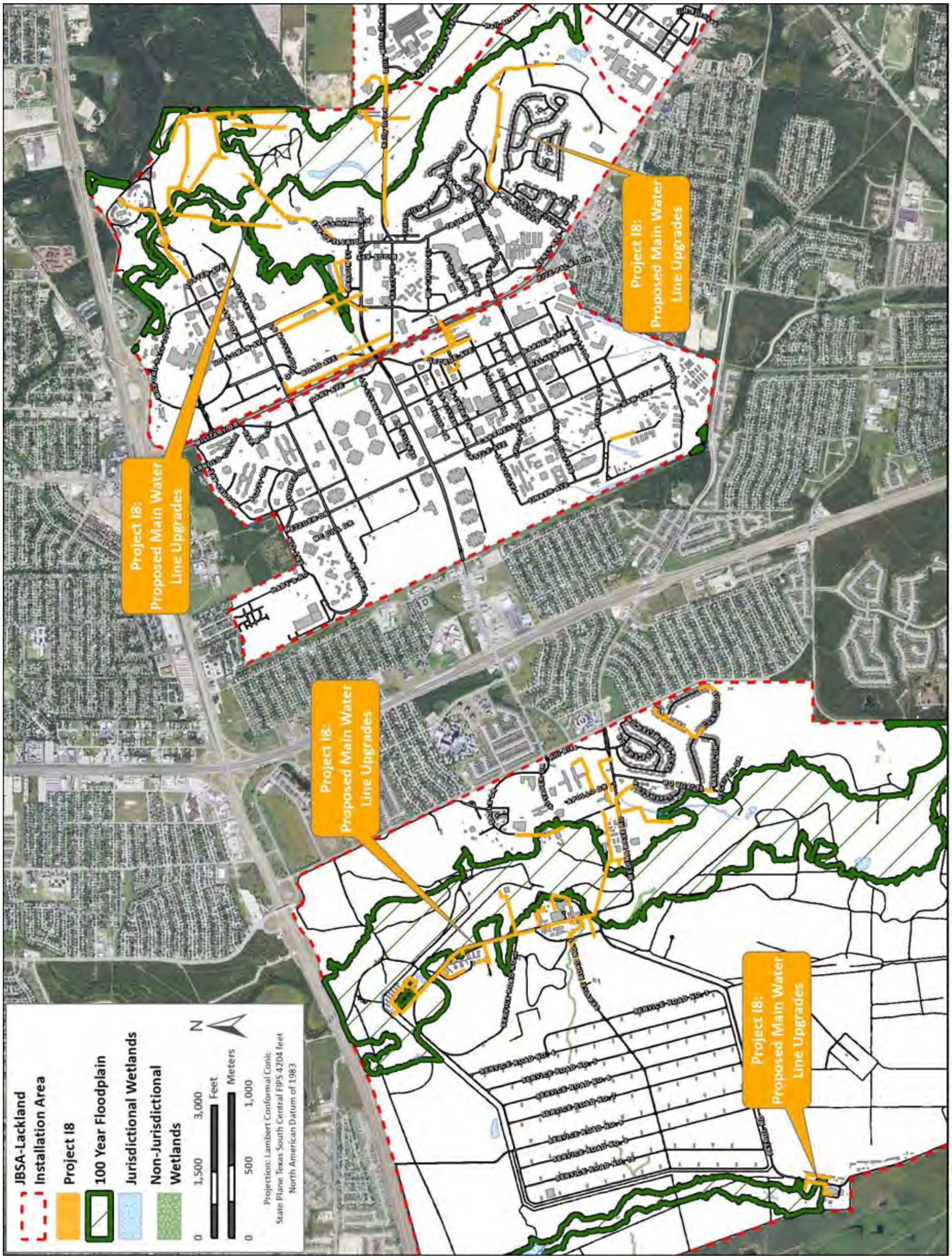
I9. Sanitary Sewer Lines Upgrades. This project would entail replacing the sanitary sewer lines located within the Lackland Training Annex at JBSA-Lackland. No new sanitary sewer lines are proposed. The purpose of the project is to upgrade the sewer system to improve system reliability. The project is needed because the current sanitary sewer system is deteriorating, is unreliable, requires constant repair, and poses a risk of leaking into the environment. The risk of leakage poses a threat to the aquatic and terrestrial environment near the existing pipes and presents a potential health and safety risk for tenants, employees, and visitors. This IDEA will only analyze the portions of the sanitary sewer system located within and adjacent to ERP sites, wetlands, jurisdictional waters of the United States, and the 100-year floodplain. This IDEA analyzes removal of the existing infrastructure and installation of up to 68,140 linear feet of sanitary sewer lines within existing rights-of-way. The sanitary sewer system would be upgraded between 2013 to 2018, with a maximum of 1/6, or 11,356 linear feet, installed in any given calendar year. Portions of Project I9 would involve construction within the 100-year floodplain and wetlands. Although it is USAF policy to avoid activities within the 100-year floodplain or construction in wetlands (AFI 32-7064, *Integrated Natural Resources Management*, EO 11988, and EO 11990), construction within 1.9 acres of the floodplain, 0.02 acre of jurisdictional wetlands, and 0.01 acre of non-jurisdictional wetlands would be unavoidable; therefore, a FONPA would be obtained and the project would need approval by AETC. **Figure 2-24** presents the proposed locations of the sanitary sewer lines to be upgraded. The portions of the sanitary sewer system requiring upgrade that are located outside of sensitive areas may be covered by a Categorical Exclusion. The determination of the applicability of a Categorical Exclusion will be made in the future when project needs and potential impacts become known.

2.1.6 Natural Infrastructure Management Projects

This IDEA addresses two natural infrastructure management projects proposed over the next 6 FYs (FY 2013 to FY 2018) to support future mission requirements. These include installation of erosion controls along Medio Creek and Leon Creek. All natural infrastructure management projects are large enough in scope to warrant analysis as projects under the Proposed Action. As such, there are not any other projects for the natural infrastructure management category. Natural infrastructure management projects could disturb as much as 15,750 ft^2 of land. **Table 2-7** identifies natural infrastructure management projects associated with the Proposed Action, and **Figures 2-1** through **2-5** show the possible locations of natural infrastructure management projects relative to known constraints at JBSA-Lackland.

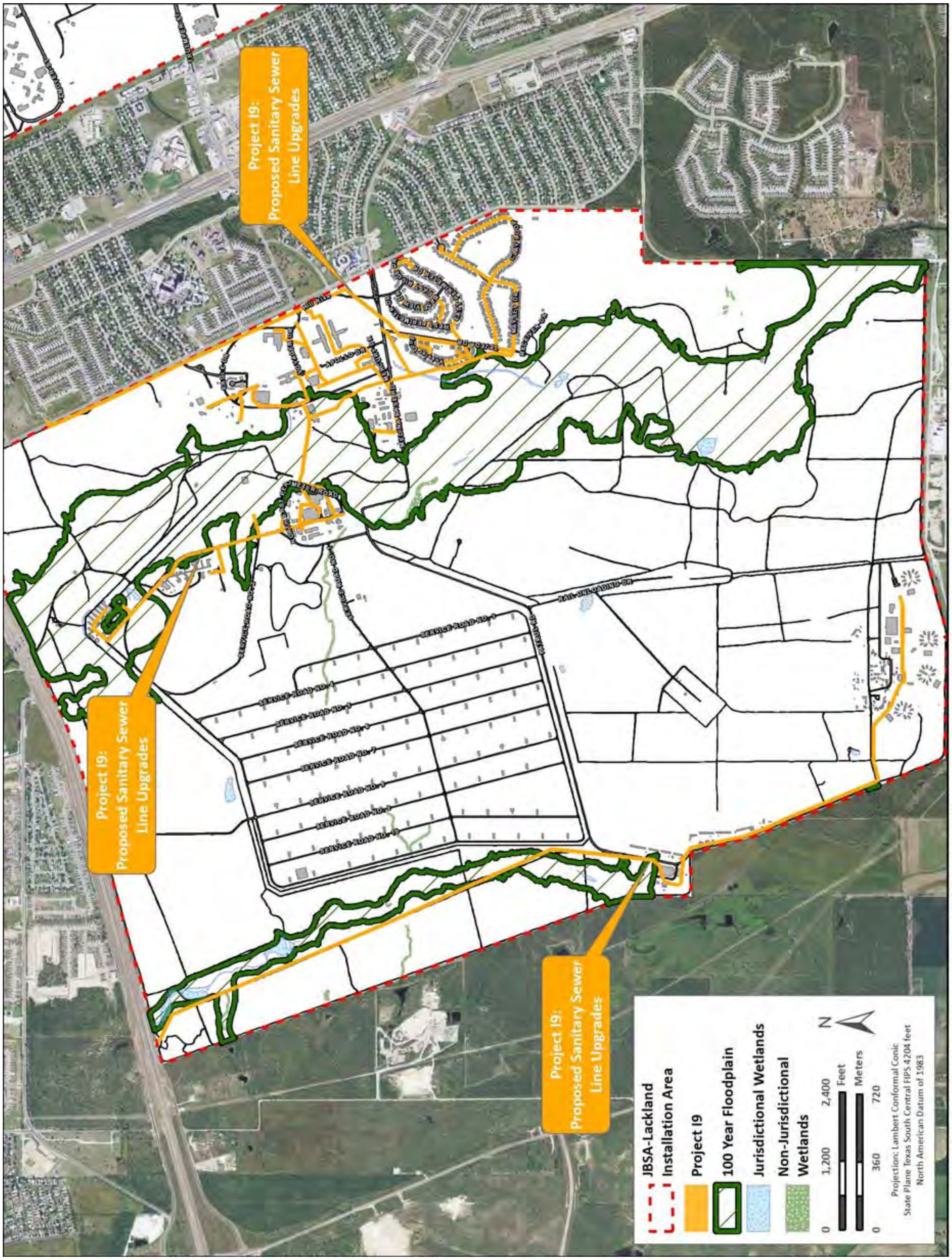
All fill used for natural infrastructure management activities would be obtained from an approved borrow pit and screened to ensure it contains no cultural resources or hazardous substances. All ground disturbed during activities that does not include site improvements would be reseeded with appropriate groundcover in accordance with the INRMP, as applicable. Greater detail on each of the natural infrastructure management projects is given in the following paragraphs.

NI1. Medio Creek Erosion Control. This project would entail installation of erosion-control measures along Medio Creek and removal of the existing concrete structure and culverts near the intersection of an unpaved patrol road and Medio Creek. The purpose of the project would be to install measures to prevent



Source: 2010 NAIP Natural Color Imagery for Texas acquired between April 23, 2010 and September 20, 2010.

Figure 2-23. Proposed Locations for Project I8, Main Water Lines Upgrades



Source: 2010 NAIP Natural Color Imagery for Texas acquired between April 23, 2010 and September 20, 2010.

Figure 2-24. Proposed Locations for Project I9, Sanitary Sewer Lines Upgrades

Table 2-7. Selected Natural Infrastructure Management Projects Analyzed in this IDEA

Project Identification Number and Title	Installation Project Number	FY	Land Use	Description	Potential Constraints	Project Area (ft^2)*	Change in Impervious Surface (ft^2)
NI1. Medio Creek Erosion Control	MPYJ100177	2013	Open Space	Installation of erosion-control measures along Medio Creek and removal of the existing concrete structure and culverts near the intersection of an unpaved patrol road and Medio Creek.	ERP Sites, Waters of the United States. 100-year Floodplain: 4.1 acres.	12,000	-2,100
NI2. Warrior Week Road – Leon Creek Bridge	MPLS031010	2013	Open Space, Training Outdoor	Repair of eroded areas near Leon Creek, removal of the existing culvert, and installation of a bridge over Leon Creek near its intersection with Warrior Week Road.	MMRP Sites, ERP Sites, Waters of the United States. 100-year Floodplain: 0.4 acres.	3,750	+3,900
					Total Square Feet	**15,750**	**+1,800**

Note: *Project area in this context refers to the footprint of the project and includes other impervious surfaces such as sidewalks and parking lots, as appropriate; building square footage is a separate number and is discussed in the project description for each project, as appropriate.

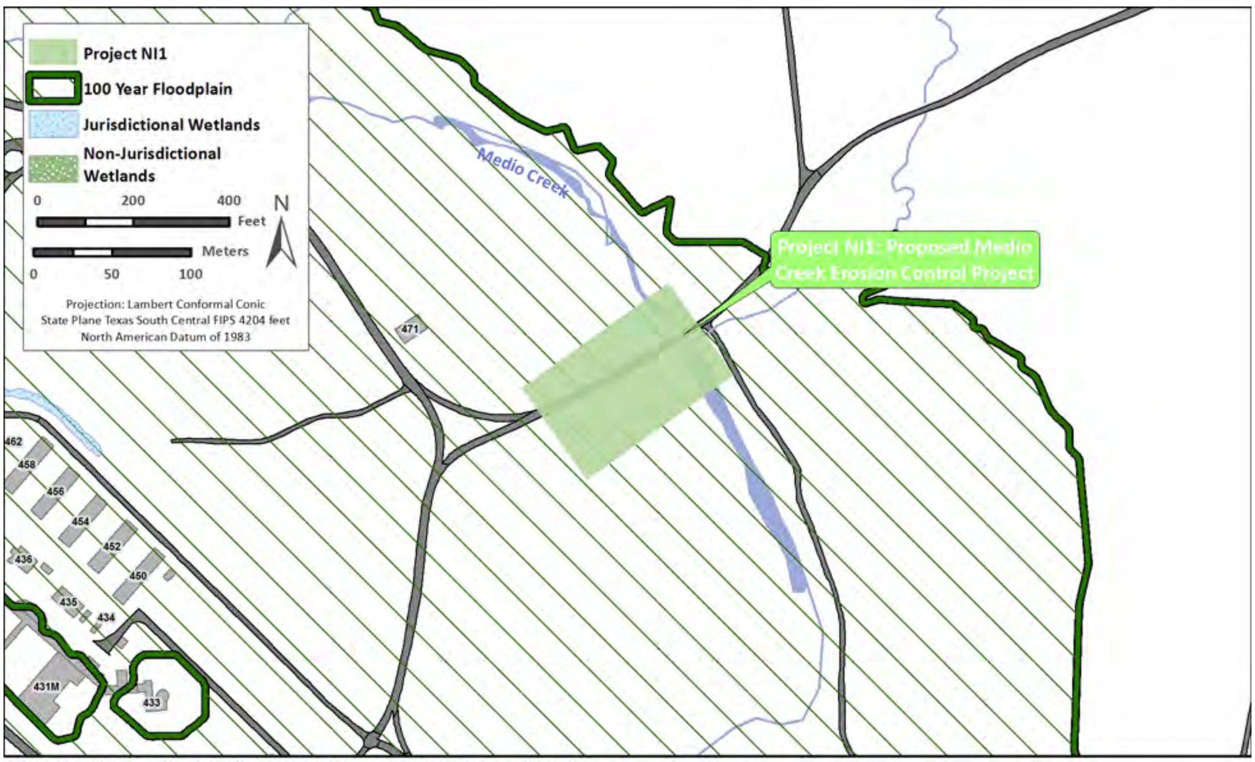
Key:

ERP = Environmental Restoration Program

ft^2 = square feet

FY = Fiscal Year

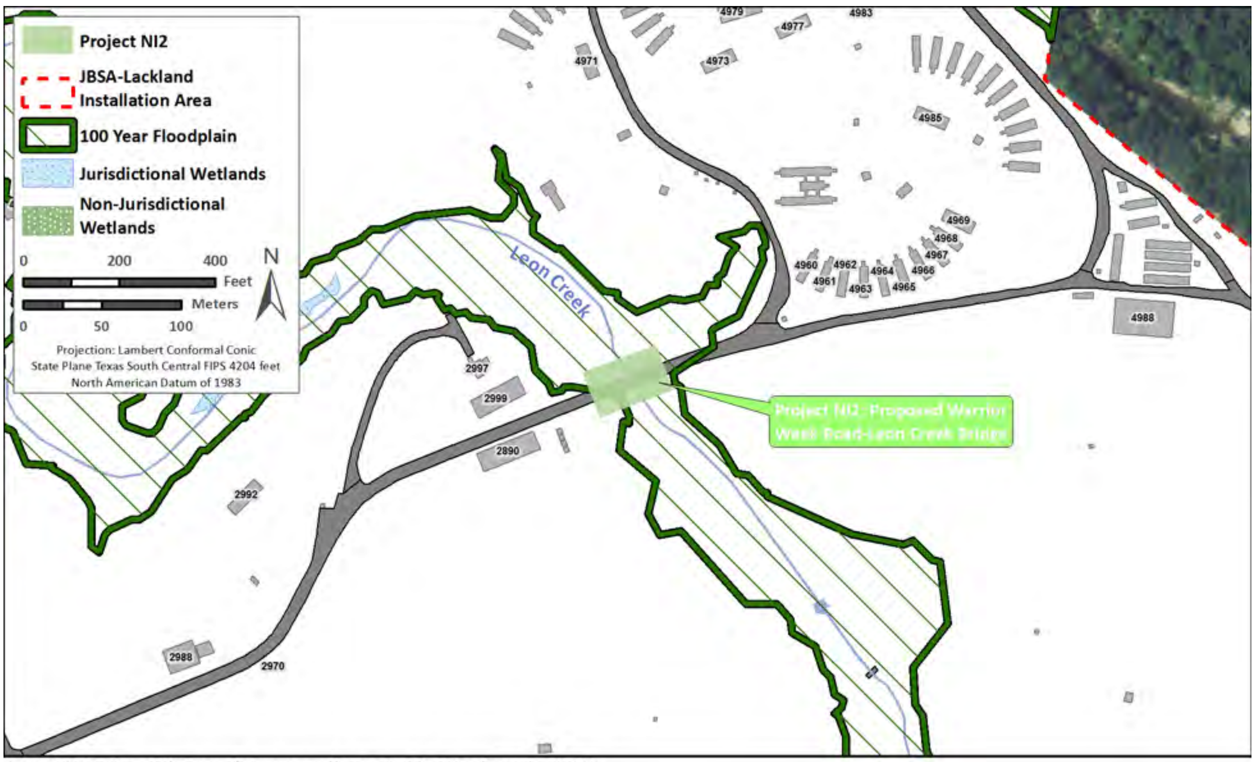
MMRP = Military Munitions Response Program future flooding, erosion, and downstream sedimentation. The project is needed because the existing culverts at the intersection are undersized, which have caused extensive erosion damage. Whenever a significant rainfall occurs, Medio Creek backs up behind and overflows the culvert, and floods its banks to the east. This flooding creates significant areas of erosion on the downstream side of the structure, which creates a safety hazard as depths adjacent to the roadway can approach 4 vertical feet. This project would replace the existing structure with a low water crossing, repair the washed out area adjacent to the stream, install gabions and erosion-control matting where needed to prevent further erosion, and restore the original configuration of the natural streambed. This configuration would match the current modeled floodplain as depicted on the Digital Flood Insurance Rate Map (DFIRM) panels and restore the water surface elevation to the pre-developed state. Construction would occur within the 100-year floodplain. Although it is USAF policy to avoid activities within the 100-year floodplain (AFI 32-7064, *Integrated Natural Resources Management* and EO 11988), disturbance within approximately 4.1 acres of the floodplain would be unavoidable; therefore, a FONPA would be obtained and the project would need approval by AETC. Removal and reconfiguration should not require review by Federal Emergency Management Agency (FEMA) as this would restore the floodplain to what is shown on the current DFIRM panels. **Figure 2-25** presents the proposed location of the Medio Creek erosion-control project.



Source: 2010 NAIP Natural Color Imagery for Texas acquired between April 23, 2010 and September 20, 2010.

Figure 2-25. Proposed Location for Project NI1, Medio Creek Erosion Control

NI2. Warrior Week Road – Leon Creek Bridge. This project would entail repair of eroded areas near Leon Creek, removal of the existing culvert, and installation of a bridge over Leon Creek near its intersection with Warrior Week Road. The purpose of the project would be to install measures to prevent future flooding, erosion, and downstream sedimentation. The project is needed because the existing culvert is undersized and creates a backwater condition that floods improved areas. Whenever a significant rainfall occurs, Leon Creek backs up behind and overflows the culvert, floods its banks, and creates multiple areas of erosion around the creek. This project would include repairing the washed out areas, installing erosion-control matting or surface hardening as required to prevent further erosion, removing the existing undersized culvert, demolishing the existing Leon Creek culvert, and installing a 200-foot-long concrete or metal bridge to span Leon Creek. In addition, an erosion-control revetment system would be installed to stabilize areas disturbed by removal of the existing bridge. This project would also remove concrete, trash, and miscellaneous debris located within and adjacent to Leon Creek to help control erosion along Leon Creek's banks. Construction would occur within the 100-year floodplain. Although it is USAF policy to avoid activities within the 100-year floodplain (AFI 32-7064, *Integrated Natural Resources Management* and EO 11988), disturbance within approximately 0.4 acre of the floodplain would be unavoidable; therefore, a FONPA would be obtained and the project would need approval by AETC. In addition, this project would require the acquisition of a Conditional Letter of Map Revision (CLOMR) and possibly a Letter of Map Revision (LOMR) from FEMA as part of this project. The CLOMR and LOMR would be required because the current DFIRM panels shows this culvert as constricting water flow within this reach of Leon Creek causing a backwater effect. In addition, the revised floodplain would need to be approved by FEMA. **Figure 2-26** presents the proposed location of the Leon Creek bridge project.



Source: 2010 NAIP Natural Color Imagery for Texas acquired between April 23, 2010 and September 20, 2010.

Figure 2-26. Proposed Location for Project NI2, Warrior Week Road - Leon Creek Bridge

2.2 Summary of Proposed Activities

As a result of implementing the projects described in the preceding subsections (all projects identified in **Tables 2-1**, **2-5**, **2-6**, and **2-7**), there would be 148,589 ft^2 of demolished buildings at JBSA-Lackland, resulting in a decrease of impervious surfaces of 148,589 ft^2. Over the course of the next 6 FYs (FY 2013 to FY 2018), these projects would add 2,715,716 ft^2 of new facilities, site improvements, and new pavements, resulting in an anticipated increase of 2,601,521 ft^2 of impervious surface. Additionally, there would be infrastructure and natural infrastructure upgrades and improvements. The selected infrastructure improvement projects under the Proposed Action could disturb as much as 33,611,138 ft^2 of area and would increase impervious surfaces by 20,937,602 ft^2; the natural infrastructure projects could disturb as much as 15,750 ft^2 of area but would increase impervious surfaces by 1,800 ft^2. **Table 2-8** summarizes the anticipated project areas and changes in impervious surfaces from the selected projects addressed under the Proposed Action.

2.3 Alternatives

All selected projects and their associated possible locations at JBSA-Lackland have undergone an intensive review by Civil Engineering, Planning, Asset Management, and supporting installation staff. During revision to JBSA-Lackland development plans and individual project planning and programming, alternatives for all selected projects are considered and evaluated. The best operational and engineering solutions, including facility siting proposals, are identified based on the following selection standards:

- Fulfillment of current mission requirements
- Facility sustainability as mission evolves or changes
- Economical feasibility
- Consistency with future land uses
- Consistency with state, regional, and local plans
- Consistency with DOD and USAF policies, guidance, and directives
- Functional compatibility with adjacent facilities
- Collocation of like services
- Availability of sites and adequacy of space
- Adherence to USAF Strategic Sustainable Performance goals and objectives
- Environmental constraints (see **Section 2.1.2**).

All selected projects are reviewed and approved by the FUB, which is chaired by the Wing Commander.

Table 2-8. Project Area and Change in Impervious Surfaces

Project Type	Total Project Area (ft^2)	Change in Impervious Surfaces (ft^2)
Demolition	148,589	-148,589
Construction	2,715,716	+2,601,521
Infrastructure Improvement	33,611,138	+20,937,602
Natural Infrastructure Management	15,750	+1,800
Total	**36,491,193**	**+23,392,334**

Note: Changes in impervious surfaces are not necessarily equivalent to the project area square footage because some facilities proposed for demolition are multiple stories, and many new facilities would be multiple stories. Furthermore, some infrastructure improvement and natural infrastructure management projects would disturb area but not add impervious surfaces.

Some projects, such as those that require demolition, renovation, or an addition to a specific building, might not have any alternatives by their very nature. Based on the listed criteria, the scope and possible locations for each project identified in **Section 2.1** were determined by installation personnel to be mission-supportive, sustainable, and economical. **Section 2.3.1** provides an overview of the alternative analysis determination process.

The individual projects identified in this IDEA would be prioritized and implemented as funding becomes available. The Proposed Action encompasses all the currently identified priority projects and the analyses describe the specific and cumulative consequences of implementing installation development. Since project phasing is expected to occur based on the availability of funding, no phasing alternatives were carried forward for independent analysis. The following subsections discuss alternatives for each of the project categories.

2.3.1 Alternatives Analysis

The process for selecting projects to be analyzed in the IDEA is initiated with a review of all projects included in the community of the installation-approved development and resource management plans. The inclusion of a project in an installation-approved plan begins with the identification of a DOD mission-essential requirement by a proponent. The proponent submits the requirement to the Base Civil Engineer (BCE) for project consideration. Working with the proponent, the Engineering staff, and other subject matter experts, including planners and environmental scientists, the BCE conducts an internal review to determine if the requirement can be met with operational or engineering solutions, while minimizing potential environmental impacts on natural and man-made environments. Additional reviews are conducted to determine if the proposed solution is consistent with the AT/FP Plan, INRMP, ICRMP, and other approved installation plans. If the requirement includes facility construction, the internal review will include an evaluation of alternatives for potential development sites, which, in turn, must meet mission and national security requirements and minimize potential environmental concerns. The siting analysis for each proposed facility considers the adequacy of the site to fulfill current requirements with space for future expansion, functionality, command and control, compatibility with existing and future land use, compatibility with adjacent facilities, infrastructure availability, and site development costs. Once the requirement is determined to need an engineering solution and is consistent with installation plans, a project is created and additional screening is conducted to determine placement of the project into the appropriate construction program (i.e., MILCON, SRM, Non-Appropriated Fund) or plan (i.e., INRMP, ICRMP). Finally, the project is presented to the FUB for approval. If it is approved, it is assigned a priority and recommended for a specific FY for completion.

2.3.2 Alternatives for Demolition Projects

The demolition projects selected under the Proposed Action are proposed for demolition because they no longer meet the selection standards described in **Section 2.3**. As presented in **Table 2-9**, the installation determined that the four selected demolition projects involve buildings that are no longer needed to support current mission requirements and are economically infeasible to repair or renovate. Further, Air Force Handbook 32-1084, *Facility Requirements*, has decreased the space requirements for many functions, which means that functionalities within different facilities can often be combined and aging facilities can be demolished. In accordance with AFI 32-1032, *Planning and Programming Appropriated Funded Maintenance, Repair, and Construction Projects*, it is USAF policy to replace a facility when the estimated repair cost exceeds 100 percent of the replacement cost. All facilities proposed for demolition have either been deemed to be unusable or too costly to repair or renovate to meet future mission requirements of JBSA-Lackland by 802 CES and other installation personnel.

Additionally, the facilities included as selected demolition projects to be addressed under the Proposed Action are proposed for demolition because they aid JBSA-Lackland in achieving the DOD and USAF energy conservation goals, as required by EO 13423, *Strengthening Federal Environmental, Energy, and Transportation Management*, the Energy Independence and Security Act (EISA), and Energy Policy Act (EPAct). The goals include reducing energy consumption/gross square feet by 2 percent each year through FY 2015 with a total reduction of 30 percent from a baseline of FY 2003.

Although not alternatives to demolition, employing different demolition methods, and altering the timing of demolition activity to minimize fugitive dust generation, would be included in the project design.

Table 2-9. Justification for Proposed Selected Building Demolition Projects

Project Number/Description	Year Constructed	Project Area (ft^2)	Installation Justification for Demolition
D1. Security Hill Dormitory Complex Demolition	2009, 2012–2015, 2018, 2020: 1953 2041: 1980	100,321	The complex is no longer needed to support mission requirements and functionalities have been moved to other facilities.
D2. Atomic Energy Commission Facilities Demolition	424: 1986 425-427: 1954 433: 1959 442: 1961 443: 1955	13,625	Buildings have exceeded their lifespan and functionalities have been moved to other facilities in accordance with space requirements outlined in Air Force Handbook 32-1084.
D3. Demolish Munitions Storage Igloos	1955	34,643	Storage igloos are no longer needed for current mission munitions storage requirements and have no functional reuse.

Alternative demolition methods would vary depending on the area where demolition is planned, the building or structural materials to be demolished, the purpose of the demolition, and the way the resultant debris would be disposed of, and are discussed within the analysis, where appropriate. These alternative demolition methods are not alternatives in the sense that the USAF would consider them during project planning, but rather, the USAF would choose the appropriate demolition method as dictated by local site conditions.

2.3.3 Alternatives for Construction Projects

JBSA-Lackland supports a complex variety of command-level activities. As noted in **Sections 2.1.2** and **Figures 2-1** through **2-5**, much of the installation is constrained by the location of the airfield and its associated CZs, APZs, and noise zones; the existence of cultural resource sites; numerous ERP sites; wetlands and floodplain areas; QD arcs; AT/FP standoffs; parking shortages; and designated land use categories. Due to the constraints described here and in **Section 2.1.2**, the analyses provided in this IDEA addressing the selected projects evaluates their siting anywhere within the improved or semi-improved areas of the installation that are within compatible land use areas of the installation.

Specific alternatives to the selected construction projects were considered by the 802 CES and other installation personnel during the planning process. The following paragraphs provide a summary of the alternatives considered and the reasoning when no reasonable alternatives were identified or were included for further detailed evaluation in this IDEA.

Alternative for Project C1 (Airman Training Complex West Campus). An alternative to Project C1 would be to renovate the existing BMT dormitories and classrooms; however, renovation of the existing facilities would not meet the selection standards established in **Section 2.3** due to economic feasibility issues. As outlined in AFI 32-1032 and determined by the installation, the cost of repairing and updating the buildings exceeds 100 percent of the replacement cost. Therefore, this alternative was deemed unfeasible and was eliminated from further detailed analysis in this IDEA. Construction of the Interfaith Religious Center would fulfill the unmet need of providing BMT recruits ease of access to religious facilities at JBSA-Lackland; therefore, alternatives such as renovation of existing facilities would not meet the selection standards established because they would not fulfill this mission requirement. Therefore, this alternative was not considered reasonable and was eliminated from further analysis.

Alternative for Project C2 (Permanent Party Dormitory). Due to an on-installation housing shortage for unaccompanied enlisted personnel, many personnel are currently forced to live off-installation. Project C2 is proposed to provide unaccompanied enlisted personnel on-installation housing to fulfill this need. No alternative approaches were identified that would fulfill this need. As previously discussed, the dormitory could be sited anywhere within the improved or semi-improved areas of the installation that is within a compatible land use area of the installation. Therefore, no alternative locations for the dormitory were identified for analysis.

Alternative for Project C3 (Battlefield Airman Aquatic Training Complex). Construction of Project C3 is proposed to fulfill the need of providing BMT recruits adequate aquatic training and classroom facilities. Renovation of existing facilities would not be feasible as current training occurs within JBSA-Lackland's public pools and they cannot be configured properly for aquatic training activities. Therefore, this alternative would not meet the selection standards established in **Section 2.3** because it would not fulfill current mission requirements.

Alternative for Project C4 (Reid Medical Center). An alternative to Project C4 would be to renovate the existing Reid Medical Center; however, the existing facility would need to undergo extensive, cost-prohibitive renovation and expansion to meet patient demand. As outlined in AFI 32-1032 and determined by the installation, the cost of repairing and updating the buildings exceeds 100 percent of the replacement cost. Therefore, renovation of the existing facility would not meet the selection standards established in **Section 2.3** due to economic feasibility issues and because it would not meet current mission requirements. This alternative was not considered reasonable and was eliminated from further detailed analysis in this IDEA.

Alternative for Project C5 (433rd Airlift Wing Building Additions and Renovations). Renovation and expansion of Buildings 828 and 898 are proposed to improve the deteriorating condition of the buildings and provide additional space to meet expanded mission needs. The alternative to construct new facilities to house the functionalities of Buildings 828 and 898 was considered, but an economic analysis indicated that repairing and expanding the buildings was the cost-effective solution. Further, as outlined in AFI 32-1032 and determined by the installation, the cost of repairing and updating the buildings does not exceed 100 percent of the cost of replacement. Therefore, construction of new facilities would not meet the selection standards established in **Section 2.3** due to economic feasibility issues. This alternative was not considered reasonable and was eliminated from further detailed analysis in this IDEA.

Alternative for Project C6 (AFOSI Administrative Support and Headquarters Facilities). The purpose of the Headquarters Facility would be to consolidate four AFOSI units into a single facility that are currently housed in disparate locations around San Antonio; therefore, no practical alternative exists to meet the need of this project except for consolidation into a new facility as there is no existing facility large enough to accommodate all four units. An alternative to the construction of the Administrative Support Facility would be to renovate the existing AFOSI administration building; however, renovation of the existing facilities would not meet the selection standards established in **Section 2.3** due to economic feasibility issues. As outlined in AFI 32-1032 and determined by the installation, the cost of repairing and updating the facilities exceeds 100 percent of the replacement cost. This alternative was not considered reasonable and was eliminated from further detailed analysis in this IDEA.

Alternative for Project C7 (AAFES BX Project). An alternative to Project C7 would be to renovate and expand the existing BX; however, renovation and expansion of the existing facilities would not meet the selection standards established in **Section 2.3** due to economic feasibility issues. As outlined in AFI 32-

1032 and determined by the installation, the cost of repairing and updating the building exceeds 100 percent of the replacement cost. This alternative was not considered reasonable and was eliminated from further detailed analysis in this IDEA.

2.3.4 Alternatives for Infrastructure Improvement Projects

Infrastructure improvement projects include the removal, installation of, or upgrades to paved roadways, aprons, troop walks, sidewalks, parking lots, golf cart paths, plazas, displays, memorials, and utilities. Alternatives are limited to existing and proposed locations of real property facilities (i.e., buildings, structures) and non-real property assets (i.e., aircraft, equipment, vehicles) that the infrastructure serves. Generally, the need for adjacency in operational activity results in most infrastructure alternatives being limited to areas that such infrastructure serves (e.g., Projects I1 and I2 are upgrades or repairs to existing pavements; Project I3 and I4 are repairs to the airfield; and Projects I6, I7, I8, and I9 are upgrades to existing utilities). The constraints described here and in **Section 2.1.2** and the selection standards presented in **Section 2.3**, namely the fulfillment of mission requirements, the collocation of like services, and the availability of sites and adequacy of space, preclude the development of reasonable alternatives to the infrastructure improvement projects analyzed in this IDEA.

2.3.5 Alternatives for Natural Infrastructure Management Projects

Natural infrastructure management projects are selected because they are required to ensure the natural environment remains compatible with military operations; the goals and objectives identified in the INRMP and ICRMP are met; and environmental statutes, rules, regulations, and permit conditions are followed. There are no reasonable alternatives to the selected natural infrastructure management projects at JBSA-Lackland. Projects NI1 and NI2 can both only occur within the existing confines of the creeks in which they are proposed and there are no reasonable alternative methods to accomplishing the objectives of the projects; therefore, no alternatives have been analyzed. The goals of the projects are to restore the creek to natural conditions, stabilize the stream banks, and prevent future erosion. The specific means of achieving these goals would be established during project design. There are no alternatives that could take place outside of the 100-year floodplain.

2.3.6 Alternatives Considered but Eliminated from Detailed Analysis

Sections 2.3.2 to **2.3.5** present alternatives for the selected demolition, construction, infrastructure, and natural infrastructure management projects that were considered, but eliminated from detailed analysis in this IDEA.

2.4 No Action Alternative

CEQ regulations require consideration of the No Action Alternative for all proposed actions. The No Action Alternative serves as a baseline against which the impacts of the Proposed Action and other potential action alternatives can be compared and consequently it is carried forward for further evaluation in this IDEA. The No Action Alternative would be "no change" from current practices, or continuing with the present course of action until that action is changed.

Through implementation of the No Action Alternative, future installation development projects would continue to be evaluated on an individual project basis. It is anticipated that future development would occur under the No Action Alternative, but those development projects would be analyzed through the preparation of project-specific NEPA documentation, as appropriate. This alternative is carried forward for analysis as a baseline against which the impacts of the Proposed Action and potential action alternatives can be evaluated.

2.4.1 No Action Alternative for Selected Demolition Projects

Under the No Action Alternative, the selected demolition projects would not be implemented. In some situations relevant to the projects addressed in this IDEA, mission functions would continue to occur, and personnel would continue to work in obsolete, deteriorating, and underused facilities or would be consolidated into other less appropriate facilities within the installation, if space is available. In addition, limited funding would have to be used to continue maintenance and upkeep of these facilities diverting necessary funding away from other mission-essential functions. The No Action Alternative for demolition projects is considered unreasonable because it would prevent JBSA-Lackland from meeting its prescribed goals and reducing the physical plant footprint on the installation pursuant to the "20/20 by 2020" initiative or allowing the installation to make space available for future development.

2.4.2 No Action Alternative for Selected Construction Projects

Under the No Action Alternative, the selected construction projects under the Proposed Action would not be built. In some situations relevant to the projects addressed in this IDEA, JBSA-Lackland would not have new state-of-the-art facilities to accommodate current and future missions and address facility workspace requirements. For example, projects to construct new housing and other facilities for BMT trainees would not be constructed, which would cause trainees to continue to be housed in substandard conditions ultimately causing JBSA-Lackland to experience difficulty meeting USAF welfare and training requirements.

2.4.3 No Action Alternative for Selected Infrastructure Improvement Projects

Under the No Action Alternative, the selected infrastructure improvement projects would not be implemented. This would cause JBSA-Lackland to continue to use obsolete or deteriorating utilities, causing unsafe conditions for tenants, employees, and visitors; vehicle and storage parking space would continue to be inadequate to support mission functions and meet national security objectives; and the installation's roadways, airfield pavements, and parking spaces would continue to deteriorate and cause unsafe conditions. JBSA-Lackland would still be required to repair breaks and interruptions in utilities and would continue to repair cracks and deteriorating pavement areas by patching until their useful life has ended. In addition, not upgrading and replacing outdated and unsafe infrastructure would hinder JBSA-Lackland's mission and security objectives and could increase potential foreign object damage hazards on aircraft.

2.4.4 No Action Alternative for Selected Natural Infrastructure Management Projects

Under the No Action Alternative, the natural infrastructure management projects would not be implemented. In some situations relevant to the projects addressed in this IDEA, the potential for erosion and degradation of water quality would continue and increase. JBSA-Lackland would not be in full compliance with INRMP and ICRMP management objectives to protect the natural and historic resources. JBSA-Lackland would not be in full compliance with Federal, state, and local regulations requiring protection of water quality, sensitive species and their associated habitat, and protection of historic resources. In addition, flooding of the roadways near Medio and Leon creeks could cause a safety concern for military personnel training adjacent to these areas. If the roadways become flooded and a safety incident occurs, emergency response times would be increased and, in some cases, could require that a helicopter be deployed when that is the only means to reach the injured military personnel.

2.5 Decision to be Made and Identification of the Preferred Alternative

In this IDEA, JBSA-Lackland provides an evaluation of the selected projects to determine whether the Proposed Action would result in any significant impacts. If such impacts are predicted, JBSA-Lackland would provide mitigation to reduce impacts to below the level of significance, undertake the preparation of an EIS addressing the selected projects under the Proposed Action, or abandon the Proposed Action. This IDEA will also be used to guide JBSA-Lackland in implementing the Proposed Action, should it be approved, in a manner consistent with USAF standards for environmental stewardship. The Preferred Alternative is the Proposed Action as set forth in **Section 2.1**.

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3. Affected Environment

3.1 Noise

3.1.1 Definition of the Resource

Sound is defined as a particular auditory effect produced by a given source, for example the sound of rain on a rooftop. Noise and sound share the same physical aspects, but noise is considered a disturbance while sound is defined as an auditory effect. Noise is defined as any sound that is undesirable because it interferes with communication, is intense enough to damage hearing, or is otherwise annoying. Noise can be intermittent or continuous, steady or impulsive, and can involve any number of sources and frequencies. Human response to increased sound levels varies according to the source type, characteristics of the sound source, distance between source and receptor, receptor sensitivity, and time of day. Affected receptors are specific (e.g., schools, churches, or hospitals) or broad areas (e.g., nature preserves or designated districts) in which occasional or persistent sensitivity to noise above ambient levels exists.

Noise Metrics and Regulations

Noise Metrics and Regulations. Although human response to noise varies, measurements can be calculated with instruments that record instantaneous sound levels in decibels. dBA is used to characterize sound levels that can be sensed by the human ear. “A-weighted” denotes the adjustment of the frequency range to what the average human ear can sense when experiencing an audible event. The threshold of audibility is generally within the range of 10 to 25 dBA for normal hearing. The threshold of pain occurs at the upper boundary of audibility, which is normally in the region of 135 dBA (USEPA 1981a). **Table 3-1** compares common sounds and shows how they rank in terms of the effects of hearing. As shown, a whisper is normally 30 dBA and considered to be very quiet while an air conditioning unit 20 feet away is considered an intrusive noise at 60 dBA. Noise levels can become annoying at 80 dBA and very annoying at 90 dBA. To the human ear, each 10 dBA increase seems twice as loud (USEPA 1981b).

Table 3-1. Sound Levels and Human Response

Noise Level (dBA)	Common Sounds	Effect
10	Just audible	Negligible
30	Soft whisper (15 feet)	Very quiet
50	Light auto traffic (100 feet)	Quiet
60	Air conditioning unit (20 feet)	Intrusive
70	Noisy restaurant or freeway traffic	Telephone use difficult
80	Alarm clock (2 feet)	Annoying
90	Heavy truck (50 feet) or city traffic	Very annoying Hearing damage (8 hours)
100	Garbage truck	Very annoying
110	Pile drivers	Strained vocal effort*
120	Jet takeoff (200 feet) or auto horn (3 feet)	Maximum vocal effort
140	Carrier deck jet operation	Painfully loud

Source: USEPA 1981b and * HDR extrapolation

Federal Regulations. Sound levels, resulting from multiple single events, are used to characterize noise effects from aircraft or vehicle activity and are measured in DNL. The DNL noise metric incorporates a "penalty" for nighttime noise events to account for increased annoyance. DNL is the energy-averaged sound level measured over a 24-hour period, with a 10-dBA penalty assigned to noise events occurring between 10:00 p.m. and 7:00 a.m. DNL values are obtained by averaging sound exposure levels over a given 24-hour period. DNL is the designated noise metric of the FAA, HUD, U.S. Environmental Protection Agency (USEPA), and DOD for modeling airport environments.

According to the USAF, the FAA, and the HUD criteria, residential units and other noise-sensitive land uses are "clearly unacceptable" in areas where the noise exposure exceeds 75 dBA DNL, "normally unacceptable" in regions exposed to noise between 65 and 75 dBA DNL, and "normally acceptable" in areas exposed to noise of 65 dBA DNL or under. The Federal Interagency Committee on Noise developed land use compatibility guidelines for noise in terms of a DNL sound level (FICON 1992). For outdoor activities, the USEPA recommends 55 dBA DNL as the sound level below which there is no reason to suspect that the general population would be at risk from any of the effects of noise (USEPA 1974).

Under the Noise Control Act of 1972, the Occupational Safety and Health Administration (OSHA) established workplace standards for noise. The minimum requirement states that constant noise exposure must not exceed 90 dBA over an 8-hour period. The highest allowable sound level to which workers can be constantly exposed to is 115 dBA and exposure to this level must not exceed 15 minutes within an 8-hour period. The standards limit instantaneous exposure, such as impact noise, to 140 dBA. If noise levels exceed these standards, employers are required to provide hearing protection equipment that will reduce sound levels to acceptable limits.

Local Regulations. The City of San Antonio has a Code of Ordinances with regulations regarding noise nuisances. Noise from construction activities is allowed during the daytime on weekdays. Daytime/ evening hours are defined between 6:00 a.m. and 10:00 p.m. Sunday through Thursday, and 6:00 a.m. and 11:00 p.m. Friday and Saturday. A definition of daytime by itself was not given. Noise is considered a nuisance if at any time it exceeds 80 dBA across a real property boundary (San Antonio 2012).

Construction Sound Levels. Building construction and demolition activities can cause an increase in sound that is well above the ambient level. A variety of sounds are emitted from loaders, trucks, saws, and other work equipment. **Table 3-2** lists noise levels associated with common types of construction equipment. Construction equipment usually exceeds the ambient sound levels by 20 to 25 dBA in an urban environment and up to 30 to 35 dBA in a quiet suburban area.

3.1.2 Existing Conditions

The ambient noise environment at JBSA-Lackland is affected mainly by military aircraft operations, maintenance activities at the airfield, and automobile traffic. In 2008, an Air Installation Compatible Use Zone (AICUZ) Study was completed for the installation (LAFB 2008a). As shown in **Figures 2-1** through **2-5**, the 65 through 80+ dBA DNL noise contours from the 2008 AICUZ extend from two locations at JBSA-Lackland. The first extends from the runway centerline and parallels the runway; the second extends from the TANG apron to the west of the runway. The noise contours extend outside of the installation boundary into the City of San Antonio.

Major roadways in the area include State Route 90 to the north of JBSA-Lackland, Interstate 410 to the west, and State Route 81 to the southeast. In addition, there are railroad tracks to the southeast, parallel to State Route 81. Considering the military aircraft operations, railroad, and vehicle traffic at and adjacent to JBSA-Lackland, the ambient sound environment is likely to resemble an urban atmosphere.

Table 3-2. Predicted Noise Levels for Construction Equipment

Construction Equipment	Predicted Noise Level at 50 feet (dBA)
Backhoe	72–93
Concrete mixer	74–88
Crane	75–87
Front loader	72–83
Grader	80–93
Jackhammer	81–98
Paver	86–88
Pile driver	95–105
Roller	73–75
Truck	83–94

Source: USEPA 1971

3.2 Land Use

3.2.1 Definition of the Resource

The term "land use" refers to real property classifications that indicate either natural conditions or the types of human activity occurring on a parcel. In many cases, land use descriptions are codified in local zoning laws. However, there is no nationally recognized convention or uniform terminology for describing land use categories. As a result, the meanings of various land use descriptions, "labels," and definitions vary among jurisdictions. Natural conditions of property can be described or categorized as unimproved, undeveloped, conservation or preservation area, and natural or scenic area. There is a wide variety of land use categories resulting from human activity. Descriptive terms often used include residential, commercial, industrial, agricultural, institutional, and recreational. USAF installation land use planning commonly uses 12 general land use classifications: airfield, aircraft operations and maintenance, industrial, administrative, community-commercial, community-service, medical, housing accompanied, housing unaccompanied, outdoor recreation, open space, and water (USAF 1998).

Two main objectives of land use planning are to ensure orderly growth and compatible uses among adjacent property parcels or areas. According to Air Force Pamphlet 32-1010, *Land Use Planning,* land use planning is the arrangement of compatible activities in the most functionally effective and efficient manner (USAF1998). The highest and best uses of real property are obtained when compatibility among land uses fosters societal interest. Tools supporting land use planning within the civilian sector include written master plans/management plans, policies, and zoning regulations. The USAF comprehensive planning process also uses functional analysis, which determines the degree of connectivity among installation land uses and between on- and off-installation land uses, to determine future installation development and facilities planning.

In appropriate cases, the location and extent of a proposed action needs to be evaluated for its potential effects on a project site and adjacent land uses. The foremost factor affecting a proposed action in terms of land use is its compliance with any applicable land use or zoning regulations. Other relevant factors include matters such as existing land use at the project site, the types of land uses on adjacent properties and their proximity to a proposed action, the duration of a proposed activity, and its "permanence."

3.2.2 Existing Conditions

JBSA-Lackland is located in Bexar County, in south-central Texas, approximately 8 miles southwest of downtown San Antonio (see **Figure 1-1**). The installation is made up of approximately 8,856 acres and includes approximately 1,752 facilities (LAFB 2010a). JBSA-Lackland is divided into three areas: Lackland Main Base, Lackland Training Annex, and the Kelly Field Annex. Although USAF installations typically identify 12 land uses, JBSA-Lackland has identified 13 land uses that are unique to installation requirements: administrative, aircraft operations and maintenance, community-commercial, community-service, housing accompanied, housing unaccompanied, industrial, medical, open space, outdoor recreation, runway/taxiway/apron, training indoor, and training outdoor (see **Figures 2-6** through **2-8**). Airfield and open space land uses compose more than 50 percent of the installation's acreage (LAFB 2002b). With respect to the selected projects, **Table 3-3** identified the proposed land use categories of each project. Some selected projects occur within multiple land use categories. Projects I1, I6, I7, I8, and I9 are not included in **Table 3-3** because various portions of each project would occur within most of the land use categories at JBSA-Lackland.

There are a number of land use, regulatory, and mission-related constraints within the boundaries of JBSA-Lackland that influence and limit future development at the installation. These constraints are described in detail in **Section 2.1.2** and listed as follows.

- Noise Contours
- Airfield Infrastructure, CZs, and Imaginary Surfaces
- QD Arcs and Safety Distances
- ERP Sites
- MMRP Sites
- Wetlands
- 100-Year Floodplain
- Threatened and Endangered Species and Associated Habitats
- Cultural Resources, Historic Buildings, and Archaeological Sites
- AT/FP Setback Requirements.

Surrounding Off-Installation Land Use. JBSA-Lackland is approximately 8 miles southwest of downtown San Antonio (see **Figure 1-1**). Lackland Main Base and Kelly Field Annex are surrounded by the City of San Antonio, and Lackland Training Annex is in an unincorporated portion of Bexar County. JBSA-Lackland is surrounded by developed land on all sides. Most of the land is composed of established residential areas; however, there are pockets of commercial, industrial, transportation, and service uses interspersed within these residential areas (LAFB 2002b).

3.3 Air Quality

3.3.1 Definition of the Resource

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

Table 3-3. Land Use Categories Associated with the Selected Projects

Land Use Category	Selected Project
Administrative	• Project D1 – Security Hill Dormitory Complex Demolition • Project C5 – 433rd Airlift Wing Building Additions and Renovations • Project C7 – AAFES BX Project
Aircraft Operations and Maintenance	• Project C5 – 433rd Airlift Wing Building Additions and Renovations • Project I3 – Airfield Lighting Upgrades • Project I4 – TANG Apron Repair
Community-Commercial	• Project D1 – Security Hill Dormitory Complex Demolition • Project C7 – AAFES BX Project
Community-Service	• Project C6 – AFOSI Administrative Support and Headquarters Facilities
Housing Unaccompanied	• Project D1 – Security Hill Dormitory Complex Demolition • Project C2 – Permanent Party Dormitory • Project C3 – Battlefield Airman Aquatic Training Complex • Project C7 – AAFES BX Project
Industrial	• Project D2 – Atomic Energy Commission Facilities Demolition • Project D3 – Demolish Munitions Storage Igloos • Project C1 – ATC West Campus • Project C3 – Battlefield Airman Aquatic Training Complex • Project C6 – AFOSI Administrative Support and Headquarters Facilities • Project I2 – Golf Cart Path Upgrades • Project I5 – Parking Lot Installation
Medical	• Project C7 – AAFES BX Project
Open Space	• Project D3 – Demolish Munitions Storage Igloos • Project C1 – ATC West Campus • Project C3 – Battlefield Airman Aquatic Training Complex • Project C4 – Reid Medical Clinic • Project C6 – AFOSI Administrative Support and Headquarters Facilities • Project C7 – AAFES BX Project • Project I3 – Airfield Lighting Upgrades • Project I4 – TANG Apron Repair • Project I5 – Parking Lot Installation • Project NI1 – Medio Creek Erosion Control • Project NI2 – Warrior Week Road – Leon Creek Bridge
Outdoor Recreation	• Project C1 – ATC West Campus • Project I2 – Golf Cart Path Upgrades • Project I5 – Parking Lot Installation

Land Use Category	Selected Project
Runway/Taxiway/Apron	• Project I3 – Airfield Lighting Upgrades • Project I4 – TANG Apron Repair
Training Indoor	• Project D2 – Atomic Energy Commission Facilities Demolition • Project C1 – ATC West Campus • Project C3 – Battlefield Airman Aquatic Training Complex
Training Outdoor	• Project C1 – ATC West Campus • Project NI2 – Warrior Week Road – Leon Creek Bridge

Ambient Air Quality Standards. The CAA directed the USEPA to develop, implement, and enforce strong environmental regulations that would ensure clean and healthy ambient air quality. To protect public health and welfare, USEPA developed numerical concentration-based standards, or National Ambient Air Quality Standards (NAAQS), for pollutants that have been determined to impact human health and the environment. USEPA established both primary and secondary NAAQS under the provisions of the CAA. NAAQS are currently established for six criteria air pollutants under 40 CFR 50: ozone (O_3), carbon monoxide (CO), nitrogen dioxide (NO_2), sulfur dioxide (SO_2), respirable particulate matter (including particulate matter equal to or less than 10 microns in diameter [PM_{10}] and particulate matter equal to or less than 2.5 microns in diameter [$PM_{2.5}$]), and lead (Pb). The primary NAAQS represent maximum levels of background air pollution that are considered safe, with an adequate margin of safety to protect public health. Secondary NAAQS represent the maximum pollutant concentration necessary to protect vegetation, crops, and other public resources along with maintaining visibility standards. The CAA also gives the authority to states, territories, and commonwealths to establish air quality rules and regulations. The State of Texas has adopted the NAAQS for criteria pollutants (30 Texas Administrative Code [TAC] Section 101, 2011). **Table 3-4** presents the primary and secondary USEPA NAAQS.

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

Attainment and General Conformity. The USEPA classifies the air quality in an air quality control region (AQCR), or in subareas of an AQCR, according to whether the concentrations of criteria pollutants in ambient air exceed the NAAQS. Areas within each AQCR are therefore designated as either "attainment," "nonattainment," "maintenance," or "unclassified" for each of the six criteria pollutants. Attainment means that the air quality within an AQCR is better than the NAAQS; nonattainment indicates that criteria pollutant levels exceed NAAQS; maintenance indicates that an area was previously designated nonattainment but is now attainment; and an unclassified air quality designation by USEPA means that there is not enough information to appropriately classify an AQCR, so the area is considered attainment. USEPA has delegated the authority for ensuring compliance with the NAAQS in Texas to the Texas Commission on Environmental Quality (TCEQ). The TCEQ's air pollution control regulations can be found in the 30 TAC §101 through §122. In accordance with the CAA, each state or commonwealth must develop a State Implementation Plan (SIP), which is a compilation of regulations, strategies, schedules, and enforcement actions designed to move the state or commonwealth into compliance with all NAAQS.

Table 3-4. National and State Ambient Air Quality Standards, Current as of October 2011

Pollutant	Averaging Time	Primary Standard: Federal	Primary Standard: State	Secondary Standard
CO	8-hour [5]	9 ppm (10 mg/m^3)	Same	None
	1-hour [5]	35 ppm (40 mg/m^3)	Same	None
Pb	Rolling 3-Month Average[6]	0.15 $\mu g/m^3$ [1]	Same	Same as Primary
NO_2	Annual[7]	53 ppb [2]	Same	Same as Primary
	1-hour[8]	100 ppb	Same	None
PM_{10}	24-hour[9]	150 $\mu g/m^3$	Same	Same as Primary
$PM_{2.5}$	Annual[10]	15 $\mu g/m^3$	Same	Same as Primary
	24-hour [8]	35 $\mu g/m^3$	Same	Same as Primary
O_3	8-hour [11]	0.075 ppm[3]	Same	Same as Primary
SO_2	1-hour[12]	75 ppb [4]	Same	None
	3-hour[5]	--	Same	0.5 ppm

Sources: USEPA 2011, 30 TAC Section 101, 2011

Notes: Parenthetical values are approximate equivalent concentrations.

1. Final rule signed October 15, 2008. The 1978 lead standard (1.5 µg/m3 as a quarterly average) remains in effect until one year after an area is designated for the 2008 standard, except that in areas designated nonattainment for the 1978, the 1978 standard remains in effect until implementation plans to attain or maintain the 2008 standard are approved.
2. The official level of the annual NO_2 standard is 0.053 ppm, equal to 53 ppb, which is shown here for the purpose of clearer comparison to the 1-hour standard.
3. Final rule signed March 12, 2008. The 1997 ozone standard (0.08 ppm, annual fourth-highest daily maximum 8-hour concentration, averaged over 3 years) and related implementation rules remain in place. In 1997, USEPA revoked the 1-hour ozone standard (0.12 ppm, not to be exceeded more than once per year) in all areas, although some areas have continued obligations under that standard ("anti-backsliding"). The 1-hour ozone standard is attained when the expected number of days per calendar year with maximum hourly average concentrations above 0.12 ppm is less than or equal to 1.
4. Final rule signed June 2, 2010. The 1971 annual (0.3 ppm) and 24-hour (0.14 ppm) SO_2 standards were revoked in that same rulemaking. However, these standards remain in effect until one year after an area is designated for the 2010 standard, except in areas designated nonattainment for the 1971 standards, where the 1971 standards remain in effect until implementation plans to attain or maintain the 2010 standard are approved.
5. Not to be exceeded more than once per year.
6. Not to be exceeded.
7. Annual mean.
8. 98^{th} percentile, averaged over 3 years.
9. Not to be exceeded more than once per year on average over 3 years.
10. Annual mean, averaged over 3 years.
11. Annual fourth-highest daily maximum 8-hour concentration, averaged over 3 years.
12. 99^{th} percentile of 1-hour daily maximum concentrations, averaged over 3 years.

Key: ppm = parts per million; ppb = parts per billion; mg/m^3 = milligrams per cubic meter; $\mu g/m^3$ = micrograms per cubic meter

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

Federal Prevention of Significant Deterioration. Federal Prevention of Significant Deterioration (PSD) regulations apply in attainment areas to major stationary sources (e.g., sources with the potential to emit 250 tons per year [tpy] of regulated pollutants) and significant modifications to major stationary sources (e.g., change that adds 0.6 tpy for Pb, or 10 tpy to 100 tpy depending on the regulated pollutant, to the facility's potential to emit). Additional PSD permitting thresholds apply to increases in stationary source greenhouse gas (GHG) emissions. PSD regulations also define ambient air increments, limiting the allowable increases to any area's baseline air contaminant concentrations, based on the area's Class designation (40 CFR 52.21[c]).

PSD permitting can also apply to a proposed project if all three of the following conditions exist: (1) the proposed project is a modification with a net emissions increase to an existing PSD major source, and (2) the proposed project is within 10 kilometers of national parks or wilderness areas (i.e., Class I Areas), and (3) regulated stationary source pollutant emissions would cause an increase in the 24-hour average concentration of any regulated pollutant in the Class I area of 1 $\mu g/m^3$ or more (40 CFR 52.21[b][23][iii]). A Class I area includes national parks larger than 6,000 acres, national wilderness areas and national memorial parks larger than 5,000 acres, and international parks. The closest Class I area is Big Bend National Park, approximately 350 miles west of the Proposed Action. JBSA-Lackland is not within 10 kilometers of a Class I area; therefore, this separate PSD permitting threshold does not apply to the Proposed Action (40 CFR 81.429).

Title V Requirements. Title V of the CAA Amendments of 1990 requires states and local agencies to permit major stationary sources. A Title V major stationary source has the potential to emit criteria air pollutants and hazardous air pollutants (HAPs) at levels equal to or greater than Major Source thresholds. Major Source thresholds vary depending on the attainment status of an AQCR or area within an AQCR. The purpose of the permitting rule is to establish regulatory control over large-scale emissions sources or industrial-type activities and monitor their impact on air quality. Section 112 of the CAA lists HAPs and identifies source categories.

Greenhouse Gas Emissions. GHGs are gaseous emissions that trap heat in the atmosphere. These emissions occur from natural processes and human activities. The most common GHGs emitted from natural processes and human activities include carbon dioxide (CO_2), methane, and nitrous oxide. On 22 September 2009, the USEPA issued a final rule for mandatory GHG reporting from large GHG emissions sources in the United States. The purpose of the rule is to collect comprehensive and accurate data on CO_2 and other GHG emissions that can be used to inform future policy decisions. In general, the threshold for reporting is 25,000 metric tons or more of CO_2 equivalent emissions per year but excludes mobile source emissions. The White House CEQ issued draft NEPA guidance in February 2010 regarding the inclusion of analysis of GHG emissions in NEPA documents. The guidance indicates 25,000 metric tons of direct CO_2-equivalent GHG emissions can provide a useful, presumptive, threshold for discussion and disclosure of GHG emissions. However, the guidance does not propose this as an indicator of a threshold of significant effects, but rather as an indicator of a minimum level of GHG emissions that might warrant some description in the appropriate NEPA analysis involving direct emissions of GHGs.

GHG emissions are also factors in PSD and Title V permitting and reporting, according to a USEPA rulemaking issued on 3 June 2010 known as the GHG Tailoring Rule (75 CFR 31514). GHG emissions thresholds for permitting of stationary sources are an increase of 75,000 tons CO_2 per year at existing major sources and facilitywide emissions of 100,000 tons of CO_2 per year for a new source or a modification of an existing minor source. The 100,000 tons/year CO_2 threshold defines a major GHG source for both construction (PSD) and operating (Title V) permitting, respectively.

3.3.2 Existing Conditions

JBSA-Lackland and the site of the Proposed Action are located in Bexar County, which is within Metropolitan San Antonio Intrastate (MSAI) AQCR 217 (40 CFR 81.40). As defined in 40 CFR 81.344, Bexar County is designated as attainment/unclassifiable for all criteria pollutants (40 CFR 81.344).

The most recent emissions inventories for, JBSA-Lackland, Bexar County and MSAI are shown in **Table 3-5**. Bexar County is considered the local area of influence, and MSAI AQCR is considered the regional area of influence for the air quality analysis.

Table 3-5. JBSA-Lackland, Local and Regional Air Emissions Inventories for Areas Impacted by the Proposed Action

Area/Region	NO_x (tpy)	VOC (tpy)	CO (tpy)	SO_2 (tpy)	PM_{10} (tpy)	$PM_{2.5}$ (tpy)
JBSA-Lackland [a]	944.14	90.24	928.17	93.38	102.44	74.16
Bexar County, TX	56,826	61,465	242,477	27,597	59,275	9,681
MSAI AQCR	127,839	425,477	555,851	40,901	183,999	32,316

Sources: USEPA 2012a, LAFB 2012a, LAFB 2010b

Note: Includes mobile and stationary sources.

The U.S. Department of Energy, Energy Information Administration, estimates that gross CO_2 emissions in the State of Texas were approximately 596.4 million metric tons in 2009 (DOE 2009).

The TCEQ regulates air quality permits for stationary air pollution sources in the State of Texas. JBSA-Lackland is classified as a major source of emissions and holds an Air Pollution Control Title V Permit to Operate. In addition, JBSA-Lackland holds three New Source Review Permits and numerous sources registered under Permit-By-Rule requirements. As required by the TCEQ, 30 TAC §101.10, JBSA-Lackland calculates annual criteria pollutant emissions from stationary sources and provides this information to the TCEQ. There are various sources on-installation that emit criteria pollutants and HAPs, including generators, boilers, hot water heaters, fuel storage tanks, gasoline service stations, surface coating/paint booths, and miscellaneous chemical usage. Texas has specific rules for control of visible emissions and particulate matter on roads, streets, and alleys; from parking lots; and during material handling, construction, and demolition activities (30 TAC § 111.143-149). JBSA-Lackland is required to prepare an Air Emissions Inventory each year. The inventory and records of calculations are maintained and are made available to TCEQ each year. JBSA-Lackland's calendar year 2008 (LAFB 2009a), 2009 (LAFB 2010b), 2010 (LAFB 2011c), and 2011 (LAFB 2012a) Stationary Source and 2008 (LAFB 2010b) Mobile Source Air Emissions Inventories are presented in **Table 3-6** and represent actual annual emissions.

3.4 Geological Resources

3.4.1 Definition of the Resource

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

Table 3-6. JBSA-Lackland Stationary and Mobile Source Air Emissions Inventories for Calendar Years 2008 to 2011

Calendar Year	NO_x (tpy)	VOC (tpy)	CO (tpy)	SO_2 (tpy)	PM_{10} (tpy)	$PM_{2.5}$ (tpy)
2008	170.77	12.8	65.64	.89	29.66	29.7
2008 (mobile)	619	52.5	882	91.6	73.8	46.7
2009	338.74	18.3	73.16	1.73	30.1	29.26
2010	421.58	31.49	71.75	2.24	17.65	16.95
2011	325.14	37.74	46.17	1.78	28.64	27.46

Sources: LAFB 2009a, LAFB 2010b, LAFB 2010c, LAFB 2011c, LAFB 2012a

Geology. Geology is the study of the Earth's composition and provides information on the structure and configuration of surface and subsurface features. Such information derives from field analysis based on observations of the surface and borings to identify subsurface composition.

Topography. Topography and physiography pertain to the general shape and arrangement of a land surface, including its height and the position of its natural and human-made features.

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

Prime Farmland. Prime farmland is protected under the Farmland Protection Policy Act (FPPA) of 1981. Prime farmland is defined as land that has the best combination of physical and chemical characteristics for producing food, feed, forage, fiber, and oilseed crops, and is also available for these uses. The soil qualities, growing season, and moisture supply are needed for a well-managed soil to produce a sustained high yield of crops in an economic manner. The land could be cropland, pasture, rangeland, or other land, but not urban built-up land or water. The intent of the FPPA is to minimize the extent that Federal programs contribute to the unnecessary conversion of farmland to nonagricultural uses. The Act also ensures that Federal programs are administered in a manner that, to the extent practicable, will be compatible with private, state, and local government programs and policies to protect farmland.

The implementing procedures of the FPPA and Natural Resources Conservation Service (NRCS) require Federal agencies to evaluate the adverse impacts (direct and indirect) of their activities on prime and unique farmland and farmland of statewide and local importance, and to consider alternative actions that could avoid adverse impacts. Determination of whether an area is considered prime or unique farmland and potential impacts associated with a proposed action is based on preparation of the farmland conversion impact rating form AD-1006 for areas where prime farmland soils occur and by applying criteria established at Section 658.5 of the FPPA (7 CFR Part 658). The NRCS is responsible for overseeing compliance with the FPPA and has developed the rules and regulations for implementation of the Act (see 7 CFR Part 658, 5 July 1984).

Geologic Hazards. Geologic hazards are defined as a natural geologic event that can endanger human lives and threaten property. Examples of geologic hazards include earthquakes, landslides, rock falls, ground subsidence, and avalanches.

3.4.2 Existing Conditions

Geology. JBSA-Lackland is situated on the Edwards Plateau, which is part of the Great Plains physiographic province. A large, faulted limestone formation, the Balcones Escarpment, forms the southern and eastern portions of the Edwards Plateau. Surficial geology consists of gravelly terrace deposits with valleys cut by stream deposits (LAFB 2010d).

Topography. JBSA-Lackland sits at the base of the Balcones Escarpment in the Blackland Prairie physiographic area. The Blackland Prairie is characterized by undulating hills with elevations ranging from 700 to 1,000 feet above mean sea level (MSL). Where most of the installation is generally flat (slopes of 1 to 3 percent), a drop in elevation occurs at Leon Creek along the installation's eastern boundary. Elevations on JBSA-Lackland range from approximately 790 feet above MSL in the northwest to 630 feet above MSL along Leon Creek (LAFB 2010d).

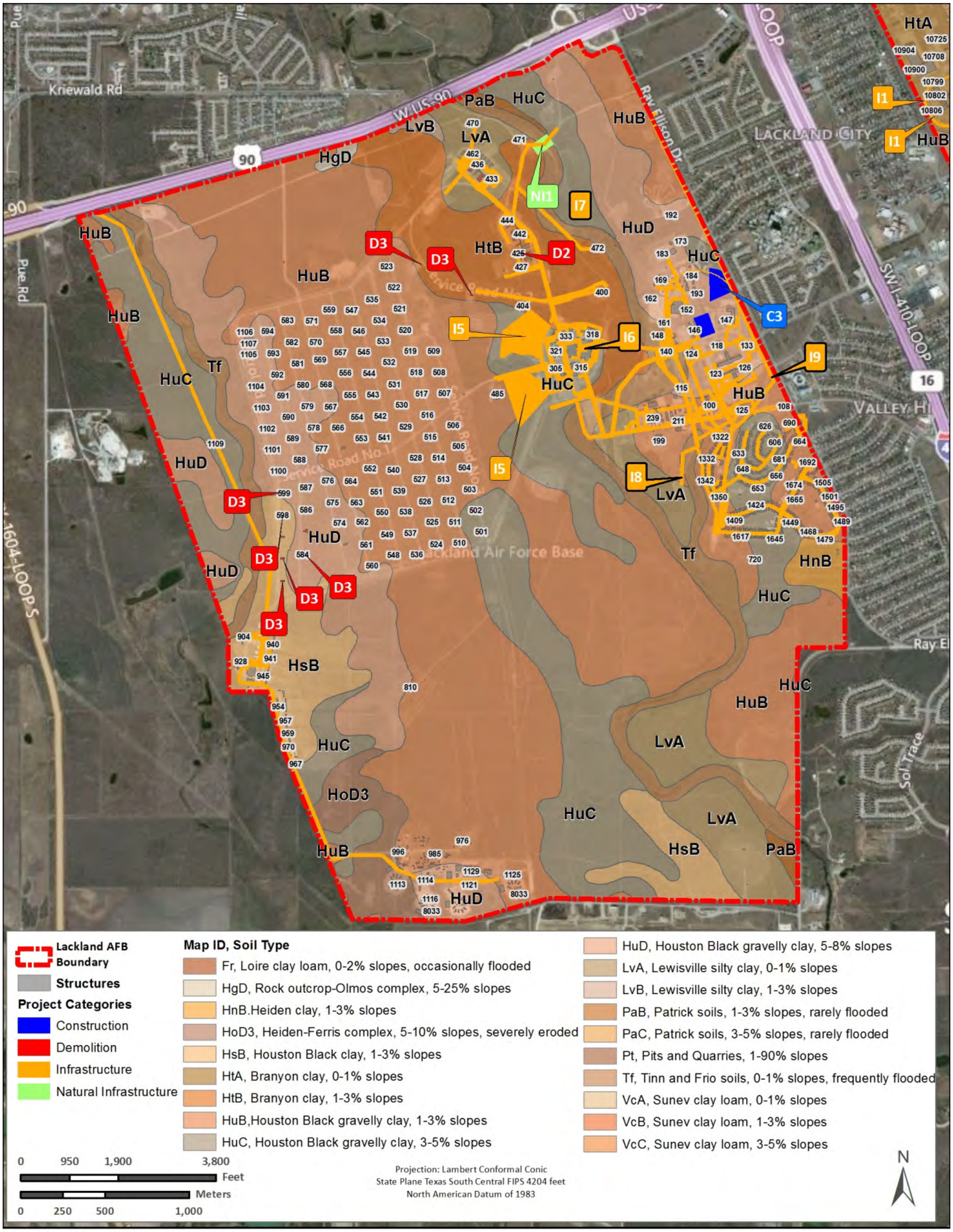
Soils. Soils present at JBSA-Lackland are primarily Houston black clays with areas of Houston black gravelly clay. In addition, Lewisville, Venus, Patrick, and Tinn and Frio are also present, but are limited in their distribution (LAFB 2006a). The Houston Black series consists of deep, calcareous, clayey soils, ranging from level to 8 percent slopes. At slopes great than 1 percent, runoff and erosion can become an issue. The Branyon series consists of moderately deep, moderately well-drained clays with slopes from level to 3 percent, with minor hydric components. The Lewisville series consists of deep, well-drained clays with slopes from level to 3 percent. The Patrick series consists of deep, well drained, clayey and sandy alluvial soils with slopes ranging from 1 to 5 percent. The Tinn and Frio series are deep, moderately well-drained clays and silty clay loams with slopes of up to 1 percent, with hydric components (LAFB 2010d). **Figures 3-1** through **3-3** show the soils mapped on installation in relation to the selected projects.

Soil limitations were determined based on data available on the NRCS' Web Soil Survey (NRCS 2012). Engineering limitations were considered for shallow excavations, construction of small commercial buildings, and construction of roads. Engineering limitations for shallow excavations were examined primarily for infrastructure projects related to utilities on installation. All soils on installation were rated somewhat limited to very limited for shallow excavations due to instability. All soils on installation were rated somewhat limited to very limited for road construction due to their shrink-swell potential and low strength. All soils on installation were rated very limited for small commercial building construction due to shrink-swell potential, flooding, or slope (NRCS 2012).

Several ERP sites exist on JBSA-Lackland that could contaminate soils or groundwater if they are disturbed. For a full discussion of these sites and their potential contamination issues, refer to **Section 3.10**, *Hazardous Materials and Waste*.

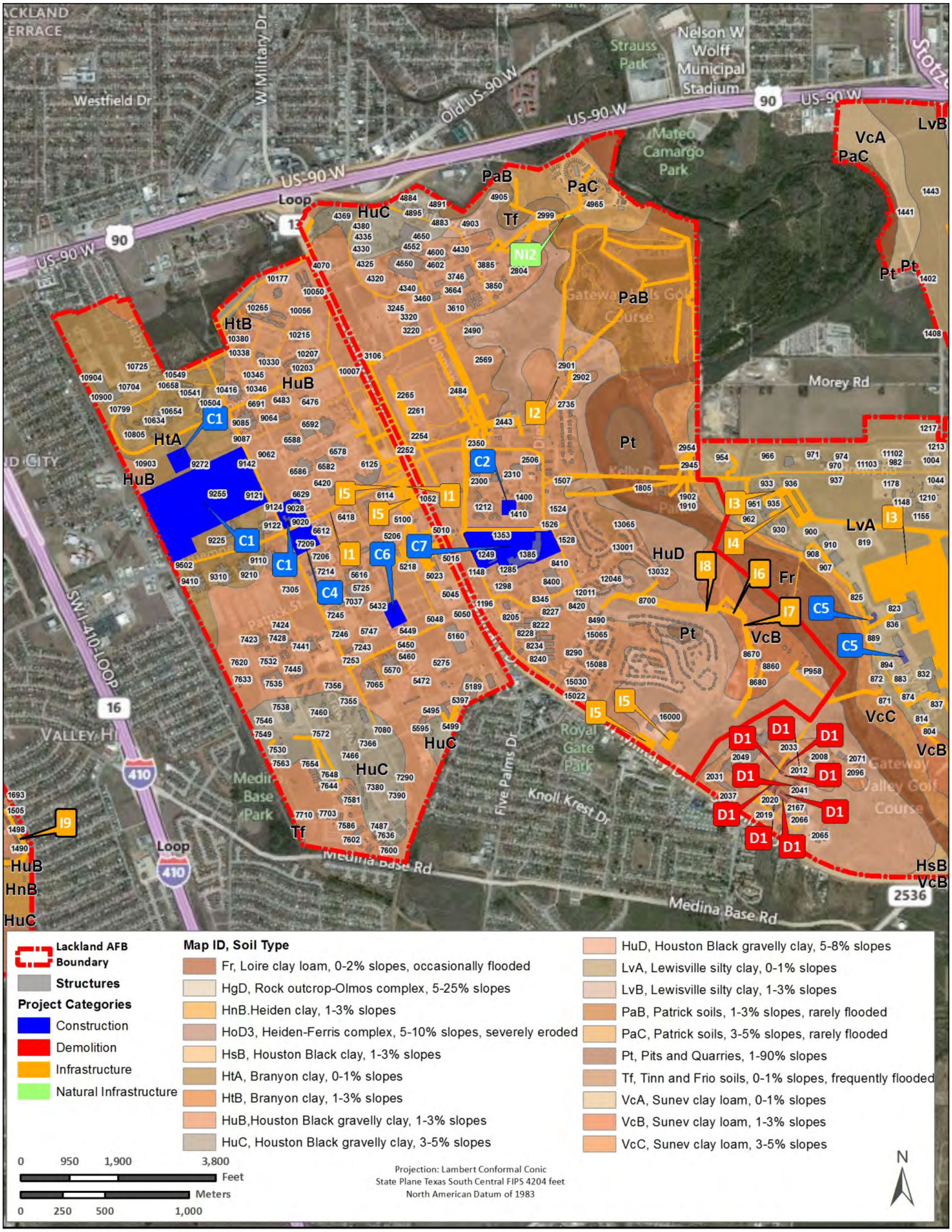
Prime Farmland. Of the soils mapped on installation, two are considered prime farmland soils: the Houston black clay and the Houston black gravelly clay. However, agriculture and irrigation are not current operations at JBSA-Lackland and are not planned for future operations. Therefore, these soils would not be considered prime farmland (LAFB 2010d).

Geological Hazards. The installation is underlain by limestone, which could be subject to solution weathering. However, karst features resulting from solution weathering such as sinkholes, caves, and formation fractures are not present on installation. The possibility of erosion is the most prominent geological hazard on installation. Because erosion potential increases with slope, the soil mapped with the greatest slope, the Houston black gravelly clay (5 to 8 percent slopes), would be considered to have



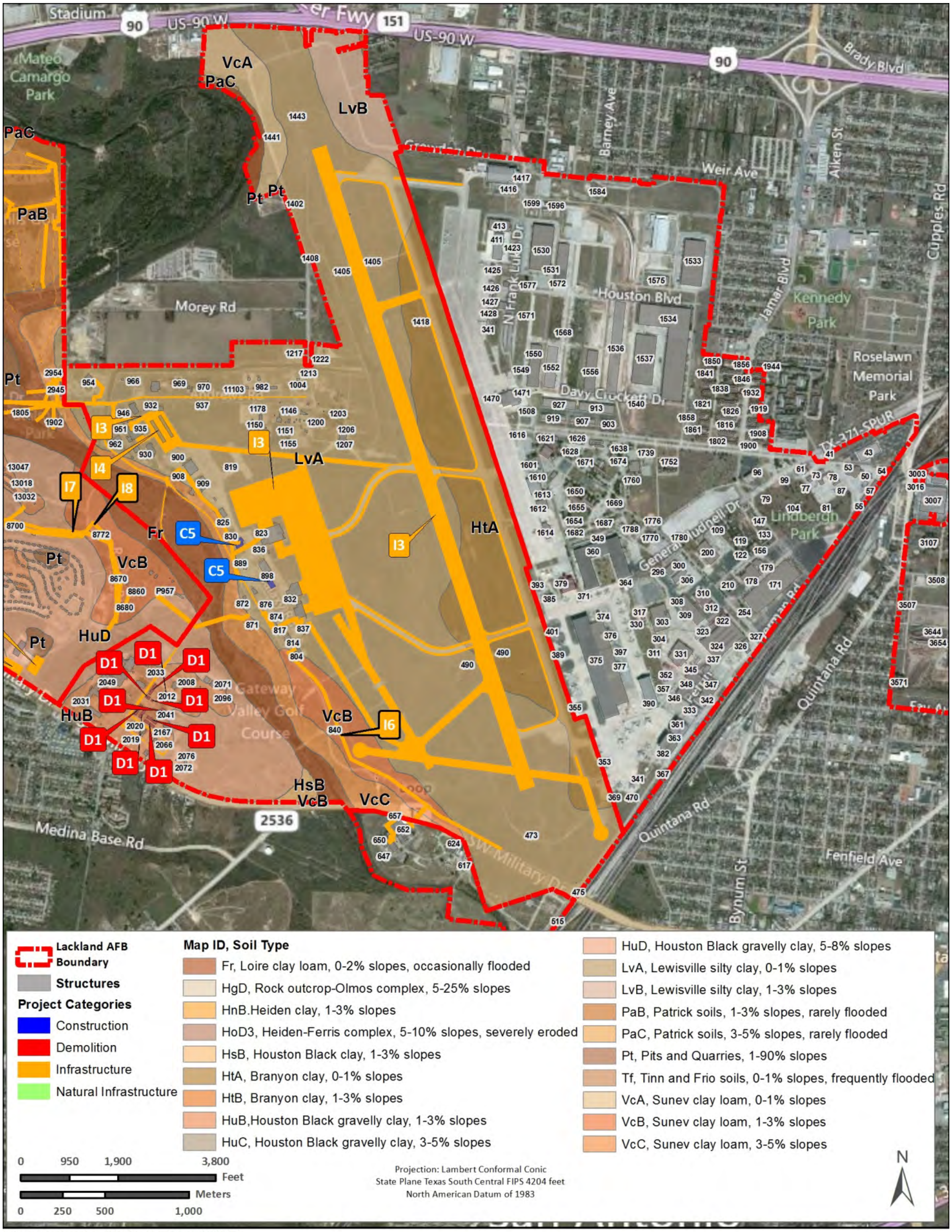
Source: ESRI StreetMap USA 2007, Bing Maps Hybrid 2010

Figure 3-1. Mapped Soils at JBSA-Lackland (Map 1 of 3)



Source: ESRI StreetMap USA 2007, Bing Maps Hybrid 2010

Figure 3-2. Mapped Soils at JBSA-Lackland (Map 2 of 3)



Source: ESRI StreetMap USA 2007, Bing Maps Hybrid 2010

Figure 3-3. Mapped Soils at JBSA-Lackland (Map 3 of 3)

moderate erosion potential. Other soils mapped on site are considered to have slight erosion potential (LAFB 2010d).

The U.S. Geological Survey (USGS) has produced seismic hazard maps based on current information about the rate at which earthquakes occur in different areas and on how far strong shaking extends from the quake source. The hazard maps show the levels of horizontal shaking that have a 2 in 100 chance of being exceeded in a 50-year period. Shaking is expressed as a percentage of the force of gravity (percent g) and is proportional to the hazard faced by a particular type of building. In general, little or no damage is expected at values less than 10 percent g, moderate damage could occur at 1 to 20 percent g, and major damage could occur at values greater than 20 percent g. Seismic zones for the United States have been established and range from 0 (no chance of severe ground shaking) to 4 (10 percent chance of severe ground shaking in a 50-year interval). The 2008 United States Seismic Hazards Map shows that the region surrounding JBSA-Lackland has a seismic hazard rating of approximately 2 to 4 percent g, indicating the potential for damaging seismic activity is low (LAFB 2010d).

3.5 Water Resources

3.5.1 Definition of the Resource

Water resources are natural and man-made sources of water that are available for use by and for the benefit of humans and the environment. Water resources relevant to JBSA-Lackland include groundwater, surface water, wetlands, and floodplains. Hydrology concerns the distribution of water through the processes of evapotranspiration, atmospheric transport, precipitation, surface runoff and flow, and subsurface flow. Hydrology is affected by climatic factors such as temperature, wind direction and speed, topography, soil, and geologic properties.

Groundwater is water that exists in the saturated zone beneath the earth's surface and includes underground streams and aquifers. It is an essential resource that functions to recharge surface water and is used for drinking, irrigation, and industrial processes. Groundwater features include depth from the surface, aquifer or well capacity, quality, recharge rate, and surrounding geologic formations. Groundwater quality and quantity are regulated under several different programs. The Federal Underground Injection Control regulations, authorized under the Safe Drinking Water Act, require a permit for the discharge or disposal of fluids into a well. The Federal Sole Source Aquifer regulations, also authorized under the Safe Drinking Water Act, protect aquifers that are critical to water supply.

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

Waters of the United States are defined within the Clean Water Act (CWA), as amended, and jurisdiction is addressed by the USEPA and the U.S. Army Corps of Engineers. These agencies assert jurisdiction over (1) traditional navigable waters, (2) wetlands adjacent to navigable waters, (3) non-navigable tributaries of traditional navigable waters that are relatively permanent where the tributaries typically flow year-around or have continuous flow at least seasonally (e.g., typically 3 months), and (4) wetlands that directly abut such tributaries. Section 404 of the CWA authorizes the Secretary of the Army, acting through the Chief of Engineers, to issue permits for the discharge of dredge or fill into waters of the United States including wetlands. Encroachment into waters of the United States and wetlands requires permits from the state and the Federal governments.

A water body can be deemed impaired if water quality analyses conclude that exceedances of CWA water quality standards occur. The CWA also mandated the National Pollutant Discharge Elimination System

(NPDES) program, which requires a permit for any discharge of pollutants into waters of the United States. In Texas, the NPDES is administered by the TCEQ under the Texas Pollution Discharge Elimination System (TPDES).

The USEPA issued a Final Rule for the CWA concerning technology-based Effluent Limitations Guidelines and New Source Performance Standards for the Construction and Development point source category. All NPDES storm water permits issued by the USEPA or states must incorporate requirements established in the Final Rule. This Rule is effective 1 February 2010 and will be phased in over 4 years. All new construction sites are required to meet the non-numeric effluent limitations and to design, install, and maintain effective erosion and sedimentation controls, including the following:

- Control storm water volume and velocity to minimize erosion
- Minimize the amount of soil exposed during construction activities
- Minimize the disturbance of steep slopes
- Minimize sediment discharges from the site
- Provide and maintain natural buffers around surface waters
- Minimize soil compaction and preserve topsoil where feasible.

In addition, construction site owners and operators that disturb 1 or more acres of land are required to obtain an NPDES general permit for construction activities. The permit mandates use of best management practices (BMPs) to ensure that soil disturbed during construction activities does not pollute nearby water bodies. Effective 1 August 2011, construction activities disturbing 20 or more acres must comply with the numeric effluent limitation for turbidity in addition to the non-numeric effluent limitations. On 2 February 2014, construction site owners and operators that disturb 10 or more acres of land are required to monitor discharges to ensure compliance with effluent limitations as specified by the permitting authority. The USEPA's limitations are based on its assessment of what specific technologies can reliably achieve. Permittees can select management practices or technologies that are best suited for site-specific conditions.

The USEPA currently regulates large and small (greater than 1 acre) construction activities through the final 2012 Construction General Permit (CGP) (16 February 2012), which recently replaced the 2008 CGP. The 2012 CGP includes a number of modifications to the 2008 CGP, many of which are necessary to implement the new Effluent Limitations Guidelines and New Source Performance Standards for Construction and Development point sources. Permittees must select, install, and maintain effective erosion- and sedimentation-control measures as identified and as necessary to comply with the 2012 CGP, including the following:

- Minimize exposure of soils and control discharges from stockpiled sediment or soil
- Design storm water-controls according to the amount, frequency, intensity, and duration of precipitation; the nature of storm water runoff and run-on at the site; and the range of soil particle sizes expected to be present on the site
- Direct discharges from storm water-controls to vegetated areas to increase sediment removal and maximize storm water infiltration
- Complete installation of storm water-controls by the time each phase of earth-disturbance has begun, unless infeasible
- Install sediment controls (e.g., sediment basins, sediment traps, silt fences, and vegetative buffer strips) along the perimeter of the construction site
- Regularly inspect and maintain all erosion and sediment controls

- Prevent discharges of petroleum products; soaps, solvents, or detergents used in equipment washing; or other toxic or hazardous substances from a spill or other release
- Minimize sediment track-out and implement dust controls
- Minimize disturbance of steep slopes
- Preserve topsoil
- Minimize soil compaction
- Design storm water conveyance channels to avoid unstabilized areas on the site and to reduce erosion; minimize erosion of channels and their embankments, outlets, and downstream waters.

Construction activities, such as clearing, grading, trenching, and excavating, disturb soils and sediment. If not managed properly, disturbed soils and sediments can easily be washed into nearby water bodies during storm events and reduce water quality. Section 438 of the EISA (42 U.S.C. Section 17094) establishes into law new storm water design requirements for Federal construction projects that disturb a footprint of greater than 5,000 ft^2 of land. EISA Section 438 requirements are independent of storm water requirements under the CWA. The project footprint consists of all horizontal hard surface and disturbed areas associated with project development. Under these requirements, predevelopment site hydrology must be maintained or restored to the maximum extent technically feasible with respect to temperature, rate, volume, and duration of flow. Predevelopment hydrology shall be modeled or calculated using recognized tools and must include site-specific factors such as soil type, groundcover, and ground slope.

Site design shall incorporate storm water retention and reuse technologies such as bioretention areas, permeable pavements, cisterns/recycling, and green roofs to the maximum extent technically feasible. Post-construction analyses would be conducted to evaluate the effectiveness of the as-built storm water reduction features (DOD 2010a). These regulations have been incorporated into applicable DOD UFC in April 2010, which stated that low-impact development features would need to be incorporated into new construction activities to comply with the restrictions on storm water management promulgated by EISA Section 438. Low-impact development is a storm water management strategy designed to maintain site hydrology and mitigate the adverse impacts of storm water runoff and nonpoint source pollution. Low-impact development features can manage the increase in runoff between pre- and post-development conditions on the project site through interception, infiltration, storage, or evapotranspiration processes before the runoff is conveyed to receiving waters. Examples of the methods include bioretention, permeable pavements, cisterns/recycling, and green roofs (DOD 2010b). Additional guidance is provided in the USEPA's *Technical Guidance on Implementing the Stormwater Runoff Requirements for Federal Projects under Section 438 of the Energy Independence and Security Act* (USEPA 2009a).

Floodplains are areas of low-level ground present along rivers, stream channels, or coastal waters. The living and nonliving parts of natural floodplains interact with each other to create dynamic systems in which each component helps to maintain the characteristics of the environment that supports it. Floodplain ecosystem functions include natural moderation of floods, flood storage and conveyance, groundwater recharge, nutrient cycling, water quality maintenance, and diversification of plants and animals. Floodplain storage reduces flood peaks and velocities, and the potential for erosion. In their natural vegetated state, floodplains slow the rate at which the incoming overland flow reaches the main water body.

Floodplains are subject to periodic or infrequent inundation due to rain or melting snow. Risk of flooding typically depends on local topography, the frequency of precipitation events, and the size of the watershed above the floodplain. Flood potential is evaluated by FEMA, which defines the 100-year floodplain. The 100-year floodplain is an area that has a 1 percent chance of inundation by a flood event in a given year.

Certain facilities inherently pose too great a risk to be in either the 100- or 500-year floodplain, such as hospitals, schools, or storage buildings for irreplaceable records. Federal, state, and local regulations often limit floodplain development to passive uses such as recreational and preservation activities to reduce the risks to human health and safety.

EO 11988, *Floodplain Management*, requires Federal agencies to determine whether a proposed action would occur within a floodplain. This determination typically involves consultation of FEMA Flood Insurance Rate Maps, which contain enough general information to determine the relationship of the project area to nearby floodplains. EO 11988 directs Federal agencies to avoid floodplains unless the agency determines that there is no practicable alternative. Where the only practicable alternative is to site in a floodplain, the agency should develop measures to reduce impacts and mitigate unavoidable impacts.

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

It is USAF policy to avoid construction of new facilities within areas containing wetlands or within the 100-year floodplain, where practicable. If a construction project does occur within a wetland or the 100-year floodplain, direct, adverse effects would be expected. Wetland and floodplain impacts would be reduced to the maximum extent practicable through project design and implementation of environmental protection measures. However, some projects might have direct impacts on wetlands and floodplains, and there is potential for indirect impacts from activities adjacent to these areas. In accordance with EOs 11988 and 11990, a FONPA must be prepared and approved by AETC for all projects involving construction in a wetland or action within floodplain areas. For those actions determined to impact jurisdictional wetlands, JBSA-Lackland would be required to obtain a permit under Section 404 of the CWA and could be required to mitigate or compensate to comply with the USAF's "no net loss" policy regarding wetlands.

3.5.2 Existing Conditions

Groundwater within San Antonio is found in a shallow alluvial aquifer and the underlying Edwards Aquifer. The shallow alluvial aquifer is found at depths between 5 and 15 feet below ground surface (bgs) and is primarily recharged through precipitation and irrigation (LAFB 2002b). The Edwards Aquifer is separated from the shallow alluvial aquifer by the low-permeability Del Rio clay. The confining layers range from depth of 25 to more than 1,200 feet bgs (LAFB 2006a). The Edwards aquifer is predominantly recharged by drainage basins on the Edwards Plateau, which lies northwest of San Antonio; however, some recharging does occur in Bexar County as well (TCEQ 2008a).

Groundwater movement in the region is generally from the southwest to the northeast. JBSA-Lackland is in the artesian zone of the Edwards Aquifer where groundwater is confined by the Glen Rose formation beneath and the Del Rio clay above. Springs occur where hydraulic pressure is sufficient to force water up through faults to the surface. Enough water is pumped from the aquifer for consumption that two artesian springs in San Antonio (the San Antonio Springs and San Pedro Springs) are generally dry (Eckhardt 2010).

The Edwards Aquifer has been designated as a sole-source aquifer pursuant to the Safe Drinking Water Act. The USEPA defines a sole-source aquifer as one that supplies at least 50 percent of the drinking water consumed in the area overlying the aquifer. The Edwards Aquifer is considered highly susceptible to contamination through its recharge zone from a number of sources, including chemical spills, leachate from landfills, and storm water runoff (LAFB 2007). However, JBSA-Lackland is not in the recharge zone, minimizing the potential for contamination. JBSA-Lackland primarily receives water from the Edwards Aquifer via six artesian wells ranging in depth from 1,042 to 1,900 feet (LAFB 2002b). The installation also supplements its water supply via recycled water from the San Antonio Water System (SAWS) which provides non-potable water for activities such as irrigation of the golf courses and the parade field (LAFB 2007).

JBSA-Lackland is within the San Antonio River Basin. The river drains southeast from San Antonio for about 240 miles to the Guadalupe River, which drains into the Gulf of Mexico. Surface water on the installation includes Leon Creek, Medio Creek, an intermittent stream called Long Hollow, golf course ponds, seasonal ponds, and water hazards developed for the Basic Trainee Confidence Course. **Figures 2-1** through **2-5** show water resources in the installation. Leon Creek is a southeast-flowing, 36 mile-long intermittent stream that flows through Lackland Main Base and Kelly Field Annex into the Medina River in southern Bexar County and eventually flows into the San Antonio River. Leon Creek serves as water hazards for the golf course and as a recreational feature of Stillman Park in the northeastern corner of the installation.

Storm water runoff on JBSA-Lackland is conveyed through a series of natural drainages, open ditches, and underground storm drainages to outfalls along Leon Creek, Indian Creek, and Medio Creek (LAFB 2002b). The installation is covered under general storm water permit TXR150000 (TCEQ 2008b). A CGP for storm water discharge requires a Storm Water Pollution Prevention Plan (SWPPP) and a Notice of Intent to be submitted (by mail or online) to the TCEQ for projects that disturb greater than 5 acres. The installation has developed an SWPPP template in accordance with the Texas Storm Water Multi-Sector General Permit to minimize storm water pollution and implement sampling and monitoring programs (LAFB 2007). JBSA-Lackland maintains a TPDES Municipal Separate Storm Sewer System (MS4) General Permit (TXR040068) (LAFB 2009b). An MS4 is a storm water conveyance or system of conveyances that is defined as follows:

- Owned by a state, city, town, village, or other public entity that discharges to waters of the United States
- Designed or used to collect or convey storm water including storm drains, pipelines, and ditches
- Not a combined sewer; and is not part of a Publicly Owned Treatment Works (USEPA 2012b).

Leon Creek is the main discharge point for the installation and is listed by the TCEQ as an impaired water body (TCEQ 2012). Lower Leon Creek is considered impaired because of decreased levels of dissolved oxygen and increased levels of bacteria. The TCEQ has initiated a project to verify and develop information necessary to support a bacterial Total Maximum Daily Load (TMDL) in lower Leon Creek. No TMDLs currently exist for dissolved oxygen or bacteria but are currently in development (TCEQ 2008b, TCEQ 2012).

JBSA-Lackland has a total of 39.6 acres of wetlands (see **Figures 2-1** through **2-5**). This includes 23.5 acres of jurisdictional wetlands (i.e., waters of the United States), 9.9 acres of non-jurisdictional wetlands, and 6.2 acres of non-classified wetlands on the Kelly Field Annex. For purposes of analysis, the wetlands on Kelly Field Annex are assumed to be jurisdictional.

The 100-year floodplain on JBSA-Lackland corresponds to low-lying areas along the banks of natural waterways and covers approximately 1,478 acres of the installation (LAFB 2002b). The January 4, 2002 FEMA Flood Insurance Rate Map Panel No. 48029C0438 for Bexar County, Texas, shows that some of the projects associated with the Proposed Action occur within the 100-year floodplain. While flooding does occur on the installation, it is primarily associated with the areas in and adjacent to Medio Creek and Leon Creek (LAFB 2007).

3.6 Biological Resources

3.6.1 Definition of the Resource

Biological resources include native or naturalized plants and animals and the habitats (e.g., grasslands, forests, and wetlands) in which they exist. Protected and sensitive biological resources include terrestrial and aquatic species listed as threatened, endangered, or those proposed for listing under the ESA, as designated by the USFWS. Migratory birds are also protected species under the MBTA. Sensitive habitats include those areas designated by the USFWS as critical habitat protected by the ESA and as sensitive ecological areas designated by state or other Federal rulings. Sensitive habitats also include wetlands or other ecological communities that are unusual, limited in distribution, or important seasonal use areas for wildlife (e.g., migration routes, breeding areas, crucial summer and winter habitats).

The ESA (16 U.S.C. §1531 et seq.) describes several categories of Federal status for plants and animals and their critical habitat, as designated by the USFWS. An “endangered species” is defined as any species in danger of extinction throughout all or a large portion of its range. A “threatened species” is defined as any species likely to become an endangered species in the foreseeable future. A “candidate species” is one that is being considered for listing as “endangered” or “threatened” under the ESA. “Candidate” status does not carry any procedural or substantive protections under the ESA. Critical habitat is designated under the ESA as “a specific geographic area that is essential for the conservation of a threatened or endangered species and that could require special management or protection.” Critical habitat can include an area that is not occupied by a species, but is needed for the recovery of that species. Section 7(a)(2) of the ESA requires that all Federal agencies consult with the USFWS, to ensure that any action it authorizes, funds, or carries out in the United States or upon the high seas is not likely to jeopardize the continued existence of any listed species or results in the destruction or adverse modification of critical habitat.

In 1973, the Texas legislature authorized the Texas Parks and Wildlife Division (TPWD) to establish a list of endangered animals in the state. Endangered species are those species which the Executive Director of the TPWD has named as being “threatened with statewide extinction.” Threatened species are those species that are likely to become endangered in the future. Laws and regulations pertaining to endangered or threatened animal species are contained in Chapters 67 and 68 of the Texas Parks and Wildlife Code and Sections 65.171–65.176 of Title 31 of the TAC. TPWD regulations prohibit the taking, possession, transportation, or sale of any of the animal species designated by state law as endangered or threatened without the issuance of a permit.

The MBTA of 1918 (16 U.S.C. 703–712), as amended, and EO 13186, *Responsibilities of Federal Agencies to Protect Migratory Birds*, require Federal agencies to minimize or avoid impacts on migratory birds. Unless otherwise permitted by regulations, the MBTA makes it unlawful to (or attempt to) pursue, hunt, take, capture, or kill any migratory bird, nest, or egg. If design and implementation of a Federal action cannot avoid measurable negative impacts on migratory birds, EO 13186 directs the responsible agency to develop and implement, within 2 years, a Memorandum of Understanding with the USFWS that shall promote the conservation of migratory bird populations.

3.6.2 Existing Conditions

Vegetation. JBSA-Lackland is in the southern extent of the Blackland Prairie vegetation area within the Texan Biotic Province. Blackland Prairie grasslands originally prevailed throughout much of this area (LAFB 2002b). Three general land uses occur at JBSA-Lackland: (1) improved areas consisting of housing, roads and other paved areas, mowed lawns, golf courses, buildings, athletic fields, and parks; (2) semi-improved areas consisting of rifle ranges, runway CZs, training areas, and antennae areas; and (3) unimproved areas consisting of forests and rangeland/grasslands (LAFB 2007). There are three general plant communities associated with these areas: (1) deciduous shrublands or woodlands on slopes and in upland areas; (2) deciduous riparian woodlands in well-watered soil on creek terraces; and (3) nonnative grassland patches common throughout JBSA-Lackland, where mowing occurs on a regular basis. Presently, no special plant species or natural communities are known to occur on JBSA-Lackland (LAFB 2007). However, in order to maintain the vegetation on JBSA-Lackland there is a Landscape Management Plan to address water use, horticultural and design practices, and landscape construction (LAFB 2007).

Improved grounds constitute the intensively developed areas of the installation and portray the visual quality and image of the installation. They are highly significant and demand high levels of maintenance, mainly because they have the highest variability of land use (LAFB 2007). The landscape of JBSA-Lackland has been altered as a result of continued use and consists of urbanized areas and some open space with nonnative grass patches, regularly mowed lawns; scattered shade trees; and established plantings of trees, shrubs, groundcover, vines, and grasses (LAFB 2007).

Semi-improved grounds comprise the limited maintenance developed areas, which are important in the daily life of the installation but have lower visibility than improved grounds and therefore have lower maintenance requirements. Semi-improved grounds or the tertiary zone consists of areas which require little or no managed maintenance; the only possible managed area in this category would be agricultural outleased areas. Areas previously included as unimproved grounds are the airfields and the strips of land between airfields and the perimeter fence. Some semi-improved areas because of their low maintenance are often considered as unimproved areas; however, because they are managed for specific purposes they are actually semi-improved rather than unimproved areas. An example of vegetation in semi-improved areas would be the equivalent to a golf course rough, which would consist of longer grasses that are allowed to grow naturally but do have some maintenance involved (LAFB 2007).

Non-maintained vegetated areas or unimproved grounds support more native types of vegetation and are typically located on the eastern third of the installation. Plant communities include deciduous shrublands or woodlands on slopes and in upland areas and deciduous riparian woodlands in well-watered soil on creek terraces. Unimproved grounds are fairly limited on Lackland Main Base and Kelly Field Annex and generally restricted to small tracts. The majority of the Lackland Training Annex is composed of unimproved grounds (LAFB 2007). These areas primarily consist of rangeland/grasslands and riparian woodlands associated with several of the perennial creeks that are associated with JBSA-Lackland (e.g., Leon and Medio creeks). The vegetation is typically dominated by large trunk trees such as pecan (*Carya illinoinensis*), cedar elm (*Ulmus crassifolia*), hackberry (*Celtis laevigata*) and live oak, which form a patchy canopy about 30 to 40 feet tall, but generally are less than 10 feet tall (LAFB 2007). These species are also associated with riparian habitats in and around the creeks on the installation. Species which have replaced the original native grassland vegetation include brushy shrublands, honey mesquite (*Prosopis glandulosa*), hackberry (*Celtis occidentalis*), and Eve's necklace (*Sophora affinis*) (LAFB 2007). In wetter soils there is frequently also eastern cottonwood (*Populus ocifero*) and black wouldow (*Salix nigra*), along with shrubs and vines such as mustang grape (*Vitis mustangensis*), poison ivy (*Rhus toxicodendron*) and young Chinese tallow saplings (*Sapium sebiferum*) (LAFB 2007). To reduce the potential for hazards associated with Bird/Wildlife Aircraft Strike Hazard (BASH) incidents, a 2003

BASH Plan is in place. The BASH Plan covers all areas of JBSA-Lackland with the focus on maintaining habitat so that it does not create a hazard itself (i.e., via tall vegetation), and also so that the habitat does not attract species that could potentially pose a BASH concern (LAFB 2011d).

Wildlife. Bexar County and the Texan Biotic Province are rich in faunal diversity; however, JBSA-Lackland is a highly urbanized environment and undeveloped areas on the installation are small, isolated, and have typically been subjected to various past or ongoing disturbance regimes. Wildlife species that occur on the installation are generally urban-adapted and disturbance-tolerant (LAFB 2007). Areas adjacent to this habitat include scattered patches of wooded areas, a wooded riparian corridor to the east, and open fields, which provide higher value habitat for wildlife.

At least 49 species of mammals have been recorded in the Texan Biotic Province in which JBSA-Lackland is located (LAFB 2007). Common mammals potentially occurring on the installation include Virginia opossum (*Didelphis virginiana*), coyote (*Canis latrans*), red fox (*Vulpes vulpes*), gray fox (*Urocyon cinereoargenteus*), common raccoon (*Procyon lotor*), ringtail (*Bassariscus astutus*), long-tailed weasel (*Mustela frenata*), mink (*Mustela vison*), American badger (*Taxidea taxus*), western spotted skunk (*Spilogale gracilis*), eastern spotted skunk (*Spilogale putorius*), striped skunk (*Mephitis mephitis*), common hog-nosed skunk (*Conepatus mesoleucus*), and bobcat (*Lynx rufus*) (LAFB 2007). Of these species, the Virginia opossum, common raccoon, and striped skunk would be the most common mammalian species found within the project area. Several bat species are also known to occur in the Texan Biotic Province; however, the only bat potentially occurring on JBSA-Lackland is the Mexican free-tail bat (*Tadarida brasiliensis*) (LAFB 2007).

Approximately 339 bird species have been recorded occurring somewhat regularly in the Texan Biotic Province. Bexar County is situated along the central migration flyway and at the divide between eastern and western North American bird populations. Common native birds potentially occurring on the installation include the red-tailed hawk (*Buteo jamaicensis*), killdeer (*Charadrius vociferous*), ring-billed gull (*Larus delawarensis*), rock pigeon (*Columba livia*), mourning dove (*Zenaida macroura*), common nighthawk (*Chordeiles minor*), chimney swift (*Chaetura ocifer*), western kingbird (*Tyrannus verticalis*), blue jay (*Cyanocitta cristata*), American crow (*Corvus brachyrhynchos*), barn swallow (*Hirundo rustica*), northern mockingbird (*Mimus polyglottos*), house finch (*Carpodacus mexicanus*), common grackle (*Quiscalus quiscula*), great-tailed grackle (*Quiscalus mexicanus*), and brown-headed cowbird (*Molothrus ater*) (LAFB 2007). The BASH Plan addresses avian and terrestrial species that might pose a BASH concern. Because JBSA-Lackland is subjected to large bird migrations and, under certain conditions, could be feeding or nesting grounds for various bird species, the BASH Plan provides guidance for reducing the potential BASH at JBSA-Lackland (LAFB 2011d).

At least 39 species of snakes, 5 species of salamanders, and 18 species of anurans (i.e., frogs and toads) have been recorded in the Texan Biotic Province (LAFB 2007). Examples of species include the Texas river cooter (*Pseudemys texana*), diamondback water snake (*Nerodia rhombifer*), blotched water snake (*Nerodia erythrogaster transversa*), western massasauga (*Sistrurus catenatus tergeminus*), and Couch's spadefoot toad (*Scaphiopus couchii*). The majority of reptiles and amphibians that might occur on JBSA-Lackland would be associated with woodland habitat or riparian habitat along the established or seasonal waterways (LAFB 2007). These species are not considered as species that make large-scale movements.

Medio and Leon creeks support numerous species of aquatic life with limited potential for fisheries management. Stream flow through Medio and Leon creeks are sufficient for limited fisheries for warm water fish such as bluegill (*Lepomis macrochirus*), *Gambusia* sp., blackstripe top minnow (*Fundulus notatus*), Rio Grande cichlid (*Cichlasoma cyanoguttatum*), sunfish (*Lepomis* sp.), channel catfish (*Ictalurus punctatus*), blue catfish (*Ictalurus furcatus*), yellow bullhead (*Ameiurus natalis*), black bullhead (*Ameiurus melas*), flathead catfish (*Pylodictis olivaris*), largemouth bass (*Micropterus salmoides*), and other aquatic and semi-aquatic species (LAFB 2007).

Protected and Sensitive Species. Thirty-three state or federally listed threatened or endangered species are known to occur in Bexar County (USFWS 2012a, TPWD 2012, LAFB 2011e); however, the USFWS and TPWD have determined that there are no federally listed threatened or endangered species on JBSA-Lackland (LAFB 2002b). The area surrounding the installation might provide habitat for federally listed threatened or endangered species; however, no occurrences of threatened or endangered species have been reported on JBSA-Lackland, except for a Texas horned lizard in 1992 (LAFB 2007). If threatened or endangered species were encountered on the installation, the USFWS would be consulted. Although there are no known occurrences of any state- or Federal-listed species on the installation, the JBSA-Lackland INRMP lists eight protected species as having the potential to utilize Lackland Main Base, Kelly Field Annex, or Lackland Training Annex for at least part of the year (see **Table 3-7**) (LAFB 2007).

Black-capped vireos (*Vireo atricapillus*) prefer areas where the scrub/shrub component is high (30 to 60 percent of the total ground coverage) (Campbell 2003). This species inhabits oak-juniper woodlands with a distinctive patchy, two-layered aspect with shrub and tree layer with open, grassy spaces requiring foliage reaching to ground level for nesting cover. Mating and nesting occurs from March and April to late summer, with multiple clutches throughout the year (Campbell 2003). There are areas of potential black-capped vireo habitat found on Lackland Main Base, Kelly Field Annex, and Lackland Training Annex. On the Main Base the large tract of land along Leon Creek, north of Kelly Drive is suitable habitat for this species. However, the majority of the potential black-capped vireo habitat can be found on the Lackland Training Annex, where much of the undeveloped land is shrub/scrub habitat; this species has not yet been identified on JBSA-Lackland (LAFB 2007).

Golden-cheeked warblers (*Dendroica chrysoparia*) prefer habitats with moderate to old stands (20+ years) of dense timber. These stands of timber are typically composed of Ashe juniper, Texas oak, Lacey oak, live oak, post oak, Texas ash, and various other hardwood species. The juniper component of the nesting habitat is crucial. This species is dependent on Ashe juniper (cedar) for its long fine bark strips that is only available on mature trees. This species constructs its nests in Ashe juniper and other tree species; however, mature junipers or nearby cedar brakes are required to provide the necessary nesting materials. Mating and nesting occurs from late March to early summer (Campbell 2003). There were no areas of juniper stands identified on JBSA-Lackland, which severely limits the suitability for established golden-cheeked warbler nesting habitat. The Lackland Training Annex has potential habitat components suitable for this species; this species has not yet been identified on JBSA-Lackland (LAFB 2007).

The white-faced ibis (*Plegadis chihi*) prefers habitat with freshwater marshes, sloughs, and irrigated rice fields, but can be found in brackish and saltwater habitats. It is possible that the ibis might occasionally visit areas of Leon and Medio creeks within JBSA-Lackland. But the ibis is not expected to spend a significant, if any, amount of time foraging within the JBSA-Lackland boundaries (LAFB 2007).

Cagle's map turtle (*Graptemys caglei*) is a small turtle endemic to the Guadalupe River system that includes the San Antonio and San Marcos rivers. Its habitat is limited to short stretches of shallow water with swift to moderate flow and gravel or cobble bottoms, connected by deeper pools with a slower flow rate and a silt or mud bottom. Leon and Medio creeks are within the drainages of the San Antonio River, so this species is possible resident of JBSA-Lackland. Only limited areas of these creeks provide the required habitat for the turtle, but its presence is possible (LAFB 2007).

Table 3-7. Federal- or State-listed Threatened or Endangered Species Potentially Using JBSA-Lackland

Common Name	Scientific Name	Federal Status	State Status	Potential Habitat on JBSA-Lackland
Birds				
Black-capped vireo	*Vireo atricapillus*	Endangered	Endangered	Oak-juniper woodlands with a distinctive patchy, two-layered aspect with shrub and tree layer with open, grassy spaces requiring foliage reaching to ground level for nesting cover. Habitat occurs on the Lackland Main Base, the Kelly Field Annex, and the Lackland Training Annex.
Golden-cheeked warbler	*Dendroica chrysoparia*	Endangered	Endangered	Moderate to old stands (20+ years) of dense timber. Habitat occurs on the Lackland Training Annex.
White-faced ibis	*Plegadis chihi*	-	Threatened	Freshwater marshes, sloughs, and irrigated rice fields, but can be found in brackish and saltwater habitats. Habitat occurs in areas of Leon and Medio creeks.
Reptiles				
Cagle's map turtle	*Graptemys caglei*	Candidate	Threatened	Short stretches of shallow water with swift to moderate flow and gravel or cobble bottoms, connected by deeper pools with a slower flow rate and a silt or mud bottom. Habitat occurs in areas of Leon and Medio creeks.
Texas horned lizard*	*Phrynosoma cornutum*	-	Threatened	Open, arid and semi-arid regions with sparse vegetation, including grass, cactus, scattered brush, or scrubby trees. Habitat occurs on the Lackland Training Annex.
Texas indigo snake	*Drymarchon corais erebennus*	-	Threatened	Moist riparian zones in grasslands and mesquite thickets or the thornbush-chaparral woodlands. Habitat occurs in undisturbed riparian zones of Leon Creek and Medio Creek.
Texas tortoise	*Gopherus berlandieri*	-	Threatened	Open brush with a grass understory and avoid open grass or bare ground habitats. Habitat occurs on Lackland Main Base and the Lackland Training Annex
Timber rattlesnake	*Crotalus horridus*	-	Threatened	Riparian woodland habitats. Habitat occurs on Lackland Main Base and the Lackland Training Annex.

Sources: LAFB 2007, TPWD 2012, USFWS 2012a

Note: * The confirmed resident status is based on historic sightings in Bexar County.

The Texas horned lizard (*Phrynosoma cornutum*) inhabits open, arid and semi-arid regions with sparse vegetation, including grass, cactus, scattered brush, or scrubby trees. The habitat soil can vary in texture from sandy to rocky. This lizard burrows into soil, but also enters rodent burrows or hides under rock when inactive. This species prefers flat open terrain with little vegetation and feeds almost exclusively on harvester ants. The decline in harvester ant populations by the imported fire ant has caused a decline in Texas horned lizards. The horned lizard is expected to inhabit JBSA-Lackland especially in the open areas of the Lackland Training Annex where harvester ants are present (LAFB 2007).

The Texas indigo snake (*Drymarchon corais erebennus*) prefers habitats of moist riparian zones in grasslands and mesquite thickets or the thornbush-chaparral woodlands of south Texas. This snake requires a moist microhabitat such as rodent burrows for shelter where they actively hunt by day, feeding on rodents, rabbits, birds, and other snakes including rattlesnakes. Although on the very edge of its range, the Texas indigo snake is a possible resident on JBSA-Lackland. They would most likely be located along the undisturbed riparian zones of Leon Creek and Medio Creek (LAFB 2007).

Texas tortoise's (*Gopherus berlandieri*) live in dry grassland habitats typical of this part of the state. They prefer open brush with a grass understory and avoid open grass or bare ground habitats. The Texas tortoise is active from March to November and breeds from April to November. When inactive, it occupies shallow depressions at the base of bush or cactus, sometimes in underground burrows or under objects. Although little grassland habitat is available on JBSA-Lackland, the Texas tortoise could occur on both the Lackland Main Base and the Lackland Training Annex. This species would most likely use the scrub/shrub and limited grassland habitats especially in areas with prickly pears (LAFB 2007).

The timber rattlesnake (*Crotalus horridus*) is found throughout the eastern parts of Texas with Bexar County being at the western edge of the range. They tend to inhabit riparian woodland habitats and feed mainly on rodents, but have been known to take birds. Timber rattlesnakes might occur in habitat associated with the Lackland Main Base and the Lackland Training Annex (LAFB 2007).

Water withdrawn from the Edwards Aquifer for use on the installation could have an indirect impact on endangered species found in the Comal Springs and San Marcos Springs areas (LAFB 2002b, LAFB 2007). Comal and San Marcos Springs are artesian outflows from the Edwards Aquifer approximately 35 and 50 miles northeast of the City of San Antonio, respectively (LAFB 2007). Water levels in these springs lower during periods of low rainfall. The springs provide habitat for the eight Federal- and state-listed threatened and endangered species identified in **Table 3-8** (USFWS 2008a).

The USAF completed a Biological Assessment in 1998 to determine the impact of DOD water withdrawals on the Edwards Aquifer and the USFWS subsequently issued a Biological Opinion in 1999. The 1999 Biological Opinion concluded that ongoing and proposed actions at the DOD installations (former Kelly AFB, Lackland AFB, Randolph AFB, and Fort Sam Houston) were not likely to jeopardize the continued existence of threatened and endangered species of the Comal and San Marcos spring systems. The USFWS stated in the Biological Opinion that it was providing DOD with an incidental take statement for the Texas blind salamander (*Eurycea rathbuni*), San Marcos salamander (*Eurycea nana*), Comal Springs dryopid beetle (*Stygoparnus comalensis*), and Peck's Cave amphipod (*Stygobromus pecki*) (USFWS 1999, USFWS 2008a).

A Biological Assessment was submitted to the USFWS in early 2005, that documented the current and future DOD water withdrawal from the Edwards Aquifer, which constituted a maximum of 2.1 percent of the overall withdrawal from the aquifer rather than the 2.63 percent determined by USFWS in the 1999 Biological Opinion. The USFWS completed a Biological Opinion on January 11, 2008, that covered the DOD for impacts on listed aquatic species of the Edwards Aquifer resulting from withdrawals from wells on JBSA-Lackland, Fort Sam Houston, and JBSA-Randolph through 2012. Conservation recommendations in the Biological Opinion included expanding DOD participation in the Edwards

Table 3-8. Federal- or State-listed Threatened or Endangered Species Potentially Impacted by Water use at JBSA-Lackland Facilities

Common Name	Scientific Name	Federal Status	State Status
Invertebrates			
Comal Springs dryopid beetle	*Stygoparnus comalensis*	Endangered	-
Comal Springs riffle beetle	*Heterelmis comalensis*	Endangered	-
Peck's Cave amphipod	*Stygobromus pecki*	Endangered	Endangered
Fish			
San Marcos gambusia	*Gambusia georgei*	Endangered	Endangered
Fountain darter	*Etheostoma fonticola*	Endangered	Endangered
Amphibians			
Cascade Caverns Salamander	*Eurycea latitans*	-	Threatened
San Marcos salamander	*Eurycea nana*	Threatened	Threatened
Texas blind salamander	*Eurycea rathbuni*	Endangered	Endangered
Plants			
Texas wild-rice	*Zizania texana*	Endangered	Endangered

Sources: LAFB 2007, TPWD 2012, USFWS 2012a

Aquifer Recovery Implementation Program (USFWS 2008b). The DOD maximum annual withdrawal from the Edwards Aquifer is presently 8,400 acre-feet/year. Based on water use identified in the Biological Opinion, from 2006 to 2011 JBSA-Lackland was projected to use 3,627.90 acre-feet/year of the DOD withdrawal (USFWS 2008a). JBSA is currently developing a new Biological Assessment to analyze the impact of future actions at JBSA-Lackland, Fort Sam Houston, and JBSA-Randolph on threatened and endangered species in the San Marcos and Comal spring systems.

Migratory birds are protected under the MBTA of 1918 and EO 13186, *Responsibilities of Federal Agencies to Protect Migratory Birds*. Approximately 339 bird species have been recorded as occurring somewhat regularly in Bexar County. Bexar County is situated along the central migration flyway (USFWS 2012b). The vast majority of birds occurring on JBSA-Lackland are migratory birds. Although the project area does not contain high-value habitat, several migratory bird species could use structures or landscaping for nesting or roosting (e.g., barn swallow [*Hirundo rustica*], chimney swift [*Chaetura ocifer*], common nighthawk [*Chordeiles acutipennis*], killdeer [*Charadrius ociferous*], house finch [*Carpodacus mexicanus*], and grackles [*Quiscalus* sp.]). Species protected under the MBTA that occur in the San Antonio area and could occur on the installation are listed in **Table 3-9**.

JBSA-Lackland currently maintains a Migratory Bird Depredation Permit from the USFWS, issued for the following species for BASH prevention: American crow, barn swallow, boat-tailed grackle (*Quiscalus major*), brown-headed cowbird, cattle egret (*Bubulcus ibis*), chimney swift, eastern meadowlark (*Sturnella magna*), European starling (*Sturnus vulgaris*), house finch, killdeer, mourning dove, common nighthawk, red-winged blackbird (*Agelaius phoeniceus*), rock pigeon, western meadowlark (*Sturnella neglecta*), and white-winged dove (*Zenaida asiatica*). The permit ensures that bird/wildlife control operations on JBSA-Lackland are conducted properly using methods and practices prescribed by the JBSA-Lackland Natural Resources Manager and in the JBSA-Lackland BASH Plan. The permit allows for the controlled shooting of only those bird species listed on the JBSA-Lackland Bird Depredation List, which are identified by the JBSA-Lackland Natural Resources Manager, Wing Safety, or designated representative. Controlled shooting is limited to designated zones (e.g., airfields) based on documented hazards and there is no controlled shooting in the direction of the Lackland Main Base if within 300 yards of buildings and 500 yards of aircraft in all directions, or within 1,250 feet of the munitions storage area (LAFB 2011d).

Table 3-9. Bird Species Protected Under the MBTA Commonly Occurring at JBSA-Lackland.

Common Name	Scientific Name	Common Name	Scientific Name
Barn swallow	*Hirundo rustica*	Great-tailed grackle	*Quiscalus mexicanus*
Black-crested titmouse	*Baeolophus atricristatus*	Cave swallow	*Hirundo rustica*
Blue-gray gnatcatcher	*Polioptila caerulea*	House finch	*Carpodacus mexicanus*
Brown-headed cowbird	*Molothrus ater*	Ladder-backed woodpecker	*Picoides scalaris*
Carolina wren	*Thryothorus ludovicianus*	Lark sparrow	*Chondestes grammacus*
Cattle egret	*Bubulcus ibis*	Mourning dove	*Zenaida macroura*
Boat-tailed grackle	*Quiscalus major*	Northern cardinal	*Cardinalis cardinalis*
Common grackle	*Quiscalus quiscula*	Pyrrhuloxia	*Cardinalis sinuatus*
Common ground-dove	*Columbina passerina*	Red-tailed hawk	*Buteo jamaicensis*
Brown-headed cowbird	*Molothrus ater*	Red-winged blackbird	*Agelaius phoeniceus*
Couch's kingbird	*Tyrannus couchii*	Ruby-crowned kinglet	*Regulus calendula*
Golden-fronted woodpecker	*Melanerpes aurifrons*	Savannah sparrow	*Passerculus sandwichensis*
Cattle egret	*Bubulcus ibis*	Turkey vulture	*Cathartes aura*
Great egret	*Ardea alba*	White-crowned sparrow	*Zonotrichia leucophrys*

3.7 Cultural Resources

3.7.1 Definition of the Resource

Cultural resources is an umbrella term for many heritage-related resources, including prehistoric and historic archaeological sites, buildings, structures, districts, or any other physical evidence of human activity considered important to a culture, a subculture, or a community for scientific, traditional, religious, or any other reason. Depending on the condition and historic use, such resources might provide insight into the cultural practices of previous civilizations or they might retain cultural and religious significance to modern groups.

Several Federal laws and regulations govern protection of cultural resources, including the NHPA, the Archaeological and Historic Preservation Act (1974), the American Indian Religious Freedom Act (1978), the Archaeological Resources Protection Act (1979), and the Native American Graves Protection and Repatriation Act (NAGPRA) (1990).

Typically, cultural resources are subdivided into archaeological resources (prehistoric or historic sites, where human activity has left physical evidence of that activity but no structures remain standing); architectural resources (buildings or other structures or groups of structures, or designed landscapes that are of historic or aesthetic significance); or resources of traditional, religious, or cultural significance to Native American tribes.

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

Architectural resources include standing buildings, bridges, dams, and other structures of historic or aesthetic significance. Generally, architectural resources should be more than 50 years old to be considered for eligibility for inclusion in the NRHP. To meet the evaluation criteria for eligibility to the NRHP, a property should be 50 years of age or older, significant under one or more NRHP evaluation criteria (36 CFR 60.4), and retain historic integrity expressive of the significance. More recent structures, such as Cold War-era resources, might warrant protection if they are of exceptional importance or if they have the potential to gain significance in the future as per NRHP evaluation Criterion Consideration G.

Resources of traditional, religious, or cultural significance to Native American tribes can include archaeological resources, structures, neighborhoods, prominent topographic features, habitat, plants, animals, and minerals that Native Americans or other groups consider essential for the preservation of traditional culture.

The EA process under NEPA and the consultation and review process prescribed in Section 106 of the NHPA require an assessment of the potential impact of an undertaking on historic properties that are within the proposed project's Area of Potential Effect, which is defined as the geographic area(s) "within which an undertaking may directly or indirectly cause alterations in the character or use of historic properties, if any such properties exist." Historic properties are cultural resources that are listed in or eligible for listing in the NRHP. Under Section 110 of the NHPA, Federal agencies are required to inventory resources under their purview and nominate those eligible to the NRHP. In accordance with the NHPA, consultation with the SHPO is required regarding the identification and evaluation of potentially affected cultural resources for NRHP, determination of potential effects of an undertaking on historic properties, and resolution of any adverse effects. Federally recognized Native American tribes also would be consulted with in accordance with EO 13175, *Consultation and Coordination With Indian Tribal Governments* (November 9, 2000).

3.7.2 Existing Conditions

There have been numerous cultural resources surveys and inventories completed at JBSA-Lackland, including the Lackland Main Base, Kelly Field Annex (and Security Hill), and Lackland Training Annex (LAFB 2002a).

Archaeological Resources. Thirteen archaeological investigations have been completed at the Lackland Main Base and Lackland Training Annex, and one at the Kelly Field Annex. The majority of archaeological investigations to date have focused on terraces above Leon Creek on Lackland Main Base, east of Military Drive near and in the golf course, and at Lackland Training Annex (Medina Base). The majority of Lackland Main Base is highly developed with previously disturbed ground and has low potential for NRHP-eligible archaeological sites and therefore has not been subject to archaeological survey. Currently, 76 archaeological sites have been identified at JBSA-Lackland. Of those sites, five have been determined NRHP-eligible and ten have been identified as requiring further investigation to determine NRHP-eligibility (LAFB 2002a, THC 2005). Four of the NRHP-eligible sites are within the boundaries of Lackland Training Annex (Medina Base) and one (Site #41BX1108) is on Lackland Main Base in the golf course area (LAFB 2002a, LAFB 1996). The five NRHP-eligible archaeological sites are of unknown prehistoric cultural affiliation. Of the ten sites requiring further investigation, nine are on

Lackland Training Annex and one (Site #41BX1107) is within Lackland Main Base in the golf course area (LAFB 1996).

Architectural Resources. JBSA-Lackland has had a number of architectural inventories and assessments. A total of 1,653 buildings or structures are currently listed in the JBSA-Lackland real property inventory. All buildings and structures at JBSA-Lackland with construction dates through 1976 have been surveyed and evaluated for NRHP eligibility. The most recent study is a 2011 architectural survey that evaluated all buildings and structures for NRHP eligibility that were unevaluated during previous studies, had reached 50 years of age since previous surveys, or would reach 50 years of age within the next 14 years (LAFB 2011b). The survey report is in draft form and is currently being reviewed by the Texas SHPO. The report concluded that no buildings that were reevaluated are eligible for NRHP listing at this time, and that two newly evaluated buildings constructed in 1968 (Buildings 6114 and 1740) could be NRHP-eligible once they have become 50 years old, although they are not NRHP eligible for exceptional significance under Criterion Consideration G.

A total of 175 built resources have been identified as NRHP-eligible or potentially eligible, of which two (Buildings 2000 and 2028) are located on Lackland Main Base, 44 are located on the Kelly Field Annex, and 129 are Cold War-era facilities on the Lackland Training Annex (former Medina Base area, west of and not contiguous with the Lackland Main Base) and are contributing properties to the NRHP-eligible Medina Base Historic District. The Q-base at Medina Base, as all nuclear weapons storage facilities are called, has been inventoried multiple times since the early 1990s. Designated as the Medina Base Historic District, it is significant as a Cold War-era National Stockpile Site for nuclear weapons and is an NRHP-eligible district that includes 129 contributing resources. A majority of these contributing resources are above-ground weapons storage igloos (LAFB 2002a).

Native American Resources/Traditional Cultural Properties. There are currently no identified traditional cultural properties at JBSA-Lackland. The project area is highly developed, so it is unlikely that any exist (LAFB 2002a). A 2000 cultural affiliation study by nearby Fort Sam Houston in Bexar County identified the Tonkawa, the Lipan Apache, the Mescalero Apache, the Coahuiltecan, the Wichita, the Comanche, and the Kiowa/Kiowa Apache as Native American tribes who might wish to claim cultural patrimony in the San Antonio area. Of these, only the Mescalero Apache, the Comanche, the Kiowa/Kiowa Apache, and the Wichita are federally recognized Tribes (LAFB 2002a). In 2011, the Commander of JBSA-Lackland sent letters to the tribal chairmen of the Mescalero Apache and Affiliated Tribes, Comanche Tribe, Tonkawa Tribe, and Wichita and Affiliated Tribes. The letters provided information about JBSA-Lackland cultural resources; requested information about archaeological, sacred sites, and traditional cultural properties; and inquired whether the tribes would be interested in establishing a relationship with JBSA-Lackland. As part of the preparation of the 2011 Section 106 Programmatic Agreement (PA) for JBSA, JBSA also consulted with the tribes. The Tonkawa Tribe elected to be an Interested Party to the PA.

3.8 Socioeconomics and Environmental Justice

3.8.1 Definition of the Resource

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

Demographics, employment characteristics, and housing occupancy status data provide key insights into socioeconomic conditions that might be affected by a proposed action. Demographics identify the population levels and the changes in population levels of a region over time. Demographics data might also be obtained to identify a region's characteristics in terms of race, ethnicity, poverty status, educational attainment level, and other broad indicators. Data on employment characteristics identify gross numbers of employees, employment by industry or trade, and unemployment trends. Data on personal income in a region can be used to compare the "before" and "after" effects of any jobs created or lost as a result of a proposed action. Data on industrial or commercial growth or growth in other sectors of the economy provide baseline and trend line information about the economic health of a region. Housing statistics provide baseline information about the local housing stock, the percentage of houses that are occupied, and the ratio of renters to homeowners. Housing statistics allow for baseline information to evaluate the impacts a proposed action might have upon housing in the region.

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

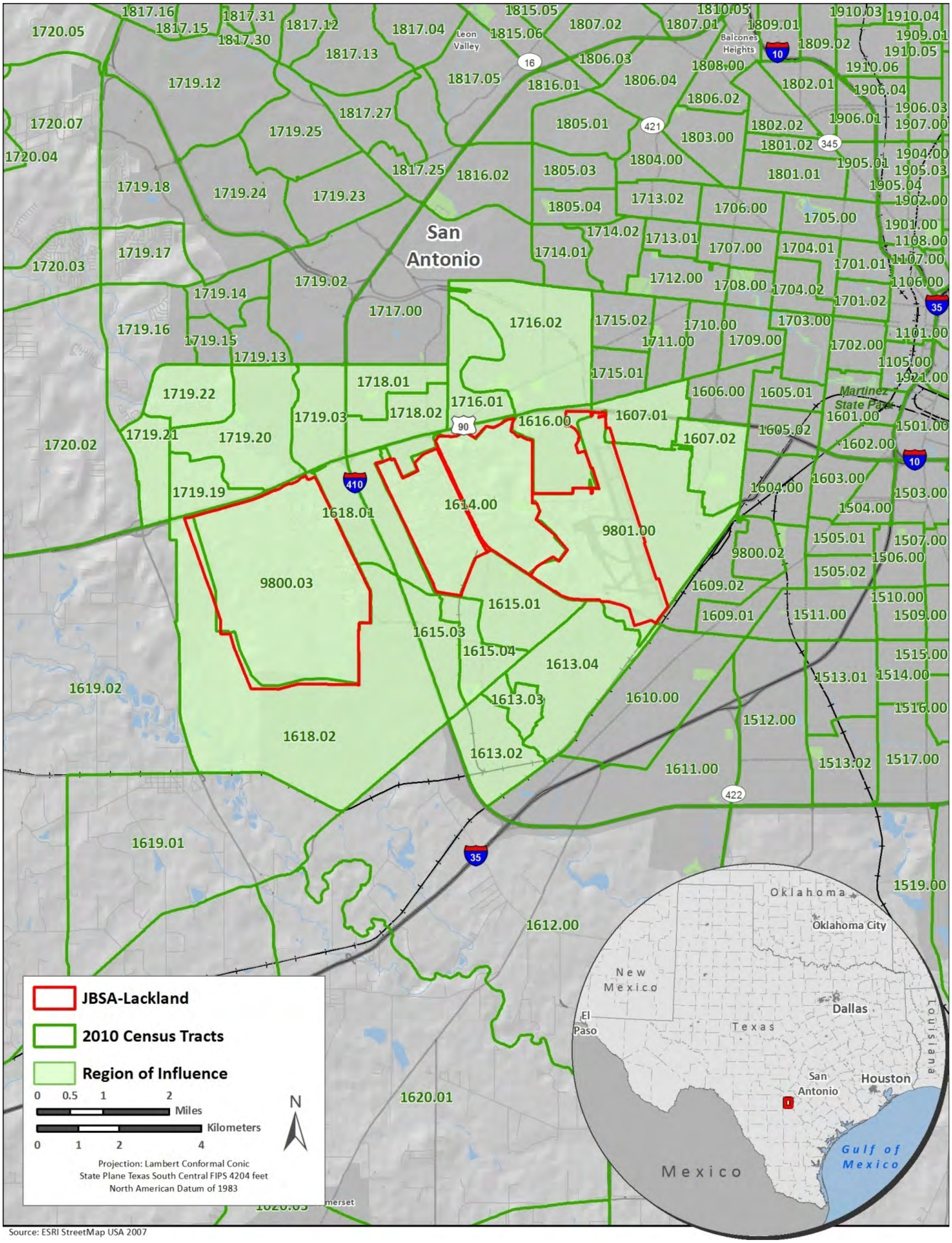
Socioeconomic data shown in this section are presented at census tract, county, state, and national levels to characterize baseline socioeconomic conditions in the context of regional and state trends.

Environmental Justice. EO 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*, requires that Federal agencies' actions substantially affecting human health or the environment do not exclude persons, deny persons benefits, or subject persons to discrimination because of their race, color, or national origin. The EO was created to ensure the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies. Fair treatment means that no groups of people, including racial, ethnic, or socioeconomic groups, should bear a disproportionate share of the negative environmental consequences resulting from industrial, municipal, and commercial operations or the execution of Federal, state, tribal, and local programs and policies.

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

3.8.2 Existing Conditions

For the purposes of this socioeconomic analysis, four different spatial levels are used: (1) primary Region of Influence (ROI), defined as the census tracts including and surrounding JBSA-Lackland, which are tracts 1614, 1615.01, 1615.03, 1615.04, 1616, 1618.01, 1618.02, 1716.01, 1716.02, 1718.02, 1719.03, 1719.19, 1719.20, 9800.03, 9801, 1719.22, 1718.01, 1719.21, 1613.02, 1613.03, 1613.04, 1607.02, and 1607.01; (2) Bexar County, the county within which JBSA-Lackland is located; (3) San Antonio-New Braunfels, Texas Metropolitan Statistical Area (MSA) that encompasses JBSA-Lackland; (4) and the State of Texas. Data from the installation will also be used where applicable. **Figure 3-4** displays the ROI for this IDEA.



Source: ESRI StreetMap USA 2007

Figure 3-4. Socioeconomic Region of Influence for the Proposed Action

The primary ROI best illustrates socioeconomic characteristics for the area nearest JBSA-Lackland, and includes a portion of the city of San Antonio. Bexar County and the San Antonio-New Braunfels, Texas, MSA represent the geographic areas where a majority and most of the impacts from the Proposed Action would occur respectively; therefore they are included in the analysis. The San Antonio-New Braunfels, Texas MSA includes the City of San Antonio and eight counties in Texas. Data for the State of Texas provide baseline comparisons for the spatial levels mentioned above. Data for the United States are included to provide an additional level for comparison.

Demographics. In 2010, the ROI had a population of 112,310 people (U.S. Census Bureau 2010a). The population in the ROI increased by 32.8 percent between the year 1990 and 2010. The U.S. Census Bureau modified the census tract boundaries between the 1990 and 2000 U.S. Censuses and again between the 2000 and 2010 U.S. Censuses. Therefore, the 1990 and 2000 population data were compiled using the 1990 and 2000 census tracts that are equivalent with the 2010 census tracts in the ROI. Complete population data are presented in **Table 3-10**.

Table 3-10. Population Data for 1990, 2000, and 2010

	Population			Percent Change in Population
	1990	2000	2010	1990 to 2010
ROI	84,555 [a]	94,018 [b]	112,310	32.8 [a]
Bexar County	1,185,394	1,392,931	1,714,773	44.7
San Antonio- New Braunfels, TX MSA [c]	1,324,749	1,592,383	2,142,508	61.7
Texas	16,986,510	20,851,820	25,145,561	48
United States	248,709,873	281,421,906	308,745,538	24.1

Sources: U.S. Census Bureau 1990a, U.S. Census Bureau 2000, U.S. Census Bureau 2010a, U.S. Census Bureau 1990b

Notes:

a. The definitions of the census tracts used in the ROI changed between the 1990 and 2010 Censuses. Therefore, the population of the ROI in 1990 was compiled using the census tracts that are equivalent with the 2010 census tracts that make up the ROI. These include census tracts 1719.04, 1719.03, 1617, 1718, 1618, 1614.01, 1615.02, 1615.01, 1716, 1616, 1614.85, 1613, and 1607.85.

b. The definitions of the census tracts used in the ROI changed between the 2000 and 2010 Censuses. Therefore, the population of the ROI in 2000 was compiled using the census tracts that are equivalent with the 2010 census tracts that make up the ROI. These include census tracts 1719.08, 1719.03, 1614.01, 1615.02, 1719.07, 1718.01, 1616, 1617, 1718.02, 1614.02, 1618, 1716, 1615.011613.01, 1603.02, 1607.01, and 1607.02.

c. The San Antonio MSA was renamed San Antonio-New Braunfels MSA in 2009; however, boundaries of this MSA remained the same.

The population of Bexar County increased 44.7 percent from 1990 to 2010. The population of Bexar County in 2010 was 1,714,773, up from 1,185,394 in 1990. In 2010, the population of the San Antonio-New Braunfels MSA was 2,142,508. The population of Texas increased 48 percent between 1990 and 2010. The United States experienced large population growth between 1990 and 2010, increasing by 24.1 percent (U.S. Census Bureau 1990a, U.S. Census Bureau 2000, U.S. Census Bureau 2010a).

Employment Characteristics. The percentage of the work force employed in the armed forces is 13.1 in the ROI, 2.8 percent in Bexar County, 2.6 percent in the San Antonio-New Braunfels MSA, 0.9 percent in Texas, and 0.7 percent in the United States. The largest percentage of employees by industry for the ROI and all other spatial levels is in the educational, health and social services industry. The second largest industry for all spatial levels is the retail trade industry (U.S. Census Bureau 2010b). For complete information regarding employment by industry see **Table 3-11**.

Table 3-11. Overview of Employment by Industry, 2010

Employment Types	ROI	Bexar County	San Antonio-New Braunfels MSA	Texas	United States
Population 16 Years and Over in the Labor Force*	51,032	857,928	1,563,725	12,465,332	156,966,769
Percent of population 16 years and over in labor force employed within the armed forces	13.1	2.8	2.6	0.9	0.7
Percent Employed Persons 16 years old and over in Civilian Labor Force (by industry)					
Agriculture, forestry, fishing and hunting, and mining	0.7	0.6	1.1	2.9	1.9
Construction	12.6	7.6	8.6	8.0	6.2
Manufacturing	5.9	5.8	6.6	9.3	10.4
Wholesale trade	2.5	2.3	3.0	2.9	2.8
Retail trade	12.5	12.0	11.9	11.5	11.7
Transportation and warehousing, and utilities	6.0	4.5	4.9	5.5	4.9
Information	1.6	2.2	2.3	1.9	2.2
Finance, insurance, real estate, and rental and leasing	7.6	9.0	9.1	6.6	6.7
Professional, scientific, management, administrative, and waste management services	9.1	10.9	10.4	10.8	10.6
Educational, health, and social services	18.6	23.1	22.0	21.8	23.2
Arts, entertainment, recreation, accommodation, and food services	10.5	10.5	9.4	8.6	9.2
Other services (except public administration)	5.1	5.2	5.0	5.3	5.0
Public administration	7.4	6.2	5.7	4.8	5.2

Sources: U.S. Census Bureau 2010b

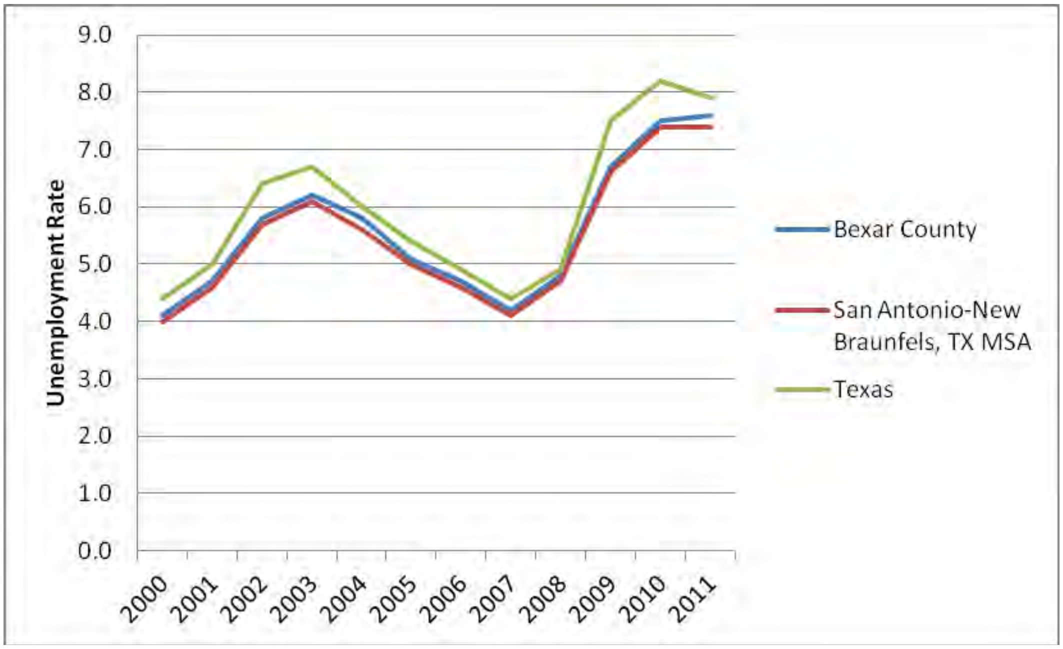
Note: * Labor force includes persons that are employed or unemployed civilians and members of the armed forces.

San Antonio's economy is based on services, commercial trade, government employment, tourism, medical facilities and manufacturing. The area relies heavily upon government employment, as JBSA, including Lackland, Randolph and Fort Sam Houston, is one of the top employers in the region (LAFB 2010d). JBSA-Lackland is estimated to create an additional 11,725 jobs indirectly and $364 million in payroll from support jobs through the community (LAFB 2009c). Based on the value of installation operations and maintenance activities, construction, and education payments and other services, JBSA-Lackland contributes more than $1.9 billion to the San Antonio economy each year (LAFB 2009c).

Unemployment in the project area is generally lower than the national average. The yearly unemployment rates (not seasonally adjusted) for Bexar County and the San Antonio-New Braunfels MSA were generally 0.3 to 0.4 percent lower than the national average unemployment rate, peaking at

7.6 percent for Bexar County and 7.4 percent in the San Antonio-New Braunfels MSA in 2011. The unemployment rate for Texas consistently remained above the national unemployment levels until 2007.

The overall unemployment rate for Texas has usually been higher than Bexar County and the San Antonio MSA. As of 2011, the unemployment rates in Bexar County, the San Antonio-New Braunfels MSA, and Texas were 7.6 percent, 7.4 percent, and 7.9 percent respectively. **Figure 3-5** displays unemployment for Bexar County, the San Antonio-New Braunfels MSA, and Texas. Unemployment rates for the primary ROI were not available.



Source: BLS 2011

Figure 3-5. Unemployment Rates, 2000 to 2011

Housing Characteristics. The U.S. Census Bureau reported that in 2010 there were 33,854 housing units in the ROI, of which 8.5 percent were vacant. Of the 30,981 occupied housing units in the ROI, 61 percent were owner-occupied and 39 percent were renter-occupied. There were 662,872 housing units in Bexar County in 2010; of these units 53,941 were vacant, resulting in an 8.1 percent vacancy rate. In the San Antonio-New Braunfels MSA, there were 837,999 housing units with an 8.9 percent vacancy rate. Owner-occupied units in Bexar County totaled 368,638, or 60.5 percent of all occupied units, while the remaining 39.5 percent were renter-occupied units. In the San Antonio-New Braunfels MSA in 2010, 488,523 units (64 percent) were owner-occupied and 274,499 (36 percent) were renter-occupied. Homeowner vacancy rate for the San Antonio-New Braunfels MSA was 2.0 percent and the rental vacancy rate was 9.4 percent (U.S. Census Bureau 2010a).

In FY 2010, JBSA-Lackland supported a population of 52,561 people, including military personnel, civilian employees, contractors, and dependants (LAFB 2011f). The JBSA-Lackland community consists of more than 28,800 military and civilian personnel and their families living on- and off-installation. JBSA-Lackland includes 1,162 MFH units consisting of 431 family housing units and 731 privatized housing units (LAFB 2009c).

Environmental Justice. Minority population levels within the ROI are roughly the same as levels in Bexar County, Texas, and the United States. The ROI's population reported as non-white is at 29.9 percent, which is higher than Bexar County (27 percent), the San Antonio-New Braunfels MSA (24.5 percent) and Texas (27.6 percent). The percent reporting Hispanic or Latino populations for the ROI was the highest of all spatial levels at 68.6 percent (U.S. Census Bureau 2010a, U.S. Census Bureau 2010b). **Table 3-12** shows the regional race and ethnicity demographic data.

Table 3-12. Minority, Low-Income, and Poverty Status, 2010

Demographic	ROI	Bexar County	San Antonio-New Braunfels MSA	Texas	United States
Total Population	112,310	1,714,773	2,142,508	25,145,561	308,745,538
Percent Male	51.2	49.0	49.1	49.6	49.2
Percent Female	48.8	51.0	50.9	50.4	50.8
Percent Under 5 Years	8.9	7.6	7.3	7.7	6.5
Percent Over 65 Years	7.4	10.3	11.0	10.3	13.0
Percent White	70.1	72.9	75.5	70.4	72.4
Percent Black or African American	6.2	7.5	6.6	11.8	12.6
Percent American Indian, Alaska Native	1.0	0.8	0.8	0.7	0.9
Percent Asian	1.1	2.4	2.1	3.8	4.8
Percent Native Hawaiian and Other Pacific Islander	0.3	0.1	0.1	0.1	0.2
Percent Some Other Race	18.0	12.7	11.6	10.5	6.2
Percent Reporting 2 or more races	3.3	3.5	3.3	2.7	2.9
Percent Hispanic or Latino [a]	74	58.7	54.1	37.6	16.3
Percent of Individuals Below the Poverty Level [b]	23.7	16.9	15.8	17.9	15.3
Percent of Families Below the Poverty Level [b]	19.4	13.1	12.2	13.8	11.3
Per Capita Income [b]	$15,084	$22,750	$23,867	$23,863	$26,059
Median Household Income [b]	$37,993	$47,921	$49,221	$48,615	$50,046

Sources: U.S. Census Bureau 2010a , U.S. Census Bureau 2010b

Notes:

a. Persons of Hispanic or Latino origin can be of any race, and thus are also included in applicable race categories.

b. Percent of Individuals Below Poverty, Percent of Families Below Poverty, Per Capita Income and Median Household Income for the ROI consist of the average of all census tracts included in the ROI.

The poverty status in the ROI for individuals and families was higher in the ROI (19.4 percent) than in Bexar County, the San Antonio-New Braunfels MSA, and Texas. Similarly, the per capita income and median household income for the ROI was lower than in other spatial levels (see **Table 3-11**) (U.S. Census Bureau 2010b).

3.9 Infrastructure

3.9.1 Definition of the Resource

Infrastructure consists of the systems and physical structures that enable a population in a specified area to function and includes utility lines. Infrastructure is wholly human-made, with a high correlation between the type and extent of infrastructure and the degree to which an area is characterized as “urban” or developed. The availability of infrastructure and its capacity to support growth are generally regarded as essential to the economic growth of an area. The infrastructure components discussed in this section include airfield, transportation, utilities, and solid waste management.

The airfield includes all pavement, runway, overruns, aprons, ramps, and arm/disarm pads that are associated with aircraft maintenance and aircraft operations. Transportation includes major and minor roadways that feed into the installation and the security gates, and roadways and parking areas on the installation. Public transit, rail, and pedestrian networks are also elements of transportation. Utilities include water supply, sanitary sewer and wastewater systems, storm drainage systems, electrical supply, natural gas supply, and communications systems. Solid waste management primarily relates to the availability of systems and landfills to support a population’s residential, commercial, and industrial needs. The infrastructure information contained in this section provides a brief overview of each infrastructure component and comments on its existing general condition.

3.9.2 Existing Conditions

Airfield. JBSA-Lackland operates one runway, which is located on Kelly Field Annex. Runway 15/33 is 11,500 feet long and 300 feet wide, with 1,000-foot overruns at the ends of the runway (LAFB 2008a). JBSA-Lackland and Port San Antonio have a joint use agreement, which allows domestic air cargo planes to use the runway (Port San Antonio undated).

Transportation. JBSA-Lackland is in the southwestern corner of the San Antonio metropolitan area. The nearest major highway interchange is U.S. Highway 90 and Interstate 410, northwest of the installation. Interstate 410 is a beltway around San Antonio that connects major interstates, U.S. highways, and state highway arteries. There are approximately 75 miles of roadway on Lackland Main Base, approximately 18 miles of roadway on Kelly Field Annex, and approximately 70 miles of roadway on Lackland Training Annex.

The primary north-south routes on Lackland Main Base are Bong Avenue on the eastern side of the installation and Carswell Avenue on the western side of the installation. Military Drive, which is a north-south, off-installation, public roadway, divides Lackland Training Annex to the west from Lackland Main Base to the east. The primary east-west routes are Truemper Street, Luke Boulevard, and Selfridge Avenue. Truemper Street is the only unimpeded four-lane road that connects the eastern and western halves of Lackland Main Base (LAFB 2008b). Students use an extensive network of troop walks on Lackland Main Base to travel between the dormitories and the major facilities used for training and exercise. Troop movements can be as individuals or in flights of up to 55 trainees. The majority of the existing troop walks are 12 feet wide, adjacent to installation roadways, and typically separated by a raised curb, highway buttons, or a painted line. There are several points on the installation where the troop walks and major roadways conflict, causing delays in traffic and troop movement, loss of training time, and unsafe conditions. To improve these situations, major intersections have flashing crosswalk lights (LAFB 2002b).

Access to Kelly Field Annex from the north is via U.S. Highway 90 and Growdon Drive, and from the south via SW Military Drive. The primary roads servicing Kelly Field Annex are Growdon Drive, Billy

Mitchell Boulevard, Luke Drive, and Hall Street. Lackland Main Base connects to Kelly Field Annex via Kelly Drive and Hall Street.

The road network at Lackland Training Annex is fairly limited due to the large amount of open space and restricted areas. Medina Base Road is the primary route at the annex. It connects the installation gate with the housing and cantonment areas. Secondary routes provide access to the shooting ranges and student living areas (LAFB 2002b).

JBSA-Lackland has nine access control points that provide ingress and egress for the installation. The majority of these access control points connect from Military Drive (LAFB 2009d). A traffic study was conducted in January 2005 at seven gates across the installation. Peak traffic volume counts were taken on Tuesday and Wednesday between 6 a.m. and 12 p.m. During the 6-hour period, approximately 14,000 vehicles were counted entering the installation (LAFB 2005a). Gate and installation traffic peaks during the morning and afternoons of BMT graduation ceremonies, when families are invited on-installation. The primary mode of travel on the installation is by privately owned vehicles. JBSA-Lackland also maintains a comprehensive shuttle bus system, which provides access to most areas of the installation. No rail service exists to the installation (LAFB 2006a).

Water Supply. Potable water is drawn from the Edwards Aquifer. Six wells and 62 miles of water mains can provide Lackland Main Base with more than 13 million gallons per day (MGD). The supply system only needs to operate at 30 percent capacity to meet the installation's needs. An emergency source is provided by a 12-inch pipe connected to Kelly Field Annex's water supply system. The distribution system is looped and water is stored in four elevated tanks with a total storage capacity of 1,275,000 gallons (LAFB 2002b). Because the Edwards Aquifer is a primary source for water in the San Antonio region, potable water obtained from the Edwards Aquifer is a limited resource that is subject to withdrawal regulation and drought restrictions (LAFB 2007).

Lackland Training Annex obtains potable water from two Edwards Aquifer wells with a combined design capacity of 4.3 MGD. The water system on Lackland Training Annex includes more than 15 miles of water mains and two elevated tanks that provide a total storage capacity of 375,000 gallons. The system only needs to operate at 17 percent capacity to meet the needs of the installation. Although the distribution system is looped, dead-end lines service the firing range and dog training areas (LAFB 2002b). The water system on the Kelly Field Annex is privatized and owned by the SAWS. Water is received from two mains coming into the installation on the east and west sides. Two elevated water towers each have a storage capacity of 500,000 gallons (LAFB 2002b).

The JBSA-Lackland water distribution system has an average age of approximately 60 years and consists of cast iron, asbestos-cement, or PVC piping. Much of the piping has deteriorated and requires frequent repair or replacement. There have been four major breaks in the system, which have resulted in a reduction in drinking water quality and an increase in water demand (LAFB undated b).

Sanitary Sewer and Wastewater System. SAWS provides wastewater collection and treatment services to JBSA-Lackland. The wastewater system is composed of approximately 44 miles of sewer mains. The system operates by gravity flow; however, lift stations and force mains are used to connect individual facilities to the main system. Wastewater from Lackland Main Base enters the SAWS sewer line along the northern and eastern boundaries of the installation at Five Palms Street and eventually discharges off site to the Leon Creek Wastewater Treatment Plant. The Lackland Main Base system is in good condition because a large portion of the original clay tile mains have been replaced with PVC. The rated capacity of Lackland Main Base sewer system is 9.79 MGD and the estimated daily wastewater discharge volume is 1.6 MGD (Riley 2011). The SAWS sanitary sewer system at Kelly Field Annex is more than 30 years old. The clay tile is brittle and there are problems with tree roots.

Sewage within the Lackland Training Annex is collected by a gravity flow system to a lift station and carried through a 2-mile-long force main where it is discharged into the SAWS system near the northeastern boundary of the Lackland Training Annex. The firing range is serviced by a small system consisting of two lift stations and more than 2 miles of force mains that discharge sewage from this area into the SAWS system at the northwestern boundary of the Lackland Training Annex. The system at Lackland Training Annex is deteriorating, is unreliable, requires constant repair, and poses a risk of leaking into the environment.

Storm Drainage System. Storm water systems convey precipitation away from developed sites to appropriate receiving surface waters. Storm water systems employ a variety of devices to slow the rapid movement of runoff and provide the benefit of reducing sediment transport into surface waters. The Lackland Main Base and Kelly Field Annex storm drainage system is a combination of underground collection pipes and open drainage ditches. About half of the system consists of graded or paved ditches and half of concrete or corrugated steel pipe. The majority of surface runoff from the three major drainage areas of Lackland Main Base and Kelly Field Annex drain into Leon Creek. A small area in the southwest portion of Lackland Main Base drains into Indian Creek (LAFB 2002b). Leon and Indian creeks flow into the Medina River, which ultimately flows into the San Antonio River.

The Lackland Training Area is drained by natural surface drainage, which is appropriate, as most of the area is undeveloped. The developed portion of Lackland Training Area has a concrete underground storm drainage system. The majority of the storm water runoff from the Lackland Training Annex drains into Medio Creek which runs along the eastern boundary. Long Hollow Creek and unnamed tributaries of the Medina River collect surface runoff from the western portion of Lackland Training Annex (LAFB 2002b).

JBSA-Lackland currently operates under two types of storm water programs to regulate and manage various discharges.

- **Multi-Sector General Permit** – JBSA-Lackland operates under TPDES Multi-Sector Permit for Storm Water Discharges Associated with Industrial Activities (Permit Number TXR050000), issued by the TCEQ, effective 14 August 2011 through 14 August 2016 (TCEQ 2011). The TPDES program implements the Federal NPDES program in the State of Texas. JBSA-Lackland has prepared an SWPPP in accordance with the permit requirements for the identification and management of industrial activities at the installation (LAFB 2009e).
- **Municipal Separate Storm Sewer System Permit** – The TCEQ has determined that JBSA-Lackland should be regulated as a small MS4. The MS4 permit requires implementation of BMPs, development of schedules and measurable goals, establishment of a Storm Water Management Program, and submission of annual reports. JBSA-Lackland currently operates under MS4 Permit TXR040068, which expired 13 August 2012 (LAFB 2009b). The new MS4 permit is currently under development and will be adopted by JBSA-Lackland upon completion.

The JBSA-Lackland storm drainage system is considered to be in poor condition due to inadequate capacity and flow characteristics of the open ditches. The system is also undersized due to the extensive growth of the installation. As new development occurs, sections of the old system are updated, but are then connected back to the original system. The increased runoff generated by the new development creates overloading of the existing drainage system during periods of unusually heavy rainfall (LAFB 2011g).

Electrical System. The City Public Service Board of San Antonio (CPSB) provides electrical service to JBSA-Lackland. JBSA-Lackland operates a substation (the Valley Hi Substation) on the western side of

Lackland Main Base, just off Valley Hi Road. Three incoming feeders from the on-installation substation provide power to the Lackland Main Base Switching Station. Seven 13.2-kilovolt distribution circuits serve different areas of the installation. There are also several CPSB overhead transmission lines traversing the installation. The switching station serving the Lackland Training Annex is located on Eagle Drive near Ray Ellison Drive on the eastern side of the annex. With primary power of 4,100 kilowatts, electrical service is distributed through four 13.2-kilovolt circuits to various parts of the annex.

The electrical distribution system at JBSA-Lackland is antiquated, deteriorating, and unreliable. The existing overhead lines sag and lean, which leads to safety and reliability issues. Power surges and outages are common (LAFB undated c). Additionally, the Lackland Main Base Switching Station is vulnerable because the three main feeds coming into the switching station are too close together and the potential for interruption of service because of having only one feed to the switching station is a concern. The Lackland Training Annex Switching Station has old, outdated equipment and a deteriorating concrete support slab.

Natural Gas System. CPSB provides natural gas service to JBSA-Lackland. Lackland Main Base is supplied natural gas through an 8-inch pipeline entering at the southern end of the installation. The combination loop and radial distribution system contains approximately 41 miles of pipeline, of which a large portion are the original, cathodically protected, steel lines. The remaining portion is constructed of polyethylene. Lackland Main Base has a high-pressure (48 pounds per square inch [psi]) distribution loop that circles the western half and a low-pressure (18 psi) distribution loop on the eastern side. In addition to the CPSB pipelines, there is an 8-inch, 250-psi, United Gas-supplied pipeline that runs along the northern boundary of the installation. The 250-psi, United Gas line supplies the Wilford Hall Medical Center Total Energy Plant (LAFB 2002b). JBSA-Lackland has contracted with United Gas to supply up to 4.93 million cubic feet per day for the 250-psi pipeline. A regulator station provides a second (i.e., emergency) feed to the installation distribution system. The combined natural gas pipeline capacity for Lackland Main Base is 9.254 million cubic feet per day. In 2010, the total annual peak natural gas usage for Lackland Main Base was 1,077.45 million cubic feet and 4.468 million cubic feet per day, which is 36 percent of the total capacity (Riley 2011).

The natural gas distribution system at Kelly Field Annex is 40 to 50 years old; some of the original steel piping has been upgraded to polyethylene pipe. The natural gas supply for Lackland Training Annex enters on the eastern side, near Valley High Drive. The distribution system consists of 10 miles of pipeline, of which approximately half are cathodically protected, steel lines and half are polyethylene. A majority of Lackland Training Annex is supplied by a 12-psi, looped distribution system. The shooting range is supplied by a single, non-looped, plastic line (LAFB 2002b).

Much of the existing natural gas distribution system at JBSA-Lackland has reached the end of its lifecycle. Protective coating around the steel piping has begun to fail, which could lead to failure of the steel piping itself (LAFB undated d).

Communications System. JBSA-Lackland uses a multimode fiber optic cable system to serve as the main data transport system. Most of the cable is underground in vaults or direct buried. In addition, JBSA-Lackland uses the Lackland Base-Wide Network, which allows individual building networks to exchange information, electronic mail, and provide access to off-installation locations through the Defense Data Network. The Defense Date Network is managed by the JBSA-Lackland Network Control Center. The Land Mobile Radio system also connects JBSA-Lackland, WHMC, and Brooke Army Medical Center. The overall condition of the fiber optic and copper cables is excellent to fair (LAFB 2002b).

Solid Waste. Municipal solid waste (MSW) at JBSA-Lackland is managed in accordance with the guidelines specified in AFI 32-7042, *Solid and Hazardous Waste Compliance*. AFI 32-7042 incorporates the requirements of Subtitle D, 40 CFR Parts 240 through 244, 257, and 258; applicable Federal regulations; AFIs; and DOD Directives. It also establishes the requirement for installations to have a solid waste management program that incorporates a solid waste management plan; procedures for handling, storing, collecting, and disposing of solid waste; record-keeping and reporting; and pollution prevention. Source reduction, resource recovery, and recycling of solid waste are addressed in AFI 32-7080, *Pollution Prevention Program*. JBSA-Lackland has an established Qualified Recycling Program that has received many awards and is recognized as a proactive model for other recycling programs. Recycling is mandated throughout the installation and the Recycling Center services all areas of the installation, including the housing areas (LAFB 2002b).

There are no landfills in operation at JBSA-Lackland. Nonhazardous MSW generated at JBSA-Lackland that cannot be diverted is collected by a private contractor and disposed of off-installation at the Covel Gardens Landfill. The Covel Gardens Landfill opened in 1993 and is composed of 783 acres, with a disposal footprint of 480 acres. Permitted capacity of the landfill is 124.1 million cubic yards and the facility operates under TCEQ Permit No. 2093B. In 2009, JBSA-Lackland generated approximately 50,000 tons of MSW, which included 11,500 tons that were disposed of in the Covel Gardens Landfill, 36,000 tons that were reused, and 2,500 tons that were recycled (WM 2012).

3.10 Hazardous Materials and Waste

3.10.1 Definition of the Resource

Hazardous materials are defined by 49 CFR 171.8 as "hazardous substances, hazardous wastes, marine pollutants, elevated temperature materials, materials designated as hazardous in the Hazardous Material Table (49 CFR 172.101), and materials that meet the defining criteria for hazard classes and divisions" in 49 CFR Part 173. Transportation of hazardous materials is regulated by the U.S. Department of Transportation regulations within 49 CFR Parts 105 to 108.

Hazardous wastes are defined by the Resource Conservation and Recovery Act (RCRA) at 42 U.S.C. §6903(5), as amended by the Hazardous and Solid Waste Amendments, as "a solid waste, or combination of solid wastes, which because of its quantity, concentration, or physical, chemical, or infectious characteristics may (A) cause, or significantly contribute to an increase in mortality or an increase in serious irreversible, or incapacitating reversible, illness; or (B) pose a substantial present or potential hazard to human health or the environment when improperly treated, stored, transported, or disposed of, or otherwise managed." Certain types of hazardous wastes are subject to special management provisions intended to ease the management burden and facilitate the recycling of such materials. These are called universal wastes and their associated regulatory requirements are specified in 40 CFR Part 273. Four types of waste are currently covered under the universal waste regulations: hazardous waste batteries, hazardous waste pesticides that are either recalled or collected in waste pesticide collection programs, hazardous waste thermostats, and hazardous waste lamps.

Special hazards are those substances that might pose a risk to human health and are addressed separately from other hazardous substances. Special hazards include asbestos-containing materials (ACMs), polychlorinated biphenyls (PCBs), and lead-based paint (LBP). The USEPA has been given authority to regulate these special hazard substances by the Toxic Substances Control Act Title 15 U.S.C. Chapter 53. The USEPA has established regulations regarding asbestos abatement and worker safety under 40 CFR Part 763 with additional regulation concerning emissions (40 CFR Part 61). Whether from lead abatement or other activities, depending on the quantity or concentration, the disposal of the LBP waste is regulated by the RCRA at 40 CFR 260. The disposal of PCBs is addressed in 40 CFR Parts 750 and 761. The presence of special hazards or controls over them might affect, or be affected by, a proposed action.

The DOD developed the ERP to facilitate thorough investigation and cleanup of contaminated sites on military installations (i.e., active installations, installations subject to BRAC, and formerly used defense sites). The Installation Restoration Program and the MMRP are components of the ERP. The Installation Restoration Program requires each DOD installation to identify, investigate, and clean up hazardous waste disposal or release sites. The MMRP addresses nonoperational rangelands that are suspected or known to contain unexploded ordnance (UXO), discarded military munitions, or munitions constituent contamination.

For the USAF, AFPD 32-70, *Environmental Quality*, and the AFI 32-7000 series incorporate the requirements of all Federal regulations, and other AFIs and DOD Directives for the management of hazardous materials, hazardous wastes, and special hazards. Evaluation extends to generation, storage, transportation, and disposal of hazardous wastes when such activity occurs at or near the project site of a proposed action.

3.10.2 Existing Conditions

Hazardous Materials and Petroleum Products. AFI 32-7086, *Hazardous Materials Management*, establishes procedures and standards that govern management of hazardous materials throughout the USAF. It applies to all USAF personnel who authorize, procure, issue, use, or dispose of hazardous materials, and to those who manage, monitor, or track any of those activities. Under AFI 32-7086, the USAF has established roles, responsibilities, and requirements for a hazardous materials management program. The purpose of the hazardous materials management program is to control the procurement and use of hazardous materials to support USAF missions, ensure the safety and health of personnel and surrounding communities, and minimize USAF dependence on hazardous materials. The hazardous materials management program includes the activities and infrastructure required for ongoing identification, management, tracking, and minimization of hazardous materials. The *Lackland Air Force Base Hazardous Materials Management Plan* applies to all hazardous materials brought onto JBSA-Lackland (LAFB 2011h).

Hazardous materials at JBSA-Lackland are managed by the hazardous materials pharmacy. The Enterprise Environmental, Safety, and Occupational Health Management Information System tracks acquisition and inventory control of hazardous materials. Hazardous materials and petroleum products such as fuels, flammable solvents, paints, corrosives, pesticides, deicing fluid, refrigerants, and cleaners are used throughout JBSA-Lackland for various functions including aircraft maintenance; aircraft ground equipment maintenance; and ground vehicles, communications infrastructure, and facilities maintenance.

Hazardous and Petroleum Wastes. The *Joint Base San Antonio Lackland Air Force Base Hazardous Waste Management Plan* (LAFB 2011i) is required under AFI 32-7042, *Waste Management*, and complies with 40 CFR Parts 260 to 272. It prescribes the roles and responsibilities of all members of JBSA-Lackland and its tenants with respect to the waste stream inventory, waste analysis plan, hazardous waste management procedures, training, emergency response, and pollution prevention. The plan establishes procedures to comply with applicable Federal, state, and local standards for solid waste and hazardous waste management. The plan outlines procedures for transport, storage, and disposal. The hazardous waste stream inventory is maintained as part of the hazardous waste management plan (LAFB 2011i).

Hazardous wastes generated at JBSA-Lackland include flammable solvents, medical wastes, cleaning solvents, contaminated fuels, paint/coatings, stripping chemicals, toxic metals, waste paint-related materials, waste generated under the Comprehensive Universal Waste Program, and other miscellaneous wastes (LAFB 2011i). The overall management of hazardous waste is the responsibility of the 802 CES. The noncontiguous properties at JBSA-Lackland each generate varying amounts of hazardous waste under all three generator sizes as defined by the USEPA (40 CFR 260.10): large-quantity generator, small-quantity generator, and conditionally exempt small-quantity generator. Lackland Main Base, including Kelly Field Annex, is categorized as a large-quantity generator; Lackland Training Annex is classified as a separate large-quantity generator; Buildings 1610 and 1530 within the Lackland Leaseback Area are classified as small-quantity generators; and nine facilities within the Lackland Leaseback Area are classified as conditionally exempt small-quantity generators. The installation operates 119 satellite accumulation points, where up to 55 gallons of “total regulated hazardous wastes” or up to 1 quart of “acutely hazardous waste” is accumulated. The installation operates three 90-day accumulation sites, where hazardous waste accumulates before being transported off-installation for ultimate disposal (LAFB 2011i). None of the buildings associated with the Proposed Action contain satellite accumulation points.

Pollution Prevention. AFI 32-7001, *Environmental Management*, implements the regulatory mandates in DOD Instruction 4715.17, *Environmental Management System*, and AFPD 32-70 and establishes the framework for an Environmental Management System within the USAF. Pollution prevention is part of the Environmental Management System and is an Environmental Safety and Occupational Health risk reduction strategy for environmental aspects that generate pollutants. Each facility shall use their Environmental Management System to identify opportunities to optimize selected business, operational, or industrial processes or activities in terms of pollutant reduction, lower energy use, reduction in the use of natural resources, water conservation, and improvements to health and safety and prepare and implement environmental action plans to achieve these objectives and targets. The 802 CES fulfills this requirement with the following environmental plans:

- Integrated Solid Waste Management Plan, 2010 (LAFB 2010e)
- Storm Water Pollution Prevention Plan, 2011 (LAFB 2011j)
- Hazardous Materials Management Plan, 2011 (LAFB 2011h)
- Hazardous Waste Management Plan, 2010 (LAFB 2011i)
- Pollution Prevention Management Action Plan, 2011 (LAFB 2011k)
- Spill Prevention, Control, and Countermeasure Plan, 2006 (LAFB 2006b).

These plans ensure that JBSA-Lackland maintains a waste-reduction program and meets the requirements of the CWA; NPDES permit program; and Federal, state, and local requirements for spill prevention control and countermeasures (SPCC).

Storage Tanks. AFI 32-7044, *Storage Tank Compliance*, implements AFPD 32-70 and identifies compliance requirements for underground storage tanks (USTs), aboveground storage tanks (ASTs), and associated piping that store petroleum products and hazardous substances. An inventory of ASTs and USTs is maintained at JBSA-Lackland and includes the location, contents, capacity, containment measures, status, and installation dates (LAFB 2006b). Storage tanks at JBSA-Lackland contain JP-8 (jet fuel), diesel fuel, used cooking oil, used oil, and unleaded gasoline. JBSA-Lackland has the capacity to store approximately 2.1 million gallons of JP-8, 1 million gallons of diesel fuel, and 100,000 gallons of unleaded gasoline. There are 113 ASTs at JBSA-Lackland with capacities ranging from 60 gallons to 1.05 million gallons; there are 5 USTs with capacities ranging from 4,000 to 10,000 gallons (LAFB 2006b). No USTs would be within the project area of any of the projects associated with the Proposed Action. Building 443, which is scheduled for demolition under Project D2, contains one AST. No other ASTs would be within the project area of the projects associated with the Proposed Action.

Asbestos-Containing Material. Asbestos is regulated by the USEPA under the CAA; Toxic Substances Control Act; and Comprehensive Environmental Response, Compensation, and Liability Act. The USEPA has established that any material containing more than 1 percent asbestos by weight is considered an ACM. Friable ACM is any material containing more than 1 percent asbestos, and that, when dry, can be crumbled, pulverized, or reduced to powder by hand pressure. Nonfriable ACM is any ACM that does not meet the criteria for friable ACM.

AFI 32-1052, *Facilities Asbestos Management*, provides the direction for asbestos management at USAF installations. It requires installations to develop an asbestos management plan for the purpose of maintaining a permanent record of the status and condition of ACMs in installation facilities and to document asbestos management efforts. In addition, the instruction requires an installation to develop an asbestos operating plan detailing how the installation accomplishes asbestos-related projects.

Building materials in older buildings (pre-1980) are assumed to contain asbestos. It exists in a variety of forms and can be found in floor tiles, floor tile mastic, roofing materials, joint compound, wallboard, thermal system insulation, and boiler gaskets. If asbestos is disturbed, fibers can become friable. Common sense measures, such as avoiding damage to walls and pipe insulation, help keep the fibers from becoming airborne and hazardous. In accordance with the Texas Asbestos Health Protection Rules, a State of Texas-licensed and –trained contractor must be used for abatement projects and asbestos-related activities.

JBSA-Lackland maintains a record of ACM maintenance and abatement. The *Lackland AFB Asbestos Management Program* specifies procedures for the testing, removal, encapsulation, enclosure, and repair activities associated with ACM-abatement projects, and addresses organization roles and responsibilities (LAFB 2005b). In addition, it is designed to protect personnel who live and work on JBSA-Lackland from exposure to airborne asbestos fibers and to ensure the installation remains in compliance with Federal, state, and local regulations pertaining to asbestos. Only Building 426 is known to contain ACMs; however, all buildings proposed for demolition or renovation would be surveyed for ACMs prior to any action.

Lead-Based Paint. Lead is a heavy, ductile metal commonly found simply as metallic lead or in association with organic compounds, oxides, and salts. It was commonly used in house paint for several years. The Federal government banned the use of most LBP in 1978; therefore, all buildings constructed prior to 1978 are assumed to contain LBP. Federal agencies are required to comply with applicable Federal, state, and local laws related to LBP activities and hazards.

JBSA-Lackland manages LBP through the *Lackland Air Force Base Lead-Based Paint Management Program* (LAFB 2005c). This plan was prepared in accordance with DOD guidance and addresses regulatory requirements, responsibilities, and management activities. The plan is designed to establish management responsibilities and procedures for identifying and controlling hazards related to the presence of LBP. It addresses organizational roles and responsibilities, program development, management actions, data management, and training (LAFB 2005c). Maintenance and abatement records are maintained by the LBP Operations Officer within 802 CES.

The following buildings associated with the Proposed Action are known to contain LBP: Buildings 146, 1250, 1251, 1385, 1400, 2012, 2013, 2014, 2020, 2058, 6576, 9028, and 9085. However, all buildings proposed for demolition or renovation would be surveyed for LBP prior to any action.

Polychlorinated Biphenyls. PCBs are a group of chemical mixtures used as insulators in electrical equipment. Chemicals classified as PCBs were widely manufactured and used in the United States throughout the 1950s and 1960s. PCBs can be present in products and materials produced before the 1979 ban. Common products that might contain PCBs include electrical equipment (e.g., transformers and capacitors), hydraulic systems, and fluorescent light ballasts. The JBSA-Lackland electrical system is considered PCB-free. However, light ballasts located throughout the installation are assumed to be PCB-contaminated unless labeled otherwise. As facility repairs and demolition occur, the suspected ballasts are removed and disposed (LAFB 2002b).

Based on their age, it is assumed that several of the buildings associated with the Proposed Action could have PCB-containing equipment, particularly fluorescent light ballasts, including Buildings 2009, 2012, 2013, 2014, 2015, 2018, 2020, 425, 426, 427, 433, 442, 443, 9020, 9028, 402, 403, 404, 584, 585, 586, 587, 595, 596, 597, 598, and 599. However, all buildings proposed for demolition or renovation would be surveyed for PCBs prior to any action.

Radon. Radon is a naturally occurring radioactive gas found in soils and rocks. It comes from the natural breakdown or decay of uranium. Radon has the tendency to accumulate in enclosed spaces that are usually below ground and poorly ventilated (e.g., basements). Radon is an odorless, colorless gas that has been determined to increase the risk of developing lung cancer. In general, the risk of lung cancer increases as the level of radon and length of exposure increase. The USEPA has established a guidance radon level of 4 picocuries per liter (pCi/L) in indoor air for residences; however, there have been no standards established for commercial structures. Radon gas accumulation greater than 4 pCi/L is considered to represent a health risk to occupants. A Radon Assessment and Mitigation Program Initial Screen Survey found that none of the structures sampled exceeded these levels (LAFB 2002b).

JBSA-Lackland is in Bexar County, Texas, which is in Radon Zone 3. Radon Zone 3 has the lowest potential for elevated indoor radon levels. Radon Zone 3 has a predicted average indoor radon level of less than 2 pCi/L (USEPA 2012c).

Pesticides. JBSA-Lackland does not suffer from any significant pest problems other than the typical need to control ants, mice, roaches, bats, pigeons, and scorpions found in installation facilities (LAFB 2002b). The *Lackland AFB Annual Pest Management Plan*, required by AFI 32-1053, *Integrated Pest Management Program*, describes the pest management practices at the installation. The program includes regular inspections and integrated pest management techniques. No pesticides, insecticides, or herbicides are known to have been stored, mixed, or disposed of within any of the project areas associated with the Proposed Action.

Environmental Restoration Program. The objectives of the ERP are to identify and fully evaluate any areas suspected to be contaminated with hazardous materials caused by past USAF operations and to eliminate or control any hazards to the public health, welfare, or the environment. The ERP is a subcomponent of the Defense ERP that became law under the Superfund Amendments and Reauthorization Act. The ERP at JBSA-Lackland began in 1985 with the investigation of possible locations of hazardous waste contamination. Since then, 70 ERP sites have been identified at JBSA-Lackland. Of those sites, 59 are closed with no further action planned and 11 are under remediation. Additionally, 27 AOCs have been identified, of which two are being investigated for further action (LAFB 2011a). ERP sites and AOCs are found within the boundaries of the following projects associated with the Proposed Action: D2, D3, I1, I2, I5, I6, I7, I8, I9, NI1, and NI2. **Table 3-13** lists the ERP sites and AOCs at the project areas associated with the Proposed Action and their current status.

Figures 2-1 through **2-5** show the locations of the contaminated ERP sites and AOCs on JBSA-Lackland. Plans for future development in the areas of any sites should take into consideration the possible restrictions and constraints that they represent as discussed in **Section 2.1.2**.

Military Munitions Response Program. The MMRP addresses nonoperational military ranges and other sites that are suspected or known to contain UXO, discarded military munitions, or munitions constituents. The goals of the MMRP are to make munitions response areas safe for reuse in accordance with planned or anticipated future land use and to protect human health and the environment (LAFB 2011l). Twenty MMRP sites have been identified at JBSA-Lackland. Fourteen of these sites are under remediation and six have been closed with no further action planned (LAFB 2011a). There are MMRP sites at the areas associated with Projects C2, C5, I1, I2, I3, I5, I6, I7, I8, and NI2. **Table 3-14** lists the MMRP sites at the project areas associated with the Proposed Action and their current status.

Figures 2-1 through **2-5** show the locations of the MMRP sites on JBSA-Lackland. Plans for future development in the areas of any sites should take into consideration the possible restrictions and constraints that they represent as discussed in **Section 2.1.2**.

Table 3-13. Summary of ERP Sites and AOCs Associated with the Proposed Action

Site Number	Description	Restoration Status	Associated Selected Projects	Restrictions
AOC-15	Former landfill occupying approximately 6 acres	Closed	I7, I8	No restrictions
AOC-18	Former landfill occupying approximately 6 acres	Closed	I6	No restrictions
AOC-20	Suspected former landfill or borrow source area occupying approximately 3 acres	Closed	I7, I8	No restrictions
AOC-26	Former landfill or borrow source area occupying 3 acres	Closed	I7, I9, NI1	No restrictions
AOC-37	Suspected former storage or waste disposal area occupying approximately 1 acre	Closed	I1	No restrictions
AOC-43	Former borrow source or landfill area occupying approximately 20 acres	Closed	I2, I8	No restrictions
AOC-45	Site of former hazardous waste accumulation point number 7, occupying approximately 0.6 acres near Building 433	Closed	D2, I7, I8	No restrictions
AOC-47	Site of former hazardous waste accumulation point number 9, occupying approximately 1 acre	Closed	I7, I9	No restrictions
AOC-49	Former smelter site occupying approximately 1 acre with soil contamination	Open	I5	Groundwater Use Prohibited
AOC-50	Former construction staging area and gas station	Closed	I1	Groundwater Disturbance Prohibited
CF27-OU1	Former Security Police Training Firing Range	Closed	I6, I8	Residential land use, soil and groundwater disturbance prohibited

Site Number	Description	Restoration Status	Associated Selected Projects	Restrictions
CF27-OU2	Former Security Police Training Firing Range	Closed	I6, I8	Residential land use, soil and groundwater disturbance prohibited
FT-23	Former burn trench location.	Closed	I7	No restrictions
GR-34	Site of former grenade range	Closed	I8	None
LF-11	Site of former landfill D-1	Closed	I1	Residential land use, soil and groundwater disturbance prohibited
LF-12	Site of former landfill D-2 with soil and groundwater contamination	Open	I1, I6	Residential land use, soil and groundwater disturbance prohibited
LF-36	Possible location of waste disposal for Wilford Hall Medical Center during the 1950s	Closed	I7, I8, NI2	No restrictions
LF-37	Site of former landfill used for disposal of municipal waste and construction debris	Closed	I1	No restrictions
LF-40	Site of former disposal site for concrete rubble	Closed	I8	No restrictions
LF-44	Site of former disposal site for construction debris	Closed	I6, I7	No restrictions
LF-46	Former landfill site	Closed	I7	No restrictions
LF-47	Former landfill site	Closed	I7, I9	No restrictions
RW-16	Former site of a 1,000-gallon wastewater tank for storage of low-level radioactive waste	Closed	I7, I8, I9	No restrictions
RW-18	Low-level radioactive waste disposal site	Closed	I7, I8, I9	No restrictions
RW-19	Low-level radioactive waste disposal site	Closed	I7, I8	No restrictions
RW-20	Low-level radioactive waste disposal site	Closed	I6, I8	No restrictions
RW-33	Former site of a munitions storage bunker that exploded, releasing radionuclides	Closed	D3, I7, I8	No restrictions
SA-38	Former temporary vehicle maintenance yard where drummed waste oil and batteries were stored	Closed	I6, I7, I8	No restrictions
SA-39	Former equipment storage site	Closed	I8, I9	No restrictions
SA-40	Former equipment storage site	Closed	I1, I6, I7	No restrictions
SA-41	Former storage yard and vehicle maintenance shop	Closed	I1, I6, I7, I8, I9	No restrictions

Site Number	Description	Restoration Status	Associated Selected Projects	Restrictions
SS-32	Excavation and fill site	Closed	I1	No restrictions
ST-01	Location of UST near Building 1016	Closed	I6	No restrictions
ST-07	Site of former USTs at Buildings 431, 436, and 439	Closed	D2, I7, I8	No restrictions
WP-13	Site of former leaching area adjacent to Building 466	Closed	I8, I9	No restrictions

Source: LAFB 2011a

Table 3-14. Summary of MMRP Sites Associated with the Proposed Action

Site Number	Description	Restoration Status	Associated Selected Projects	Restrictions
AL-240	Former Kelly Bombing Range North	Closed	I1, I2, I6, I7, I8, NI2	None
AL-269	433rd Practice Bombing Target	Closed	C5, I3, I6	None
AL-722	Former Kelly Bombing Range South	Closed	C2, I1, I2, I5, I6, I7, I8	None
FR-242	Old East Ranges	Closed	I6, I7, I8	None
SA-725	Ordnance Storage Area Number 1	Closed	I6, I7	None
TS-270	Former Skeet Range	Closed	I6	None
TS-271	Former Skeet Range	Closed	I3, I6	None
TS-667	Site of former Skeet Range SR034	Closed	I5	Residential land use, soil and groundwater disturbance prohibited

Sources: LAFB undated e, LAFB 2011a, LAFB 2011l

3.11 Safety

3.11.1 Definition of the Resource

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

Construction site safety is largely a matter of adherence to regulatory requirements imposed for the benefit of employees and implementation of operational practices that reduce risks of illness, injury, death, and property damage. The health and safety of onsite military and civilian workers are safeguarded by numerous DOD and USAF regulations designed to comply with standards issued by OSHA and

USEPA. These standards specify the amount and type of training required for industrial workers, the use of protective equipment and clothing, engineering controls, and maximum exposure limits for workplace stressors.

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

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

Another safety concern affecting military facilities is the consideration of AT/FP requirements. These requirements include mandated setback of parking areas from buildings, increased security measures such as barricades at military facility entrances and exits, and AT/FP-compliant perimeter fences. Requirements also include mandates regarding emergency notification systems and procedures. The USAF Installation Force Protection Guide contains information on installation planning, engineering design, and construction techniques that can preclude or minimize the impacts of terrorist attacks upon existing and future facilities. Additional criteria are available in UFC 4-010-01, DOD Minimum Antiterrorism Standards for Buildings.

3.11.2 Existing Conditions

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

Seventy ERP sites have been identified on JBSA-Lackland. Of these 70 sites, 59 have a no further action status and 11 remain active. Installation-wide Preliminary Assessments have also identified 27 AOCs, 2 of which require further studies to determine the nature and extent of contamination (LAFB 2011a). There is the potential for construction workers to encounter contamination from ERP sites during construction and demolition activities. Therefore, it is recommended that a health and safety plan be prepared in accordance with OSHA requirements prior to commencement of construction activities. Workers performing soil-removal activities within ERP Sites are required to have OSHA 40-hour

Hazardous Waste Operations and Emergency Response (HAZWOPER) training. In addition to this training, supervisors are required to have an OSHA Site Supervisor certification. Should contamination be encountered, then handling, storage, transportation, and disposal activities would be conducted in accordance with applicable Federal, state, and local regulations; AFIs; and the JBSA-Lackland Hazardous Waste Management Plan.

Some of the buildings proposed for demolition under Project D2 were used historically for the storage and assembly of nuclear and non-nuclear components of atomic weapons. Though it is not expected to be harmful to personnel, there is the potential that some of the facilities may contain trace levels of low-level radioactive material.

Explosives and Munitions Safety. Explosive safety clearance zones are established around facilities used for the storage, handling, or maintenance of munitions. Air Force Manual 91-201, *Explosives Safety Standards*, establishes the size of the clearance zone based upon QD criteria or the category and weight of the explosives contained within the facility. Areas on JBSA-Lackland that require QD safety zones include munitions facilities, firing ranges, and an FAA restricted area (LAFB 2002b).

The largest QD arc complex, made up of approximately 6 QD arcs, is within the Lackland Training Annex and associated with the munitions storage area in the western portion of the installation (LAFB 2010d). There is also another QD arc associated with the southern portion of the Kelly Field Annex. **Figures 2-1, 2-2**, and **2-5** display these QD arcs. Projects D2, D3, I3, I5, I6, I7, I8, and I9 are proposed within these QD arcs.

There are 20 MMRP sites at JBSA-Lackland. The MMRP identifies munitions and explosives of concern (MEC) and UXO that might be present at the munitions response sites (LAFB 2010d). Although most of the projects are not within MMRP sites, the possibility remains that munitions and UXO might be encountered within project areas.

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4. Environmental Consequences

This section contains four subsections. **Section 4.1** provides a general introduction to the environmental consequences analysis, including significance criteria for each resource area. **Section 4.2** presents the No Action Alternative, which is prescribed by CEQ regulations. **Section 4.3** provides a general analysis of the environmental consequences by resource area. **Section 4.4** provides the detailed analysis of the Proposed Action, as presented in **Section 2.1**. Potential cumulative effects that could occur as a result of implementing the Proposed Action and other past, present, and reasonably foreseeable projects are discussed in **Section 5**.

4.1 Introduction

The intention of **Section 4** of this IDEA is to present both a general analysis of the environmental effects of installation development activities (see **Section 4.3**), and to provide potential environmental effects of selected installation development projects (see **Section 4.4**). The general analysis identifies the general environmental effects on each resource area associated with construction, demolition, infrastructure improvement, natural infrastructure upgrade activities, and strategic sustainability performance projects with a focus on avoiding those areas that are constraints to development. However, a general analysis of potential activities alone does not provide the framework to assess adequately the potential environmental consequences of a single proposed project. Therefore, **Section 4.4** presents a detailed analysis of the selected demolition, construction, infrastructure improvement, natural infrastructure improvement, and strategic sustainability performance projects under the Proposed Action as described in **Section 2.1**.

The specific criteria for evaluating the potential environmental effects of the No Action Alternative or the Proposed Action are discussed in the following text, identified by resource area. The significance of an action is also measured in terms of its context and intensity. The context and intensity of potential environmental effects are described in terms of duration, whether they are direct or indirect, the magnitude of the impact, and whether they are adverse or beneficial, and are summarized as follows:

- ***Short-term or long-term.*** In general, short-term effects are those that would occur only with respect to a particular activity, for a finite period, or only during the time required for construction or installation activities. Long-term effects are those that are more likely to be persistent and chronic.
- ***Direct or indirect.*** A direct effect is caused by an action and occurs around the same time at or near the location of the action. An indirect effect is caused by an action and might occur later in time or be farther removed in distance but still be a reasonably foreseeable outcome of the action.
- ***Negligible, minor, moderate, or significant.*** These relative terms are used to characterize the magnitude or intensity of an impact. Negligible impacts are generally those that might be perceptible but are at the lower level of detection. A minor effect is slight, but detectable. A moderate effect is readily apparent. Significant effects are those that, in their context and due to their magnitude (severity), have the potential to meet the thresholds for significance set forth in CEQ regulations (40 CFR 1508.27) and, thus, warrant heightened attention and examination for potential means for mitigation to fulfill the policies set forth in NEPA. Significance criteria by resource area are presented in the following text.
- ***Adverse or beneficial.*** An adverse effect is one having unfavorable or undesirable outcomes on the man-made or natural environment. A beneficial effect is one having positive outcomes on the man-made or natural environment.

Mitigation measures, BMPs, and environmental protection measures are discussed to describe how the level of impact of a project on a resource area could be minimized. Mitigation measures only refer to those actions that could reduce impacts below significance. BMPs are actions required by statutes or regulations, or to fulfill permitting requirements, that reduce potential impacts. Environmental protection measures are those actions that are used to minimize impacts that are not required as a part of statutes, regulations, or to fulfill permitting requirements, but are typically measures taken during design and construction phases of a project to reduce impacts on the environment. None of the BMPs or environmental protection measures described is needed to bring an impact below the threshold of significance.

The following text presents the criteria that would constitute a significant environmental effect resulting from implementation of the No Action Alternative (see **Section 4.2**), or the Proposed Action. The same significance criteria are also applied to potential cumulative effects (see **Section 5**) of implementing the Proposed Action in conjunction with past, present, or reasonably foreseeable future actions.

Noise Evaluation Criteria

Noise impact analyses typically evaluate potential changes to the existing noise environment that would result from implementation of a proposed action. Potential changes in the acoustical environment can be beneficial (i.e., if they reduce the number of sensitive receptors exposed to unacceptable noise levels or reduce the ambient sound level), negligible (i.e., if the total number of sensitive receptors to unacceptable noise levels is essentially unchanged), or adverse (i.e., if they result in increased sound exposure to unacceptable noise levels or ultimately increase the ambient sound level). Projected noise effects were evaluated qualitatively for the alternatives considered. For this project, construction noise is considered a nuisance if it exceeds 80 dBA at a property boundary.

Land Use Evaluation Criteria

The significance of potential land use effects is based on the level of land use sensitivity in areas affected by a proposed action and the compatibility of a proposed action with existing conditions. A proposed action could have a significant effect with respect to land use if any the following were to occur:

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

Air Quality Evaluation Criteria

The environmental consequences to local and regional air quality conditions near a proposed Federal action are determined based upon the increases or decreases in regulated air pollutant emissions, and upon existing conditions and ambient air quality. The evaluation criteria are dependent on whether the Proposed Action is located in an attainment, nonattainment, or maintenance area for criteria pollutants. Other evaluation criteria include whether Major New Source Review air quality construction permitting is triggered or Title V operating permitting is triggered. Major New Source Review air quality permitting is divided into Nonattainment Major New Source Review for nonattainment pollutants and PSD permitting for attainment pollutants.

JBSA-Lackland is in an attainment area for all criteria pollutants; therefore, Nonattainment Major New Source Review and General Conformity do not apply to the selected projects. This means a comparison of emissions to General Conformity *de minimis* thresholds is not necessary and a General Conformity determination is not required. With regard to permitting, Title V permitting already applies to JBSA-Lackland and PSD permitting could apply. The air quality evaluation criteria for the selected projects are discussed in the following paragraphs.

Attainment Area Pollutants. The attainment area pollutants for the location of these selected projects are CO, NO_2 (measured as NO_x) SO_2, Pb, $PM_{10,}$ $PM_{2.5}$, and O_3 (measured as NO_x and VOCs). The impact in NAAQS "attainment" areas would be considered significant if the net increases in these pollutant emissions from the Federal action would result in any one of the following scenarios:

- Cause or contribute to a violation of any national or state ambient air quality standard
- Expose sensitive receptors to substantially increased pollutant concentrations
- Exceed any Evaluation Criteria established by a SIP

PSD Permit. The following factors were considered in determining the significance of air quality impacts with respect to PSD permitting requirements prior to construction:

- If the net increase in stationary source emissions qualifies as a PSD major source. This includes 250 tpy emissions per attainment pollutant (40 CFR 52.21(b)(1) and 40 CFR 52.21(a)(2), or 75,000 tpy emissions of GHGs.
- If the net increase in stationary source emissions qualifies as a significant modification to an existing PSD major stationary source, (i.e., change that adds 15 to 40 tpy of criteria pollutants to the PSD major source's potential to emit depending on the pollutant, or adding 75,000 tpy of GHGs).

Only operational emissions increases were evaluated for PSD permitting impacts as construction activity emissions are typically not subject to the previously discussed PSD significance criteria. Impacts on JBSA-Lackland's existing Title V operating permit would just be to incorporate new stationary sources that have applicable air quality requirements.

Geological Resources Evaluation Criteria

Protection of unique geological features, minimization of soil erosion, and the siting of facilities in relation to potential geologic hazards are considered when evaluating the potential impacts of a proposed action on geological resources. Generally, adverse impacts can be avoided or minimized if proper construction techniques, erosion-control measures, and structural engineering design are incorporated into project development.

Impacts on geology and soils would be significant if they would substantially alter the geology that controls groundwater quality, distribution of aquifers and confining beds, and groundwater availability; or change the soil composition, structure, or function (including prime farmland and other unique soils) within the environment.

Water Resources Evaluation Criteria

Evaluation criteria for effects on water resources are based on water availability, quality, and use; existence of floodplains; and associated regulations. A proposed action could have a significant effect with respect to water resources if any the following were to occur:

- Substantially reduce water availability or supply to existing users
- Overdraft groundwater basins
- Exceed safe annual yield of water supply sources
- Substantially affect water quality adversely
- Endanger public health by creating or worsening health hazard conditions
- Threaten or damage unique hydrologic characteristics
- Noncompliance with laws, regulations, or orders protecting water resources
- Result in an increase of floodplain areas beyond the current extent, including areas with structures that are not designed for occurrence within a floodplain that could result in safety hazards.

Determination of the significance of wetland impacts is based on (1) loss of wetland acreage, (2) the function and value of the wetland, (3) the proportion of the wetland that would be affected relative to the occurrence of similar wetlands in the region, (4) the sensitivity of the wetland to proposed activities, and (5) the duration of ecological ramifications. Impacts on wetland resources are considered significant if high-value wetlands would be adversely affected or if wetland acreage is lost.

Biological Resources Evaluation Criteria

The significance of effects on biological resources is based on the following:

- The importance (i.e., legal, commercial, recreational, ecological, or scientific) of the resource
- The proportion of the resource that would be affected relative to its occurrence in the region
- The sensitivity of the resource to proposed activities
- The duration of ecological ramifications
- The "taking" of threatened or endangered species
- Jeopardizing threatened or endangered species habitat.

Effects on biological resources would be significant if species or habitats of high concern are adversely affected over relatively large areas. Effects would also be considered significant if disturbances cause reductions in population size or distribution of a species of high concern.

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

Cultural Resources Evaluation Criteria

The criteria of adverse effect as defined by 36 CFR 800.5(a)(1) provides a definition of a significant impact for the purposes of NEPA and Section 106 of the NHPA. According to the criteria of adverse effect:

"An adverse effect is found when an undertaking may alter, directly or indirectly, any of the characteristics of a historic property that qualify the property for inclusion in the National Register in a manner that would diminish the integrity of the property's location, design, setting, materials, workmanship, feeling, or association. Consideration shall be given to all qualifying characteristics of a historic property, including those that may have been identified subsequent to the original evaluation of the property's eligibility for the National Register. Adverse effects may include reasonably foreseeable effects caused by the undertaking that may occur later in time, be farther removed in distance or be cumulative."

Under Section 106 of the NHPA, a Proposed Action might have no effects on historic properties (no historic properties finding), no adverse effects on historic properties, or adverse effects on historic properties. An adverse effect under Section 106 of the NHPA would not necessarily be significant under NEPA. Impacts on cultural resources would be considered significant under NEPA if impacts were considered to be substantial or could not be mitigated. Measures developed to minimize or mitigate adverse effects on historic properties under Section 106 of the NHPA could result in a Proposed Action having no significant impacts on cultural resources under NEPA.

Management of cultural resources at JBSA-Lackland follows the JBSA PA, signed in 2011 by the commander of the 502 ABW and the SHPO. The PA, which covers cultural resources actions at all three JBSA installations including JBSA-Lackland, allows for a streamlined process to replace undertaking-specific review at 36 CFR 800.2-800.6 for complying with Section 106 of the NHPA. The agreement provides exemptions from review for certain specific actions that will have no adverse effect on cultural resources when carried out in accordance with the *Secretary of the Interior's Standards and Guidelines for Archeology and Historic Preservation*. Additionally, the PA lays out a decision-making review process for non-exempt projects and gives specific considerations for projects that might have significant impact on archaeological sites and buildings and structures, such as building additions and new construction, site improvements, accessibility upgrades. Under the PA, where adverse effects cannot be avoided, JBSA-Lackland would develop mitigation measures acceptable to the SHPO, or would follow the dispute resolution stipulation in the PA. With the SHPO's acceptance of mitigation measures, individual Section 106 Memoranda of Agreement are not needed under the PA.

Socioeconomics and Environmental Justice Evaluation Criteria

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

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

Infrastructure Evaluation Criteria

Effects on infrastructure are evaluated based on their potential for disruption or improvement of existing levels of service and additional needs for energy and water consumption, sanitary sewer and wastewater systems, and transportation patterns and circulation. Impacts might arise from physical changes to circulation, construction activities, introduction of construction-related traffic on local roads or changes in daily or peak-hour traffic volumes, and energy needs created by either direct or indirect workforce and population changes related to installation activities. An effect might be considered adverse if a proposed action exceeded capacity of a utility. A proposed action could have a significant effect with respect to infrastructure if the following were to occur:

- Exceeded capacity of a utility
- A long-term interruption of the utility
- A violation of a permit condition
- A violation of an approved plan for that utility.

Hazardous Materials and Wastes Evaluation Criteria

A proposed action could have a significant effect with respect to hazardous materials and wastes if the following were to occur:

- Noncompliance with applicable Federal and state regulations as a result of the proposed action
- Disturbance or creation of contaminated sites resulting in adverse effects on human health or the environment
- Established management policies, procedures, and handling capacities could not accommodate the proposed activities.

Safety Evaluation Criteria

Any increase in safety risks would be considered an adverse effect on safety. A proposed action could have a significant effect with respect to health and safety if the following were to occur:

- Substantially increase risks associated with the safety of construction and installation personnel, contractors, or the local community
- Substantially hinder the ability to respond to an emergency
- Introduce a new health or safety risk for which the installation is not prepared or does not have adequate management and response plans in place.

4.2 Environmental Consequences of the No Action Alternative

Under the No Action Alternative, JBSA-Lackland would not implement the selected projects under the Proposed Action, which would result in the continuation of existing conditions as described in **Section 3**. In some cases, the continuation of existing conditions would result in the potential for impacts on the resources analyzed in this IDEA. If erosion control projects under Projects NI1 and NI2 were not implemented, there would be long-term, minor, adverse impacts on water and geological resources from the continuation of erosion and sedimentation issues in Leon and Medio creeks. If apron repairs under Project I4 were not implemented, there would be long-term, minor, adverse impacts on safety on the flightline from the unsafe condition of the apron. If parking lots were not constructed under Project I5, there would be long-term, minor, adverse impacts on infrastructure from the continued lack of availability of on-installation parking. If the infrastructure projects under Projects I6 to I9 were not implemented, there would be long-term, minor, adverse impacts on health and safety and infrastructure. The existing infrastructure is aging and poses a worker health and safety risk, and increases the likelihood of outages and failures of the existing system. No direct changes in environmental effects would be expected on the noise environment, land use, air quality, biological resources, cultural resources, socioeconomics and environmental justice, or hazardous materials and wastes. Although the selected projects would not be implemented under the No Action Alternative, it is anticipated that future development would still continue to occur, but those development projects would be analyzed through the preparation of project-specific environmental documentation, as appropriate.

4.3 General Environmental Consequences of the Proposed Action by Resource Area

4.3.1 Noise

The Proposed Action would not result in significant impacts on the noise environment.

Construction Impacts. No significant impacts on the noise environment would be expected from construction or demolition activities associated with the Proposed Action. Implementation of the selected projects would be expected to result in short-term, minor, adverse impacts on the noise environment from equipment that would be used. The selected projects would require grading, paving, demolition, and construction. All of the selected projects would occur on JBSA-Lackland property, in the northern-central and southern regions of the installation. The north-central region of the installation consists primarily of industrial, community, and aircraft operations and maintenance facilities. The southern region of the installation consists primarily of industrial facilities and open space. The selected projects would be implemented at different times and locations over the next 6 FYs. It is possible that several projects would occur simultaneously but would not be expected to result in significant, adverse impacts.

Individual equipment used during construction and demolition activities would be expected to result in noise levels comparable to those shown in **Table 3-2**. In general, noise from construction and demolition activities varies depending on the type of equipment being used, the area that the action would occur in, and the distance from the noise source. To predict how these activities would impact adjacent populations, noise from the probable equipment was estimated. For example, as shown in **Table 3-2**, construction and demolition (i.e., clearing and grading) usually involves several pieces of equipment (e.g., bulldozers and trucks) that can be used simultaneously. Under the Proposed Action, the cumulative noise from equipment during the busiest day, was estimated to determine the total impact of noise from construction and demolition activities at a given distance. Examples of expected construction and demolition noise during daytime hours at specified distances are shown in **Table 4-1**. These sound levels were estimated by adding the noise from several pieces of equipment and then calculating the decrease in noise levels at various distances from the source of the noise.

Noise generation would last only for the duration of construction and demolition activities and could be minimized through measures such as restricting these activities to normal working hours (i.e., between 7:00 a.m. and 5:00 p.m.), and using equipment with exhaust mufflers. The short-term increase in noise levels resulting from the selected projects would not cause significant, adverse impacts on the surrounding populations.

Operational Impacts. No long-term, adverse impacts on the noise environment would be expected from implementation of the Proposed Action. Selected projects would not result in populations exposed to long-term noise impacts; therefore, no adverse impacts would be expected.

Table 4-1. Estimated Noise Levels from Construction and Demolition Activities

Distance from Noise Source (feet)	Estimated Noise Level
50	90 to 94 dBA
100	84 to 88 dBA
150	81 to 85 dBA
200	78 to 82 dBA
400	72 to 76 dBA
800	66 to 70 dBA
1,500	< 64 dBA

4.3.2 Land Use

The Proposed Action would not result in significant impacts on land use. The Proposed Action would occur entirely on JBSA-Lackland property. In general, the selected projects would comply with, and be consistent with, existing and future installation land use plans and policies, as identified in the *Lackland AFB General Plan* (LAFB 2002b). Projects C1, C3, C4, C5, C6, C7, and I5 could require a change in land use designation, which would result short-term, minor, adverse impacts. Projects D2, D3, I1, I2, I5, I6, I7, I8, I9, NI1, and NI2 would be constructed within the boundaries of ERP sites; Projects C2, C5, I1, I2, I3, I5, I6, I7, I8, and NI2 would be constructed within the boundaries of MMRP sites; and Projects D2, D3, I3, I5, I6, I7, I8, and I9 would be constructed within QD arcs; all appropriate land use restrictions associated with these constraints would be adhered to and no adverse impacts would be anticipated. Beneficial impacts on land use would be expected from efficient use of installation land, particularly through demolition of aging, inadequate, and underused facilities. Demolition of facilities would also be consistent with the goal of reducing installation physical plant footprint as found in the "20/20 by 2020" initiative (see **Section 1.2.1**).

4.3.3 Air Quality

The Proposed Action would not result in significant impacts on air quality.

Construction Emissions Estimates. Short-term, minor to moderate, adverse effects on air quality would be expected from the implementation of the selected projects; however, these effects would not be significant. The construction and demolition activities associated with the selected projects would generate air pollutant emissions from site-disturbing activities such as grading, filling, compacting, and trenching and the operation of construction and demolition equipment and haul trucks transporting construction supplies, excavation material, and demolition debris. Construction and demolition workers commuting daily to and from the job site in their personal vehicles would also result in criteria pollutant air emissions. Construction and demolition activities would also generate particulate emissions as fugitive dust from ground-disturbing activities and from the combustion of fuels in construction and demolition equipment. Fugitive dust emissions would be greatest during the initial site preparation activities and would vary from day to day depending on the work phase, level of activity, and prevailing weather conditions. The quantity of uncontrolled fugitive dust emissions from a construction and demolition site is proportional to the area of land being worked and the level of activity. The Proposed Action would include tens of millions of square feet of demolition, construction, and paving, and hundreds of acres of soil disturbance over a 5 year period. These activities would generate a relatively large level of particulate emissions; however, they would be intermittent, transient in nature, dispersed over a wide area, and temporary.

Estimated PM_{10} emissions are significantly higher than estimated emissions of other pollutants (mostly from construction activities); therefore, the ambient impact for this pollutant merits further discussion. The Federal and state ambient air quality standard for PM_{10} is 150 micrograms per cubic meter ($\mu g/m^3$) are averaged over a 24-hour period. The historical maximum 24-hour PM_{10} concentration in the San Antonio area, is 128 $\mu g/m^3$ measured in 2009 in Bexar County (USEPA 2012a).[1]

As shown in **Table 4-2**, the highest estimated PM_{10} emissions for the selected projects are 348 tons in 2015. As shown in **Table 3-5**, the PM_{10} emissions inventory for Bexar County is 59,275 tpy. The highest annual PM_{10} estimate for the Proposed Action would therefore be 340.5% of the JBSA-Lackland baseline emissions and 0.59% of the Bexar County Inventory. Assuming the contribution to ambient concentrations is roughly proportional to the contribution to the county emissions inventory, it may be reasonably concluded that temporary construction emissions from the Proposed Action are highly unlikely to cause or significantly contribute to an exceedance of the PM_{10} ambient air quality standard. In mathematical terms, by conservatively using the highest historical maximum 24-hour PM_{10} concentration as a baseline (i.e., 128 $\mu g/m^3$) plus 0.0059 times 128 $\mu g/m^3$ (i.e., 129 $\mu g/m^3$), the ambient air quality standard of 150 $\mu g/m^3$is highly unlikely to be exceeded.

Construction and demolition activities would incorporate environmental protection measures (e.g., frequent use of water for dust-generating activities) to minimize fugitive particular matter emissions. Additionally, the work vehicles are assumed to be well-maintained and could use diesel particulate filters to reduce emissions.

Operational Emissions Estimates. Long-term, minor, adverse, and beneficial effects on air quality would be expected from the selected projects; however, these effects would not be significant. The use of new boilers, furnaces, tanks, and emergency generators at the buildings proposed for construction would increase air emissions from JBSA-Lackland. JBSA-Lackland would obtain all necessary state-level air quality construction permits for new stationary sources as required by 30 TAC Chapter 116. However, the demolition of older and less energy-efficient buildings would remove older and more emissions-intensive boilers, furnaces, and emergency generators from the installation and contribute to decreasing energy intensity at the installation. For the purposes of analysis in this IDEA, it was assumed that there would be operational emissions equal to a full year of operations during the same year of facility construction.

Operational air emissions from anticipated construction and demolition of natural gas fired boilers used for comfort heating and from generators used for emergency backup power are shown in **Appendix E** for each selected project where boilers and emergency generators would be applicable. Anticipated operational air emissions from year to year, based on the schedule of select projects, are presented in **Table 4-3**. The analysis focuses on comfort heating and emergency generation because they are anticipated to represent the bulk of stationary source emissions from facilities during operations. No change in operational emissions is anticipated from personal vehicle use under the Proposed Action; therefore, emissions were not calculated. Air emissions from new construction of stationary sources (e.g., boilers, heaters, emergency generators) would be somewhat offset by reductions in air emissions from demolition of stationary sources. Operational air emissions decreases due to demolition projects are

[1] This website also reports that the average 24-hour PM_{10} concentration over the past five years has been approximately 10 $\mu g/m^3$, and the 98[th] percentile has been approximately 25 $\mu g/m^3$.

represented in parentheses in **Table 4-3** and all subsequent tables where operational emissions from demolition are presented.

Construction-related air emissions from the selected projects are summarized in **Table 4-2** by the year in which they would be produced. These construction emissions exclude the operational emissions presented in **Table 4-3**. However, construction and operational emissions from the selected projects are combined in **Table 4-4**. Further information and details on the individual air quality effects from the selected projects is included in **Section 4.4**. **Appendix E** contains a summary of the calculations and the assumptions used to estimate the air emissions.

Table 4-2. Estimated Annual Construction Air Emissions Resulting from the Selected Projects

Project	NO_x (tpy)	VOC (tpy)	CO (tpy)	SO_2 (tpy)	PM_{10} (tpy)	$PM_{2.5}$ (tpy)	CO_2 (metric tons/year)
Project C2	5.27	0.89	3.99	0.41	1.83	0.56	671.38
Project C3	7.00	1.83	7.44	0.55	7.3	1.35	989.87
Project I1 – 2013 Roadway Expansion	10.60	2.82	14.35	0.87	158.99	16.85	1,842.22
Project I1 – 2013 Sidewalk Construction	1.76	0.68	4.56	0.12	22.26	2.37	565.02
Project I1 – 2013 Troop Walk Construction	0.75	0.43	3.42	0.04	6.05	0.66	417.67
Project I1 – 2013 Plaza, Display, Memorial Construction	5.19	0.83	5.30	0.39	0.64	0.39	866.42
Project I5	0.41	0.16	1.09	0.03	4.66	0.50	136.01
Project I6	0.10	0.08	0.75	0.003	1.49	0.15	91.70
Project I8	0.10	0.08	0.75	0.003	1.00	0.11	91.70
Project I9	0.10	0.08	0.75	0.003	0.90	0.10	91.70
Project NI1	4.87	0.48	2.91	0.38	0.51	0.36	584.44
Project NI2	4.94	0.52	3.08	0.39	0.87	0.40	599.00
Total 2013 Emissions	**41.09**	**8.88**	**48.39**	**3.18**	**206.50**	**23.80**	**6,947.12**
Percentage of Total JBSA-Lackland Baseline Emissions	**4.35**	**9.84**	**5.21**	**3.41**	**201.58**	**32.09**	**NA**
Percentage of Bexar County Emissions	**0.07**	**0.01**	**0.02**	**0.01**	**0.35**	**0.25**	**0.001***
Project C1 – Classroom/Dining Facility #1	6.07	1.58	6.32	0.47	4.52	0.98	853.74
Project C1 – Demolition of Buildings 9121, 9140, 9142, 9144, and 9255	0.33	0.14	1.01	0.02	0.31	0.06	123.97
Project C1 – Central Utility Plant	5.31	0.94	4.14	0.41	1.90	0.58	681.74
Project C1 – Dormitory, Drill Pad, Training Area #1	9.18	3.47	13.43	0.73	28.50	3.86	1,474.43
Project C6 – AFOSI Headquarters Facility	5.59	1.01	4.45	0.44	5.87	1.00	722.21

Project	NO_x (tpy)	VOC (tpy)	CO (tpy)	SO_2 (tpy)	PM_{10} (tpy)	$PM_{2.5}$ (tpy)	CO_2 (metric tons/year)
Project I1 – 2014 Roadway Expansion	10.60	2.82	14.35	0.87	158.99	16.85	1,842.22
Project I1 – 2014 Sidewalk Construction	1.76	0.68	4.56	0.12	22.26	2.37	565.02
Project I1 – 2014 Troop Walk Construction	0.75	0.43	3.42	0.04	6.05	0.66	417.67
Project I1 – 2014 Plaza, Display, Memorial Construction	5.19	0.83	5.30	0.39	0.64	0.39	866.42
Project I2	1.63	0.45	2.45	0.13	23.73	2.52	312.72
Project I4	1.66	0.46	2.48	0.13	24.23	2.57	317.32
Project I5	0.41	0.16	1.09	0.03	4.66	0.50	136.01
Project I6	0.10	0.08	0.75	0.003	1.49	0.15	91.70
Project I8	0.10	0.08	0.75	0.003	1.00	0.11	91.70
Project I9	0.10	0.08	0.75	0.003	0.90	0.10	91.70
Total 2014 Emissions	**48.78**	**13.21**	**65.25**	**3.78**	**285.05**	**32.7**	**8,588.55**
Percentage of Total JBSA-Lackland Baseline Emissions	**5.17**	**14.64**	**7.03**	**4.05**	**278.26**	**44.09**	**NA**
Percentage of Bexar County Emissions	**0.09**	**0.02**	**0.03**	**0.01**	**0.48**	**0.34**	**0.001***
Project D3	0.85	0.26	1.35	0.07	1.24	0.20	164.07
Project C1 – Dormitory, Drill Pad, Training Area #2	9.30	3.55	13.76	0.73	28.63	3.90	1,500.38
Project C4	6.47	1.49	6.19	0.51	14.65	2.00	884.67
Project C6 – AFOSI Administrative Support Facility	5.39	0.89	4.03	0.42	4.25	0.81	684.25
Project I1 – 2015 Roadway Expansion	10.60	2.82	14.35	0.87	158.99	16.85	1,842.22
Project I1 – 2015 Sidewalk Construction	1.76	0.68	4.56	0.12	22.26	2.37	565.02
Project I1 – 2015 Troop Walk Construction	0.75	0.43	3.42	0.04	6.05	0.66	417.67
Project I1 – 2015 Plaza, Display, Memorial Construction	5.19	0.83	5.30	0.39	0.64	0.39	866.42
Project I3	6.68	1.74	8.69	0.55	100.52	10.65	1,120.49
Project I5	0.35	0.14	1.03	0.02	3.88	0.42	128.04
Project I6	0.10	0.08	0.75	0.003	1.49	0.15	91.70
Project I7	0.15	0.09	0.77	0.01	5.22	0.53	96.18
Project I8	0.10	0.08	0.75	0.003	1.00	0.11	91.70
Project I9	0.10	0.08	0.75	0.003	0.90	0.10	91.70
Total 2015 Emissions	**47.79**	**13.16**	**65.7**	**3.73**	**349.72**	**39.14**	**8,544.51**

Project	NO_x (tpy)	VOC (tpy)	CO (tpy)	SO_2 (tpy)	PM_{10} (tpy)	$PM_{2.5}$ (tpy)	CO_2 (metric tons/year)
Percentage of Total JBSA-Lackland Baseline Emissions	**5.06**	**14.58**	**7.08**	**3.99**	**341.39**	**52.78**	**NA**
Percentage of Bexar County Emissions	**0.084**	**0.021**	**0.027**	**0.013**	**0.588**	**0.403**	**0.001***
Project D1	5.19	1.42	6.54	0.41	7.53	1.25	791.50
Project D2	1.20	0.35	1.77	0.09	1.74	0.29	215.08
Project C1 – Dormitory, Drill Pad, Training Area #3	9.30	3.55	13.76	0.73	28.63	3.90	1,500.38
Project C1 – Classroom/Dining Facility #2	6.18	1.66	6.65	0.48	4.65	1.02	879.70
Project C5	5.04	0.69	3.37	0.39	0.97	0.43	621.34
Project I1 – 2016 Roadway Expansion	10.60	2.82	14.35	0.87	158.99	16.85	1,842.22
Project I1 – 2016 Sidewalk Construction	1.76	0.68	4.56	0.12	22.26	2.37	565.02
Project I1 – 2016 Troop Walk Construction	0.75	0.43	3.42	0.04	6.05	0.66	417.67
Project I1 – 2016 Plaza, Display, Memorial Construction	5.19	0.83	5.30	0.39	0.64	0.39	866.42
Project I5	0.61	0.21	1.32	0.05	8.01	0.85	165.13
Project I6	0.10	0.08	0.75	0.003	1.49	0.15	91.70
Project I8	0.10	0.08	0.75	0.003	1.00	0.11	91.70
Project I9	0.10	0.08	0.75	0.003	0.90	0.10	91.70
Total 2016 Emissions	**46.12**	**12.88**	**63.29**	**3.57**	**242.86**	**28.37**	**8,139.54**
Percentage of Total JBSA-Lackland Baseline Emissions	**4.88**	**14.27**	**6.82**	**3.82**	**237.08**	**38.26**	**NA**
Percentage of Bexar County Emissions	**0.08**	**0.02**	**0.03**	**0.01**	**0.41**	**0.29**	**0.001***
Project C1 – Dormitory, Drill Pad, Training Area #4	9.30	3.55	13.76	0.73	28.63	3.90	1,500.38
Project C1 – Demolition of Buildings 9020 and 9028	2.17	0.69	3.44	0.17	2.88	0.50	401.45
Project C1 – Interfaith Religious Center	6.05	1.56	6.28	0.47	4.21	0.95	850.68
Project C7	8.07	3.05	11.72	0.63	13.84	2.27	1,291.30
Project I1 – 2017 Roadway Expansion	10.60	2.82	14.35	0.87	158.99	16.85	1,842.22
Project I1 – 2017 Sidewalk Construction	1.76	0.68	4.56	0.12	22.26	2.37	565.02
Project I1 – 2017 Troop Walk Construction	0.75	0.43	3.42	0.04	6.05	0.66	417.67

Project	NO_x (tpy)	VOC (tpy)	CO (tpy)	SO_2 (tpy)	PM_{10} (tpy)	$PM_{2.5}$ (tpy)	CO_2 (metric tons/year)
Project I1 – 2017 Plaza, Display, Memorial Construction	5.19	0.83	5.30	0.39	0.64	0.39	866.42
Project I5	2.41	0.66	3.37	0.20	36.93	3.91	428.54
Project I6	0.10	0.08	0.75	0.003	1.49	0.15	91.70
Project I8	0.10	0.08	0.75	0.003	1.00	0.11	91.70
Project I9	0.10	0.08	0.75	0.003	0.90	0.10	91.70
Total 2017 Emissions	**46.60**	**14.51**	**68.45**	**3.62**	**277.82**	**32.16**	**8,438.77**
Percentage of Total JBSA-Lackland Baseline Emissions	**4.94**	**16.08**	**7.37**	**3.88**	**271.20**	**43.37**	**NA**
Percentage of Bexar County Emissions	**0.08**	**0.02**	**0.03**	**0.01**	**0.47**	**0.33**	**0.002***
Project I1 – 2018 Roadway Expansion	10.60	2.82	14.35	0.87	158.99	16.85	1,842.22
Project I1 – 2018 Sidewalk Construction	1.76	0.68	4.56	0.12	22.26	2.37	565.02
Project I1 – 2018 Troop Walk Construction	0.75	0.43	3.42	0.04	6.05	0.66	417.67
Project I1 – 2018 Plaza, Display, Memorial Construction	5.19	0.83	5.30	0.39	0.64	0.39	866.42
Project I5	2.21	0.60	3.12	0.18	33.32	3.53	398.06
Project I6	0.10	0.08	0.75	0.003	1.49	0.15	91.70
Project I8	0.10	0.08	0.75	0.003	1.00	0.11	91.70
Project I9	0.10	0.08	0.75	0.003	0.90	0.10	91.70
Total 2018 Emissions	**20.81**	**5.60**	**33.00**	**1.60**	**224.65**	**24.16**	**4364.48**
Percentage of Total JBSA-Lackland Baseline Emissions	**2.20**	**6.21**	**3.56**	**1.71**	**219.30**	**32.58**	**NA**
Percentage of Bexar County Emissions	**0.04**	**0.01**	**0.01**	**0.01**	**0.38**	**0.25**	**0.001***

Notes: NA= Not Applicable.

*Percentage of State of Texas CO_2 emissions.

PSD and Title V Air Permitting. Emissions increases from the selected projects due to constructing new stationary sources are expected to be somewhat offset by the removal of similar sources. The overall increase in occupied building area results in an increase in stationary source emissions. However, as demonstrated in **Table 4-3**, the stationary source emissions increases are not expected to exceed the PSD major modification thresholds which would require a PSD permit. Although PSD permitting is not expected to be triggered by the selected projects, JBSA-Lackland should confirm this statement once projects are approved and designed. In addition, JBSA-Lackland is already covered under a Title V operating permit. JBSA-Lackland would update its Title V operating permit to incorporate new stationary sources under the selected projects Proposed Action. Refer to the following *Greenhouse Gas Emissions* section with respect to GHG emissions impact on the Title V permit.

1 **Table 4-3. Estimated Annual Operational Air Emissions Resulting from the Selected Projects**

Project	NO_x (tpy)	VOC (tpy)	CO (tpy)	SO_2 (tpy)	PM_{10} (tpy)	$PM_{2.5}$ (tpy)	CO_2 (metric tons/year)	HAPs (tpy)
Project C2	0.057	0.003	0.024	0.0004	0.005	0.005	66.46	0.001
Project C3	3.256	0.259	0.788	0.207	0.232	0.232	255.20	0.005
Total 2013 Emissions	**3.313**	**0.262**	**0.812**	**0.207**	**0.237**	**0.237**	**321.67**	**0.006**
Percentage of Total JBSA-Lackland Baseline Emissions	**0.351**	**0.290**	**0.087**	**0.222**	**0.231**	**0.319**	**NA**	**NA**
Percentage of Bexar County Emissions	**0.005830**	**0.000426**	**0.000335**	**0.000752**	**0.000399**	**0.002446**	**0.00005***	**NA**
Project C1 – Classroom/Dining Facility #1	0.19	0.010	0.16	0.001	0.014	0.014	205.97	0.004
Project C1 – Demolition of Buildings 9121, 9140, 9142, 9144, and 9255	(0.009)	(0.001)	(0.004)	(0.0001)	(0.001)	(0.001)	-10.48	(0.0002)
Project C1 – Central Utility Plant	6.302	0.507	1.372	0.413	0.448	11.154	259.98	0.007
Project C1 – Dormitory, Drill Pad, Training Area #1	3.629	0.280	1.101	0.209	0.260	0.039	661.97	0.012
Project C2	0.057	0.003	0.024	0.0004	0.005	0.005	66.46	0.001
Project C3	3.256	0.259	0.788	0.207	0.232	0.232	255.20	0.005
Project C6 – AFOSI Headquarters Facility	3.185	0.255	0.700	0.207	0.227	0.227	182.89	0.004
Total 2014 Emissions	**16.609**	**1.314**	**4.141**	**1.037**	**1.185**	**11.670**	**1,621.99**	**0.033**
Percentage of Total JBSA-Lackland Baseline Emissions	**1.759**	**1.456**	**0.446**	**1.111**	**1.157**	**15.737**	**NA**	**NA**
Percentage of Bexar County Emissions	**0.029228**	**0.002137**	**0.001708**	**0.003758**	**0.001999**	**0.120550**	**0.0003***	**NA**
Project C1 – Classroom/Dining Facility #1	0.19	0.010	0.16	0.001	0.014	0.014	205.97	0.004
Project C1 – Demolition of Buildings 9121, 9140, 9142, 9144, and 9255	(0.009)	(0.001)	(0.004)	(0.0001)	(0.001)	(0.001)	-10.48	(0.0002)
Project C1 – Central Utility Plant	6.302	0.507	1.372	0.413	0.448	11.154	259.98	0.007
Project C1 – Dormitory, Drill Pad, Training Area #1	3.629	0.280	1.101	0.209	0.260	0.039	661.97	0.012

Project	NO_x (tpy)	VOC (tpy)	CO (tpy)	SO_2 (tpy)	PM_{10} (tpy)	$PM_{2.5}$ (tpy)	CO_2 (metric tons/year)	HAPs (tpy)
Project C1 – Dormitory, Drill Pad, Training Area #2	3.629	0.280	1.101	0.209	0.260	0.039	661.97	0.012
Project C2	0.057	0.003	0.024	0.0004	0.005	0.005	66.46	0.001
Project C3	3.256	0.259	0.788	0.207	0.232	0.232	255.20	0.005
Project C4	16.766	1.349	3.699	1.100	1.191	1.191	709.67	0.006
Project C6 – AFOSI Headquarters Facility	3.185	0.255	0.700	0.207	0.227	0.227	182.89	0.004
Project C6 – AFOSI Administrative Support Facility	3.168	0.254	0.693	0.207	0.225	0.225	163.40	0.004
Total 2015 Emissions	**40.173**	**3.196**	**9.634**	**2.553**	**2.861**	**13.125**	**3,157.04**	**0.056**
Percentage of Total JBSA-Lackland Baseline Emissions	**4.255**	**3.542**	**1.038**	**2.734**	**2.793**	**17.699**	**NA**	**NA**
Percentage of Bexar County Emissions	**0.070695**	**0.005200**	**0.003973**	**0.009252**	**0.004827**	**0.135577**	**0.0005***	**NA**
Project D1	(0.22)	(0.013)	(0.092)	(0.001)	(0.017)	(0.017)	-249.90	(0.004)
Project D2	(0.048)	(0.003)	(0.020)	(0.0003)	(0.004)	(0.004)	-55.61	(0.001)
Project C1 – Classroom/Dining Facility #1	0.19	0.010	0.16	0.001	0.014	0.014	205.97	0.004
Project C1 – Demolition of Buildings 9121, 9140, 9142, 9144, and 9255	(0.009)	(0.001)	(0.004)	(0.0001)	(0.001)	(0.001)	-10.48	(0.0002)
Project C1 – Central Utility Plant	6.302	0.507	1.372	0.413	0.448	11.154	259.98	0.007
Project C1 – Dormitory, Drill Pad, Training Area #1	3.629	0.280	1.101	0.209	0.260	0.039	661.97	0.012
Project C1 – Dormitory, Drill Pad, Training Area #2	3.629	0.280	1.101	0.209	0.260	0.039	661.97	0.012
Project C1 – Dormitory, Drill Pad, Training Area #3	3.629	0.280	1.101	0.209	0.260	0.039	661.97	0.012
Project C1 – Classroom/Dining Facility #2	0.19	0.010	0.16	0.001	0.014	0.014	205.97	0.004
Project C2	0.057	0.003	0.024	0.0004	0.005	0.005	66.46	0.001
Project C3	3.256	0.259	0.788	0.207	0.232	0.232	255.20	0.005
Project C4	16.766	1.349	3.699	1.100	1.191	1.191	709.67	0.006

Project	NO_x (tpy)	VOC (tpy)	CO (tpy)	SO_2 (tpy)	PM_{10} (tpy)	$PM_{2.5}$ (tpy)	CO_2 (metric tons/year)	HAPs (tpy)
Project C5	0.027	0.002	0.011	0.000	0.002	0.002	30.73	0.001
Project C6 – AFOSI Headquarters Facility	3.185	0.255	0.700	0.207	0.227	0.227	182.89	0.004
Project C6 – AFOSI Administrative Support Facility	3.168	0.254	0.693	0.207	0.225	0.225	163.40	0.004
Total 2016 Emissions	**43.754**	**3.472**	**10.794**	**2.762**	**3.116**	**13.159**	**3,750.21**	**0.067**
Percentage of Total JBSA-Lackland Baseline Emissions	**4.634**	**3.848**	**1.163**	**2.958**	**3.042**	**17.744**	**NA**	**NA**
Percentage of Bexar County Emissions	**0.076997**	**0.005649**	**0.004451**	**0.010009**	**0.005258**	**0.135929**	**0.0006***	**NA**
Project D1	(0.22)	(0.013)	(0.092)	(0.001)	(0.017)	(0.017)	-249.90	(0.004)
Project D2	(0.048)	(0.003)	(0.020)	(0.0003)	(0.004)	(0.004)	-55.61	(0.001)
Project C1 – Classroom/Dining Facility #1	0.19	0.010	0.16	0.001	0.014	0.014	205.97	0.004
Project C1 – Demolition of Buildings 9121, 9140, 9142, 9144, and 9255	(0.009)	(0.001)	(0.004)	(0.0001)	(0.001)	(0.001)	-10.48	(0.0002)
Project C1 – Central Utility Plant	6.302	0.507	1.372	0.413	0.448	11.154	259.98	0.007
Project C1 – Dormitory, Drill Pad, Training Area #1	3.629	0.280	1.101	0.209	0.260	0.039	661.97	0.012
Project C1 – Dormitory, Drill Pad, Training Area #2	3.629	0.280	1.101	0.209	0.260	0.039	661.97	0.012
Project C1 – Dormitory, Drill Pad, Training Area #3	3.629	0.280	1.101	0.209	0.260	0.039	661.97	0.012
Project C1 – Classroom/Dining Facility #2	0.189	0.010	0.159	0.001	0.014	0.014	205.97	0.004
Project C1 – Dormitory, Drill Pad, Training Area #4	3.629	0.280	1.101	0.209	0.260	0.039	661.97	0.012
Project C1 – Demolition of Buildings 9020 and 9028	(0.083)	(0.005)	(0.036)	(0.001)	(0.007)	(0.007)	-96.68	-0.002
Project C1 – Interfaith Religious Center	0.169	0.009	0.142	0.001	0.013	0.013	183.88	0.003
Project C2	0.057	0.003	0.024	0.0004	0.005	0.005	66.46	0.001
Project C3	3.256	0.259	0.788	0.207	0.232	0.232	255.20	0.005

Project	NO_x (tpy)	VOC (tpy)	CO (tpy)	SO_2 (tpy)	PM_{10} (tpy)	$PM_{2.5}$ (tpy)	CO_2 (metric tons/year)	HAPs (tpy)
Project C4	16.766	1.349	3.699	1.100	1.191	1.191	709.67	0.006
Project C5	0.027	0.002	0.011	0.000	0.002	0.002	30.73	0.001
Project C6 – AFOSI Headquarters Facility	3.185	0.255	0.700	0.207	0.227	0.227	182.89	0.004
Project C6 – AFOSI Administrative Support Facility	3.168	0.254	0.693	0.207	0.225	0.225	163.40	0.004
Project C7	3.589	0.277	1.067	0.209	0.257	0.257	617.52	0.012
Total 2017 Emissions	**51.058**	**4.034**	**13.069**	**3.181**	**3.640**	**13.461**	**5,116.90**	**0.093**
Percentage of Total JBSA-Lackland Baseline Emissions	**5.408**	**4.470**	**1.408**	**3.406**	**3.553**	**18.152**	**NA**	**NA**
Percentage of Bexar County Emissions	**0.089849**	**0.006562**	**0.005390**	**0.011526**	**0.006140**	**0.139049**	**0.0008***	**NA**
Project D1	(0.22)	(0.013)	(0.092)	(0.001)	(0.017)	(0.017)	-249.90	(0.004)
Project D2	(0.048)	(0.003)	(0.020)	(0.0003)	(0.004)	(0.004)	-55.61	(0.001)
Project C1 – Classroom/Dining Facility #1	0.19	0.010	0.16	0.001	0.014	0.014	205.97	0.004
Project C1 – Demolition of Buildings 9121, 9140, 9142, 9144, and 9255	(0.009)	(0.001)	(0.004)	(0.0001)	(0.001)	(0.001)	-10.48	(0.0002)
Project C1 – Central Utility Plant	6.302	0.507	1.372	0.413	0.448	11.154	259.98	0.007
Project C1 – Dormitory, Drill Pad, Training Area #1	3.629	0.280	1.101	0.209	0.260	0.039	661.97	0.012
Project C1 – Dormitory, Drill Pad, Training Area #2	3.629	0.280	1.101	0.209	0.260	0.039	661.97	0.012
Project C1 – Dormitory, Drill Pad, Training Area #3	3.629	0.280	1.101	0.209	0.260	0.039	661.97	0.012
Project C1 – Classroom/Dining Facility #2	0.189	0.010	0.159	0.001	0.014	0.014	205.97	0.004
Project C1 – Dormitory, Drill Pad, Training Area #4	3.629	0.280	1.101	0.209	0.260	0.039	661.97	0.012
Project C1 – Demolition of Buildings 9020 and 9028	-0.083	-0.005	-0.036	-0.001	-0.007	-0.007	-96.68	-0.002
Project C1 – Interfaith Religious Center	0.169	0.009	0.142	0.001	0.013	0.013	183.88	0.003

Project	NO_x (tpy)	VOC (tpy)	CO (tpy)	SO_2 (tpy)	PM_{10} (tpy)	$PM_{2.5}$ (tpy)	CO_2 (metric tons/year)	HAPs (tpy)
Project C2	0.057	0.003	0.024	0.000	0.005	0.005	66.46	0.001
Project C3	3.256	0.259	0.788	0.207	0.232	0.232	255.20	0.005
Project C4	16.766	1.349	3.699	1.100	1.191	1.191	709.67	0.006
Project C5	0.027	0.002	0.011	0.000	0.002	0.002	30.73	0.001
Project C6 – AFOSI Headquarters Facility	3.185	0.255	0.700	0.207	0.227	0.227	182.89	0.004
Project C6 – AFOSI Administrative Support Facility	3.168	0.254	0.693	0.207	0.225	0.225	163.40	0.004
Project C7	3.589	0.277	1.067	0.209	0.257	0.257	617.52	0.012
Total 2018 Emissions	**51.058**	**4.034**	**13.069**	**3.181**	**3.640**	**13.461**	**5,116.90**	**0.093**
Percentage of Total JBSA-Lackland Baseline Emissions	**5.408**	**4.470**	**1.408**	**3.406**	**3.553**	**18.152**	**NA**	**NA**
Percentage of Bexar County Emissions	**0.089849**	**0.006562**	**0.005390**	**0.011526**	**0.006140**	**0.139049**	**0.0008***	**NA**
Total 2018 and Later Emissions (stationary sources only)	**5.193**	**0.285**	**4.424**	**0.031**	**0.394**	**0.394**	5,643.13	**0.098**
PSD Permit Significance Criteria (stationary sources only)**	**40**	**40**	**100**	**100**	**15**	**10**	68,038.86	**NA**

Notes: Projects D1, D2, and D3 and the demolition associated with Project C1 would result in decreased HAP emissions due to removal of external combustion sources needed to heat the building.

* Percentage of State of Texas CO_2 emissions.

** This PSD major modification permit criteria ultimately applies to the net increase in emissions, which accounts for new and removed emissions sources.

Key: NA= Not Applicable.

Table 4-4. Estimated Annual Total Air Emissions Resulting from the Selected Projects

Project	NO_x (tpy)	VOC (tpy)	CO (tpy)	SO_2 (tpy)	PM_{10} (tpy)	$PM_{2.5}$ (tpy)	CO_2 (metric tons/year)	HAPs (tpy)
Project C2	5.33	0.89	4.01	0.41	1.84	0.57	737.85	0.0010
Project C3	10.26	2.09	8.23	0.76	7.53	1.58	1,245.07	0.005388

Project	NO_x (tpy)	VOC (tpy)	CO (tpy)	SO_2 (tpy)	PM_{10} (tpy)	$PM_{2.5}$ (tpy)	CO_2 (metric tons/year)	HAPs (tpy)
Project I1 – 2013 Roadway Expansion	10.60	2.82	14.35	0.87	158.99	16.85	1,842.22	--
Project I1 – 2013 Sidewalk Construction	1.76	0.68	4.56	0.12	22.26	2.37	565.02	--
Project I1 – 2013 Troop Walk Construction	0.75	0.43	3.42	0.04	6.05	0.66	417.67	--
Project I1 – 2013 Plaza, Display, Memorial Construction	5.19	0.83	5.30	0.39	0.64	0.39	866.42	--
Project I5	0.41	0.16	1.09	0.03	4.66	0.50	136.01	--
Project I6	0.10	0.080	0.75	0.00	1.49	0.15	91.70	--
Project I8	0.10	0.080	0.75	0.00	1.00	0.11	91.70	--
Project I9	0.10	0.080	0.75	0.00	0.90	0.10	91.70	--
Project NI1	4.87	0.48	2.91	0.38	0.51	0.36	584.44	--
Project NI2	4.94	0.52	3.08	0.39	0.87	0.40	599.00	--
Total 2013 Emissions	**44.40**	**9.14**	**49.20**	**3.39**	**206.74**	**24.04**	**7,268.78**	**0.006388**
Percentage of Total JBSA-Lackland Baseline Emissions	**4.70**	**10.13**	**5.30**	**3.63**	**201.81**	**32.41**	**NA**	**NA**
Percentage of Bexar County Emissions	**0.08**	**0.01**	**0.02**	**0.01**	**0.35**	**0.25**	**0.002**	**NA**
Project C1 – Classroom/Dining Facility #1	6.26	1.59	6.48	0.47	4.53	0.99	1,059.71	0.0036
Project C1 – Demolition of Buildings 9121, 9140, 9142, 9144, and 9255	0.32	0.14	1.01	0.02	0.31	0.06	113.48	(0.0002)
Project C1 – Central Utility Plant	11.61	1.45	5.51	0.82	2.35	11.73	941.72	0.002255
Project C1 – Dormitory, Drill Pad, Training Area #1	12.81	3.75	14.53	0.94	28.76	3.90	2,136.40	0.012450
Project C2	0.057	0.0030	0.024	0.0004	0.0050	0.0050	66.46	0.0010
Project C3	3.25587	0.25903	0.78780	0.20701	0.23176	0.23176	255.20	0.005388
Project C6 – AFOSI Headquarters Facility	8.78	1.02	4.50	0.44	5.88	1.01	854.10	0.002291
Project I1 – 2014 Roadway Expansion	10.60	2.82	14.35	0.87	158.99	16.85	1,842.22	--
Project I1 – 2014 Sidewalk Construction	1.76	0.68	4.56	0.12	22.26	2.37	565.02	--
Project I1 – 2014 Troop Walk Construction	0.75	0.43	3.42	0.04	6.05	0.66	417.67	--

Project	NO_x (tpy)	VOC (tpy)	CO (tpy)	SO_2 (tpy)	PM_{10} (tpy)	$PM_{2.5}$ (tpy)	CO_2 (metric tons/year)	HAPs (tpy)
Project I1 – 2014 Plaza, Display, Memorial Construction	5.19	0.83	5.30	0.39	0.64	0.39	866.42	--
Project I2	1.63	0.45	2.45	0.13	23.73	2.52	312.72	--
Project I4	1.66	0.46	2.48	0.13	24.23	2.57	317.32	--
Project I5	0.41	0.16	1.09	0.03	4.66	0.50	136.01	--
Project I6	0.10	0.080	0.75	0.00	1.49	0.15	91.70	--
Project I8	0.10	0.080	0.75	0.00	1.00	0.11	91.70	--
Project I9	0.10	0.080	0.75	0.00	0.90	0.10	91.70	--
Total 2014 Emissions	**65.39**	**14.27**	**68.74**	**4.61**	**286.02**	**44.15**	**10,159.55**	**0.026781**
Percentage of Total JBSA-Lackland Baseline Emissions	**6.93**	**15.82**	**7.41**	**4.94**	**279.21**	**59.54**	**NA**	**NA**
Percentage of Bexar County Emissions	**0.115**	**0.023**	**0.028**	**0.017**	**0.483**	**0.456**	**0.002**	**NA**
Project D3	0.85	0.26	1.35	0.07	1.24	0.20	164.07	--
Project C1 – Classroom/Dining Facility #1	0.19	0.010	0.16	0.0011	0.014	0.014	205.97	0.0036
Project C1 – Demolition of Buildings 9121, 9140, 9142, 9144, and 9255	(0.0091)	(0.00053)	(0.0039)	(0.00006)	(0.00073)	(0.00073)	-10.48	(0.00018)
Project C1 – Central Utility Plant	6.302	0.5068	1.3718	0.4128	0.4479	11.155	259.98	0.00689
Project C1 – Dormitory, Drill Pad, Training Area #1	3.6292	0.2796	1.1014	0.2092	0.2601	0.0389	661.97	0.01245
Project C1 – Dormitory, Drill Pad, Training Area #2	12.93	3.83	14.86	0.94	28.89	3.94	2,162.36	0.01245
Project C2	0.06	0.00	0.02	0.00	0.01	0.01	66.46	0.001
Project C3	3.26	0.26	0.79	0.21	0.23	0.23	255.20	0.005388
Project C4	23.24	2.84	9.89	1.61	15.84	3.19	1,594.34	0.006310
Project C6 – AFOSI Headquarters Facility	3.185	0.255	0.701	0.207	0.227	0.227	182.89	0.0041
Project C6 – AFOSI Administrative Support Facility	8.56	1.14	4.72	0.63	4.48	1.04	847.65	0.00379
Project I1 – 2015 Roadway Expansion	10.60	2.82	14.35	0.87	158.99	16.85	1,842.22	--

Project	NO_x (tpy)	VOC (tpy)	CO (tpy)	SO_2 (tpy)	PM_{10} (tpy)	$PM_{2.5}$ (tpy)	CO_2 (metric tons/year)	HAPs (tpy)
Project I1 – 2015 Sidewalk Construction	1.76	0.68	4.56	0.12	22.26	2.37	565.02	--
Project I1 – 2015 Troop Walk Construction	0.75	0.43	3.42	0.04	6.05	0.66	417.67	--
Project I1 – 2015 Plaza, Display, Memorial Construction	5.19	0.83	5.30	0.39	0.64	0.39	866.42	--
Project I3	6.68	1.74	8.69	0.55	100.52	10.65	1,120.49	--
Project I5	0.35	0.14	1.03	0.02	3.88	0.42	128.04	--
Project I6	0.10	0.080	0.75	0.00	1.49	0.15	91.70	--
Project I7	0.15	0.09	0.77	0.01	5.22	0.53	96.18	--
Project I8	0.10	0.080	0.75	0.00	1.00	0.11	91.70	--
Project I9	0.10	0.080	0.75	0.00	0.90	0.10	91.70	--
Total 2015 Emissions	**87.96**	**16.36**	**75.33**	**6.28**	**352.58**	**52.27**	**11,701.55**	**0.055808**
Percentage of Total JBSA-Lackland Baseline Emissions	**9.32**	**18.13**	**8.12**	**6.73**	**344.18**	**70.48**	**NA**	**NA**
Percentage of Bexar County Emissions	**0.15479**	**0.02661**	**0.03107**	**0.02277**	**0.59482**	**0.53986**	**0.002**	**NA**
Project D1	4.97	1.41	6.45	0.41	7.51	1.23	541.60	(0.0043)
Project D2	1.15	0.35	1.75	0.09	1.74	0.29	159.47	(0.00097)
Project C1 – Classroom/Dining Facility #1	0.19	0.010	0.16	0.0011	0.014	0.014	205.97	0.0036
Project C1 – Demolition of Buildings 9121, 9140, 9142, 9144, and 9255	(0.0091)	(0.00053)	(0.0039)	(0.00006)	(0.00073)	(0.00073)	-10.48	(0.0002)
Project C1 – Central Utility Plant	6.30	0.51	1.37	0.41	0.45	11.15	259.98	0.006888
Project C1 – Dormitory, Drill Pad, Training Area #1	3.63	0.28	1.10	0.21	0.26	0.04	661.97	0.012450
Project C1 – Dormitory, Drill Pad, Training Area #2	3.63	0.28	1.10	0.21	0.26	0.04	661.97	0.012450
Project C1 – Dormitory, Drill Pad, Training Area #3	12.93	3.83	14.86	0.94	28.89	3.94	2162.36	0.012450
Project C1 – Classroom/Dining Facility #2	6.37	1.67	6.81	0.48	4.66	1.03	1,085.67	0.003579
Project C2	0.06	0.00	0.02	0.00	0.01	0.01	66.46	0.001000

Project	NO_x (tpy)	VOC (tpy)	CO (tpy)	SO_2 (tpy)	PM_{10} (tpy)	$PM_{2.5}$ (tpy)	CO_2 (metric tons/year)	HAPs (tpy)
Project C3	3.26	0.26	0.79	0.21	0.23	0.23	255.20	0.005388
Project C4	16.77	1.35	3.70	1.10	1.19	1.19	709.67	0.006310
Project C5	5.07	0.69	3.38	0.39	0.97	0.43	652.07	0.000534
Project C6 – AFOSI Headquarters Facility	3.19	0.26	0.70	0.21	0.23	0.23	182.89	0.004132
Project C6 – AFOSI Administrative Support Facility	3.168	0.254	0.693	0.207	0.225	0.225	163.40	0.004
Project I1 – 2016 Roadway Expansion	10.60	2.82	14.35	0.87	158.99	16.85	1,842.22	--
Project I1 – 2016 Sidewalk Construction	1.76	0.68	4.56	0.12	22.26	2.37	565.02	--
Project I1 – 2016 Troop Walk Construction	0.75	0.43	3.42	0.04	6.05	0.66	417.67	--
Project I1 – 2016 Plaza, Display, Memorial Construction	5.19	0.83	5.30	0.39	0.64	0.39	866.42	--
Project I5	0.61	0.21	1.32	0.05	8.01	0.85	165.13	--
Project I6	0.10	0.08	0.75	0.00	1.49	0.15	91.70	--
Project I8	0.10	0.080	0.75	0.00	1.00	0.11	91.70	--
Project I9	0.10	0.080	0.75	0.00	0.90	0.10	91.70	--
Total 2016 Emissions	**89.87**	**16.35**	**74.08**	**6.33**	**245.98**	**41.53**	**11,889.75**	**0.067062**
Percentage of Total JBSA-Lackland Baseline Emissions	**9.52**	**18.12**	**7.98**	**6.78**	**240.12**	**56.00**	**NA**	**NA**
Percentage of Bexar County Emissions	**0.16**	**0.03**	**0.03**	**0.02**	**0.41**	**0.43**	**0.002**	**NA**
Project D1	(0.216)	(0.013)	(0.092)	(0.001)	(0.017)	(0.017)	-249.90	(0.0043)
Project D2	(0.048)	(0.003)	(0.020)	(0.000)	(0.004)	(0.004)	-55.61	(0.0096)
Project C1 – Classroom/Dining Facility #1	0.19	0.010	0.16	0.0011	0.014	0.014	205.97	0.0036
Project C1 – Demolition of Buildings 9121, 9140, 9142, 9144, and 9255	(0.0091)	(0.00053)	(0.0039)	(0.00006)	(0.00073)	(0.00073)	-10.48	(0.0002)
Project C1 – Central Utility Plant	6.30	0.51	1.37	0.41	0.45	11.15	259.98	0.006888
Project C1 – Dormitory, Drill Pad, Training Area #1	3.63	0.28	1.10	0.21	0.26	0.04	661.97	0.012450

Project	NO_x (tpy)	VOC (tpy)	CO (tpy)	SO_2 (tpy)	PM_{10} (tpy)	$PM_{2.5}$ (tpy)	CO_2 (metric tons/year)	HAPs (tpy)
Project C1 – Dormitory, Drill Pad, Training Area #2	3.63	0.28	1.10	0.21	0.26	0.04	661.97	0.012450
Project C1 – Dormitory, Drill Pad, Training Area #3	3.63	0.28	1.10	0.21	0.26	0.04	661.97	0.012450
Project C1 – Classroom/Dining Facility #2	0.19	0.01	0.16	0.00	0.01	0.01	205.97	0.003579
Project C1 – Dormitory, Drill Pad, Training Area #4	12.93	3.83	14.86	0.94	28.89	3.94	2162.36	0.012450
Project C1 – Demolition of Buildings 9020 and 9028	2.09	0.69	3.40	0.17	2.87	0.49	304.77	-0.001680
Project C1 – Interfaith Religious Center	6.22	1.57	6.42	0.47	4.22	0.96	1,034.55	0.003195
Project C2	0.06	0.00	0.02	0.00	0.01	0.01	66.46	0.001000
Project C3	3.26	0.26	0.79	0.21	0.23	0.23	255.20	0.005388
Project C4	16.77	1.35	3.70	1.10	1.19	1.19	709.67	0.006310
Project C5	0.03	0.00	0.01	0.00	0.00	0.00	30.73	0.000534
Project C6 – AFOSI Headquarters Facility	3.19	0.26	0.70	0.21	0.23	0.23	182.89	0.004132
Project C6 – AFOSI Administrative Support Facility	3.17	0.25	0.69	0.21	0.23	0.23	163.40	0.003793
Project C7	11.66	3.33	12.79	0.84	14.10	2.53	1,908.82	0.011683
Project I1 – 2017 Roadway Expansion	10.60	2.82	14.35	0.87	158.99	16.85	1,842.22	--
Project I1 – 2017 Sidewalk Construction	1.76	0.68	4.56	0.12	22.26	2.37	565.02	--
Project I1 – 2017 Troop Walk Construction	0.75	0.43	3.42	0.040	6.05	0.66	417.67	--
Project I1 – 2017 Plaza, Display, Memorial Construction	5.19	0.83	5.30	0.39	0.64	0.39	866.42	--
Project I5	2.41	0.66	3.37	0.20	36.93	3.910	428.54	--
Project I6	0.10	0.08	0.75	0.00	1.49	0.15	91.70	--
Project I8	0.10	0.080	0.75	0.00	1.00	0.11	91.70	--
Project I9	0.10	0.080	0.75	0.00	0.90	0.10	91.70	--
Total 2017 Emissions	**97.66**	**18.54**	**81.52**	**6.80**	**281.46**	**45.62**	**13,555.67**	**0.092710**

Project	NO_x (tpy)	VOC (tpy)	CO (tpy)	SO_2 (tpy)	PM_{10} (tpy)	$PM_{2.5}$ (tpy)	CO_2 (metric tons/year)	HAPs (tpy)
Percentage of Total JBSA-Lackland Baseline Emissions	**10.34**	**20.55**	**8.78**	**7.28**	**274.76**	**61.52**	**NA**	**NA**
Percentage of Bexar County Emissions	**0.17**	**0.03**	**0.03**	**0.02**	**0.47**	**0.47**	**0.002**	**NA**
Project D1	(0.216)	(0.013)	(0.092)	(0.001)	(0.017)	(0.017)	-249.90	(0.0043)
Project D2	(0.048)	(0.003)	(0.020)	(0.000)	(0.004)	(0.004)	-55.61	(0.0009)
Project C1 – Classroom/Dining Facility #1	0.19	0.010	0.16	0.0011	0.014	0.014	205.97	0.0036
Project C1 – Demolition of Buildings 9121, 9140, 9142, 9144, and 9255	(0.0091)	(0.00053)	(0.0039)	(0.00006)	(0.00073)	(0.00073)	-10.48	(0.00018)
Project C1 – Central Utility Plant	6.30	0.51	1.37	0.41	0.45	11.15	259.98	0.006888
Project C1 – Dormitory, Drill Pad, Training Area #1	3.63	0.28	1.10	0.21	0.26	0.04	661.97	0.012450
Project C1 – Dormitory, Drill Pad, Training Area #2	3.63	0.28	1.10	0.21	0.26	0.04	661.97	0.012450
Project C1 – Dormitory, Drill Pad, Training Area #3	3.63	0.28	1.10	0.21	0.26	0.04	661.97	0.012450
Project C1 – Classroom/Dining Facility #2	0.19	0.01	0.16	0.00	0.01	0.01	205.97	0.003579
Project C1 – Dormitory, Drill Pad, Training Area #4	3.63	0.28	1.10	0.21	0.26	0.04	661.97	0.012450
Project C1 – Demolition of Buildings 9020 and 9028	-0.08	0.00	-0.04	0.00	-0.01	-0.01	-96.68	-0.001680
Project C1 – Interfaith Religious Center	0.17	0.01	0.14	0.00	0.01	0.01	183.88	0.003195
Project C2	0.06	0.00	0.02	0.00	0.01	0.01	66.46	0.001000
Project C3	3.26	0.26	0.79	0.21	0.23	0.23	255.20	0.005388
Project C4	16.77	1.35	3.70	1.10	1.19	1.19	709.67	0.006310
Project C5	0.03	0.00	0.01	0.00	0.00	0.00	30.73	0.000534
Project C6 – AFOSI Headquarters Facility	3.19	0.26	0.70	0.21	0.23	0.23	182.89	0.004132
Project C6 – AFOSI Administrative Support Facility	3.17	0.25	0.69	0.21	0.23	0.23	163.40	0.003793

Project	NO_x (tpy)	VOC (tpy)	CO (tpy)	SO_2 (tpy)	PM_{10} (tpy)	$PM_{2.5}$ (tpy)	CO_2 (metric tons/year)	HAPs (tpy)
Project C7	3.59	0.28	1.07	0.21	0.26	0.26	617.52	0.011683
Project I1 – 2018 Roadway Expansion	10.600	2.82	14.35	0.87	158.99	16.850	1,842.22	--
Project I1 – 2018 Sidewalk Construction	1.76	0.68	4.56	0.12	22.26	2.370	565.02	--
Project I1 – 2018 Troop Walk Construction	0.75	0.43	3.42	0.04	6.05	0.660	417.67	--
Project I1 – 2018 Plaza, Display, Memorial Construction	5.19	0.83	5.30	0.39	0.64	0.39	866.42	--
Project I5	2.21	0.60	3.12	0.18	33.32	3.53	398.06	--
Project I6	0.10	0.08	0.75	0.00	1.49	0.15	91.70	--
Project I8	0.10	0.080	0.75	0.00	1.00	0.11	91.70	--
Project I9	0.10	0.080	0.75	0.00	0.90	0.10	91.70	--
Total 2018 Emissions	**71.87**	**9.63**	**46.07**	**4.78**	**228.29**	**37.62**	**9,481.38**	**0.092710**
Percentage of Total JBSA-Lackland Baseline Emissions	**7.612**	**10.675**	**4.963**	**5.120**	**222.852**	**50.730**	**NA**	**NA**
Percentage of Bexar County Emissions	**0.126**	**0.016**	**0.019**	**0.017**	**0.385**	**0.389**	**0.002**	**NA**

Notes: Projects D1, D2, and D3 and the demolition associated with Project C1 would result in decreased HAP emissions due to removal of external combustion sources needed to heat the building.

* Percentage of State of Texas CO_2 emissions.

** This PSD major modification permit criteria ultimately applies to the net increase in emissions, which accounts for new and removed emissions sources.

Key: NA= Not Applicable.

Greenhouse Gas Emissions. The selected projects would contribute directly to emissions of GHGs from the combustion of fossil fuels. Because CO_2 emissions account for approximately 92 percent of all GHG emissions in the United States, they are used for analyses of GHG emissions in this assessment. The U.S. Department of Energy, Energy Information Administration estimates that in 2009, gross CO_2 emissions in the State of Texas were approximately 596.4 million metric tons and in 2009 gross CO_2 emissions in the entire United States were 5,425.6 million metric tons (USEPA 2012a). **Table 4-2** and **Table 4-3** show the estimated amount of CO_2 emissions by year from the selected project construction activities and operational activities, respectively.

Based on **Table 4-4** which combines both construction and operational emissions, the calculated increases in GHG emissions from the selected projects are a maximum of 13,555 metric tons in year 2017. Considering the maximum CO_2 emissions for all years (i.e., 13,555 metric tons) the selected projects would represent a negligible contribution (0.002%) towards statewide GHG inventories and an extremely negligible contribution (less than 0.0003%) toward national GHG inventories. The GHG emissions increases for each set of independent projects are expected to be well below 75,000 tpy, which is below the PSD major modification threshold for GHGs.

4.3.4 Geological Resources

The Proposed Action would not result in significant impacts on geological resources. The following subsections describe the non-significant effects on geological resources that would result from implementation of the Proposed Action. An erosion-and-sediment-control plan (ESCP) would be prepared for projects that would disturb more than 1 acre of land. Projects of this size have more potential to result in adverse effects as a result of soil erosion and sedimentation, and the ESCP would minimize these potentially adverse effects. No effects on geology would be expected from implementation of the Proposed Action.

Topography. Long-term, negligible, adverse effects would be expected on the natural topography as a result of demolition, site preparation (i.e., grading, excavating, and recontouring), and construction under the Proposed Action. These impacts are considered negligible as JBSA-Lackland is fairly level in elevation and only minor, if any, grading would be anticipated.

Geology. No impacts on geology would be anticipated from implementing the Proposed Action. No geological resources would be disturbed.

Soils. Long-term, minor to moderate, adverse effects on soils would be expected from implementation of the Proposed Action. The primary effects would be soil compaction, disturbance, and erosion; however, impacts would be minimized through implementation of environmental protection measures, including ESCPs. Compaction of soils would disturb and modify the soil structure. Soil productivity, which is the capacity of the soil to produce vegetative biomass, would decline in disturbed areas and be eliminated within the footprints of buildings, pavements, and roadways. Loss of soil structure due to compaction from foot and vehicle traffic could change drainage patterns, but could be mitigated by soil decompaction methods such as aeration. Site-specific soil testing should be conducted prior to implementing projects to determine if limitations exist and to determine appropriate environmental protection measures to minimize potential adverse effects. No significant adverse impacts on the soils would be anticipated.

Environmental protection measures to prevent erosion could include installing silt fencing and sediment traps, applying water to disturbed soil, and revegetating disturbed areas as soon as possible after the disturbance, as appropriate. In the event of a chemical or fuel spill, the installation's SPCC Plan would be followed to contain and clean up a spill quickly. There remains the possibility that an accidental spill or leak could occur, but implementation of environmental protection measures identified in the SPCC plan would minimize the potential for and extent of associated contamination. No impacts on prime farmland soils would occur since none exist on the installation.

Because the soils mapped have been determined to be somewhat to very limited for shallow excavations, road development, and the construction of small commercial buildings, site-specific soil testing would be conducted prior to implementing projects to determine appropriate environmental protection measures to offset potential adverse effects; therefore, no significant adverse impacts on the soils would be anticipated.

Geological Hazards. Adverse effects on humans and property could occur in the event of earthquake activity. Any new construction under the Proposed Action would be designed consistent with requirements established in UFC 3-310-03 (*Seismic Design for Buildings*) and EO 12699 (*Seismic Safety*), which would reduce the potential for adverse effects associated with structural failure during or following a seismic event. Therefore, no significant impacts would be anticipated.

4.3.5 Water Resources

No significant effects on water resources would occur from the Proposed Action. Short- and long-term, negligible to minor, direct and indirect adverse and beneficial effects on water resources would be expected to occur from implementation of the Proposed Action; however, adverse effects would be minimized by implementing environmental protection measures and following the installation SWPPP. Demolition and construction activities associated with the Proposed Action would have negligible to minor, adverse effects on groundwater and surface water quality. Construction activities associated with the Proposed Action, such as grading, excavating, and trenching, would result in soil disturbance. Ground disturbing activities could result in temporary impacts on surface water from soil erosion and sedimentation associated with a destabilized ground surface. However, BMPs would be implemented to avoid and minimize impacts associated with storm water, in accordance with the general storm water permit (TXR150000), EISA, and all other applicable codes and ordinances.

It is possible that equipment used for demolition and construction could leak fuels or hazardous materials, or spills could occur during demolition activities which could pollute groundwater and surface water. Potential for impacts on the Edwards Aquifer is low because the aquifer is isolated and the recharge zone is not near the installation. However, a shallow aquifer also underlies the installation that could be susceptible to pollution. Contaminants released during demolition and construction activities could become mobilized and enter the surface water and shallow groundwater. However, to avoid and minimize potential adverse effects on groundwater and surface water, spill prevention practice, consistent with the JBSA-Lackland SPCC plan (LAFB 2006b), would be implemented during all activities associated with the Proposed Action.

Implementation of the Proposed Action would be expected to have negligible to minor, adverse effects on groundwater recharge of the shallow aquifer. The Proposed Action would result in an increase in impervious surfaces throughout the installation. It is assumed that the increase in impervious surfaces would slightly increase runoff to streams and decrease recharge of the aquifer system. Storm water management practices, developed consistent with the JBSA-Lackland SWPPP, would be implemented to reduce potential adverse effects of increased impervious surfaces on groundwater recharge at the installation.

Implementation of the Proposed Action would increase impervious surfaces, which would likely impact the quantity of storm water runoff at the installation. This could have an indirect effect on groundwater and surface water quality. Impacts from increased storm water runoff due to the increase in impervious surfaces would be minimized by adhering to proper engineering practices and implementation of storm water BMPs, which are developed to be consistent with the general storm water permit (TXR150000), EISA, and all other applicable codes and ordinances. Additionally, the two natural infrastructure management projects would help to improve drainage and flooding on the installation.

Projects with a footprint of less than 1 acre of ground disturbance do not require coverage under General Stormwater Permit TXR1500000. Projects that are expected to disturb less than 1 acre include the following:

- Project D2 (Atomic Energy Commission Facilities Demolition)
- Project D3 (Demolish Munitions Storage Igloos)
- Project C2 (Permanent Party Dormitory)
- Project C5 (433rd Airlift Wing Building Additions and Renovations)
- Project I3 (Airfield Lighting Upgrades)
- Project NI1 (Medio Creek Erosion Control)
- Project NI2 (Warrior Week Road – Leon Creek Bridge).

Under General Stormwater Permit TXR1500000, projects with footprints greater than 1 acre and less than 5 acres of ground disturbance would require an individual SWPPP, a posted site notice, and submittal of a copy of the site notice to any MS4 operator receiving the discharge. The permit requires the implementation of BMPs to avoid and minimize pollution in storm water runoff before and after construction. These projects include the following:

- Project D1 (Security Hill Dormitory Complex Demolition)
- Project C3 (Battlefield Airman Aquatic Training Complex)
- Project C6 (AFOSI Administrative Support and Headquarters Facilities)
- Project I2 (Golf Cart Path Upgrades)
- Project I7 (Electrical Distribution System Upgrades)
- Project I9 (Sanitary Sewer Lines Upgrades).

Projects with footprints of greater than 5 acres of ground disturbance would require compliance with General Stormwater Permit TXR1500000 or require a separate TPDES permit. To be covered under TXR1500000 General Stormwater Permit, the project would require development and implementation of an SWPPP, submittal of a Notice of Intent (by mail or online) to the TCEQ, a posted Notice of Intent and site notice, and submittal of a copy of the Notice of Intent to any MS4 operator receiving the discharge. As part of the SWPPP, BMPs would be developed in accordance with applicable regulations to avoid and minimize pollution in storm water runoff. Projects that are expected to disturb greater than 5 acres include the following:

- Project C1 (ATC West Campus)
- Project C4 (Reid Medical Clinic)
- Project C7 (AAFES BX Project)
- Project I1 (Pavements Projects)
- Project I4 (TANG Apron Repair)
- Project I5 (Parking Lot Installation)
- Project I6 (Natural Gas Lines Upgrade)
- Project I8 (Main Water Lines Upgrades).

Six infrastructure projects could involve construction in a wetland area; therefore each project would require consideration of practicable alternatives and practicable measures to minimize harm to wetlands to support a FONPA, approval from AETC, and individual or nationwide permits.

The projects that could directly impact wetlands include the following (see **Figures 4-1** through **4-7**):

- Project I1 (Pavements Projects)
- Project I2 (Golf Cart Path Upgrades)
- Project I6 (Natural Gas Lines Upgrade)
- Project I7 (Electrical Distribution System Upgrades)
- Project I8 (Main Water Lines Upgrades)
- Project I9 (Sanitary Sewer Lines Upgrades).

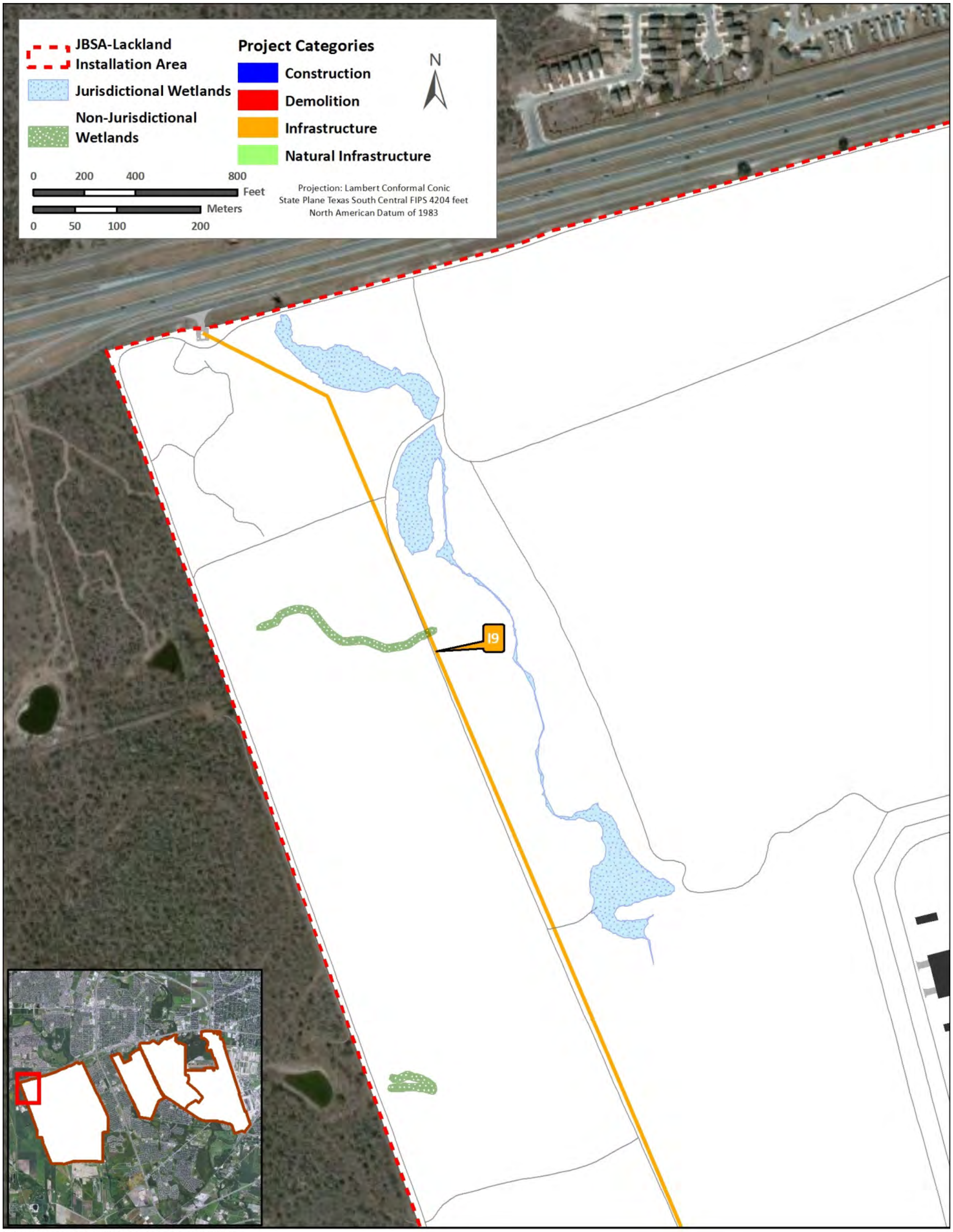
Effects on wetlands from these projects would not be significant. Adverse effects would be avoided through design, siting, and proper implementation of appropriate environmental protection measures. Proper implementation of these measures would ensure that no effects on surrounding wetlands or other waters of the United States would occur. Further, JBSA-Lackland would potentially be required to mitigate or compensate to comply with the USAF's "no net loss" policy regarding wetlands. Additionally, Projects D2, C3, C5, and I5 would be adjacent to wetlands and could result in negligible, indirect, adverse impacts on wetlands through a potential change in the normal seasonal flow patterns in the wetland, a potential increase in erosion and sedimentation into the wetland, or a potential change in wetlands species composition and habitat diversity. Effects on adjacent wetlands would be avoided through design, project siting, proper implementation of all appropriate environmental protection measures.

Projects I1, I2, I6, I7, I8, I9, NI1, and NI2 would occur in the 100-year floodplain, and therefore, would require a FONPA and approval from AETC. Construction activities can increase storm water runoff and the potential for storm-related damage to infrastructure, facilities, and possibly human safety. Impacts would be minimized through design, siting, and proper implementation of environmental protection measures, including elevating structures to the base flood level; placing sensitive equipment on upper levels of facilities; constructing sidewalks, roads, and parking lots with pervious materials; and creating new storm water retention areas for projects that create new impervious surface areas, to the maximum practicable extent. Additionally, an approved ESCP would be followed during construction, and construction BMPs in accordance with the CWA Final Rule would be implemented to retain runoff and promote recharge of groundwater. No mitigation measures would be required because no significant impacts would occur. Project NI2 would require a CLOMR and possibly an LOMR would be required because the current DFIRM panels shows this culvert as constricting water flow within this reach of Leon Creek causing a backwater effect.

4.3.6 Biological Resources

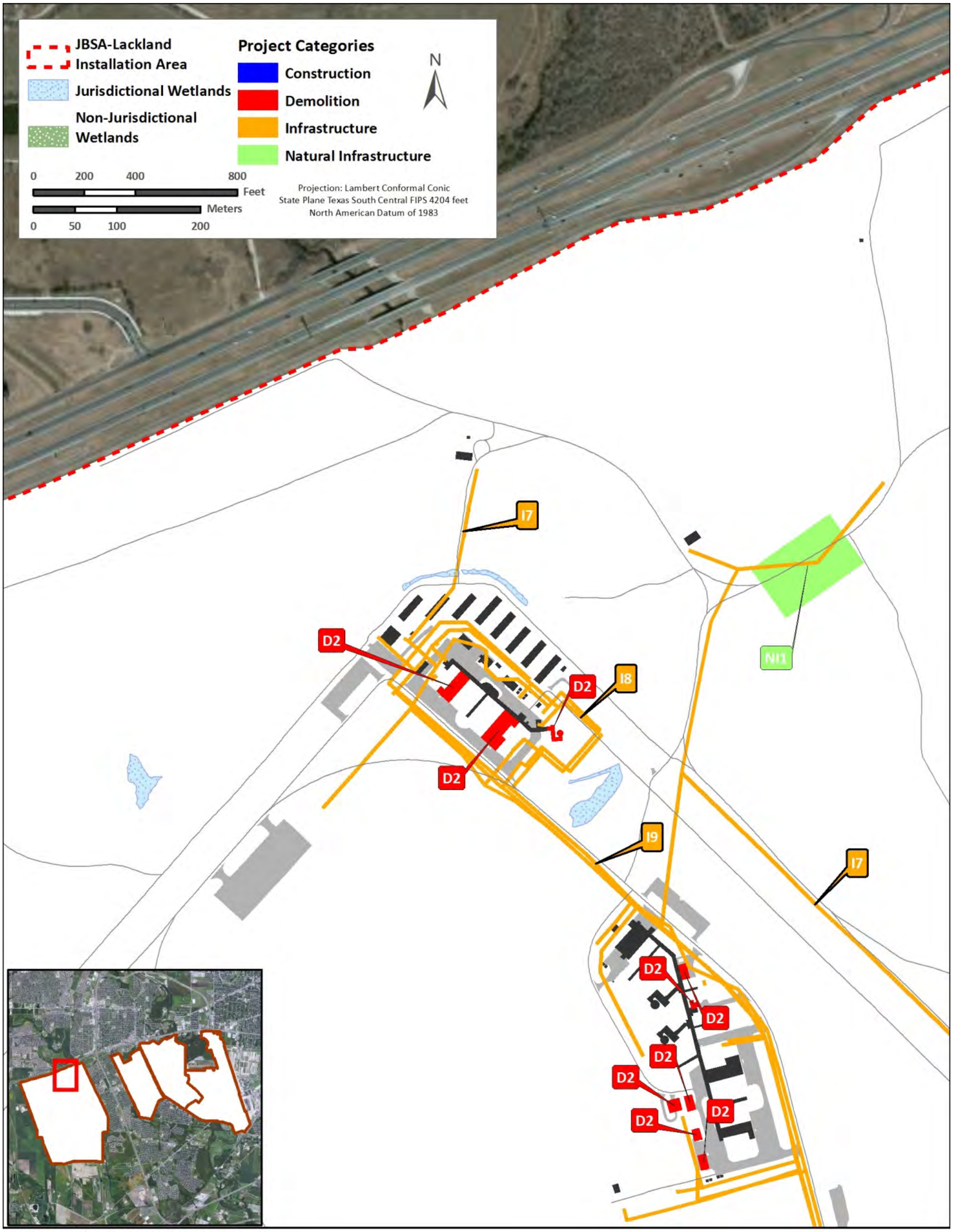
No significant impacts on biological resources would be expected from implementation of the Proposed Action. The following subsections describe the expected impacts on vegetation, wildlife, and protected and sensitive species at JBSA-Lackland.

Vegetation. Short- and long-term, negligible to minor, direct, adverse effects on vegetation would be expected from disturbances during construction, demolition, and infrastructure improvement activities (e.g., trampling, crushing, and removal) and from the permanent removal of vegetation from the construction of new facilities and infrastructure. The demolition projects would require removal of trees and shrubbery, with a net loss of vegetation across the installation. The primary vegetation on JBSA-Lackland is urbanized and dominated by scattered shade trees, and established plantings of trees, shrubs, groundcover, vines, and grasses with a small amount of scattered savanna or forest vegetation limited to small remnant areas adjacent to Leon Creek. The historic vegetation cover has been altered considerably by general use and disturbance due to development. However, once demolition of the areas



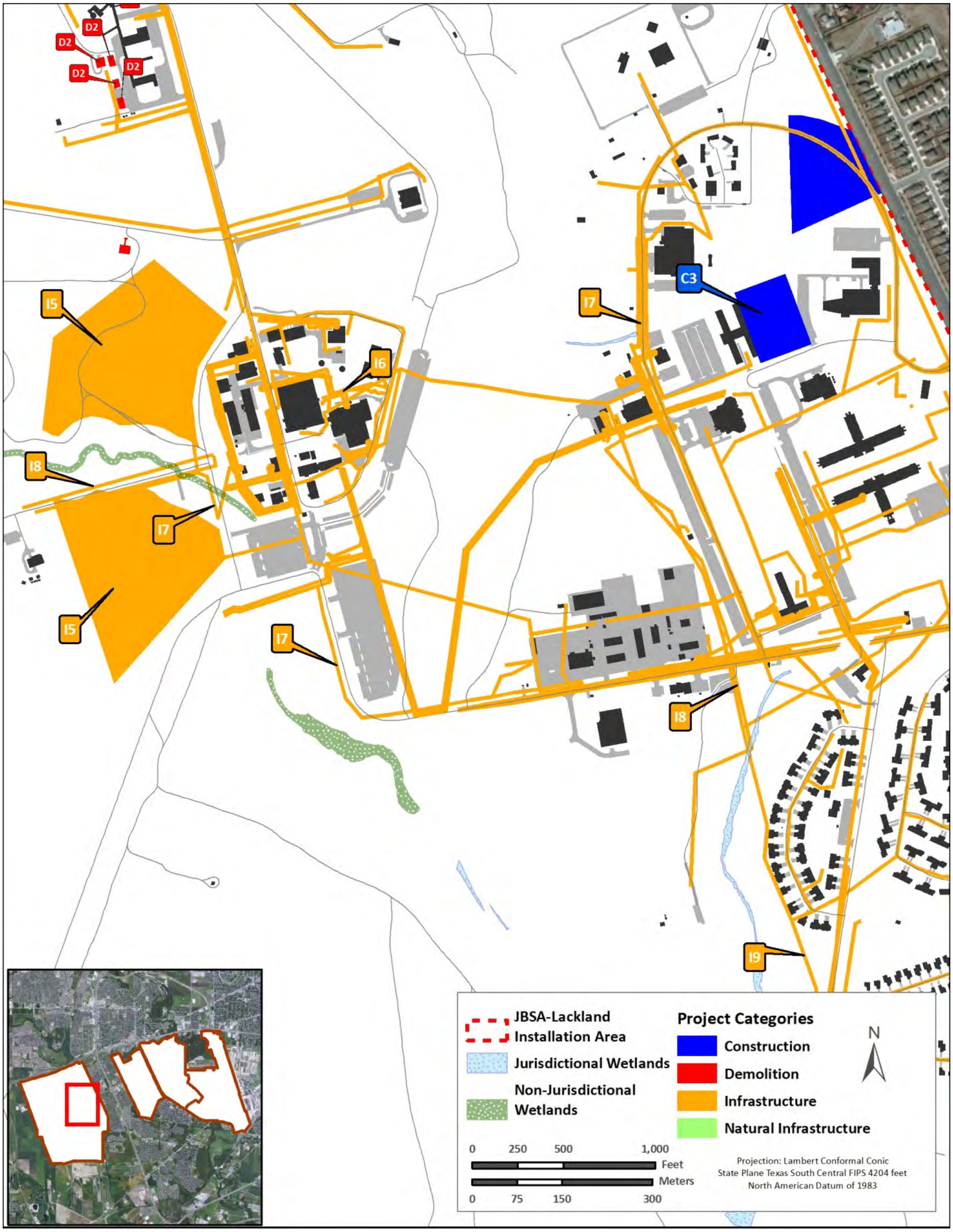
1 Source: ESRI StreetMap USA 2007, Bing Maps Hybrid 2010

2 **Figure 4-1. Wetlands Potentially Impacted by the Proposed Action (Map Area 1)**



1 Source: ESRI StreetMap USA 2007, Bing Maps Hybrid 2010

2 **Figure 4-2. Wetlands Potentially Impacted by the Proposed Action (Map Area 2)**

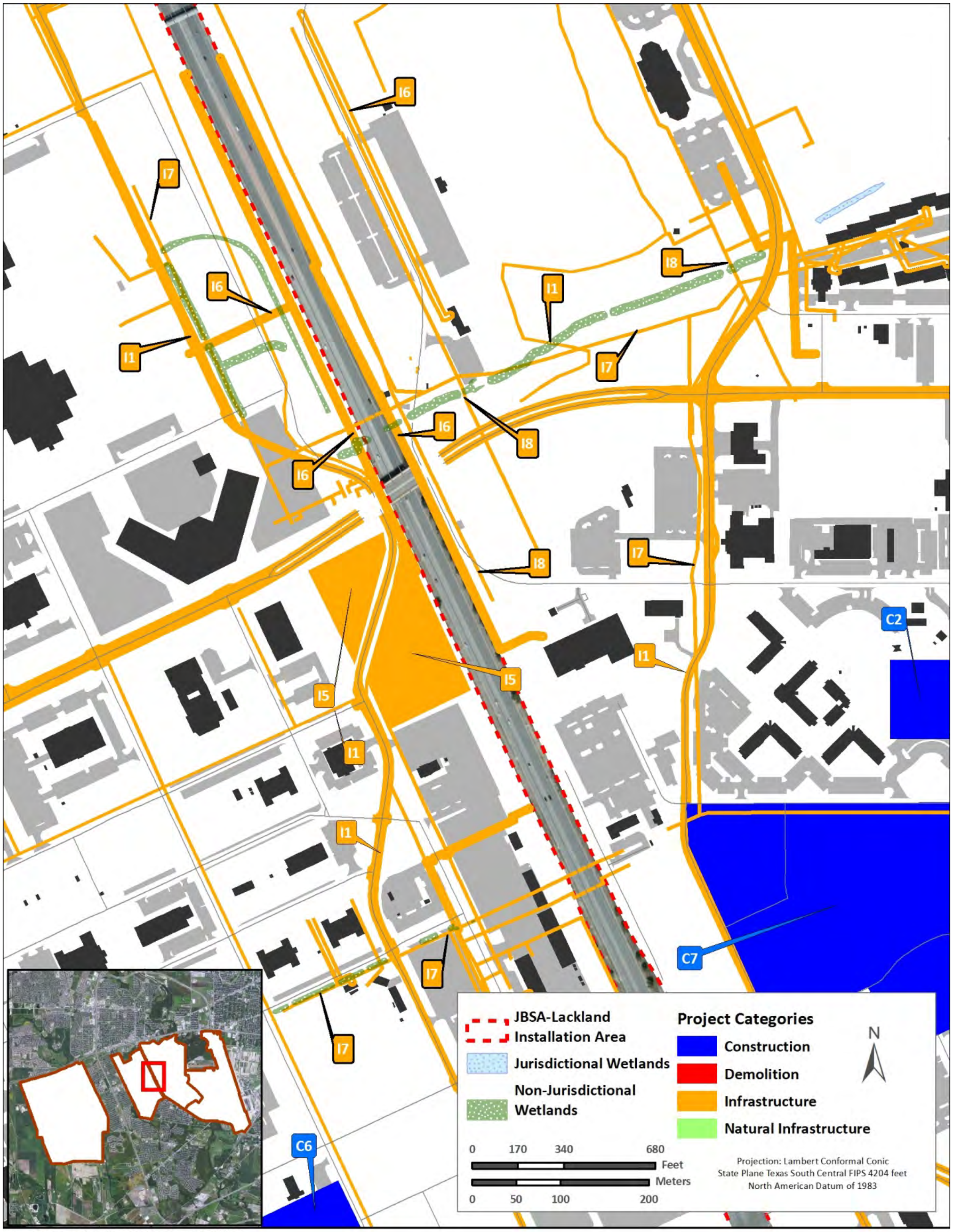


1 Source: ESRI StreetMap USA 2007, Bing Maps Hybrid 2010

2 **Figure 4-3. Wetlands Potentially Impacted by the Proposed Action (Map Area 3)**

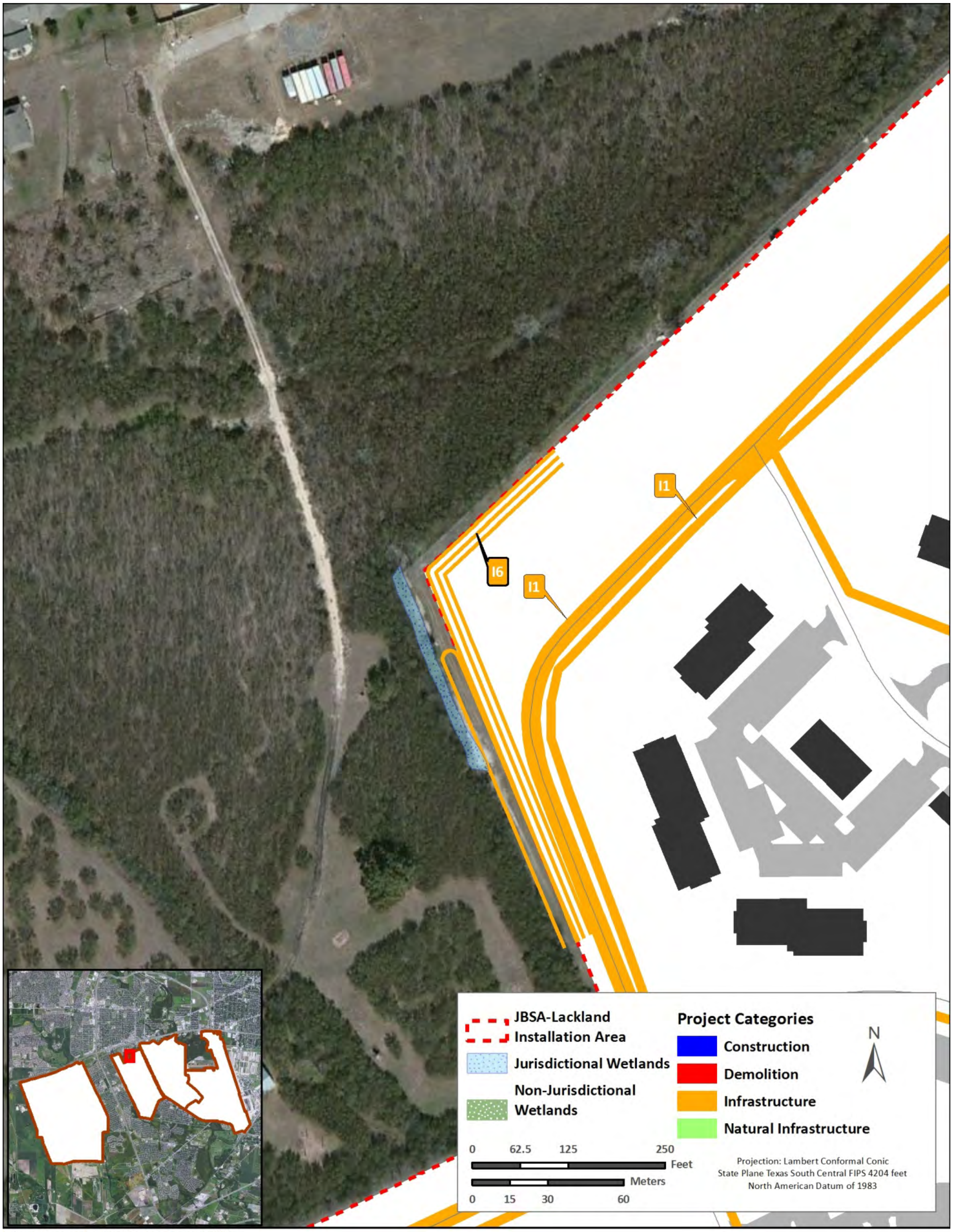
1 Source: ESRI StreetMap USA 2007, Bing Maps Hybrid 2010

2 **Figure 4-4. Wetlands Potentially Impacted by the Proposed Action (Map Area 4)**



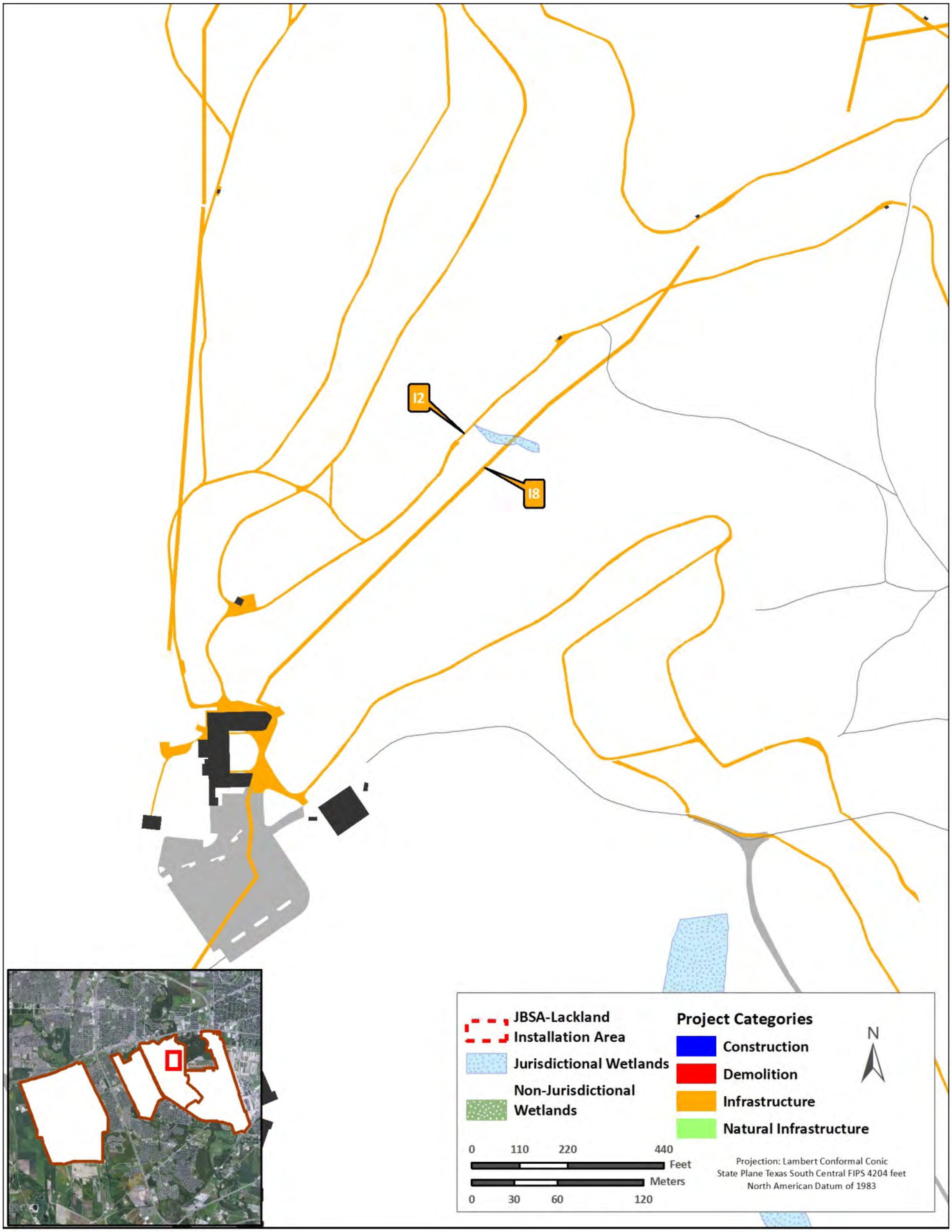
1 Source: ESRI StreetMap USA 2007, Bing Maps Hybrid 2010

2 **Figure 4-5. Wetlands Potentially Impacted by the Proposed Action (Map Area 5)**



1 Source: ESRI StreetMap USA 2007, Bing Maps Hybrid 2010

2 **Figure 4-6. Wetlands Potentially Impacted by the Proposed Action (Map Area 6)**



1 Source: ESRI StreetMap USA 2007, Bing Maps Hybrid 2010

2 **Figure 4-7. Wetlands Potentially Impacted by the Proposed Action (Map Area 7)**

associated with Project D1 (Security Hill Dormitory Complex Demolition), Project D2 (Atomic Energy Commission Facilities Demolition), and Project D3 (Demolish Munitions Storage Igloos) is complete, they would be reseeded with appropriate ground cover for the area in accordance with the INRMP and allowed to revegetate naturally. As a result there would be a localized, long-term beneficial effect on vegetation in the area. The parking lots associated with Project I5 would also permanently remove vegetation. However, the vegetation would primarily consist of urban upland, non-forested upland communities, manicured lawns, and brush or scrub consistent with urbanized areas, and is not considered high value vegetation.

Wildlife. The Proposed Action would result in short- and long-term, negligible to minor, adverse and beneficial effects on wildlife at JBSA-Lackland. During construction and demolition, noise events and human and equipment presence could cause wildlife to avoid the project areas. However, most wildlife species in the proposed project vicinities would be expected to recover quickly once the disturbance has ceased. Furthermore, JBSA-Lackland is moderately developed and aircraft operations are frequent; therefore, wildlife currently inhabiting the project sites would be habituated to noise disturbances. In order to reduce the potential impacts from BASH, vegetation around the flightline is kept low (LAFB 2011d). All projects associated with this IDEA would be completed in accordance with existing policies on JBSA-Lackland to minimize BASH impacts.

Long-term, negligible to minor, adverse effects on wildlife habitat due to tree removal would be expected under the Proposed Action. Some trees provide habitat for wildlife species (e.g., birds and bats), which would be lost through the removal of vegetation associated with Project D1, Project D2, and Project D3. However, these sites would be restored to natural conditions following demolition and limited additional wildlife habitat would be created.

Construction under Projects NI1 and NI2 would involve demolishing the existing structure and restoring Medio Creek and Leon Creek to more natural flow conditions. The replacement structures could improve the adjacent and downstream habitat for terrestrial and avian species by creating a more natural habitat. Long-term, negligible to minor, adverse effects on fish species associated with Project NI1 would be expected due to the construction of a low water crossing, which could restrict the ability of fish to move up- or downstream. However, the fish species likely present in Medio Creek do not generally make large-scale movements and the impacts are expected to be minor. A long-term, beneficial impact could also result from the prevention of invasive fish species from moving upstream during winter. During construction, short-term effects on the area downstream might occur due to increased sedimentation. This would be minimized through the implementation of environmental protection measures such as sediment curtains or coffer dams. No impacts on sensitive habitats, such as wetlands, downstream are expected based on the distance away from the construction areas.

Protected and Sensitive Species. The Proposed Action would not result in impacts on federally or state-listed threatened or endangered species. The only federally or state-listed species sighted on the installation was a Texas horned lizard in 1992 (LAFB 2002b); however, suitable habitat is limited. Since no threatened or endangered species have been observed on the installation in the past 20 years, and habitat is limited, no adverse effects on threatened or endangered species are expected to occur. However, there is the potential for impacts on potential habitat for sensitive species. **Table 4-5** provides a summary of the projects that could affect potential habitat for protected and sensitive species (based on a review of aerial photographs).

Impacts on threatened and endangered species in the Comal and San Marcos spring systems from water withdrawals from the Edwards Aquifer for JBSA-Lackland are being addressed in a new Biological Assessment; however, as the projects proposed in the IDEA would not result in a significant increase in water withdrawals from the aquifer, no impacts would be anticipated.

The MBTA (16 U.S.C. 703–712), as amended, and EO 13186, *Responsibilities of Federal Agencies to Protect Migratory Birds*, require Federal agencies to minimize or avoid impacts on migratory birds listed in 50 CFR 10.13. If design and implementation of a Federal action cannot avoid measurable negative impacts on migratory birds, EO 13186 requires the responsible agency to consult with the USFWS and obtain a Migratory Bird Depredation Permit. Demolition, construction, infrastructure improvement, and natural infrastructure management activities associated with the Proposed Action would be conducted in a manner to avoid adverse effects on migratory birds to the extent practicable.

Table 4-5. Summary of Potential Sensitive Species Habitat Impacts at the JBSA-Lackland Project Locations

Common Name	Project																					
	D				C							I									NI	
	1	2	3	4	1	2	3	4	5	6	7	1	2	3	4	5	6	7	8	9	1	2
Black-capped vireo		X		X									X									
Golden-cheeked warbler				X																		
White-faced ibis		X										X	X				X	X	X	X	X	X
Cagle's map turtle		X										X	X				X	X	X	X	X	X
Texas horned lizard				X																		
Texas indigo snake		X										X	X				X	X	X	X	X	X
Texas tortoise																						
Timber rattlesnake		X										X	X				X	X	X	X	X	X

Short-term, direct, negligible to minor, adverse effects on migratory bird species could occur as a result of noise from project activities. Barn swallows and chimney swifts might nest on buildings or within chimneys, killdeer might nest on rooftops or parking lots; common nighthawks might nest on rooftops; and several other species (e.g., grackles, house finch, and northern mockingbird) might nest in the trees or shrubs that would be removed during construction. If these activities occur during nesting season, activities associated with the Proposed Action would be conducted in a manner to avoid adverse effects on migratory birds, to the extent practicable. Environmental protection measures could be used to avoid take of birds under MBTA.

Implementation of the following environmental protection measures would help to avoid take of migratory birds during demolition, construction, infrastructure, and natural infrastructure projects:

- All projects identified in this IDEA should be performed outside of migratory bird nesting season (from February 1 through August 31), if possible. If project activities are scheduled during nesting season, a survey of migratory birds should be performed no more than 72 hours prior to project activities begin. If bird nests are found during surveys, an avoidance buffer should be established around nests. Project activities should be deferred from the avoidance buffers until birds have left the nest. Confirmation that all young have fledged should be made by a qualified biologist.
- If project activities are scheduled to start during migratory bird nesting season, steps should be taken to prevent the establishment of nests in the potential impact area. These steps could include covering equipment and structures, use of various excluders (e.g., noise), and removing nesting material as birds attempt to build nests. Birds can be harassed to prevent them from nesting within the project area. Once a nest is established (with eggs), they should not be harassed until all young have fledged and are capable of leaving the nest site.

4.3.7 Cultural Resources

The Proposed Action would not result in significant impacts on cultural resources at JBSA-Lackland, though a small number of specific projects have the potential for moderate adverse effects. These impacts would not be significant with development of avoidance or mitigation measures acceptable to the SHPO in accordance with the stipulations of the ICRMP and JBSA-Lackland PA.

Archaeological Resources. Generally, areas of JBSA-Lackland that have been highly developed and have disturbed ground have not been surveyed as there is considered to be little potential for archaeological resources. This includes large portions of Lackland Main Base, Kelly Field Annex, and the munitions storage area of Lackland Training Annex. Additionally, a number of sites in undisturbed areas of Lackland Main Base and Lackland Training Annex that were identified as NRHP eligible in the 1996 archaeological survey were later determined to be NRHP ineligible through coordination with the NPS and the SHPO (LAFB 1996, NPS 1997). Though these sites are NRHP ineligible, ground-disturbing projects in these areas could uncover individual artifacts or remains. Any projects occurring in unsurveyed portions of the installation or near NRHP-ineligible sites are expected to have no impacts on archaeological resources. However, standard operating procedures (SOPs) for inadvertent discovery of archaeological remains including artifacts are included in both Appendix A of the JBSA-Lackland ICRMP and Stipulation IV of the JBSA PA.

Two projects have the potential to impact archaeological resources directly. Projects I2 and I8 are both planned for portions of the golf course in the vicinity of NRHP-eligible archaeological site, 41BX1108. Another site within the golf course (41BX1107) has been recommended for additional testing, and is to be treated as NRHP-eligible until testing is completed and a further determination of its eligibility is made.

All other projects should be able to avoid the archaeological sites on Lackland Training Annex that have been determined NRHP eligible or in need of additional testing with proper planning. These projects must all be coordinated with the SHPO to ensure that the sites are avoided and to develop testing and monitoring plans, if necessary. If the sites cannot be avoided the projects might constitute an adverse effect which would require mitigation as specified in Section 4.5 of the JBSA-Lackland ICRMP and Stipulation I.1.G of the JBSA-Lackland PA.

Architectural Resources. Projects D2, D3 and C6 have the potential to create adverse effects on architectural resources. Project D2 involves the demolition of eight NRHP-eligible structures in the Medina Base Historic District on Lackland Training Annex. However, impacts would not be significant under NEPA with development of avoidance or mitigation measures acceptable to the SHPO in accordance with the stipulations of the ICRMP and JBSA-Lackland PA. Project D3 has the potential to cause an adverse effect to cultural resources at Lackland Training Annex under Section 106 of the NHPA; however, the demolitions have previously been coordinated with the SHPO under the 2006 ACHP program alternative titled "Program Comment for World War II and Cold War Era (1939-1974) Ammunition Storage Facilities."

Project C6 could create an indirect adverse effect on one of the few NRHP-eligible buildings on Lackland Main Base, the World War II chapel (Building 5432). Alteration to the context of the chapel could occur due to the proximity of the proposed new headquarters and support building for AFOSI. This adverse effect can be avoided or minimized with appropriate design of the proposed new headquarters building and through proper coordination with the SHPO, following Stipulation II.2 of the JBSA-Lackland PA.

4.3.8 Socioeconomics and Environmental Justice

No significant effects on socioeconomics and environmental justice would occur from the Proposed Action. Short-term, minor to moderate, beneficial effects on the local economy would be expected due to expenditures from the implementation of the selected construction, demolition, infrastructure improvement, and natural infrastructure management projects. The San Antonio-New Braunfels MSA contains approximately 80,000 construction workers, which collectively should be able to meet the demands of the Proposed Action easily. Short-term increases in local business volume and employment within the ROI would be expected under the Proposed Action. The use of local construction workers would produce increases in local sales volumes, payroll taxes, and the purchases of goods and services resulting in short-term, indirect, minor, and beneficial increases in the local economy. The Proposed Action would not increase or decrease the number of persons employed or stationed at JBSA-Lackland; therefore, no significant effects on demographics or social services and conditions would be expected.

Implementation of the selected projects would occur entirely on JBSA-Lackland. Possible adverse effects from construction activities could include increased traffic and noise levels and decreased air quality, but these effects would be short-term, intermittent, and minimal, and would affect on-installation residents more than off-installation populations. Therefore, disproportionate impacts on minority or low-income populations would not be expected.

4.3.9 Infrastructure

The Proposed Action would not result in significant adverse effects on the installation's infrastructure. The following subsections describe the effects on infrastructure that would result from implementation of the Proposed Action. Long-term, beneficial effects would be realized from implementing improved infrastructure projects and the consolidation of functions. In addition, all new construction would be designed to minimize buildings' electricity/energy and water consumption and optimize construction waste management and storm water management techniques to the maximum extent practicable.

Airfield. Long-term, moderate, beneficial effects would be expected from implementing the Proposed Action. The airfield lighting upgrades (Project I3) and TANG apron repairs (Project I4) would improve airfield operations.

Transportation. Short-term, minor, direct, adverse effects on the transportation network would be expected from construction and demolition activities associated with the Proposed Action due to increased traffic and parking lot use associated with demolition and construction equipment and contractor vehicles. The construction and demolition phases of the Proposed Action would require delivery of materials to, and removal of debris from, demolition and construction sites. Construction traffic would compose a small percentage of the total existing traffic on the installation. Many of the heavy construction vehicles would be driven to the site and kept on site for the duration of construction and demolition activities, resulting in relatively few additional trips. The proposed installation development projects would occur at different times and locations on JBSA-Lackland over a 5-year period, which would further reduce construction traffic. Any potential increases in traffic volume associated with the proposed construction and demolition activities would be temporary.

Long-term, minor, adverse effects on traffic can be expected due to possible localized traffic increases from consolidation projects; however, these effects would be reduced to negligible due to the proposed expansion of existing roadways on the installation. Long-term, moderate, beneficial effects on transportation would be expected due to the expansion of existing roadways, the installation of dedicated bike lanes, and the installation of new troop walks and sidewalks (Project I1) enhancing the flow of traffic on the installation and construction of new parking lots installation wide (Project I5).

Water Supply. Short-term, negligible, adverse effects on the water supply system would be expected from construction and demolition activities associated with the Proposed Action. Short-term interruptions could be experienced when buildings are disconnected from or connected to the JBSA-Lackland water supply system. Water necessary for construction would be obtained from the existing water supply system. Construction water needs would be limited and have little effect on the installation's water supply system. Any potential disruption of components of the water supply system would be temporary and coordinated with area users prior to starting the work.

Long-term, minor, beneficial effects would be expected on the water supply system due to the removal and replacement of the main water lines (Project I8), removal of outdated facilities, and construction of new energy-efficient structures.

Sanitary Sewer and Wastewater System. Short-term, negligible, adverse effects on the sanitary sewer and wastewater systems would be expected from construction and demolition activities associated with the Proposed Action. Short-term interruptions could be experienced when buildings are disconnected from or connected to the installation sanitary sewer and wastewater system. However, disruption of components of the sanitary sewer and wastewater system would be temporary and coordinated with area users prior to starting the work.

Long-term, minor, beneficial effects would be expected on the sanitary sewer and wastewater system at Lackland Training Annex due to the removal and replacement of deteriorating sanitary sewer lines (Project I9).

Storm Drainage System. Short-term, negligible, adverse effects would be expected from implementation of the Proposed Action due to temporary disturbance of the storm water systems during construction and demolition activities. Long-term, minor, adverse effects on the JBSA-Lackland storm water system would be expected as a result of a net increase in impervious surfaces associated with the Proposed Action. However, long-term, minor, beneficial effects are expected because the Medio Creek Erosion Control (Project NI1) and Warrior Week Road – Leon Creek Bridge (Project NI2) would install measures to prevent future flooding and erosion issues and improve the installation's storm drainage system.

Electrical System. Short-term, negligible, adverse effects on the electrical system would be expected during the construction and demolition activities associated with the Proposed Action. Short-term electrical interruptions could be experienced when buildings are disconnected from or connected to the JBSA-Lackland electrical system. However, the discontinuation of electrical services would be temporary and coordinated with area users prior to disconnection.

Long-term, negligible, beneficial effects on the installation electrical system would be expected from implementation of the Proposed Action by demolishing old buildings with outdated electrical systems and constructing new buildings with updated electrical systems. Long-term, minor, beneficial effects would be expected on the electrical system with replacement of the existing overhead electrical distribution system with a modernized underground distribution system (Project I7).

Natural Gas System. Short-term, negligible, adverse effects on the natural gas system would be expected during construction and demolition associated with the Proposed Action. Short-term interruptions could be experienced when buildings are disconnected from or connected to the JBSA-Lackland natural gas system. The discontinuation of natural gas services would be temporary and coordinated with area users prior to disconnection.

Long-term, negligible, beneficial effects on the installation natural gas system would be expected from implementation of the Proposed Action by demolishing old buildings with outdated heating systems and constructing new buildings with updated heating systems. Long-term, minor, beneficial effects would be expected on the natural gas system with system upgrades which would improve reliability (Project I6).

Communications System. Short-term, negligible, adverse effects on the communications systems at JBSA-Lackland would be expected during construction and demolition activities associated with the Proposed Action. Short-term interruptions could be experienced when buildings are disconnected from and connected to the JBSA-Lackland communications system. However, work on the communications systems would be temporary and coordinated with area users prior to the start of work activities.

Solid Waste. Short-term, minor, adverse effects would result from increased construction and demolition debris production associated with the Proposed Action. Solid waste generation from the proposed construction and demolition activities would consist of building materials such as solid pieces of concrete, metals (e.g., conduit, piping, and wiring), and lumber. Contractors would be required to recycle construction and demolition debris to the maximum extent practicable in accordance with installation policy, thereby diverting it from landfills. The contractor would dispose of nonrecyclable construction and demolition debris at an offsite permitted landfill facility, which would have a long-term, negligible, adverse effect on solid waste management by permanently using landfill capacity.

The proposed demolition, construction, and infrastructure improvement projects would result in a short-term, minor, adverse effect as a result of increased solid waste generation. As indicated in **Table 4-6**, approximately 50,065 tons of solid waste would be generated over the next 6 years from implementing the selected projects of the Proposed Action (USEPA 2009b). Clean demolition and construction debris (e.g., concrete, asphalt) would be ground, recycled, and used for fill and roadwork rather than disposed of in a landfill, whenever possible.

Table 4-6. Anticipated Generation of Construction and Demolition Debris

Proposed Projects Addressed in this IDEA	Total Square Footage	Multiplier (pounds/ft²)	Total Waste Generated	
			Pounds	U.S. Tons
Demolition	441,030	158	69,682,740	34,841
Construction	2,715,716	4.34	11,786,207	5,893
Pavement Construction	20,937,602	1	20,937,602	10,468
		TOTAL	**102,406,549**	**51,202**

Source: USEPA 2009b

4.3.10 Hazardous Materials and Waste

The Proposed Action would not result in significant impacts on hazardous materials use or hazardous waste generation. Short- to long-term, minor, adverse effects resulting from use of hazardous materials during demolition and construction, such as sealants, solvents, and oils, would be minimal.

Hazardous Materials and Petroleum Products. Short-term, minor, adverse impacts associated with the use of hazardous materials and petroleum products would be anticipated. Products containing hazardous materials, such as paints, welding gases, solvents, preservatives, sealants, oils, and fuels, would be procured and used during proposed construction and demolition activities. It is anticipated that the quantity of products containing hazardous materials used during construction would be minimal and their use would be of short duration. Contractors would be responsible for the management of hazardous materials, which would be handled in accordance with Federal, state, local, and USAF regulations. In accordance with AFI 32-7086, contractors would report the use of hazardous materials to the 802 CES. A list of all hazardous materials should include a copy of each material's Material Safety Data Sheet, an estimate of how much material would be used, amount stored, duration of use, and location of storage prior to the start of work. This increase in hazardous materials would not affect overall management plans or capacities for handling these materials. Therefore, the Proposed Action would result in a short-term, minor, adverse impact on hazardous materials management at JBSA-Lackland. Contractors would use environmental protection measures to prevent releases of hazardous materials and ensure that any releases do not result in contamination.

Long-term, negligible, beneficial impacts on hazardous materials and petroleum product management could occur with respect to storage conditions because the older buildings would be replaced with new facilities that have modern hazardous material and petroleum product storage areas. Hazardous materials and petroleum products stored and used during operation of the proposed facilities would be similar in type and quantity to current conditions.

Hazardous and Petroleum Wastes. Short-term, minor, adverse impacts associated with the generation of hazardous and petroleum wastes would be expected. It is anticipated that the quantity of hazardous wastes generated from proposed construction and demolition activities would be negligible. Contractors would be responsible for the disposal of hazardous wastes in accordance with Federal and state laws and regulations, and the *Joint Base San Antonio Lackland Air Force Base Hazardous Waste Management Plan*. This increase would not be expected to affect the management plans or capacities for handling this waste.

Long-term, negligible, beneficial impacts on management of hazardous and petroleum wastes could occur with respect to storage conditions because the older buildings would be replaced with new facilities that have modern hazardous and petroleum waste storage areas. Hazardous and petroleum wastes generated and stored during operation of the proposed facilities would be similar in type and quantity to current conditions.

Pollution Prevention. Quantities of hazardous materials and chemical purchases, off-installation transport of hazardous wastes, disposal of MSW, and energy consumption would continue and increase during construction. Operations associated with the Proposed Action would require procurement of products containing hazardous materials, generation of hazardous waste, and consumption of energy consistent with the baseline condition. The Pollution Prevention Program at JBSA-Lackland would accommodate the Proposed Action.

Storage Tanks. No impacts on USTs would be anticipated from implementation of the Proposed Action because there are no existing USTs at any of the project areas associated with the Proposed Action.

Short-term, negligible, adverse impacts on ASTs would be expected because Building 443, which is scheduled for demolition under Project D2, contains one AST. This AST would be disposed of in accordance with appropriate Federal, state, and USAF regulations. This would result in a long-term, beneficial impact due to the disposal of aging ASTs. No other ASTs would be within the areas of the projects associated with the Proposed Action.

Asbestos-Containing Materials. Short-term, minor, adverse impacts associated with ACMs would be expected. Only Building 426 is known to contain ACMs; however, all buildings proposed for demolition or renovation would be surveyed for asbestos by a certified inspector prior to commencement of any activities. Demolition plans would be reviewed by 802 CES to ensure appropriate measures were taken to reduce potential exposure to, and release of, asbestos. For all renovation and demolition activities, friable ACM would be removed and disposed of at a USEPA-approved landfill, if the combined quantity of ACMs exceeds 260 linear feet, 160 ft^2, or 35 cubic feet (40 CFR Part 61). Contractors would be required to adhere to all Federal, state, and local regulations in addition to the asbestos management program. Long-term, negligible, adverse impacts would be expected due to the additional disposal of ACMs in USEPA-approved landfills. However, long-term, beneficial impacts would be expected from less exposure to and maintenance of ACMs due to demolition of aged buildings.

Lead-Based Paint. Short-term, minor, adverse impacts associated with LBP could be expected. The following buildings associated with the Proposed Action are known to contain LBP: Buildings 146, 1250, 1251, 1385, 1400, 2012, 2013, 2014, 2020, 2058, 6576, 9028, and 9085. However, all buildings proposed for demolition or renovation would be surveyed by a certified inspector prior to any activities. Facilities containing LBP can be demolished without removing the LBP; however, construction debris would need to be analyzed for hazardous characteristics according to the toxicity characteristics leaching procedure prior to disposal. If the debris is determined to be a hazardous waste it would need to be disposed of at a USEPA-approved landfill. All other construction debris would be disposed of in a landfill that accepts MSW. Contractors would be required to adhere to all Federal, state, and local regulations in addition to JBSA-Lackland management plans. Long-term, negligible, adverse impacts would be expected due to the additional disposal of LBP in USEPA-approved landfills. However, long-term, beneficial impacts would be expected from less exposure to and maintenance of LBP due to demolition of aged buildings.

Polychlorinated Biphenyls. Short-term, minor, adverse impacts associated with PCBs could be expected. Based on their age, it is assumed that several of the buildings proposed for demolition would have PCB-containing equipment, particularly fluorescent light ballasts, including Buildings 2009, 2012, 2013, 2014, 2015, 2018, 2020, 425, 426, 427, 433, 442, 443, 9020, 9028, 402, 403, 404, 584, 585, 586, 587, 595, 596, 597, 598, and 599. Any potential PCB-containing equipment not labeled PCB-free or missing date-of-manufacture labels discovered within the facilities proposed for demolition would be removed and handled in accordance with Federal and state regulations and the installation's Hazardous Waste Management Plan. PCB-containing materials would be transported off-installation and disposed of at a hazardous waste disposal facility. Long-term, beneficial impacts would be expected from the removal of PCB-containing equipment due to demolition of aged buildings.

Radon. JBSA-Lackland is within an area of low potential for radon gas decay, which means that indoor activity is on average between 0 and 2 pCi/L. Based on this low potential and previous monitoring, which did not discover any elevated levels of radon at JBSA-Lackland, no impacts from radon exposure would be anticipated from implementation of the Proposed Action.

Pesticides. No impacts associated with pesticides would be expected. The Proposed Action would not require any significant change in the quantities of pesticides used or significantly alter pesticide application areas. Future pesticide applications at the proposed project sites would be conducted according to Federal, state, and local regulations and JBSA-Lackland's *Annual Pest Management Plan*.

Environmental Restoration Program. Short-term, minor to moderate, adverse impacts would be expected from the potential to encounter contamination from ERP sites and AOCs during construction and demolition activities. Therefore, it is recommended that a health and safety plan be prepared in accordance with OSHA requirements prior to commencement of construction and demolition activities. Workers performing soil removal activities within ERP sites are required to have OSHA 40-hour HAZWOPER Response training. In addition to this training, supervisors are required to have an OSHA Site Supervisor certification. Should contamination be encountered, handling, storage, transportation, and disposal activities would be conducted in accordance with applicable Federal, state, and local regulations; AFIs; and JBSA-Lackland programs and procedures. Further, an *ERP Waiver to Construct* must be reviewed and approved by AETC to construct on an open ERP or AOC site. See **Sections 4.4.1**, **4.4.2**, **4.4.3**, and **4.4.4** for a discussion of projects that could affect or be affected by ERP sites and AOCs. Long-term, beneficial impacts would be expected due to the elevated ERP clean-up priority that would result from developing on and adjacent to ERP sites and AOCs.

Military Munitions Response Program. Short-term, minor, adverse impacts would be expected from the potential to encounter UXO, discarded military munitions, or munitions constituents during construction and demolition activities. Therefore, it is recommended that a health and safety plan be prepared in accordance with OSHA requirements prior to commencement of construction and demolition activities. The sites should be surveyed for MEC, UXO or related materials prior to construction or demolition. If any MEC, UXO, or related materials were discovered, compliance with the DOD Environment, Safety, and Health UXO Safety Education Program should be maintained prior to and during clearing of the site and proper disposal methods should be followed to ensure maximum safety of clearing personnel. Should MEC, UXO, or related materials be encountered during construction or demolition activities, work should immediately cease and action should be taken to clear the items by authorized personnel. See **Sections 4.4.1**, **4.4.2**, **4.4.3**, and **4.4.4** for a discussion of projects that could affect or be affected by MMRP sites.

4.3.11 Safety

The Proposed Action would not result in significant adverse effects on safety. The following subsections describe the general effects on safety that would result from the Proposed Action.

Construction Safety. Short-term, minor, adverse effects could occur from the implementation of the Proposed Action. The short-term risk on demolition and construction contractors would slightly increase at JBSA-Lackland during the normal workday as demolition and construction activity levels would increase. However, all demolition and construction contractors are required to follow and implement OSHA standards to establish and maintain safety procedures. Projects associated with the Proposed Action would not pose new or unacceptable safety risks to installation personnel or activities at the installation. The proposed projects would enable JBSA-Lackland to meet future mission objectives at the installation and conduct or meet mission requirements in a safe operating environment. No long-term, adverse effects on safety would be expected. Long-term beneficial effects could result from the demolition of old, outdated structures and the updating of outdated infrastructure.

Construction workers could encounter soil or groundwater contamination or MEC, UXO, or related materials as a result of ERP and MMRP sites, respectively, or previously unknown soil or groundwater contamination, which could result in short-term, minor, adverse impacts on workers. Projects that are within or near to ERP and MMRP sites increase the potential for construction workers to encounter contamination. Prior to commencement of construction and demolition activities at or within the vicinity of open ERP sites, a health and safety plan should be prepared in accordance with OSHA regulations. Workers performing soil-removal activities within ERP sites would be required to have OSHA 40-hour HAZWOPER training. In addition, supervisors would be required to obtain an OSHA Site Supervisor Certification. Coordination with the installation Safety Officer would occur prior to commencement of construction activities to determine if an ERP waiver is required for each particular site. For more information on ERP sites and their associated hazards, see **Section 4.3.10,** *Hazardous Waste and Materials*.

Short-term, negligible, adverse effects on safety from exposure to ACMs or LBP could be experienced during demolition, construction, and infrastructure improvement activities, but adherence to all Federal, state, and local regulations and JBSA-Lackland management plans would reduce these effects. Long-term, negligible to minor, beneficial effects on safety would be experienced from the removal of ACMs and LBP materials by reducing potential exposure to personnel.

Because some of the buildings proposed for demolition under Project D2 were used historically for the storage or assembly of nuclear and non-nuclear components of atomic weapons, the buildings would be surveyed for residual low-level radioactive materials by the Air Force Safety Center prior to demolition. If radioactive materials are discovered, the buildings would remain in place and any potential future work would be coordinated with the Air Force Safety Center.

Demolition, construction, and infrastructure improvement activities would be accomplished in accordance with Federal, state, and local regulations to minimize safety hazards associated with hazardous materials, wastes, and substances.

Explosives and Munitions Safety. Short-term, minor, adverse effects could occur during demolition and construction activities within existing QD arcs and MMRP sites. Projects D2, D3, I3, I5, I6, I7, I8, and I9 are proposed within existing QD arcs. Contractors working within a QD arc could be exposed to an increased risk of potential explosions. Coordination with the installation Safety Office would occur so that handling or transportation of hazardous materials would not happen within QD arcs while construction workers are in these areas. This would minimize explosive safety risks to construction workers. Any construction activities within the existing munitions storage or EOD areas should be monitored for potential UXO. All proposed projects within QD arcs would be mission-necessary and consistent with current land uses inside established QD arcs. Any construction activities within MMRP sites should be cautious of MEC or related material. If there is an inadvertent discovery of MEC during construction activities, work would cease immediately and the Explosive Ordnance Disposal Unit would be contacted. Work would resume once all MEC are cleared and the site has been deemed safe to continue work.

4.4 Detailed Environmental Consequences of the Proposed Action

4.4.1 Selected Demolition Projects

4.4.1.1 D1. Security Hill Dormitory Complex Demolition

Project D1 would not result in significant effects. The following subsections break down by resource areas the non-significant effects that would result from Project D1.

Noise. Short-term, minor, adverse impacts on the noise environment would be expected from demolition of the Security Hill Dormitory Complex. The noise emanating from demolition equipment would be localized, short-term, and intermittent during machinery operations. **Table 3-2** shows the predicted noise levels for various types of construction equipment 50 feet from the source, and **Table 4-1** shows estimated noise levels that would be expected at varying distances from a demolition area. Heavy construction equipment would not be operational during the entire demolition period, which would limit the duration of increased noise levels. The land use in the project area is within a portion of JBSA-Lackland that was previously used for unaccompanied housing. On-installation populations potentially affected by the increased noise levels would include USAF personnel working in the adjacent buildings approximately 100 feet from the facilities proposed for demolition. The closest personnel would be exposed to noise levels between 84 and 88 dBA. The closest off-installation populations would be approximately 800 feet to the southwest and would be exposed to noise levels of between 66 and 70 dBA from demolition activities. Contractors and workers are responsible to follow noise regulations in accordance with Federal, state and USAF guidelines.

Land Use. Long-term, minor, beneficial impacts would be expected from demolition of the Security Hill Dormitory Complex. Demolition activities would result in beneficial impacts on the installation's organizational functions by removing outdated facilities and creating space for future projects. The land made available by demolition of the Security Hill Dormitory Complex would increase the amount of vacant land available for future development and would contribute to the goal of reducing the physical plant footprint on the installation according to the "20/20 by 2020" initiative (see **Section 2.1**). Present land use in the area, which is designated as community-commercial, administrative, and housing unaccompanied would remain viable during the demolition activities. Following demolition, the land use designations would not change and would remain compatible with adjacent land uses.

Air Quality. Short-term, negligible to minor, adverse effects on air quality would be expected from the demolition of the Security Hill Dormitory Complex. Demolition activities would result in temporary effects on local and regional air quality, primarily from site-disturbing activities, the operation of demolition equipment and haul trucks transporting debris, and workers commuting to the job site. Appropriate fugitive dust-control measures would be employed during demolition activities to suppress emissions. All emissions associated with demolition activities would be temporary in nature. However, subsequent to the demolition, operational emissions would slightly decrease due to elimination of the combustion sources, i.e. boilers/heaters, associated with the Security Hill Dormitory Complex. This would result in a long-term, negligible to minor beneficial effect on air quality. It is not expected that overall emissions from the demolition of the Security Hill Dormitory Complex would affect local or regional attainment status with respect to the NAAQS. Emissions from the demolition of the Security Hill Dormitory Complex and resulting decrease in operational emissions are summarized in **Table 4-7**. Emissions estimation spreadsheets are included in **Appendix E**.

Long-term, minor, beneficial effects on air quality would be expected from the demolition of the Security Hill Dormitory Complex. Any long-term air emissions sources (e.g., boilers, furnaces, electrical generators) at these facilities would be deactivated and removed during the demolition process. The deactivation and removal of these air emissions sources would contribute to reducing the total air emissions produced at JBSA-Lackland.

Geological Resources. Project D1 would be expected to result in short-term, minor, adverse impacts, and long-term, beneficial impacts on soils. Soils previously were disturbed in this area when the building was constructed. Long-term, beneficial effects would result from the removal of impervious surfaces and restoration of the project area to match surrounding areas. Short-term effects would result from vegetation removal and compaction of surrounding soils under the weight of construction equipment, which would result in increased soil erosion and transport in storm water runoff during construction activities. Adverse effects would be minimized with implementation of environmental protection measures including wetting of soils, and implementation of erosion and storm water management practices to contain soil and runoff on site. Berming along nearby water bodies would decrease the amount of potential sedimentation in adjacent water bodies. Wetting of soils would occur on a daily basis as needed to prevent erosion and generation of dust. Due to the potential presence of ACMs in the building, proper abatement procedures, environmental protection measures, and an ESCP would be implemented to minimize impacts and ensure contamination of soils does not occur during demolition.

Table 4-7. Estimated Air Emissions Resulting from Project D1

Activity	NO_x (tpy)	VOC (tpy)	CO (tpy)	SO_2 (tpy)	PM_{10} (tpy)	$PM_{2.5}$ (tpy)	CO_2 (metric tons/year)	HAPs (tpy)
Demolition								
Total Demolition Emissions	5.19	1.42	6.54	0.41	7.53	1.25	791.50	--
Percentage of Total JBSA-Lackland Baseline Emissions	0.55	1.57	0.70	0.44	7.35	1.69	NA	NA
Percentage of Bexar County Emissions*	0.0091	0.0023	0.0027	0.0015	0.0127	0.0129	0.00013**	NA
Operations								
Total Operations Emissions	(0.216)	(0.013)	(0.092)	(0.001)	(0.017)	(0.017)	(249.896)	(0.004)
Percentage of Total JBSA-Lackland Baseline Emissions	(0.023)	(0.014)	(0.010)	(0.001)	(0.017)	(0.024)	NA	NA
Percentage of Bexar County Emissions*	(0.00038)	(0.00002)	(0.00004)	(0.00000)	(0.00003)	(0.00018)	(0.00004)	NA

Notes: * Based on maximum year emissions.
** Percentage of State of Texas CO_2 emissions as the Bexar County CO_2 emissions inventory is not available.

No impacts on topography, geology, or prime farmland soils or from geological hazards would be anticipated.

Water Resources. Short-term, negligible, adverse and long-term, beneficial effects on groundwater and surface water would be expected from activities associated with Project D1. No new construction is planned for this area and there would be a decrease in impervious surfaces. Following demolition the area would be reseeded in accordance with the JBSA-Lackland INRMP (LAFB 2007). The decrease in impervious surface would have a localized beneficial effect on groundwater and surface water.

Ground disturbance as a result of Project D1 would be approximately 2.3 acres. Because the project footprint is greater than 1 acre and less than 5 acres, the project would be covered by General Stormwater Permit TXR1500000 and would require an individual SWPPP, a posted site notice, and submittal of a copy of the site notice to any MS4 operator receiving the discharge. The permit requires the implementation of BMPs to avoid and minimize pollution in storm water runoff. BMPs could include the use of silt fences, covering of soil stockpiles, use of secondary containment for the temporary storage of hazardous liquids, detention/retention ponds, and establishment of buffer areas, as appropriate.

Spill prevention practices, consistent with the JBSA-Lackland SPCC plan (LAFB 2006b), would be implemented during all activities associated with the Proposed Action to avoid and minimize potential adverse effects on groundwater and surface water. The decrease in impervious surfaces associated with the removal of the structures would be expected to reduce the volume and velocity of local storm water runoff and the associated potential for erosion and off site transport of sediments.

No impacts on wetlands, water features, or the 100-year floodplain are anticipated from implementation of Project D1.

Biological Resources. Short-term, direct, negligible, adverse and long-term, beneficial effects on vegetation would be expected from demolition activities associated with Project D1. Demolition would occur in a previously developed area; therefore, vegetation in the area consists primarily of manicured lawns and associated landscaping, and brush or scrub consistent with urbanized areas. While a long-term loss of vegetation such as trees and shrubs would occur as a result of demolition activities, the area would be reseeded in accordance with the JBSA-Lackland INRMP (LAFB 2007). Minor, adverse impacts on the land adjacent to the project area would be anticipated from use of heavy demolition equipment. These impacts would be short-term, as these areas would be reseeded with appropriate groundcover in accordance with the INRMP. Overall, the project would result in long-term, beneficial effects on vegetation at the project site.

Short- and long-term, direct, negligible to minor, adverse and long-term, beneficial effects on wildlife would be expected from demolition activities associated with Project D1. Demolition would occur in a previously developed area. Disturbance as a result of noise and heavy equipment could cause wildlife to engage in escape or avoidance behaviors; however, most wildlife species near the project area would be expected to recover quickly once the disturbances have ceased. Furthermore, JBSA-Lackland is moderately developed and aircraft operations are frequent; therefore, wildlife currently inhabiting the project sites would be habituated to noise. Short-term, minor impacts would result from the removal of trees and vegetation that could serve as habitat for wildlife species; however, the resulting increase in habitat following demolition would provide a beneficial, long-term effect on wildlife by providing a net increase in potentially available habitat.

No impacts on protected and sensitive species would occur as a result of Project D1. No species have been observed and no suitable or critical habitat is found within the project area. Short-term, indirect, negligible to minor, adverse effects on migratory bird species could occur as a result of noise and physical disturbance. If these activities occur during nesting season, the environmental protection measures under **Section 4.3.6** would help to avoid take under MBTA.

Cultural Resources. This project would not have a significant impact on cultural resources at JBSA-Lackland. Buildings 2009, 2012, 2013, 2014, 2015, 2018, 2020, and 2041 have been determined ineligible for listing in the NRHP (LAFB 2002a). Building 2022 need not be evaluated for NRHP-eligibility because it was constructed very recently in 2000. Buildings 2009, 2013, 2015, 2018, and 2020 are covered by the 2006 Section 106 program comment entitled *Program Comment for Cold War Era Unaccompanied Personnel Housing (1946-1974).* This program comment stipulated nationwide mitigation to provide for any future adverse effects on these property types and, if the housing structures to be demolished in this project were considered eligible, their demolition would already be mitigated (ACHP 2006b).

Since the areas within the dormitory complex to be demolished are previously developed and highly disturbed, archaeological resources are unlikely. Areas of highly disturbed ground on JBSA-Lackland, including the Kelly Field Annex, have not been surveyed for archaeological resources as they are considered to have low potential for NRHP-eligible sites (LAFB 1996). If any unanticipated discoveries of archaeological resources are made during demolition and related site work, SOP #5 of the JBSA-Lackland ICRMP, “Unanticipated Discoveries of Archaeological Deposits,” and Section IV of the JBSA PA, “Inadvertent Discoveries and Emergencies,” would be followed.

Socioeconomics and Environmental Justice. Short-term, negligible to minor, beneficial effects on socioeconomic resources would be expected from the demolition of Buildings 2009, 2012, 2013, 2014, 2015, 2018, 2020, 2022, and 2041 under Project D1. It is assumed that equipment and supplies necessary to complete demolition activities would be obtained locally, and local contractors would be used. The demand for workers as part of demolition activities would be minor and would not outstrip the local supply of workers, as there are more than 80,000 construction workers in the San Antonio-New Braunfels MSA. Proposed activities would occur entirely on JBSA-Lackland and, therefore, would have little potential to affect off-installation residents adversely. The dormitory complex is currently vacant; therefore, no changes to the potential use of private housing outside of JBSA-Lackland are anticipated. It is possible that nearby residents of San Antonio approximately 750 feet to the southwest of the project could experience short-term intermittent noise associated with the proposed demolition activities. However, this noise would be short-term and would not be a disproportionate adverse effect. No other environmental justice issues would be anticipated. No long-term effects on socioeconomic resources are expected to result from the proposed project.

Infrastructure. Short-term, minor, adverse effects on solid waste would be expected to result from the generation of demolition debris. Debris not recycled would be landfilled, which would be considered a long-term, irreversible, adverse effect. Removal of Buildings 2009, 2012, 2013, 2014, 2015, 2018, 2020, and 2041 would result in a slight decrease in demand for certain utilities. Short-term, negligible, adverse effects on infrastructure can be expected due to the potential for disruption to utilities and transportation and would only occur during demolition activities. Long-term, negligible, beneficial effects would be realized from the removal of outdated utilities (e.g., electrical and heating units). Long-term, beneficial effects on storm drainage systems would be expected from the decrease in impervious surfaces.

Hazardous Materials and Waste. Short-term, minor, adverse impacts associated with hazardous materials and waste would be expected from implementation of Project D1. Demolition of Buildings 2009, 2012, 2013, 2014, 2015, 2018, 2020, and 2041 would result in a short-term increase in the use of hazardous materials and petroleum products and the generation of hazardous and petroleum wastes. Contractors would be responsible for the management of these materials, which would be handled in accordance with JBSA-Lackland hazardous materials management and hazardous waste management plans and Federal, state, local, and USAF regulations. Sampling for ACMs, LBP, and PCBs would occur prior to any demolition activities so that these materials can be properly characterized, handled, and disposed of in accordance with JBSA-Lackland management plans, local regulations, and USAF policies. Long-term, minor, beneficial impacts would be associated with demolition due to the elimination of older buildings, resulting in a reduced potential for exposure to, and maintenance of, ACMs, LBP, and PCBs. No long-term impacts on hazardous materials management or hazardous waste generation would be expected as a result of Project D1. No impacts would be expected from pesticides, radon, ERP sites, storage tanks, or MMRP sites.

Safety. Short-term, negligible to minor, adverse effects on safety could occur during demolition activities. Demolition activities pose an increased risk of demolition-related accidents, but this level of risk would be managed by adhering to established Federal, state, and local safety regulations. Workers would be required to wear personal protective equipment (PPE) such as ear protection, steel-toed boots, hard hats, gloves, and other appropriate safety gear. Demolition areas would be fenced and appropriately marked with signs. Demolition equipment and associated trucks transporting material to and from demolition sites would be directed to roads and streets that have a lesser volume of traffic. Therefore, no long-term, adverse effects on safety would be expected.

ACMs and LBP could be encountered during demolition activities. ACMs and LBP require appropriate characterization, removal, handling, and disposal during demolition activities by qualified personnel. Short-term, minor, adverse impacts on safety during removal of ACMs and LBP could occur, and long-term, beneficial effects on safety would also be experienced from the removal of ACMs and LBP materials by reducing exposure to installation personnel.

4.4.1.2 D2. Atomic Energy Commission Facilities Demolition

Project D2 would not result in significant effects. The following subsections break down by resource areas the non-significant effects that would result from Project D2.

Noise. Short-term, minor, adverse impacts on the noise environment would be expected from demolition of the Atomic Energy Commission facilities. The noise emanating from demolition equipment would be localized, short-term, and intermittent during machinery operations. **Table 3-2** shows the predicted noise levels for various types of construction equipment 50 feet from the source, and **Table 4-1** shows estimated noise levels that would be expected at varying distances from a demolition area. Heavy construction equipment would not be operational during the entire demolition period, which would limit the duration of increased noise levels. This area of JBSA-Lackland is designated for industrial and training functions. Populations potentially affected by the increased noise levels would include USAF personnel working in the adjacent industrial buildings approximately 100 feet from the demolition area. The closest personnel would be exposed to noise levels between 84 and 88 dBA. The closest off-installation populations would be approximately 2,500 feet to the northwest, and would be exposed to noise levels of approximately 60 dBA from demolition activities. Contractors and workers are responsible to follow noise regulations in accordance with Federal, state and USAF guidelines.

Land Use. Long-term, minor, beneficial impacts would be expected from demolition of the Atomic Energy Commission Facilities. Demolition activities would result in beneficial impacts on the installation's organizational functions by removing outdated facilities and creating space for future projects. The land made available by demolition of the Atomic Energy Commission Facilities would reduce the amount of undisturbed land required for future development and would contribute to the goal of reducing the physical plant footprint on the installation according to the "20/20 by 2020" initiative (see **Section 2.1**). Present land use in the area, which is designated as industrial and training indoor, would remain viable during the demolition activities. Following demolition, the land use designations would not change and would remain compatible with adjacent land uses. Project D2 is within the boundaries of two ERP sites, AOC-45 and ST-07, and within the QD arcs associated with the Lackland Training Annex munitions storage area. Demolition activities would take into account any land use restrictions in place due to the presence of both ERP sites and the QD arcs. Demolition of these structures would also reduce the number of facilities within a QD arc resulting in long-term, minor, beneficial impacts.

Air Quality. Short-term, negligible to minor, adverse effects on air quality would be expected from the demolition of the Atomic Energy Commission Facilities Demolition. Demolition activities would result in temporary effects on local and regional air quality, primarily from site-disturbing activities, the operation of demolition equipment and haul trucks transporting debris, and workers commuting to the job site. Appropriate fugitive dust-control measures would be employed during demolition activities to suppress emissions. All emissions associated with demolition activities would be temporary in nature. However, subsequent to the demolition, operational emissions would slightly decrease due to elimination of the combustion sources (i.e., boilers/heaters) associated with the Atomic Energy Commission Facilities. This would result in a long-term, negligible to minor beneficial effect on air quality. It is not expected that overall emissions from the demolition of the Atomic Energy Commission Facilities Demolition would affect local or regional attainment status with respect to the NAAQS. Emissions from the demolition of the Atomic Energy Commission Facilities Demolition and the resulting decrease in operational emissions are summarized in **Table 4-8**. Emissions estimation spreadsheets are included in **Appendix E**.

Long-term, minor, beneficial effects on air quality would be expected from the demolition of the Atomic Energy Commission Facilities Demolition. Any long-term air emissions sources (e.g., boilers, furnaces, electrical generators) at these facilities would be deactivated and removed during the demolition process.

Table 4-8. Estimated Air Emissions Resulting from Project D2

Activity	NO_x (tpy)	VOC (tpy)	CO (tpy)	SO_2 (tpy)	PM_{10} (tpy)	$PM_{2.5}$ (tpy)	CO_2 (metric tons/year)	HAPs (tpy)
Demolition								
Total Demolition Emissions	1.20	0.35	1.77	0.09	1.74	0.29	215.08	--
Percentage of Total JBSA-Lackland Baseline Emissions	0.13	0.39	0.19	0.10	1.70	0.39	NA	NA
Percentage of Bexar County Emissions*	0.002	0.001	0.001	0.0003	0.003	0.003	0.00004**	NA
Operations								
Total Operations Emissions	(0.048)	(0.003)	(0.020)	(0.000)	(0.004)	(0.004)	(55.61)	(0.001)
Percentage of Total JBSA-Lackland Baseline Emissions	(0.005)	(0.003)	(0.002)	(0.000)	(0.004)	(0.005)	NA	NA
Percentage of Bexar County Emissions*	(0.00008)	(0.00000)	(0.00001)	(0.00000)	(0.00001)	(0.00004)	(0.00001)	NA

Notes: * Based on maximum year emissions.
** Percentage of State of Texas CO_2 emissions as the Bexar County CO_2 emissions inventory is not available.

The deactivation and removal of these air emissions sources would contribute to reducing the total air emissions produced at JBSA-Lackland.

Geological Resources. Project D2 would be expected to result in short-term, minor, adverse impacts, and long-term, beneficial impacts on soils. Soils previously were disturbed in this area when the building was constructed. Long-term, beneficial effects would result from the removal of impervious surfaces and restoration of the project area to match surrounding areas. Short-term effects would involve vegetation removal and compaction of surrounding soils under the weight of construction equipment, which would result in increased soil erosion and transport in storm water runoff during construction activities. Adverse effects would be minimized with implementation of environmental protection measures including wetting of soils, and implementation of erosion and storm water management practices to contain soil and runoff on site. Berming along nearby water bodies would decrease the amount of potential sedimentation in adjacent water bodies. Wetting of soils would occur on a daily basis as needed to prevent erosion and generation of dust. Due to the potential presence of ACMs in the buildings, proper abatement procedures, environmental protection measures, and an ESCP would be implemented to minimize impacts and ensure contamination of soils does not occur during demolition.

Some of the buildings proposed for demolition under Project D2 lie within an ERP site. Therefore, short-term, minor to moderate, adverse effects on soils could occur from the disturbance of potentially contaminated soils. Project planning should include sampling and subsequent remediation within the project area to account for the discovery of contaminated soil. The handling, storage, transportation, and disposal of hazardous substances would be conducted in accordance with applicable Federal, state, and local regulations; USAF regulations; and JBSA-Lackland management procedures. No long-term effects would be expected.

No impacts on topography, geology, or prime farmland soils or from geological hazards would be anticipated.

Water Resources. Short-term, negligible to minor, adverse and long-term, beneficial effects on water resources would occur. The buildings proposed for demolition are adjacent to the 100-year floodplain; however, no impacts would be anticipated. No new construction is planned for this area and there would be a decrease in impervious surfaces. Following demolition, the area would be reseeded in accordance with the JBSA-Lackland INRMP (LAFB 2007). The decrease in impervious surface would have a localized beneficial effect on groundwater and surface water.

Ground disturbance as a result of Project D2 would be 0.8 acres; however, no new construction is planned for this area and the project would lead to a decrease in impervious surfaces. This would have a localized beneficial effect on groundwater and surface water. Because the project footprint has less than 1 acre of ground disturbance, the project would not require coverage under General Stormwater Permit TXR1500000. BMPs would be implemented to avoid and minimize pollution in storm water runoff. BMPs could include the use of silt fences, covering of soil stockpiles, use of secondary containment for the temporary storage of hazardous liquids, detention/retention ponds, and establishment of buffer areas, as appropriate.

Spill prevention practices, consistent with the JBSA-Lackland SPCC plan (LAFB 2006b), would be implemented during all activities associated with the Proposed Action to avoid and minimize potential adverse effects on groundwater and surface water. The decrease in impervious surfaces associated with the removal of the structures would be expected to reduce the volume and velocity of local storm water runoff and the associated potential for erosion and off site transport of sediments.

No wetlands or water features are present on the project site for Project D2; therefore no direct, adverse effects would occur. Three jurisdictional wetlands are located between 100 and 375 feet from the project area. Because of the proximity, demolition activities associated with Building 433 have the potential to indirectly impact these wetlands. However, adherence to the SWPPP and use of environmental protection measures would be implemented to minimize potential impacts. Long-term, beneficial impacts to the floodplain would be anticipated from demolition of Building 433. This building is within the floodplain. Removal of the building would restore the floodplain to natural conditions.

Biological Resources. Short- and long-term, negligible, adverse and long-term, beneficial effects on vegetation would be expected from demolition activities associated with Project D2. Demolition would occur in a previously developed area; therefore, vegetation in the area consists primarily of manicured lawns and associated landscaping, and brush or scrub consistent with developed areas. While a long-term loss of vegetation such as trees and shrubs would occur as a result of demolition activities, the area would be reseeded in accordance with the JBSA-Lackland INRMP (LAFB 2007). Minor, adverse impacts on the land adjacent to the project area would be anticipated from use of heavy demolition equipment. These impacts would be short-term, as these areas would be reseeded with appropriate groundcover in accordance with the INRMP. Overall, the project would result in long-term, beneficial effects on vegetation at the project site.

Short-term, negligible to minor, adverse and long-term, beneficial effects on wildlife would be expected from demolition activities associated with Project D2. Demolition would occur in a previously developed area. Disturbance as a result of noise and equipment could cause wildlife to engage in escape or avoidance behaviors; however, most wildlife species near the project area would be expected to recover quickly once the disturbances have ceased. Furthermore, JBSA-Lackland is moderately developed and aircraft operations are frequent; therefore, wildlife currently inhabiting the project sites would be habituated to noise. Short-term, minor impacts would result from the removal of trees and vegetation that could serve as habitat for wildlife species; however, the resulting increase in habitat following demolition would provide a beneficial, long-term effect on wildlife by providing a net increase in potentially available habitat.

No impacts on protected and sensitive species would occur as a result of Project D2. Riparian habitat to the east of the project area in Medio Creek and the woodlands and shrublands surrounding the project footprints could be suitable habitat for black-capped vireo, white-faced ibis, Cagle's map turtle, Texas indigo snake, and the timber rattlesnake (LAFB 2007). However, no species have been observed and no suitable or critical habitat is found within the project area. Short-term, indirect, negligible to minor, adverse effects on migratory bird species could occur as a result of noise and physical disturbance. If these activities occur during nesting season, the environmental protection measures under **Section 4.3.6** would help to avoid take under MBTA.

Cultural Resources. This project will result in adverse effects on cultural resources at JBSA-Lackland; however, development of avoidance or mitigation measures acceptable to the SHPO in accordance with the JBSA-Lackland PA would minimize potential impacts on cultural resources. Six of the seven structures proposed for demolition under Project D2 are NRHP-eligible as contributing resources to the Medina Base Historic District. Detailed information regarding NRHP eligibility is provided in **Table 4-9**.

Table 4-9. NRHP-Eligibility of Buildings Proposed for Demolition under Project D2

Building No.	Building Name	Construction Date	NRHP Eligibility	Category Code
424	Inert Spares Storage	1986	Not eligible.	422265
425	Inert Spares Storage	1954	NRHP-eligible. Contributing to Medina Base Historic District.	422265
426	Logistics Facility Depot Operations	1954	NRHP-eligible. Contributing to Medina Base Historic District.	610675
427	Inert Spares Storage	1954	NRHP-eligible. Contributing to Medina Base Historic District.	422265
433	Base Engineer Covered Storage Facility	1959	NRHP-eligible. Contributing to Medina Base Historic District.	219946
442	Inert Spares Storage	1961	NRHP-eligible. Contributing to Medina Base Historic District.	422265
443	Air Conditioning Central Plant	1955	NRHP-eligible. Contributing to Medina Base Historic District.	890123

Sources: LAFB 2002a, LAFB 2011m

Buildings 425, 427, and 442 are types of ammunition storage facilities covered in the ACHP program alternative titled *Program Comment for World War II and Cold War Era (1939-1974) Ammunition Storage Facilities*. However, this program comment specifically excludes ammunition storage facilities that are part of a NRHP-eligible- or listed district that also includes other building types, as is the case with the Medina Base Historic District. Demolition of these seven structures will constitute an adverse effect under Section 106 of the NHPA. JBSA-Lackland will follow the provisions of Section 4.5 of the

JBSA-Lackland ICRMP and Stipulation II.1.G of the JBSA-Lackland PA to develop avoidance or mitigation measures acceptable to the SHPO, or otherwise follow the dispute resolution stipulation outlined in the PA.

These buildings are also near two archaeological sites that have been determined eligible for the NRHP: Sites 41BX1102 and 41BX1103 (LAFB 1996). There are two other sites in this upper portion of the Medio Creek terrace that were determined to be NRHP ineligible in consultation with the SHPO (LAFB 2002a). These sites are all in areas of undisturbed ground outside of developed land and should be avoidable with proper coordination with the SHPO during the planning phases of the project.

Socioeconomics and Environmental Justice. Short-term, negligible to minor, beneficial effects on socioeconomic resources would be expected from the demolition of Buildings 424, 425, 426, 427, 433, 442, and 443. It is assumed that equipment and supplies necessary to complete demolition activities would be obtained locally, and local contractors would be used. The demand for workers as part of the demolition would be minor and would not outstrip the local supply of workers, as there are more than 80,000 construction workers in the San Antonio-New Braunfels MSA. Proposed activities would occur entirely on JBSA-Lackland and, therefore, would have little potential to affect off-installation residents aversely. No other environmental justice issues would be anticipated. No long-term effects on socioeconomic resources are expected to result from the proposed project.

Infrastructure. Short-term, minor, adverse effects on solid waste would be expected to result from the generation of demolition debris. Debris not recycled would be landfilled, which would be considered a long-term, irreversible, adverse effect. Removal of Buildings 424, 425, 426, 427, 433, 442, and 443 would result in a slight decrease in demand for certain utilities. Short-term, negligible, adverse effects on infrastructure can be expected due to the potential for disruption to utilities and transportation and would only occur during demolition activities. Long-term, negligible, beneficial effects would be realized from the removal of outdated utilities (e.g., electrical and heating units).

Hazardous Materials and Waste. Short-term, minor, adverse impacts associated with hazardous materials and waste would be expected from implementation of Project D2. Demolition of Buildings 424, 425, 426, 427, 433, 442, and 443 would result in a short-term increase in the use of hazardous materials and petroleum products and the generation of hazardous and petroleum wastes. Contractors would be responsible for the management of these materials, which would be handled in accordance with JBSA-Lackland hazardous materials management and hazardous waste management plans and Federal, state, local, and USAF regulations. ACMs, LBP, and PCBs could be encountered during demolition. Sampling for these materials should occur prior to any demolition activities so that these materials can be properly characterized, handled, and disposed of in accordance with JBSA-Lackland management plans, local regulations, and USAF policies. All of the buildings associated with Project D2 would be within the boundaries of ERP sites AOC-45 and ST-07; however, these ERP sites have been closed and no further action has been recommended. Therefore, no impacts from ERP sites would be anticipated. If contamination were discovered during demolition, work would be halted immediately and any contaminated materials would be handled, stored, transported, and disposed of in accordance with applicable Federal, state, local, and USAF regulations. Long-term, minor, beneficial impacts would be associated with demolition due to the elimination of older buildings, resulting in a reduced potential for exposure to, and maintenance of, ACMs, LBP, and PCBs. No long-term impacts on hazardous materials management or hazardous waste generation would be expected as a result of Project D2. No impacts would be expected from pesticides, radon, or MMRP sites.

Short-term, negligible, adverse impacts on ASTs would be expected because Building 443, which is scheduled for demolition under Project D2, contains one AST. This AST would be disposed of in accordance with appropriate Federal, state, and USAF regulations.

Safety. Short-term, negligible to minor, adverse effects on safety could occur during demolition activities. Demolition activities pose an increased risk of demolition-related accidents, but this level of risk would be managed by adhering to established Federal, state, and local safety regulations. Workers would be required to wear PPE such as ear protection, steel-toed boots, hard hats, gloves, and other appropriate safety gear. Demolition areas would be fenced and appropriately marked with signs. Demolition equipment and associated trucks transporting material to and from demolition sites would be directed to roads and streets that have a lesser volume of traffic. Therefore, no long-term, adverse effects on safety would be expected.

ACMs and LBP could be encountered during demolition. These materials require appropriate characterization, removal, handling, and disposal during demolition activities by qualified personnel. Short-term, minor, adverse impacts on safety during removal of ACMs and LBP could occur, and long-term, beneficial effects on safety would also be experienced from the removal of ACMs and LBP materials by reducing exposure to installation personnel.

This project is also within ERP sites AOC-45 and ST-07, which has been closed and classified as requiring "No Further Action," (LAFB 2011a). There is a potential for workers to encounter previously unknown contamination during demolition activities within ERP sites. If contamination is encountered, it would be handled, stored, transported, and disposed of in accordance with the installation's Hazardous Waste Management Plan and all applicable Federal, state, and local regulations and policies.

Because the buildings were used historically for the storage or assembly of nuclear and non-nuclear components of atomic weapons, the buildings would be surveyed for residual low-level radioactive materials by the Air Force Safety Center prior to demolition. If radioactive materials are discovered, the buildings would remain in place and any potential future work would be coordinated with the Air Force Safety Center.

Project D2 is located with the QD arcs associated with the Lackland Training Annex munitions storage area. Construction workers could be at an increased risk of explosions in the area which could have minor, adverse impacts on workers in this location. To avoid potential impacts on construction workers and the installation mission, this project would be coordinated with the installation Safety Office.

4.4.1.3 D3. Demolish Munitions Storage Igloos

Project D3 would not result in significant effects. The following subsections break down by resource areas the non-significant effects that would result from Project D3.

Noise. Short-term, minor, adverse impacts on the noise environment would be expected from demolition of Munitions Storage Igloos. The noise emanating from demolition equipment would be localized, short-term, and intermittent during machinery operations. **Table 3-2** shows the predicted noise levels for various types of construction equipment 50 feet from the source, and **Table 4-1** shows estimated noise levels that would be expected at varying distances from a demolition area. Heavy construction equipment would not be operational during the entire demolition period, which would limit the duration of increased noise levels. This area of JBSA-Lackland is used for industrial functions and as open space. Populations potentially affected by the increased noise levels would include USAF personnel working in the adjacent industrial buildings approximately 700 feet from the demolition area. The closest personnel would be exposed to noise levels between 67 and 71 dBA. The closest off-installation populations would be approximately 2,900 feet to the northwest, and would be exposed to noise levels of approximately 58 dBA from demolition activities. Contractors and workers are responsible to follow noise regulations in accordance with Federal, state and USAF guidelines.

Land Use. Long-term, minor, beneficial impacts would be expected from demolition of the Munitions Storage Igloos. Demolition activities would result in beneficial impacts on the installation's organizational functions by removing these facilities as part of JBSA-Lackland's effort to consolidate munitions storage. The land made available by demolition of the Munitions Storage Igloos would reduce the amount of undisturbed land required for future development and would contribute to the goal of reducing the physical plant footprint on the installation according to the "20/20 by 2020" initiative (see **Section 2.1**). Present land use in the area, which is designated as open space and industrial, would remain viable during the demolition activities. Following demolition, the area would continue to be used as a munitions storage area, so the current land use designation would remain. Project D3 is within the boundaries of ERP site RW-33 and within the QD arcs associated with the Lackland Training Annex munitions storage area. Demolition activities would take into account any land use restrictions in place due to the presence of the ERP site and the QD arcs. Demolition of these structures would also result in an adjustment in the size of the existing QD arcs, possibility reducing them and resulting in long-term, beneficial impacts.

Air Quality. Short-term, negligible to minor, adverse effects on air quality would be expected from the demolition of the Munitions Storage Igloos. Demolition activities would result in temporary effects on local and regional air quality, primarily from site-disturbing activities, the operation of demolition equipment and haul trucks transporting debris, and workers commuting to the job site. Appropriate fugitive dust-control measures would be employed during demolition activities to suppress emissions. All emissions associated with demolition activities would be temporary in nature. It is assumed the igloos are not heated so there would be no decrease in operational emissions from their demolition. It is not expected that emissions from the demolition of the Munitions Storage Igloos would affect local or regional attainment status with respect to the NAAQS. Emissions from the demolition of the Munitions Storage Igloos are summarized in **Table 4-10**. Emissions estimation spreadsheets are included in **Appendix E**.

Long-term, minor, beneficial effects on air quality would be expected from the demolition of the Munitions Storage Igloos. Any long-term air emissions sources (e.g., boilers, furnaces, electrical generators) at these facilities would be deactivated and removed during the demolition process. The deactivation and removal of these air emissions sources would contribute to reducing the total air emissions produced at JBSA-Lackland.

Table 4-10. Estimated Air Emissions Resulting from Project D3

Activity	NO_x (tpy)	VOC (tpy)	CO (tpy)	SO_2 (tpy)	PM_{10} (tpy)	$PM_{2.5}$ (tpy)	CO_2 (metric tons/year)	HAPs (tpy)
Demolition								
Total Demolition Emissions	0.85	0.26	1.35	0.07	1.24	0.20	164.07	--
Percentage of Total JBSA-Lackland Baseline Emissions	0.09	0.29	0.15	0.07	1.21	0.27	NA	NA
Percentage of Bexar County Emissions*	0.0015	0.0004	0.0006	0.0003	0.0021	0.0021	0.00003**	NA

Notes: * Based on maximum year emissions.

** Percentage of State of Texas CO_2 emissions as the Bexar County CO_2 emissions inventory is not available.

Geological Resources. Project D3 would be expected to result in short-term, minor, adverse impacts, and long-term, beneficial impacts on soils. Soils previously were disturbed in this area when the igloos were constructed. Long-term, beneficial effects would result from the removal of impervious surfaces and restoration of the project area to match surrounding areas. Short-term effects would involve vegetation removal and compaction of surrounding soils under the weight of construction equipment, which would result in increased soil erosion and transport in storm water runoff during construction activities. Adverse effects would be minimized with implementation of environmental protection measures including wetting of soils, and implementation of erosion and storm water management practices to contain soil and runoff

on site. Berming along nearby water bodies would decrease the amount of potential sedimentation in adjacent water bodies. Wetting of soils would occur on a daily basis as needed to prevent erosion and generation of dust. Due to the potential presence of ACMs in the igloos, proper abatement procedures, environmental protection measures, and an ESCP would be implemented to minimize impacts and ensure contamination of soils does not occur during demolition.

Some of the munitions storage igloos to be demolished under Project D3 lie within an ERP site. Therefore, short-term, minor to moderate, adverse effects on soils could occur from the disturbance of potentially contaminated soils. Project planning should include sampling and subsequent remediation within the project area to account for the discovery of contaminated soil. The handling, storage, transportation, and disposal of hazardous substances would be conducted in accordance with applicable Federal, state, and local regulations; USAF regulations; and JBSA-Lackland management procedures. No long-term effects would be expected. No impacts on topography, geology, or prime farmland soils or from geological hazards would be anticipated.

Water Resources. Short- and long-term, negligible to minor, adverse and long-term beneficial effects on groundwater and surface water would be expected from activities associated with Project D3. No new construction is planned for this area and there would be a decrease in impervious surfaces. Following demolition the area would be reseeded in accordance with the JBSA-Lackland INRMP (LAFB 2007). The decrease in impervious surface would have a localized beneficial effect on groundwater and surface water.

Ground disturbance as a result of Project D3 would be approximately 0.8 acres. Because the project footprint has less than 1 acre of ground disturbance the project would not require coverage under General Stormwater Permit TXR1500000. BMPs could include the use of silt fences, covering of soil stockpiles, use of secondary containment for the temporary storage of hazardous liquids, detention/retention ponds, and establishment of buffer areas, as appropriate.

Spill prevention practices, consistent with the JBSA-Lackland SPCC plan (LAFB 2006b), would be implemented during all activities associated with the Proposed Action to avoid and minimize potential adverse effects on groundwater and surface water. The decrease in impervious surfaces associated with the removal of the structures would be expected to reduce the volume and velocity of local storm water runoff and the associated potential for erosion and off site transport of sediments.

No impacts on wetlands, water features, or the 100-year floodplain are anticipated from implementation of Project D3.

Biological Resources. Short- and long-term, direct, negligible, adverse and long-term, beneficial effects on vegetation would be expected from activities associated with Project D3. Demolition would occur in a previously developed area; therefore, vegetation would consist primarily of manicured lawns and associated landscaping, and brush or scrub consistent with urbanized areas. While a long-term loss of vegetation such as trees and would likely occur as a result of demolition activities, the area would be reseeded in accordance with the JBSA-Lackland INRMP (LAFB 2007). Minor, adverse impacts on the land adjacent to the project area would be anticipated from use of heavy demolition equipment. These impacts would be short-term, as these areas would be reseeded with appropriate groundcover in accordance with the INRMP. Overall, the project would result in long-term, beneficial effects on vegetation at the project site.

Short- and long-term, negligible to minor, adverse and beneficial effects on wildlife would be expected from demolition activities associated with Project D3. Demolition would occur in a previously developed area. Disturbance as a result of noise and heavy equipment could cause wildlife to engage in escape or avoidance behaviors; however, most wildlife species near the project area would be expected to recover quickly once the disturbances have ceased. Furthermore, JBSA-Lackland is moderately developed and aircraft operations are frequent; therefore, wildlife currently inhabiting the project sites would be habituated to noise. Short-term, minor impacts would result from the removal of trees and vegetation that could serve as habitat for wildlife species; however, the resulting increase in habitat following demolition would provide a beneficial, long-term effect on wildlife by providing a net increase in potentially available habitat.

No impacts on protected and sensitive species would occur as a result of Project D3. Suitable habitat for the Texas horned lizard, black-capped vireo, and golden-cheeked warblers is found near the project area; however, no species have been observed and no suitable or critical habitat is found within the project area.

Cultural Resources. This project, involving the demolition of 12 NRHP-eligible ammunition storage facilities, will cause an adverse effect to cultural resources at Lackland Training Annex under Section 106 of the NHPA; however, the demolitions have previously been coordinated with the SHPO under the 2006 ACHP program alternative titled Program Comment for World War II and Cold War Era (1939-1974) Ammunition Storage Facilities. This program comment includes nationwide mitigation for the demolitions and this project, therefore, will have no significant impacts on cultural resources under NEPA.

The ammunition storage field is highly developed and its immediate area is disturbed. However, a 1996 survey along the western edge of the Lackland Training Annex, in the vicinity of structures 584 to 587 and 595 to 599 identified a number of archaeological sites that with the concurrence of the SHPO in 1997 were all determined to be ineligible for NRHP listing (LAFB 2002a). If any unanticipated discoveries are made during the demolition and site work, SOP #5 of the JBSA-Lackland ICRMP, "Unanticipated Discoveries of Archaeological Deposits," and Stipulation IV of the JBSA PA, "Inadvertent Discoveries and Emergencies," will be followed.

Socioeconomics and Environmental Justice. Short-term, negligible to minor, beneficial effects on socioeconomic resources would be expected from the demolition of the Igloos 402, 403, 404, 584, 585, 586, 587, 595, 596, 597, 598, and 599. It is assumed that equipment and supplies necessary to complete the demolition and associated soil remediation activities would be obtained locally, and local contractors would be used. The demand for workers as part of demolition activities would be minor and would not outstrip the local supply of workers, as there are more than 80,000 construction workers in the San Antonio-New Braunfels MSA. Proposed activities would occur entirely on JBSA-Lackland and, therefore, would have little potential to affect off-installation residents adversely. No other environmental justice issues would be anticipated. No long-term effects on socioeconomic resources are expected to result from the proposed project.

Infrastructure. Short-term, minor, adverse effects on solid waste would be expected to result from the generation of demolition debris. Debris not recycled would be landfilled, which would be considered a long-term, irreversible, adverse effect. Removal of Igloos 402, 403, 404, 584, 585, 586, 587, 595, 596, 597, 598, and 599 would result in a slight decrease in demand for electrical service. Short-term, negligible, adverse effects on infrastructure can be expected due to the potential for disruption to utilities and transportation and they would occur only during demolition activities. Long-term, negligible, beneficial effects would be realized from the removal of outdated utilities (e.g., electrical). Long-term, beneficial effects on storm drainage systems would be expected from the decrease in impervious surfaces.

Hazardous Materials and Waste. Short-term, minor, adverse impacts associated with hazardous materials and waste would be expected from implementation of Project D3. Demolition of Igloos 402, 403, 404, 584, 585, 586, 587, 595, 596, 597, 598, and 599 would result in a short-term increase in the use of hazardous materials and petroleum products and the generation of hazardous and petroleum wastes. Contractors would be responsible for the management of these materials, which would be handled in accordance with JBSA-Lackland hazardous materials management and hazardous waste management plans and Federal, state, local, and USAF regulations. ACMs, LBP, and PCBs could be encountered during demolition. Sampling for these materials should occur prior to any demolition activities so that these materials can be properly characterized, handled, and disposed of in accordance with JBSA-Lackland management plans, local regulations, and USAF policies. Igloos 584, 595, and 596 would be within the boundaries of ERP site RW-33; however, this ERP site has been closed and no further action has been recommended. Therefore, no impacts from ERP sites would be anticipated. If contamination were discovered during demolition, work would be halted immediately and any contaminated materials would be handled, stored, transported, and disposed of in accordance with applicable Federal, state, local, and USAF regulations. Long-term, minor, beneficial impacts would be associated with demolition due to the elimination of older buildings, resulting in a reduced potential for exposure to, and maintenance of, ACMs, LBP, and PCBs. No long-term impacts on hazardous materials management or hazardous waste generation would be expected as a result of Project D3. No impacts would be expected from pesticides, radon, storage tanks, or MMRP sites.

Safety. Short-term, negligible to minor, adverse effects on safety could occur during demolition activities. Demolition activities pose an increased risk of demolition-related accidents, but this level of risk would be managed by adhering to established Federal, state, and local safety regulations. Workers would be required to wear PPE such as ear protection, steel-toed boots, hard hats, gloves, and other appropriate safety gear. Demolition areas would be fenced and appropriately marked with signs. Demolition equipment and associated trucks transporting material to and from demolition sites would be directed to roads and streets that have a lesser volume of traffic. Therefore, no long-term, adverse effects on safety would be expected.

ACMs and LBP could be encountered during demolition. These materials require appropriate characterization, removal, handling, and disposal during demolition activities by qualified personnel. Short-term, minor, adverse impacts on safety during removal of ACMs and LBP could occur, and long-term, beneficial effects on safety would also be experienced from the removal of ACMs and LBP materials by reducing exposure to installation personnel.

Project D3 is also located within the QD arc associated with the Lackland Training Annex munitions storage area, which puts workers at an increased risk of explosions in this area. This could have minor, adverse impacts on safety to workers in this area; however, to minimize potential impacts on construction workers and the installation mission, this project would be coordinated with the installation Safety Office. Minor, long-term, beneficial impacts on safety could be expected from the consolidation of munitions on JBSA-Lackland.

Igloos 584, 595, and 596 would be within the boundaries of ERP site RW-33, which has been closed and classified as requiring “No Further Action,” (LAFB 2011a). There is a potential for workers to encounter previously unknown contamination during demolition activities within ERP sites. If contamination is encountered, it would be handled, stored, transported, and disposed of in accordance with the installation's Hazardous Waste Management Plan and all applicable Federal, state, and local regulations and policies.

4.4.2 Selected Construction Projects

4.4.2.1 C1. Airman Training Complex West Campus

Project C1 would not result in significant effects. The following subsections break down by resource areas the non-significant effects that would result from Project C1.

Noise. Short-term, minor, adverse impacts on the noise environment would be expected from demolition of Buildings 9020, 9028, 9121, 9140, 9142, 9144, and 9255 as part of Project C1. The noise emanating from demolition equipment would be localized, short-term, and intermittent during machinery operations. **Table 3-2** shows the predicted noise levels for various types of construction equipment 50 feet from the source, and **Table 4-1** shows estimated noise levels that would be expected at varying distances from a demolition area. Heavy construction equipment would not be operational during the entire demolition period, which would limit the duration of increased noise levels. The closest populations potentially affected by the increased noise levels would include USAF personnel working in the adjacent industrial buildings approximately 100 feet from the demolition area near Buildings 9020 and 9028. These personnel would be exposed to noise levels between 84 and 88 dBA. The closest off-installation populations would be approximately 2,400 feet to the southwest, and would be exposed to noise levels of approximately 60 dBA.

Short-term, minor, adverse impacts on the noise environment would be expected from construction of the ATC West Campus. The noise emanating from construction equipment would be localized, short-term, and intermittent during machinery operations. **Table 3-2** shows the predicted noise levels for various pieces of construction equipment 50 feet from the source, and **Table 4-1** shows estimated noise levels that would be expected at varying distances from a construction site. Heavy construction equipment would not be operational during the entire construction period, which would limit the duration of increased noise levels. This area of JBSA-Lackland is currently used for, industrial, outdoor training , outdoor recreation, and open space. Populations potentially affected by the increased noise levels would include USAF personnel in the adjacent building approximately 100 feet from the construction site. The closest personnel to the construction site would be exposed to noise levels of 84 to 88 dBA. The closest off-installation populations would be approximately 200 feet to the west, and would be exposed to noise levels between 78 and 82 dBA from construction activities. Consequently, proposed construction activities would result in short-term, minor, adverse impacts on the noise environment in the vicinity of construction activities. However, noise generation would last only for the duration of construction activities and would be isolated to normal working hours (i.e., between 7:00 a.m. and 5:00 p.m.). The short-term increase in noise levels from construction at the proposed ATC West Campus would not cause significant adverse effects on the surrounding populations. Contractors and workers are responsible to follow noise regulations in accordance with Federal, state, and USAF guidelines.

Land Use. Long-term, minor, adverse impacts on land use would be expected from construction of the ATC West Campus. This area of JBSA-Lackland is currently designated as open space, industrial, training outdoor, training indoor, and outdoor recreation. Project C1 would require the land use category to be changed to housing unaccompanied and training outdoor. The proposed project would be compatible with surrounding development and overall development planning for JBSA-Lackland.

Air Quality. Short-term, minor, adverse effects on air quality would be expected from the construction of Project C1. Construction activities and associated demolition activities would result in temporary effects on local and regional air quality, primarily from site-disturbing activities, the operation of construction and paving equipment and haul trucks transporting building materials to the work site and debris off site, and workers commuting to the job site. Appropriate fugitive dust-control measures would be employed during construction and demolition activities to suppress emissions. All emissions associated with construction and demolition activities would be temporary in nature.

Long-term, minor, adverse effects on air quality would be expected from the use of natural gas boilers to provide comfort heating to the proposed facility. While these operating emissions would increase the overall air emissions from JBSA-Lackland, the added emissions would be marginally offset by a reduction in air emissions from the demolition of older buildings that use more emissions-intensive heating systems. It is not expected that emissions from Project C1 would affect local or regional attainment status with respect to the NAAQS. Emissions from the construction and operation of Project C1 are summarized in **Table 4-11**. Emissions estimation spreadsheets are included in **Appendix E**.

Table 4-11. Estimated Air Emissions Resulting from Project C1

Activity (Year)	NO_x (tpy)	VOC (tpy)	CO (tpy)	SO_2 (tpy)	PM_{10} (tpy)	$PM_{2.5}$ (tpy)	CO_2 (metric tons/year)	HAP (tpy)
2014 Construction and Demolition								
Classroom/Dining Facility #1	6.07	1.58	6.32	0.47	4.52	0.98	853.74	--
Demolition of Buildings 9121, 9140, 9142, 9144, and 9255	0.33	0.14	1.01	0.02	0.31	0.06	123.97	--
Central Utility Plant	5.31	0.94	4.14	0.41	1.90	0.58	681.74	--
Dormitory, Drill Pad, Training Area #1	9.18	3.47	13.43	0.73	28.50	3.86	1,474.43	--
Total	**20.89**	**6.13**	**24.9**	**1.63**	**35.23**	**5.48**	**3,133.88**	**--**
Percentage of Total JBSA-Lackland Baseline Emissions	**2.21**	**6.79**	**2.68**	**1.75**	**34.39**	**7.39**	**NA**	**NA**
Percentage of Bexar County Emissions*	**0.037**	**0.010**	**0.010**	**0.006**	**0.059**	**0.057**	**0.0005****	**NA**
2014 Operations								
Classroom/Dining Facility #1	0.19	0.010	0.16	0.0011	0.014	0.014	205.97	0.0036
Demolition of Buildings 9121, 9140, 9142, 9144, and 9255	-0.009	-0.0005	-0.004	-0.0001	-0.0007	-0.0007	-10.48	-0.0002
Central Utility Plant	6.302	0.507	1.372	0.4128	0.4479	11.1545	259.98	0.0069
Dormitory, Drill Pad, Training Area #1	3.63	0.280	1.10	0.2092	0.260	0.039	661.65	0.01
Total	**10.111**	**0.796**	**2.628**	**0.623**	**0.722**	**11.207**	**1,117.12**	**0.023**

Activity (Year)	NO_x (tpy)	VOC (tpy)	CO (tpy)	SO_2 (tpy)	PM_{10} (tpy)	$PM_{2.5}$ (tpy)	CO_2 (metric tons/year)	HAP (tpy)
Percentage of Total JBSA-Lackland Baseline Emissions	**1.071**	**0.882**	**0.283**	**0.667**	**0.704**	**15.112**	**NA**	**NA**
Percentage of Bexar County Emissions*	**0.0178**	**0.0013**	**0.0011**	**0.0023**	**0.0012**	**0.1158**	**0.0002****	**NA**
2015 Construction								
Dormitory, Drill Pad, Training Area #2	9.30	3.55	13.76	0.73	28.63	3.90	1,500.39	--
Total	**9.30**	**3.55**	**13.76**	**0.73**	**28.63**	**3.90**	**1,500.39**	**--**
Percentage of Total JBSA-Lackland Baseline Emissions	**0.985**	**3.933**	**1.483**	**0.786**	**27.951**	**5.253**	**NA**	**NA**
Percentage of Bexar County Emissions*	**0.0164**	**0.0058**	**0.0057**	**0.0027**	**0.0483**	**0.0402**	**0.0002****	**NA**
2015 Operations								
Classroom/Dining Facility #1	0.19	0.010	0.16	0.0011	0.014	0.014	205.97	0.0036
Demolition of Buildings 9121, 9140, 9142, 9144, and 9255	-0.009	-0.0005	-0.004	-0.0001	-0.0007	-0.0007	-10.48	-0.0002
Central Utility Plant	6.302	0.507	1.372	0.4128	0.4479	11.1545	259.98	0.0069
Dormitory, Drill Pad, Training Area #1	3.63	0.280	1.10	0.2092	0.260	0.039	661.65	0.01
Dormitory, Drill Pad, Training Area #2	3.63	0.280	1.10	0.2092	0.260	0.039	661.65	0.01
Total	**13.740**	**1.076**	**3.730**	**0.832**	**0.982**	**11.246**	**1,778.77**	**0.035**
Percentage of Total JBSA-Lackland Baseline Emissions	**1.455**	**1.192**	**0.402**	**0.891**	**0.958**	**15.164**	**NA**	**NA**
Percentage of Bexar County Emissions*	**0.0242**	**0.0018**	**0.0015**	**0.0030**	**0.0017**	**0.1162**	**0.0003****	**NA**
2016 Construction								
Dormitory, Drill Pad, Training Area #3	9.30	3.55	13.76	0.73	28.63	3.90	1,500.39	--
Classroom/Dining Facility #2	6.18	1.66	6.65	0.48	4.65	1.02	879.70	
Total	**15.476**	**5.209**	**20.415**	**1.214**	**33.283**	**4.916**	**2,380.09**	**--**
Percentage of Total JBSA-Lackland Baseline Emissions	**1.639**	**5.772**	**2.199**	**1.300**	**32.490**	**6.629**	**NA**	**NA**
Percentage of Bexar County Emissions*	**0.0272**	**0.0085**	**0.0084**	**0.0044**	**0.0562**	**0.0508**	**0.0004****	**NA**

Activity (Year)	NO_x (tpy)	VOC (tpy)	CO (tpy)	SO_2 (tpy)	PM_{10} (tpy)	$PM_{2.5}$ (tpy)	CO_2 (metric tons/year)	HAP (tpy)
2016 Operations								
Classroom/Dining Facility #1	0.19	0.010	0.16	0.0011	0.014	0.014	205.97	0.0036
Demolition of Buildings 9121, 9140, 9142, 9144, and 9255	-0.009	-0.0005	-0.004	-0.0001	-0.0007	-0.0007	-10.48	-0.0002
Central Utility Plant	6.302	0.507	1.372	0.4128	0.4479	11.1545	259.98	0.0069
Dormitory, Drill Pad, Training Area #1	3.63	0.280	1.10	0.2092	0.260	0.039	661.65	0.01
Dormitory, Drill Pad, Training Area #2	3.63	0.280	1.10	0.2092	0.260	0.039	661.65	0.01
Dormitory, Drill Pad, Training Area #3	3.63	0.280	1.10	0.2092	0.260	0.039	661.65	0.01
Classroom/Dining Facility #2	0.19	0.010	0.16	0.0011	0.014	0.014	205.97	0.0036
Total	**17.56**	**1.37**	**4.99**	**1.04**	**1.26**	**11.30**	**2,646.39**	**0.05**
Percentage of Total JBSA-Lackland Baseline Emissions	**1.860**	**1.513**	**0.538**	**1.117**	**1.226**	**15.236**	**NA**	**NA**
Percentage of Bexar County Emissions*	**0.0309**	**0.0022**	**0.0021**	**0.0038**	**0.0021**	**0.1167**	**0.0004****	**NA**
2017 Construction and Demolition								
Dormitory, Drill Pad, Training Area #4	9.30	3.55	13.76	0.73	28.63	3.90	1,500.39	--
Demolition of Buildings 9020 and 9028	2.17	0.69	3.44	0.17	2.88	0.50	401.45	--
Interfaith Religious Center	6.05	1.56	6.28	0.47	4.21	0.95	850.68	--
Total	**17.52**	**5.80**	**23.48**	**1.37**	**35.72**	**5.35**	**2,752.52**	**--**
Percentage of Total JBSA-Lackland Baseline Emissions	**1.855**	**6.426**	**2.530**	**1.471**	**34.872**	**7.208**	**NA**	**NA**
Percentage of Bexar County Emissions*	**0.0308**	**0.0094**	**0.0097**	**0.0050**	**0.0603**	**0.0552**	**0.0005****	**NA**
2017 and 2018 Annual Operations								
Classroom/Dining Facility #1	0.19	0.010	0.16	0.0011	0.014	0.014	205.97	0.0036
Demolition of Buildings 9121, 9140, 9142, 9144, and 9255	-0.009	-0.0005	-0.004	-0.0001	-0.0007	-0.0007	-10.48	-0.0002
Central Utility Plant	6.302	0.507	1.372	0.4128	0.4479	11.1545	259.98	0.0069

Activity (Year)	NO_x (tpy)	VOC (tpy)	CO (tpy)	SO_2 (tpy)	PM_{10} (tpy)	$PM_{2.5}$ (tpy)	CO_2 (metric tons/year)	HAP (tpy)
Dormitory, Drill Pad, Training Area #1	3.63	0.280	1.10	0.2092	0.260	0.039	661.65	0.01
Dormitory, Drill Pad, Training Area #2	3.63	0.280	1.10	0.2092	0.260	0.039	661.65	0.01
Dormitory, Drill Pad, Training Area #3	3.63	0.280	1.10	0.2092	0.260	0.039	661.65	0.01
Classroom/Dining Facility #2	0.19	0.010	0.16	0.0011	0.014	0.014	205.97	0.0036
Dormitory, Drill Pad, Training Area #4	3.63	0.280	1.10	0.2092	0.260	0.039	661.65	0.01
Demolition of Buildings 9020 and 9028	-0.083	-0.005	-0.036	-0.001	-0.007	-0.007	-96.678	-0.0017
Interfaith Religious Center	0.169	0.009	0.142	0.001	0.013	0.013	183.88	0.0032
Total	**21.27**	**1.65**	**6.20**	**1.25**	**1.52**	**11.34**	**3,395.24**	**0.07**
Percentage of Total JBSA-Lackland Baseline Emissions	**2.253**	**1.828**	**0.668**	**1.341**	**1.486**	**15.297**	**NA**	**NA**
Percentage of Bexar County Emissions*	**0.0374**	**0.0027**	**0.0026**	**0.0045**	**0.0026**	**0.1172**	**0.0006****	**NA**

Notes: * Based on maximum year emissions.
** Percentage of State of Texas CO_2 emissions as the Bexar County CO_2 emissions inventory is not available.

Geological Resources. Demolition of Buildings 9020, 9028, 9121, 9140, 9142, 9144, and 9255 would be expected to result in short-term, minor, adverse impacts. Short-term effects would involve vegetation removal and compaction of surrounding soils under the weight of construction equipment, which would result in increased soil erosion and transport in storm water runoff during construction activities. Adverse effects would be minimized with implementation of environmental protection measures, including wetting of soils, and implementation of erosion and storm water management practices to contain soil and runoff on site. Berming along nearby water bodies would decrease the amount of potential sedimentation in adjacent water bodies. Wetting of soils would occur on a daily basis as needed to prevent erosion and generation of dust. Due to the potential presence of ACMs in the buildings, proper abatement procedures, environmental protection measures, and an ESCP would be implemented to minimize impacts and ensure contamination of soils does not occur during demolition.

Short-term, moderate, and long-term, moderate, adverse effects on soils would be expected from construction of the ATC West Campus. Short-term impacts during construction would result from disturbance of soils; clearing of vegetation; and grading, paving, and excavation or trenching. Vegetative clearing would increase erosion and sedimentation potential. As a result of constructing the dormitories, classroom/dining facilities, and utility plant, long-term, minor to moderate, adverse effects would occur as soils would be compacted, and soil structure disturbed and modified. Soil productivity, which is the capacity of the soil to produce vegetative biomass, would decline in disturbed areas and would be eliminated in those areas within the footprints of buildings. Explosives may be used for excavation, and localized surface soil structure would be permanently altered once charges were detonated. Unless the soil is periodically compacted after explosives use, the soil would be less compacted, which could increase erosion from wind and water eroding bare, susceptible soils. Loss of soil structure due to compaction from foot and vehicle traffic could change local drainage patterns. Soil erosion- and sediment-control measures would be included in site plans to minimize long-term erosion and sediment production at each site. Use of storm water-control measures that favor reinfiltration would minimize erosion and sediment production from future storm events.

The Branyon clay and Houston black gravelly clay complexes are mapped at this project location. The soil was analyzed for building construction limitations associated with small commercial buildings, and was determined to be very limited by the NRCS due to their shrink-swell potential (NRCS 2012). The site is not adjacent to any open ERPs. No soil contamination is known on site. No impacts on topography or geology would be anticipated.

Water Resources. Long-term, negligible to minor, direct, adverse effects on groundwater and surface water would be expected from activities associated with Project C1. While no water resources are present within the project area for Project C1, there would be an increase in amount of impervious surfaces and associated ground disturbance of 34.7 acres which would likely increase the amount of storm water runoff, which could affect groundwater and surface water quality. Storm water detention ponds would be constructed to account for any changes in storm water discharge that would occur from construction of the complex. The exact size and location of the detention ponds would be determined during final design. Because ground disturbance associated with this project is greater than 5 acres, General Stormwater Permit TXR1500000 requires the development and implementation of an SWPPP, submittal of a Notice of Intent (by mail or online) to the TCEQ, a posted Notice of Intent and site notice, and submittal of a copy of the Notice of Intent to any MS4 operator receiving the discharge. As part of the SWPPP, BMPs would be developed in accordance with applicable regulations to avoid and minimize pollution in storm water runoff both during and after construction. Additionally, spill prevention practices, consistent with the JBSA-Lackland SPCC plan (LAFB 2006b), would be implemented during all activities associated with the Proposed Action to avoid and minimize potential adverse effects on groundwater and surface water. No impacts on wetlands, water features, or the 100-year floodplain are anticipated from implementation of Project C1.

Biological Resources. Short- and long-term, direct, negligible, adverse effects on vegetation would be expected from activities associated with Project C1. Demolition and construction activities associated with Project C1 would occur in a previously developed area and would primarily affect urbanized areas including manicured lawns, some mid-sized trees, and associated landscaping. The project would result in a permanent loss of approximately 4.2 acres of vegetation. All ground disturbed during construction activities that does not include site improvements would be reseeded with appropriate groundcover in accordance with the INRMP.

Short- and long-term, direct, negligible to minor, adverse effects on wildlife would be expected from activities associated with Project C1. Impacts would result from noise, demolition and construction activities, and heavy equipment use during construction. Disturbance would cause wildlife to engage in escape or avoidance behaviors. This project would primarily affect 4.2 acres of urbanized areas including manicured lawns, some mid-sized trees, and associated landscaping; therefore, wildlife in the vicinity would be expected to be acclimated to frequent disturbance. Most wildlife species would be expected to recover quickly once construction noise and disturbances have ceased. While a new building would be constructed where there was once some open area and asphalt, no long-term effects are anticipated. Short-term, minor impacts would result from the removal of trees and vegetation that could serve as habitat for wildlife species.

No impacts on sensitive and protected species would occur as a result of Project C1 due to a lack of suitable or critical habitat in the project footprint. Short-term, indirect, negligible to minor, adverse effects on migratory bird species could occur as a result of noise and physical disturbance. If these activities occur during nesting season, the environmental protection measures under **Section 4.3.6** would help to avoid take under MBTA.

Cultural Resources. This project is not expected to have significant impacts on cultural resources under NEPA. Buildings 9020, 9028, 9121, 9140, 9142, 9144, and 9255 that are proposed for demolition are not eligible for listing in the NRHP. Buildings 9020, 9028, and 9255 have been evaluated as ineligible for listing in the NRHP as part of a 2011 architectural survey and NRHP eligibility evaluation report (LAFB 2011b). This survey does not yet have concurrence with the Texas SHPO; however, assuming concurrence with the NRHP eligibility evaluations in the report, JBSA-Lackland will only have to notify the SHPO of the demolition in accordance with the JBSA-Lackland PA. Buildings 9121, 9140, 9142, and 9144 have not been evaluated for NRHP eligibility because they are less than 50 years of age. Coordination for demolition of these structures under Section 106 of the NHPA will not be necessary.

No impacts on archaeological resources are anticipated from construction of the ATC West Complex. Areas of highly disturbed ground on JBSA-Lackland have not been surveyed for archaeological resources, including those portions of Lackland Main Base west of Military Drive, as there is considered to be low potential for NRHP-eligible sites (LAFB 1996). If any unanticipated discoveries are made during the site work process, SOP #5 of the JBSA-Lackland ICRMP, "Unanticipated Discoveries of Archaeological Deposits," and Stipulation IV of the JBSA PA, "Inadvertent Discoveries and Emergencies," will be followed.

Socioeconomics and Environmental Justice. Short-term, negligible to minor, beneficial effects on socioeconomic resources would be expected from demolition activities and construction of the ATC West Campus and the Interfaith Religious Center. It is assumed that equipment and supplies necessary to complete construction and demolition would primarily be obtained locally, and local contractors would primarily be used. The demand for workers would be minor and would not outstrip the local supply of workers, as there are more than 80,000 construction workers in the San Antonio-New Braunfels MSA. The proposed activities would occur entirely on JBSA-Lackland; however, residents in the Springvale area of San Antonio approximately 50 to 100 feet to the northwest of Project C1 could experience short-term intermittent noise associated with the proposed construction activities. Lackland City Elementary is also in this area and could be impacted. However, this noise would be short-term and would not be a disproportionate adverse effect. No long-term effects on socioeconomic resources are expected to result from demolition activities and the proposed construction of the ATC West Campus.

Infrastructure. Short-term, negligible to minor, adverse effects would be expected as a result of debris generated during construction and demolition activities. Construction and demolition debris is generally composed of clean materials, and most of this waste would be recycled. However, debris not recycled would be landfilled, which would be considered a long-term, irreversible, adverse effect. Long-term, negligible, adverse and beneficial effects would be expected to occur. Adverse effects would occur because utility demand would increase very slightly in terms of electricity, water, sanitary sewer, and natural gas demand for the new complex. Beneficial effects would occur because Project C1 would include the demolition of outdated structures and associated utilities (e.g., electrical and heating systems). Moderate, adverse impacts on storm water drainage would be anticipated from construction of the ATC West Campus. The existing storm water drainage system near the site is already near capacity; therefore, the ATC West Campus would be designed to include storm water detention ponds to minimize the increase in impervious surfaces that would result from construction. The exact location and size of the ponds would be determined during final design.

Hazardous Materials and Waste. Short- to long-term, minor, adverse impacts associated with hazardous materials and waste would be expected from implementation of Project C1. Demolition and construction would result in a short-term increase in the use of hazardous materials and petroleum products and the generation of hazardous and petroleum wastes. Contractors would be responsible for the management of these materials, which would be handled in accordance with JBSA-Lackland hazardous materials management and hazardous waste management plans and Federal, state, local, and USAF regulations. ACMs, LBP, and PCBs could be encountered during demolition activities. Sampling for these materials would occur prior to any demolition activities so that these materials can be properly characterized, handled, and disposed of in accordance with JBSA-Lackland management plans, local regulations, and USAF policies. Long-term, minor, beneficial impacts would be associated with demolition due to the elimination of older buildings, resulting in a reduced potential for exposure to, and maintenance of, ACMs, LBP, and PCBs. There would be a long-term increase in the use of hazardous materials and petroleum products and the generation of hazardous wastes and petroleum products associated with operation of the facility. No impacts would be expected from pesticides, radon, ERP sites, storage tanks, or MMRP sites.

Safety. Short-term, negligible to minor, adverse effects associated with construction safety could occur during construction and demolition activities related to Project C1. Construction and demolition activities pose an increased risk of construction-related accidents, but this level of risk would be managed by adhering to established Federal, state, and local safety regulations. Workers would be required to wear PPE such as ear protection, steel-toed boots, hard hats, gloves, and other appropriate safety gear. Construction and demolition areas would be fenced and appropriately marked with signs. Construction and associated trucks transporting material to and from construction sites would be directed to roads and streets that have a lesser volume of traffic. Therefore, no long-term, adverse effects on safety would be expected. The buildings proposed for demolition could contain ACMs, LBP, and PCBs. These materials require appropriate characterization, removal, handling, and disposal during demolition activities by qualified personnel. Short-term, minor, adverse impacts on safety during removal of ACMs, LBP, and PCBs could occur, and long-term, beneficial effects on safety would also be experienced from the removal of ACMs, LBP, and PCBs by reducing exposure to installation personnel.

4.4.2.2 C2. Permanent Party Dormitory

Project C2 would not result in significant effects. The following subsections break down by resource areas the non-significant effects that would result from Project C2.

Noise. Short-term, minor, adverse impacts on the noise environment would be expected from construction of the Permanent Party Dormitory. The noise emanating from construction equipment would be localized, short-term, and intermittent during machinery operations. **Table 3-2** shows the predicted noise levels for various pieces of construction equipment 50 feet from the source, and **Table 4-1** shows estimated noise levels that would be expected at varying distances from a construction site. Heavy construction equipment would not be operational during the entire construction period, which would limit the duration of increased noise levels. This area of JBSA-Lackland is currently used for unaccompanied housing. Populations potentially affected by the increased noise levels would include USAF personnel temporarily living in the adjacent unaccompanied housing facility approximately 50 feet from the site. The closest personnel to the construction site would be exposed to noise levels of 90 to 94 dBA. No change in operations would be expected as a result of the construction of the Permanent Party Dormitory; therefore, no long-term, adverse, impacts on the existing noise environment would be expected. The closest off-installation populations would be approximately 6,300 feet to the west, and would be exposed to noise levels of approximately 52 dBA from construction activities. Contractors and workers are responsible to follow noise regulations in accordance with Federal, state and USAF guidelines.

Land Use. No effects on land use would be expected from construction of the Permanent Party Dormitory. The present land use for this area is designated as housing unaccompanied and no change to the land use designation would be expected. The proposed project would be compatible with surrounding development and overall development planning for JBSA-Lackland. Project C2 is within the boundaries of MMRP site AL-722. Construction activities would take into account any land use restrictions in place due to the presence of the MMRP site.

Air Quality. Short-term, minor, adverse effects on air quality would be expected from the construction of Project C2. Construction activities would result in temporary effects on local and regional air quality, primarily from site-disturbing activities, the operation of construction and paving equipment and haul trucks transporting building materials to the work site, and workers commuting to the job site. Appropriate fugitive dust-control measures would be employed during construction activities to suppress emissions. All emissions associated with construction activities would be temporary in nature.

Long-term, minor, adverse effects on air quality would be expected from the use of natural gas boilers to provide comfort heating to the proposed facility. It is not expected that emissions from Project C2 would affect local or regional attainment status with respect to the NAAQS. Emissions from the construction and operation of the proposed Project C2 (Permanent Party Dormitory) are summarized in **Table 4-12**. Emissions estimation spreadsheets are included in **Appendix E**.

Table 4-12. Estimated Air Emissions Resulting from Project C2

Activity	NO_x (tpy)	VOC (tpy)	CO (tpy)	SO_2 (tpy)	PM_{10} (tpy)	$PM_{2.5}$ (tpy)	CO_2 (metric tons/year)	HAPs (tpy)
2013 Construction								
Total Construction Emissions	5.27	0.89	3.99	0.41	1.83	0.56	671.38	--
Percentage of Total JBSA-Lackland Baseline Emissions	0.56	0.99	0.43	0.44	1.79	0.76	NA	NA
Percentage of Bexar County Emissions*	0.01	0.001	0.002	0.002	0.003	0.006	0.0001**	NA
2013 to 2018 Annual Operations								
Total Operations Emissions	0.057	0.003	0.024	0.000	0.005	0.005	66.465	0.001
Percentage of Total JBSA-Lackland Baseline Emissions	0.006	0.004	0.003	0.000	0.005	0.006	NA	NA
Percentage of Bexar County Emissions*	0.0001	0.00001	0.00001	0.000001	0.00001	0.00005	0.00001	NA

Notes: * Based on maximum year emissions.
** Percentage of State of Texas CO_2 emissions as the Bexar County CO_2 emissions inventory is not available.

Geological Resources. Short-term, minor, and long-term, minor, adverse effects on soils would be expected from construction of the Permanent Party Dorm. Short-term impacts during construction would result from disturbance of soils; clearing of vegetation; and grading, paving, and excavation or trenching. Vegetative clearing would increase erosion and sedimentation potential.

As a result of constructing the dormitory, long-term, minor to moderate, adverse effects would occur as soils would be compacted, and soil structure disturbed and modified. Soil productivity, which is the capacity of the soil to produce vegetative biomass, would decline in disturbed areas and would be eliminated in those areas within the footprints of buildings. Explosives may be used for excavation, and localized surface soil structure would be permanently altered once charges were detonated. Unless the soil is periodically compacted after explosives use, the soil would be less compacted, which could increase erosion from wind and water eroding bare, susceptible soils. Loss of soil structure due to compaction from foot and vehicle traffic could change local drainage patterns. Soil erosion- and sediment control-measures would be included in site plans to minimize long-term erosion and sediment production at each site. Use of storm water control measures that favor reinfiltration would minimize erosion and sediment production from future storm events.

The Houston black gravelly clay complex is the only soil mapped at this project location. The soil was analyzed for building construction limitations associated with small commercial buildings, and was determined to be very limited by the NRCS due to its shrink-swell potential (NRCS 2012).

The site is not adjacent to any open ERPs. No impacts on topography or geology would be anticipated.

Water Resources. Long-term, negligible, indirect, adverse effects on groundwater and surface water would be expected from activities associated with Project C2. While no water resources are present within the project area for Project C2, there would be an increase in amount of impervious surfaces and associated ground disturbance of 0.3 acres which would likely increase the amount of storm water runoff, which could affect groundwater and surface water quality. Because the project footprint has less than 1 acre of ground disturbance the project would not require coverage under General Stormwater Permit TXR1500000. The project would use BMPs to avoid and minimize pollution in storm water runoff both during and after construction. Additionally, spill prevention practices, consistent with the JBSA-Lackland SPCC plan (LAFB 2006b), would be implemented during all activities associated with the Proposed Action to avoid and minimize potential adverse effects on groundwater and surface water.

No impacts on wetlands, water features, or the 100-year floodplain are anticipated from implementation of Project C2.

Biological Resources. Short- and long-term, direct, negligible, adverse effects on vegetation would be expected from activities associated with Project C2. The construction of the building associated with Project C2 would occur in a previously developed area and would primarily affect urbanized areas including manicured lawns, some mid-sized trees, and associated landscaping. The project would result in a permanent loss of approximately 1.95 acres of vegetation. All trees and vegetation associated with this project would be replaced or relocated as applicable. All ground disturbed during construction activities that does not include site improvements would be reseeded with appropriate groundcover in accordance with the INRMP.

Short-term, direct, negligible to minor, adverse effects on wildlife would be expected from activities associated with Project C2. Impacts would result from noise, demolition and construction activities, and heavy equipment use during construction. Disturbance would cause wildlife to engage in escape or avoidance behaviors. This project would primarily affect 1.95 acres of urbanized areas including manicured lawns, some mid-sized trees, and associated landscaping; therefore, wildlife in the vicinity would be expected to be acclimated to frequent disturbance. Most wildlife species would be expected to recover quickly once construction noise and disturbances have ceased. While a new building would be constructed where there was once open area and asphalt, no long-term effects are anticipated.

No impacts on sensitive and protected species would occur as a result of Project C2 due to a lack of suitable or critical habitat in the project footprint. Short-term, indirect, negligible to minor, adverse effects on migratory bird species could occur as a result of noise and physical disturbance. If these activities occur during nesting season, the environmental protection measures under **Section 4.3.6** would help to avoid take under MBTA.

Cultural Resources. This project will not have significant impacts on cultural resources under NEPA. The project will involve no demolition and there are no NRHP-eligible buildings in the viewshed of the proposed project location. The project is in an area of the installation that is highly developed with highly disturbed ground. Areas of highly disturbed ground on JBSA-Lackland have not been surveyed for archaeological resources, including the proposed location of this project, as there is considered to be low potential for NRHP-eligible sites (LAFB 1996). If any unanticipated discoveries are made during the construction process, SOP #5 of the JBSA-Lackland ICRMP, "Unanticipated Discoveries of Archaeological Deposits," and Stipulation IV of the JBSA PA, "Inadvertent Discoveries and Emergencies" will be followed.

Socioeconomics and Environmental Justice. Short-term, minor, beneficial effects on socioeconomic resources would be expected from the construction of the permanent party dormitory. It is assumed that equipment and supplies necessary to complete the construction activities would be obtained locally, and local contractors would be used. The demand for workers as part of the construction would be minor and would not outstrip the local supply of workers, as there are more than 80,000 construction workers in the San Antonio-New Braunfels MSA. The proposed construction activities would occur entirely on JBSA-Lackland. Noise from this project would be short-term and would not be a disproportionate adverse effect. No long-term effects on socioeconomic resources are expected to result from the proposed construction of the permanent party dormitory.

Infrastructure. Short-term, negligible, adverse effects would be expected as a result of debris generated during construction activities. Construction debris is generally composed of clean materials, and most of this waste would be recycled. However, debris not recycled would be landfilled, which would be considered a long-term, irreversible, adverse effect. Long-term, negligible, adverse and beneficial effects would be expected to occur. Adverse effects would occur because utility demand would increase very slightly in terms electricity, sanitary sewer, natural gas, and water demand. This change in utility demand would be negligible when compared to the total installation usage. Beneficial effects on transportation would occur because unaccompanied enlisted personnel would no longer be required to live off-installation resulting in a decrease in ingress and egress traffic for the installation.

Hazardous Materials and Waste. Short- to long-term, minor, adverse impacts associated with hazardous materials and waste would be expected from implementation of Project C2. There would be a short-term increase in the use of hazardous materials and petroleum products and the generation of hazardous and petroleum wastes associated with construction activities. Contractors would be responsible for the management of these materials, which would be handled in accordance with JBSA-Lackland hazardous materials management and hazardous waste management plans and Federal, state, local, and USAF regulations. There would be a long-term increase in the use of hazardous materials and petroleum products and the generation of hazardous wastes and petroleum products associated with operation of the facility. The project area for Project C2 overlaps MMRP site AL-722. There is the potential for workers to encounter previously unknown UXO, MEC, or related materials during construction. If any UXO, MEC, or related materials were discovered, compliance with the DOD Environment, Safety, and Health UXO Safety Education Program should be maintained prior to and during clearing of the site and proper disposal methods should be followed to ensure maximum safety of clearing personnel. No impacts would be expected from ACMs, LBP, PCBs, pesticides, radon, storage tanks, or ERP sites.

Safety. Short-term, negligible to minor, adverse effects associated with construction safety could occur during construction and demolition activities related to Project C2. Construction and demolition activities pose an increased risk of construction-related accidents, but this level of risk would be managed by adhering to established Federal, state, and local safety regulations. Workers would be required to wear PPE such as ear protection, steel-toed boots, hard hats, gloves, and other appropriate safety gear. Construction and demolition areas would be fenced and appropriately marked with signs. Construction and associated trucks transporting material to and from construction sites would be directed to roads and streets that have a lesser volume of traffic. Therefore, no long-term, adverse effects on safety would be expected.

This project is located within MMRP site AL-722 which has been closed and recommended for "No Further Action" (LAFB 2011l). There is a potential for workers to encounter previously unknown UXO, MEC, or related materials during construction activities within MMRP sites. If these materials are encountered, they would be handled, stored, transported, and disposed of in accordance with the installation's Hazardous Waste Management Plan and all applicable Federal, state, and local regulations and policies.

4.4.2.3 C3. Battlefield Airman Aquatic Training Complex

Project C3 would not result in significant effects. The following subsections break down by resource areas the non-significant effects that would result from Project C3.

Noise. Short-term, minor, adverse impacts on the noise environment would be expected from construction of the Battlefield Airman Aquatic Training Complex and demolition of Building 146. The noise emanating from construction and demolition equipment would be localized, short-term, and intermittent during machinery operations. **Table 3-2** shows the predicted noise levels for various pieces of construction and demolition equipment 50 feet from the source, and **Table 4-1** shows estimated noise levels that would be expected at varying distances from a construction site. Heavy construction equipment would not be operational during the entire construction period, which would limit the duration of increased noise levels. This area of JBSA-Lackland is currently used for unaccompanied housing and open space. Populations potentially affected by the increased noise levels would include USAF personnel in the adjacent building approximately 175 feet from the construction site. The closest personnel to the construction site would be exposed to noise levels of 79 to 84 dBA. The closest off-installation populations would be approximately 200 feet to the east, and would be exposed to noise levels between 78 and 82 dBA from construction activities. Consequently, proposed construction and demolition activities would result in short-term, minor, adverse impacts on the noise environment in the vicinity of the project site. However, noise generation would last only for the duration of construction and demolition activities and would be isolated to normal working hours (i.e., between 7:00 a.m. and 5:00 p.m.). The short-term increase in noise levels from construction and demolition at the proposed Battlefield Airman Aquatic Training Complex site would not cause significant adverse effects on the surrounding populations. Contractors and workers are responsible to follow noise regulations in accordance with Federal, state, and USAF guidelines.

Land Use. Long-term, negligible, adverse, impacts on land use would be expected from construction of the Battlefield Airman Aquatic Training Complex. The new Battlefield Airman Aquatic Training Complex would be constructed within the open space, industrial, training indoor, and housing unaccompanied land use categories, and would require a land use change to training indoor. The proposed project would be compatible with surrounding development and overall development planning for JBSA-Lackland.

Air Quality. Short-term, minor, adverse effects on air quality would be expected from the construction of Project C3. Construction activities and associated demolition activities would result in temporary effects on local and regional air quality, primarily from site-disturbing activities, the operation of construction and paving equipment and haul trucks transporting building materials to the work site and debris off site, and workers commuting to the job site. Appropriate fugitive dust-control measures would be employed during construction and demolition activities to suppress emissions. All emissions associated with construction and demolition activities would be temporary in nature.

Long-term, minor, adverse effects on air quality would be expected from the use of natural gas boilers to provide comfort heating to the proposed facility. While these operating emissions would increase the overall air emissions from JBSA-Lackland, the added emissions would be marginally offset by a reduction in air emissions from the demolition of older buildings that use more emissions-intensive heating systems. It is not expected that emissions from Project C3 would affect local or regional attainment status with respect to the NAAQS. Emissions from the construction and operation of Project C3 are summarized in **Table 4-13**. Emissions estimation spreadsheets are included in **Appendix E**.

Table 4-13. Estimated Air Emissions Resulting from Project C3

Activity	NO_x (tpy)	VOC (tpy)	CO (tpy)	SO_2 (tpy)	PM_{10} (tpy)	$PM_{2.5}$ (tpy)	CO_2 (metric tons/year)	HAPs (tpy)
2013 Construction								
Total Construction Emissions	7.00	1.83	7.44	0.55	7.30	1.35	989.87	--
Percentage of Total JBSA-Lackland Baseline Emissions	0.74	2.03	0.80	0.59	7.13	1.82	NA	NA
Percentage of Bexar County Emissions*	0.0055	0.0004	0.0013	0.0013	0.0040	0.0042	0.0002**	NA
2013 to 2018 Annual Operations								
Total Operations Emissions	3.256	0.259	0.788	0.207	0.232	0.232	255.20	0.005
Percentage of Total JBSA-Lackland Baseline Emissions	0.345	0.287	0.085	0.222	0.226	0.313	NA	NA
Percentage of Bexar County Emissions*	0.0057	0.00042	0.00032	0.000750	0.00039	0.0024	0.00004**	NA

Notes: * Based on maximum year emissions.
** Percentage of State of Texas CO_2 emissions as the Bexar County CO_2 emissions inventory is not available.

Geological Resources. Short-term, minor to moderate, and long-term, minor to moderate, adverse effects on soils would be expected from implementation of Project C3. Demolition of Building 146 would result in vegetation removal and compaction of surrounding soils under the weight of construction equipment. This would result in increased soil erosion and transport in storm water runoff during construction activities. Adverse effects would be minimized with implementation of environmental protection measures, including wetting of soils and implementation of erosion and storm water management practices to contain soil and runoff on site. Berming along nearby water bodies would decrease the amount of potential sedimentation in adjacent water bodies. Wetting of soils would occur on a daily basis as needed to prevent erosion and generation of dust. ACMs could be encountered during demolition of

Building 146; therefore, proper abatement procedures, environmental protection measures, and an ESCP would be implemented to minimize impacts and ensure contamination of soils does not occur during demolition.

Short-term impacts during construction would result from disturbance of soils; clearing of vegetation; and grading, paving, and excavation or trenching. Vegetative clearing would increase erosion and sedimentation potential. As a result of constructing the facility, long-term, minor to moderate, adverse effects would occur as soils would be compacted, and soil structure disturbed and modified. Soil productivity, which is the capacity of the soil to produce vegetative biomass, would decline in disturbed areas and would be eliminated in those areas within the footprints of buildings. Explosives may be used for excavation, and localized surface soil structure would be permanently altered once charges were detonated. Unless the soil is periodically compacted after explosives use, the soil would be less compacted, which could increase erosion from wind and water eroding bare, susceptible soils. Loss of soil structure due to compaction from foot and vehicle traffic could change local drainage patterns. Soil erosion- and sediment-control measures would be included in site plans to minimize long-term erosion and sediment production at each site. Use of storm water-control measures that favor reinfiltration would minimize erosion and sediment production from future storm events.

The Houston black gravelly clay complex is the only soil mapped at this project location. The soil was analyzed for building construction limitations associated with small commercial buildings, and was determined to be very limited by the NRCS due to its shrink-swell potential (NRCS 2012).

The site is not adjacent to any open ERPs. No impacts on topography or geology would be anticipated.

Water Resources. Long-term, negligible to minor, indirect, adverse effects on groundwater and surface water would be expected from activities associated with Project C3. While no water resources are present on the area for Project C3, there would be an increase in the amount of impervious surfaces and associated ground disturbance of 3.1 acres which would likely increase the amount of storm water runoff, which could affect groundwater and surface water quality. Because the project footprint is greater than 1 acre and less than 5 acres of ground disturbance, the project would be covered by General Stormwater Permit the TXR1500000 and require an individual SWPPP, a posted site notice, and submittal of a copy of the site notice to any MS4 operator receiving the discharge. The permit requires the implementation of BMPs to avoid and minimize pollution in storm water runoff both during and after construction. Additionally, spill prevention practices, consistent with the JBSA-Lackland SPCC plan (LAFB 2006b), would be implemented during all activities associated with the Proposed Action to avoid and minimize potential adverse effects on groundwater and surface water.

No wetlands or other waters of the United States are present on the site for Project C3; therefore, no direct adverse effects would occur. One jurisdictional wetland is approximately 300 feet from the classroom facilities and parking lots proposed as part of Project C3. This wetland is part of a drainage system that empties into Medio Creek. Runoff from the construction site could result in indirect impacts on wetlands. However, adherence to the SWPPP and use of environmental protection measures would be implemented to minimize impacts. Project C3 does not occur within the 100-year floodplain. As such, there would be no impacts on the 100-year floodplain.

Biological Resources. Short- and long-term, direct, negligible, adverse effects on vegetation would be expected from activities associated with Project C3. Demolition and construction activities associated with Project C3 would occur in a previously developed area and would primarily affect urbanized areas including manicured lawns, some mid-sized trees, and associated landscaping. The project would result in a permanent loss of approximately 1.8 acres of vegetation. All trees and vegetation associated with this project would be replaced or relocated as applicable. All ground disturbed during construction and demolition activities that does not include site improvements would be reseeded with appropriate groundcover.

Short- and long-term, negligible to minor, adverse effects on wildlife would be expected from activities associated with Project C3. Impacts would be disturbances from noise, demolition and construction activities, and heavy equipment use. Disturbance would cause wildlife to engage in escape or avoidance behaviors. This project would primarily affect 1.8 acres of urbanized areas including manicured lawns, some mid-sized trees, and associated landscaping. Therefore, wildlife in the vicinity would be expected to be acclimated to frequent disturbance. Most wildlife species would be expected to recover quickly once construction noise and disturbances have ceased. While a new building would be constructed where there was once some open area and asphalt, no long-term effects are anticipated.

No impacts on sensitive and protected species would occur as a result of Project C3 due to a lack of suitable or critical habitat in the project footprint. Short-term, indirect, negligible to minor, adverse effects on migratory bird species could occur as a result of noise and physical disturbance. If these activities occur during nesting season, the environmental protection measures under **Section 4.3.6** would help to avoid take under the MBTA.

Cultural Resources. This project is not expected to have significant impacts on cultural resources under NEPA. Building 146 is not eligible for listing in the NRHP. As part of a 2011 architectural survey and NRHP eligibility evaluation report (LAFB 2011b), Building 146 was evaluated as ineligible for listing in the NRHP. This survey does not yet have concurrence with the Texas SHPO; however, assuming concurrence with the NRHP eligibility evaluations in the report, JBSA-Lackland will only have to notify the SHPO of the demolition in accordance with the JBSA-Lackland PA. Two archaeological sites in the vicinity of the proposed project location were determined ineligible for the NRHP with the concurrence of the SHPO (LAFB 2002a). If any unanticipated discoveries are made during the construction process, stipulation 5 of the JBSA-Lackland ICRMP, “Unanticipated Discoveries of Archaeological Deposits,” and Section IV of the JBSA PA, “Inadvertent Discoveries and Emergencies” will be followed.

Socioeconomics and Environmental Justice. Short-term, minor, beneficial effects on socioeconomic resources would be expected from the construction of Battlefield Airman Aquatic Training Complex and demolition of Building 146. It is assumed that equipment and supplies necessary to complete the construction and demolition activities would primarily be obtained locally, and local contractors would primarily be used. The demand for workers as part of construction and demolition would be minor and would not outstrip the local supply of workers, as there are more than 80,000 construction workers in the San Antonio-New Braunfels MSA. The proposed construction activities would occur entirely on JBSA-Lackland. Noise from this project would be short-term and would not be a disproportionate adverse effect. No long-term effects on socioeconomic resources are expected to result from the demolition of Building 146 proposed construction of the Battlefield Airman Aquatic Training Complex.

Infrastructure. Short-term, negligible, adverse effects would be expected as a result of debris generated during construction and demolition activities. Construction and demolition debris is generally composed of clean materials, and most of this waste would be recycled. However, debris not recycled would be landfilled, which would be considered a long-term, irreversible, adverse effect. Long-term, negligible, adverse and beneficial effects would be expected to occur. Adverse effects would occur because utility demand would increase very slightly in terms of electricity and natural gas demand. This change in utility demand would be negligible when compared to the total installation usage.

Hazardous Materials and Waste. Short- to long-term, minor, adverse impacts associated with hazardous materials and waste would be expected from implementation of Project C3. Demolition and construction would result in a short-term increase in the use of hazardous materials and petroleum products and the generation of hazardous and petroleum wastes. Contractors would be responsible for the management of these materials, which would be handled in accordance with the JBSA-Lackland hazardous materials management and hazardous waste management plans and Federal, state, local, and USAF regulations. There would be a long-term increase in the use of hazardous materials and the generation of hazardous waste associated with operation of the facility. Building 146 could contain ACMs, LBP, and PCBs. Sampling for these materials would occur prior to any demolition activities so that these materials can be properly characterized, handled, and disposed of in accordance with JBSA-Lackland management plans, local regulations, and USAF policies. Long-term, minor, beneficial impacts would be associated with demolition from reducing potential exposure to, and maintenance of, ACMs, LBP, and PCBs. No impacts would be expected from pesticides, radon, ERP sites, storage tanks, or MMRP sites.

Safety. Short-term, negligible to minor, adverse effects associated with construction safety could occur during construction and demolition activities related to Project C3. Construction and demolition activities pose an increased risk of construction-related accidents, but this level of risk would be managed by adhering to established Federal, state, and local safety regulations. Workers would be required to wear PPE such as ear protection, steel-toed boots, hard hats, gloves, and other appropriate safety gear. Construction and demolition areas would be fenced and appropriately marked with signs. Construction and associated trucks transporting material to and from construction sites would be directed to roads and streets that have a lesser volume of traffic. Therefore, no long-term, adverse effects on safety would be expected. Building 146 could contain ACMs, LBP, and PCBs. These materials require appropriate characterization, removal, handling, and disposal during demolition activities by qualified personnel. Short-term, minor, adverse impacts on safety during removal of ACMs, LBP, and PCBs could occur, and long-term, beneficial effects on safety would also be experienced from the removal of ACMs, LBP, and PCBs by reducing exposure to installation personnel.

4.4.2.4 C4. Reid Medical Clinic

Project C4 would not result in significant effects. The following subsections break down by resource areas the non-significant effects that would result from Project C4.

Noise. Short-term, minor, adverse impacts on the noise environment would be expected from construction of the Reid Medical Clinic. The noise emanating from construction equipment would be localized, short-term, and intermittent during machinery operations. **Table 3-2** shows the predicted noise levels for various pieces of construction equipment 50 feet from the source, and **Table 4-1** shows estimated noise levels that would be expected at varying distances from a construction site. Heavy construction equipment would not be operational during the entire construction period, which would limit the duration of increased noise levels. This area of JBSA-Lackland is currently open space. Populations potentially affected by the increased noise levels would include USAF personnel in the adjacent building approximately 80 feet from the construction site. The closest personnel to the construction site would be exposed to noise levels of 85 to 90 dBA. No change in operations would be expected as a result of the construction of the Reid Medical Clinic; therefore, no long-term, adverse, impacts on the existing noise environment would be expected. The closest off-installation populations would be approximately 2,100 feet to the west, and would be exposed to noise levels of approximately 61 dBA from construction activities. Contractors and workers are responsible to follow noise regulations in accordance with Federal, state, and USAF guidelines.

Land Use. Long-term, negligible, adverse impacts on land use would be expected from construction of the Reid Medical Clinic. The new medical clinic would be constructed within the open space land use category, and would require a land use change to medical. The proposed project would be compatible with surrounding development and overall development planning for JBSA-Lackland.

Air Quality. Short-term, minor, adverse effects on air quality would be expected from the construction of Project C4. Construction activities would result in temporary effects on local and regional air quality, primarily from site-disturbing activities, the operation of construction and paving equipment and haul trucks transporting building materials to the work site, and workers commuting to the job site. Appropriate fugitive dust-control measures would be employed during construction activities to suppress emissions. All emissions associated with construction activities would be temporary in nature.

Long-term, minor, adverse effects on air quality would be expected from the use of natural gas boilers to provide comfort heating to the proposed facility. It is not expected that emissions from Project C4 would contribute to or affect local or regional attainment status with respect to the NAAQS. Emissions from the construction and operation of Project C4 are summarized in **Table 4-14**. Emissions estimation spreadsheets are included in **Appendix E**.

Table 4-14. Estimated Air Emissions Resulting from Project C4

Activity	NO_x (tpy)	VOC (tpy)	CO (tpy)	SO_2 (tpy)	PM_{10} (tpy)	$PM_{2.5}$ (tpy)	CO_2 (metric tons/year)	HAPs (tpy)
2015 Construction								
Total Construction Emissions	6.47	1.49	6.19	0.51	14.65	2.00	884.66	--
Percentage of Total JBSA-Lackland Baseline Emissions	0.69	1.65	0.67	0.55	14.30	2.70	NA	NA
Percentage of Bexar County Emissions*	0.01	0.002	0.003	0.002	0.02	0.02	0.0002**	NA
2015 to 2018 Annual Operations								
Total Operations Emissions	16.766	1.349	3.699	1.100	1.191	1.191	709.68	0.006
Percentage of Total JBSA-Lackland Baseline Emissions	1.776	1.494	0.399	1.178	1.162	1.605	NA	NA
Percentage of Bexar County Emissions*	0.0295	0.00219	0.00153	0.003988	0.00201	0.0123	0.0001**	NA

Notes: * Based on maximum year emissions.

** Percentage of State of Texas CO_2 emissions as the Bexar County CO_2 emissions inventory is not available.

Geological Resources. Short-term, moderate, and long-term, moderate, adverse effects on soils would be expected from construction of the Reid Medical Clinic. Short-term impacts during construction would result from disturbance of soils; clearing of vegetation; and grading, paving, and excavation or trenching. Vegetative clearing would increase erosion and sedimentation potential.

As a result of constructing the facility, long-term, minor to moderate, adverse effects would occur as soils would be compacted, and soil structure disturbed and modified. Soil productivity, which is the capacity of the soil to produce vegetative biomass, would decline in disturbed areas and would be eliminated in those areas within the footprints of buildings. Explosives may be used for excavation, and localized surface soil structure would be permanently altered once charges were detonated. Unless the soil is periodically compacted after explosives use, the soil would be less compacted, which could increase erosion from wind and water eroding bare, susceptible soils. Loss of soil structure due to compaction from foot and vehicle traffic could change local drainage patterns. Soil erosion- and sediment-control measures would be included in site plans to minimize long-term erosion and sediment production at each site. Use of storm water control measures that favor reinfiltration would minimize erosion and sediment production from future storm events.

The Houston black gravelly clay complex is the only soil mapped at this project location. The soil was analyzed for building construction limitations associated with small commercial buildings, and was determined to be very limited by the NRCS due to its shrink-swell potential (NRCS 2012).

The site is not adjacent to any open ERPs. No impacts on topography or geology would be anticipated.

Water Resources. Long-term, negligible to minor, indirect, adverse effects on groundwater and surface water would be expected from activities associated with Project C4. While no water resources are present on the area for Project C4, there would be an increase in amount of impervious surfaces and associated ground disturbance of 5.6 acres which would likely increase the amount of storm water runoff, which could affect groundwater and surface water quality. Because ground disturbance associated with this project is greater than 5 acres, General Stormwater Permit TXR1500000 would require the development and implementation of an SWPPP, submittal of a Notice of Intent (by mail or online) to the TCEQ, a posted Notice of Intent and site notice, and submittal of a copy of the Notice of Intent to any MS4 operator receiving the discharge. As part of the SWPPP, BMPs would be developed in accordance with applicable regulations to avoid and minimize pollution in storm water runoff both during and after construction. Additionally, spill prevention practices, consistent with the JBSA-Lackland SPCC plan (LAFB 2006b), would be implemented during all activities associated with the Proposed Action to avoid and minimize potential adverse effects on groundwater and surface water.

No impacts on wetlands, water features, or the 100-year floodplain are anticipated from implementation of Project C4.

Biological Resources. Short- and long-term, negligible, adverse effects on vegetation would be expected from activities associated with Project C4. The construction of the buildings associated with Project C4 would occur in a previously developed area and would primarily affect urbanized areas including manicured lawns, some mid-sized trees, and associated landscaping. The project would result in a permanent loss of approximately 5.6 acres of vegetation. All ground disturbed during construction activities that does not include site improvements would be reseeded with appropriate groundcover in accordance with the INRMP.

Short- and long-term, negligible to minor, adverse effects on wildlife would be expected from activities associated with Project C4. Impacts would result from noise, demolition and construction activities, and heavy equipment use during construction. Disturbance would cause wildlife to engage in escape or avoidance behaviors. This project would primarily affect 5.6 acres of urbanized areas including manicured lawns, some mid-sized trees, and associated landscaping; therefore, wildlife in the vicinity would be expected to be acclimated to frequent disturbance. Most wildlife species would be expected to recover quickly once construction noise and disturbances have ceased. While a new building would be constructed where there was once some open area and asphalt, no long-term effects are anticipated.

No impacts on sensitive and protected species would occur as a result of Project C4 due to a lack of suitable or critical habitat in the project footprint. Short-term, indirect, negligible to minor, adverse effects on migratory bird species could occur as a result of noise and physical disturbance. If these activities occur during nesting season, the environmental protection measures under **Section 4.3.6** would help to avoid take under MBTA.

Cultural Resources. This project will not have significant impacts on cultural resources under NEPA. The construction of the new medical clinic will require the demolition of Building 6612, which has been evaluated as not eligible for the NRHP in the 2011 survey (LAFB 2011b) that is under review by the SHPO. There are no NRHP-eligible buildings in the viewshed of the proposed project location. Areas of highly disturbed ground on JBSA-Lackland have not been surveyed for archaeological resources, including those portions of Lackland Main Base west of Military Drive, as there is considered to be low potential for NRHP-eligible sites (LAFB 1996). If any unanticipated discoveries are made during the construction process, Stipulation 5 of the JBSA-Lackland ICRMP, "Unanticipated Discoveries of Archaeological Deposits," and Section IV of the JBSA PA, "Inadvertent Discoveries and Emergencies," would be followed.

Socioeconomics and Environmental Justice. Short-term, minor, beneficial effects on socioeconomic resources would be expected from the construction of the Reid medical clinic. It is assumed that equipment and supplies necessary to complete the construction activities would primarily be obtained locally, and local contractors would primarily be used. The demand for workers as part of the construction would be minor and would not outstrip the local supply of workers, as there are more than 80,000 construction workers in the San Antonio-New Braunfels MSA. The proposed construction activities would occur entirely on JBSA-Lackland. Noise from this project would be short-term and would not be a disproportionate adverse effect. No long-term effects on socioeconomic resources are expected to result from the proposed construction of the Reid Medical Clinic.

Infrastructure. Short-term, negligible, adverse effects would be expected as a result of debris generated during construction activities. Construction debris is generally composed of clean materials, and most of this waste would be recycled. However, debris not recycled would be landfilled, which would be considered a long-term, irreversible, adverse effect. Long-term, negligible, adverse and beneficial effects would be expected to occur. Adverse effects would occur because utility demand would increase very slightly in terms of electricity demand for the new clinic. This change in utility demand would be negligible when compared to the total installation usage. Beneficial effects would occur because Project C4 would include the demolition of outdated structures and associated utilities (e.g., electrical and heating systems).

Hazardous Materials and Waste. Short- to long-term, minor, adverse impacts associated with hazardous materials and waste would be expected from implementation of Project C4. There would be a short-term increase in the use of hazardous materials and petroleum products and the generation of hazardous and petroleum wastes associated with construction activities. Contractors would be responsible for the management of these materials, which would be handled in accordance with the with JBSA-Lackland hazardous materials management and hazardous waste management plans and Federal, state, local, and USAF regulations. There would be a long-term increase in the use of hazardous materials and the generation of hazardous waste associated with operation of the facility. No impacts would be expected from ACMs, LBP, PCBs, pesticides, radon, ERP sites, storage tanks, or MMRP sites.

Safety. Short-term, negligible to minor, adverse effects associated with construction safety could occur during construction and demolition activities related to Project C4. Construction and demolition activities pose an increased risk of construction-related accidents, but this level of risk would be managed by adhering to established Federal, state, and local safety regulations. Workers would be required to wear PPE such as ear protection, steel-toed boots, hard hats, gloves, and other appropriate safety gear. Construction and demolition areas would be fenced and appropriately marked with signs. Construction and associated trucks transporting material to and from construction sites would be directed to roads and streets that have a lesser volume of traffic. Therefore, no long-term, adverse effects on safety would be expected.

4.4.2.5 C5. 433rd Airlift Wing Building Additions and Renovations

Project C5 would not result in significant effects. The following subsections break down by resource areas the non-significant effects that would result from Project C5.

Noise. Short-term, minor, adverse impacts on the noise environment would be expected from additions and renovations of the 433rd Airlift Wing Buildings. The noise emanating from construction equipment would be localized, short-term, and intermittent during machinery operations. **Table 3-2** shows the predicted noise levels for various pieces of construction equipment 50 feet from the source, and **Table 4-1** shows estimated noise levels that would be expected at varying distances from a construction site. Heavy construction equipment would not be operational during the entire construction period, which would limit the duration of increased noise levels. This area of JBSA-Lackland is currently used for aircraft operations and maintenance and administrative functions. Populations potentially affected by the increased noise levels would include USAF personnel in the adjacent building approximately 67 feet from the construction site. The closest personnel to the construction site would be exposed to noise levels of 87 to 91 dBA. No change in operations would be expected as a result of the construction of the 433rd Airlift Wing Building additions and renovations; therefore, no long-term, adverse, impacts on the existing noise environment would be expected. The closest off-installation populations would be approximately 5,600 feet to the east, and would be exposed to noise levels of approximately 53 dBA from construction activities. Contractors and workers are responsible to follow noise regulations in accordance with Federal, state, and USAF guidelines.

Project C5 is proposed in the zone between the 70 to 74 dBA DNL noise contours. Air Force Pamphlet 32-1010, *Land Use Planning*, recommends using the AICUZ guidance in installation planning. According to USAF land use compatibility guidelines, which are outlined in the AICUZ guidance, government services are generally considered a compatible land use in the zone between the 70 to 74 dBA DNL noise contours with noise level-reduction measures. However, measures to achieve an overall noise level reduction do not necessarily solve all noise difficulties (such as outdoor noise) and additional evaluation is warranted. It is recommended that USAF guidelines are referred to before or during the design of the Airlift Wing facility. Long-term, minor adverse effects on personnel could result if the proposed facility is built in the zone between the 70 to 74 dBA DNL noise contours; however, no significant impacts would be expected.

Land Use. Long-term, negligible, adverse impacts on land use would be expected from the additions and renovations of the 433rd Airlift Wing Building. The new additions would be constructed within the aircraft operations and maintenance and administrative land use categories, and would require a land use change to aircraft operations and maintenance. The proposed project would be compatible with surrounding development and overall development planning for JBSA-Lackland. Land use compatibility with respect to noise impacts is discussed in **Section 4.4.2**. Project C5 is within the boundaries of MMRP site AL-269. Construction activities would take into account any land use restrictions in place due to the presence of the MMRP site.

Air Quality. Short-term, minor, adverse effects on air quality would be expected from the construction of Project C5. Construction activities would result in temporary effects on local and regional air quality, primarily from site-disturbing activities, the operation of construction and paving equipment and haul trucks transporting building materials to the work site, and workers commuting to the job site. Appropriate fugitive dust-control measures would be employed during construction activities to suppress emissions. All emissions associated with construction activities would be temporary in nature.

Long-term, minor, adverse effects on air quality would be expected from the use of natural gas boilers to provide comfort heating to the proposed facility. It is not expected that emissions from Project C5 would affect local or regional attainment status with respect to the NAAQS. Emissions from the construction and operation of Project C5 are summarized in **Table 4-15**. Emissions estimation spreadsheets are included in **Appendix E**.

Table 4-15. Estimated Air Emissions Resulting from Project C5

Activity	NO_x (tpy)	VOC (tpy)	CO (tpy)	SO_2 (tpy)	PM_{10} (tpy)	$PM_{2.5}$ (tpy)	CO_2 (metric tons/year)	HAPs (tpy)
2016 Construction								
Total Construction Emissions	5.04	0.69	3.37	0.39	0.97	0.43	621.34	--
Percentage of Total JBSA-Lackland Baseline Emissions	0.53	0.76	0.36	0.42	0.95	0.58	NA	NA
Percentage of Bexar County Emissions*	0.01	0.001	0.001	0.001	0.002	0.004	0.0001**	NA
2016 to 2018 Annual Operations								
Total Operations Emissions	0.027	0.002	0.011	0.000	0.002	0.002	30.732	0.001
Percentage of Total JBSA-Lackland Baseline Emissions	0.003	0.002	0.001	0.000	0.002	0.003	NA	NA
Percentage of Bexar County Emissions*	0.00005	0.000003	0.000005	0.000001	0.000001	0.000004	0.00001	NA

Notes: * Based on maximum year emissions.

** Percentage of State of Texas CO_2 emissions as the Bexar County CO_2 emissions inventory is not available.

Geological Resources. Short-term, minor, and long-term, minor, adverse effects on soils would be expected from renovation and additions to the 433rd Airlift Wing Building. Short-term impacts during construction would result from disturbance of soils; clearing of vegetation; and grading, paving, and excavation or trenching. Vegetative clearing would increase erosion and sedimentation potential.

As a result of constructing the facility, long-term, minor to moderate, adverse effects would occur as soils would be compacted, and soil structure disturbed and modified. Soil productivity, which is the capacity of the soil to produce vegetative biomass, would decline in disturbed areas and would be eliminated in those areas within the footprints of buildings. Explosives may be used for excavation, and localized surface soil structure would be permanently altered once charges were detonated. Unless the soil is periodically compacted after explosives use, the soil would be less compacted, which could increase erosion from wind and water eroding bare, susceptible soils. Loss of soil structure due to compaction from foot and vehicle traffic could change local drainage patterns. Soil erosion- and sediment-control measures would be included in site plans to minimize long-term erosion and sediment production at each site. Use of storm water control measures that favor reinfiltration would minimize erosion and sediment production from future storm events.

The Lewisville silty clay complex is the only soil mapped at this project location. The soil was analyzed for building construction limitations associated with small commercial buildings, and was determined to be very limited by the NRCS due to its shrink-swell potential (NRCS 2012). The site is not adjacent to any open ERPs. No impacts on topography or geology would be anticipated.

Water Resources. Short- and long-term, indirect, negligible to minor, adverse effects on groundwater and surface water would be expected from activities associated with Project C5. While no water resources are present on the project area for Project C5, there would be an increase in amount of impervious surfaces and associated ground disturbance of 0.4 acres which would likely increase the amount of storm water runoff, which could affect groundwater and surface water quality. Because the project footprint has less than 1 acre of ground disturbance the project would not require coverage under TXR1500000 General Stormwater Permit. The project would use BMPs to avoid and minimize pollution in storm water runoff both during and after construction. Additionally, spill prevention practices, consistent with the JBSA-Lackland SPCC plan (LAFB 2006b), would be implemented during all activities associated with the Proposed Action to avoid and minimize potential adverse effects on groundwater and surface water.

No wetlands or other waters of the United States are present on the project site for Project C5; therefore, no direct adverse effects would occur. Two non-jurisdictional wetlands occur approximately 380 feet from construction. Based on the proximity, Project C5 could have indirect impacts on these wetlands; however, adherence to the SWPPP and use of environmental protection measures minimize any potential impacts. Project C5 does not occur within the 100-year floodplain. As such, there would be no impacts on the 100-year floodplain.

Biological Resources. Short- and long-term, direct, negligible, adverse effects on vegetation would be expected from activities associated with Project C5. The construction of, and addition to, the buildings associated with Project C5 would occur in a previously developed area. Some ancillary vegetation might be impacted as a result of heavy machinery used during construction, but impacts are expected to be negligible. All ground disturbed during construction activities that does not include site improvements would be reseeded with appropriate groundcover in accordance with the INRMP.

Short-term, negligible, adverse effects on wildlife would be expected from activities associated with Project C5. Disturbance would cause wildlife to engage in escape or avoidance behaviors. However, this project would be situated in a highly disturbed area next to the flight line; therefore, wildlife in the vicinity would be expected to be acclimated to frequent disturbances. Most wildlife species would be expected to recover quickly once construction noise and disturbances have ceased. The addition to Building 828 is adjacent to the flight line and is not expected to result in a reduction of any relevant habitat.

No impacts on sensitive and protected species would occur as a result of Project C5 due to a lack of suitable or critical habitat in the project footprint. Short-term, indirect, negligible to minor, adverse effects on migratory bird species could occur as a result of noise and physical disturbance. If these activities occur during nesting season, the environmental protection measures under **Section 4.3.6** would help to avoid take under MBTA.

Cultural Resources. This project will not have significant impacts on cultural resources under NEPA. Buildings 828 and 898, which will receive additions along with interior and exterior renovations, have been determined ineligible for the NRHP. There are no NRHP-eligible buildings in the viewshed of the proposed construction (LAFB 2002a). This project is in an area of the installation that is highly developed with highly disturbed ground. Areas of highly disturbed ground on JBSA-Lackland have not been surveyed for archaeological resources, including the proposed location of this project, as there is considered to be low potential for NRHP-eligible sites (LAFB 1996). If any unanticipated discoveries are made during the construction process, stipulation 5 of the JBSA-Lackland ICRMP, "Unanticipated Discoveries of Archaeological Deposits," and Stipulation IV of the JBSA PA, "Inadvertent Discoveries and Emergencies" will be followed.

Socioeconomics and Environmental Justice. Short-term, minor, beneficial effects on socioeconomic resources would be expected from renovation and additions to the 433rd Airlift Wing Building. It is assumed that equipment and supplies necessary to complete the construction activities would primarily be obtained locally, and local contractors would primarily be used. The demand for workers as part of the construction would be minor and would not outstrip the local supply of workers, as there are more than 80,000 construction workers in the San Antonio-New Braunfels MSA. The proposed construction activities would occur entirely on JBSA-Lackland. Noise from this project would be short-term and would not be a disproportionate adverse effect. No long-term effects on socioeconomic resources are expected to result from the proposed construction of the 433rd Airlift Wing building additions and renovations.

Infrastructure. Short-term, negligible, adverse effects would be expected as a result of debris generated during construction activities. Construction debris is generally composed of clean materials, and most of this waste would be recycled. However, debris not recycled would be landfilled, which would be considered a long-term, irreversible, adverse effect. Long-term, negligible, adverse and beneficial effects would be expected to occur. Adverse effects would occur because utility demand would increase very slightly in terms of electricity demand for the building additions. This change in utility demand would be negligible when compared to the total installation usage. Beneficial effects would occur because the consolidation project would improve Maintenance Squadron operations.

Hazardous Materials and Waste. Short- to long-term, minor, adverse impacts associated with hazardous materials and waste would be expected from implementation of Project C5. There would be a short-term increase in the use of hazardous materials and petroleum products and the generation of hazardous and petroleum wastes associated with construction activities. Contractors would be responsible for the management of these materials, which would be handled in accordance with JBSA-Lackland hazardous materials management and hazardous waste management plans and Federal, state, local, and USAF regulations. There would be a long-term increase in the use of hazardous materials and the generation of hazardous wastes associated with operation of the facility.

The project area for Project C5 overlaps MMRP Site AL-269. There is the potential for workers to encounter previously unknown UXO, MEC, or related materials during construction. If any UXO, MEC, or related materials were discovered, compliance with the DOD Environment, Safety, and Health UXO Safety Education Program should be maintained prior to and during clearing of the site and proper disposal methods should be followed to ensure maximum safety of clearing personnel. Buildings 828 and 898 could contain ACMs, LBP, and PCBs. Sampling for these materials would occur prior to any renovation activities so that these materials can be properly characterized, handled, and disposed of in accordance with JBSA-Lackland management plans, local regulations, and USAF policies. Long-term, minor, beneficial impacts would be associated with renovation from reducing potential exposure to, and maintenance of, ACMs, LBP, and PCBs. No impacts would be expected from ACMs, LBP, PCBs, pesticides, radon, storage tanks, or ERP sites.

Safety. Short-term, negligible to minor, adverse effects associated with construction safety could occur during construction and demolition activities related to Project C5. Construction and demolition activities pose an increased risk of construction-related accidents, but this level of risk would be managed by adhering to established Federal, state, and local safety regulations. Workers would be required to wear PPE such as ear protection, steel-toed boots, hard hats, gloves, and other appropriate safety gear. Construction and demolition areas would be fenced and appropriately marked with signs. Construction and associated trucks transporting material to and from construction sites would be directed to roads and streets that have a lesser volume of traffic. Therefore, no long-term, adverse effects on safety would be expected.

This site is located within MMRP Site AL-269 which has been closed and recommended for "No Further Action" (LAFB 2011l). There is a potential for workers to encounter previously unknown UXO, MEC or related materials during construction activities within MMRP sites, which could have minor, adverse impacts on safety.

4.4.2.6 C6. AFOSI Administrative Support and Headquarters Facilities

Project C6 would not result in significant effects. The following subsections break down by resource areas the non-significant effects that would result from Project C6.

Noise. Short-term, minor, adverse impacts on the noise environment would be expected from construction of the AFOSI Administrative Support and Headquarters facilities. The noise emanating from construction equipment would be localized, short-term, and intermittent during machinery operations. **Table 3-2** shows the predicted noise levels for various pieces of construction equipment 50 feet from the source, and **Table 4-1** shows estimated noise levels that would be expected at varying distances from a construction site. Heavy construction equipment would not be operational during the entire construction period, which would limit the duration of increased noise levels. This area of JBSA-Lackland is currently used for industrial and commercial functions. Populations potentially affected by the increased noise levels would include USAF personnel in the adjacent building approximately 64 feet from the construction site. The closest personnel to the construction site would be exposed to noise levels of 88 to 92 dBA. No change in operations would be expected as a result of the construction of the AFOSI Administrative Support and Headquarters facilities; therefore, no long-term, adverse, impacts on the existing noise environment would be expected. The closest off-installation populations would be approximately 3,400 feet to the southwest, and would be exposed to noise levels of approximately 57 dBA from construction activities. Contractors and workers are responsible to follow noise regulations in accordance with Federal, state, and USAF guidelines.

Land Use. Long-term, negligible, adverse impacts on land use would be expected from construction of the AFOSI Administrative Support and Headquarters Facilities. The new facilities would be constructed within the industrial, community-service, and open space land use categories, and would require a land use change to administrative. The proposed project would be compatible with surrounding development and overall development planning for JBSA-Lackland.

Air Quality. Short-term, minor, adverse effects on air quality would be expected from the construction of Project C6. Construction activities would result in temporary effects on local and regional air quality, primarily from site-disturbing activities, the operation of construction and paving equipment and haul trucks transporting building materials to the work site, and workers commuting to the job site. Appropriate fugitive dust-control measures would be employed during construction activities to suppress emissions. All emissions associated with construction activities would be temporary in nature.

Long-term, minor, adverse effects on air quality would be expected from the use of natural gas boilers to provide comfort heating to the proposed facilities. It is not expected that emissions from Project C6 would affect local or regional attainment status with respect to the NAAQS. Emissions from the construction and operation of Project C6 are summarized in **Table 4-16**. Emissions estimation spreadsheets are included in **Appendix E**.

Table 4-16. Estimated Air Emissions Resulting from Project C6

Activity	NO_x (tpy)	VOC (tpy)	CO (tpy)	SO_2 (tpy)	PM_{10} (tpy)	$PM_{2.5}$ (tpy)	CO_2 (metric tons/year)	HAPs (tpy)
2014 Construction – AFOSI Headquarters Facility								
Total Construction Emissions	5.59	1.01	4.45	0.44	5.87	1.00	722.21	--
Percentage of Total JBSA-Lackland Baseline Emissions	0.59	1.12	0.48	0.47	5.73	1.35	NA	NA
Percentage of Bexar County Emissions*	0.0098	0.0016	0.0018	0.0016	0.0099	0.0103	0.0001**	NA
2014 to 2018 Annual Operations								
Total Operations Emissions	3.185	0.255	0.700	0.207	0.227	0.227	182.89	0.004
Percentage of Total JBSA-Lackland Baseline Emissions	0.337	0.283	0.075	0.22126	0.221	0.306	NA	NA
Percentage of Bexar County Emissions*	0.0056	0.00042	0.00029	0.00075	0.00038	0.0023	0.00003**	NA
2015 Construction – AFOSI Administrative Support Facility								
Total Construction Emissions	5.39	0.89	4.03	0.42	4.25	0.81	684.25	--
Percentage of Total JBSA-Lackland Baseline Emissions	0.57	0.99	0.43	0.45	4.15	1.09	NA	NA
Percentage of Bexar County Emissions*	0.0095	0.0014	0.0017	0.0015	0.0072	0.0084	0.0001**	NA
2015 to 2018 Annual Operations								
AFOSI Administrative Support Facility	3.168	0.254	0.693	0.207	0.225	0.225	163.4	0.004
Percentage of Total JBSA-Lackland Baseline Emissions	0.336	0.282	0.075	0.22114	0.220	0.304	NA	NA
Percentage of Bexar County Emissions*	0.0056	0.00041	0.00029	0.00075	0.00038	0.0023	0.00003**	NA

Notes: * Based on maximum year emissions.
** Percentage of State of Texas CO_2 emissions as the Bexar County CO_2 emissions inventory is not available.

Geological Resources. Short-term, minor to moderate, and long-term, minor to moderate, adverse effects on soils would be expected from construction of the Headquarters Building. Short-term impacts during construction would result from disturbance of soils; clearing of vegetation; and grading, paving, and excavation or trenching. Vegetative clearing would increase erosion and sedimentation potential.

As a result of constructing the facility, long-term, minor to moderate, adverse effects would occur as soils would be compacted, and soil structure disturbed and modified. Soil productivity, which is the capacity of the soil to produce vegetative biomass, would decline in disturbed areas and would be eliminated in those areas within the footprints of buildings. Explosives may be used for excavation, and localized surface soil structure would be permanently altered once charges were detonated. Unless the soil is periodically compacted after explosives use, the soil would be less compacted, which could increase erosion from wind and water eroding bare, susceptible soils. Loss of soil structure due to compaction from foot and vehicle traffic could change local drainage patterns. Soil erosion- and sediment-control measures would be included in site plans to minimize long-term erosion and sediment production at each site. Use of storm water control measures that favor reinfiltration would minimize erosion and sediment production from future storm events.

The Houston black gravelly clay complex is the only soil mapped at this project location. The soil was analyzed for building construction limitations associated with small commercial buildings, and was determined to be very limited by the NRCS due to its shrink-swell potential (NRCS 2012). The site is not adjacent to any open ERPs. No impacts on topography or geology would be anticipated.

Water Resources. Long-term, negligible to minor, indirect, adverse effects on groundwater and surface water would be expected from activities associated with Project C6. While no water resources are present within the area for Project C6, there would be an increase in the amount of impervious surfaces and associated ground disturbance of 3.5 acres which would likely increase the amount of storm water runoff, which could affect groundwater and surface water quality. Because the project footprint is greater than 1 acre and less than 5 acres of ground disturbance the project would be covered by General Stormwater Permit TXR1500000 and require an individual SWPPP, a posted site notice, and submittal of a copy of the site notice to any MS4 operator receiving the discharge. The permit requires the implementation of BMPs to avoid and minimize pollution in storm water runoff both during and after construction. Additionally, spill prevention practices, consistent with the JBSA-Lackland SPCC plan (LAFB 2006b), would be implemented during all activities associated with the Proposed Action to avoid and minimize potential adverse effects on groundwater and surface water.

No impacts on wetlands, water features, or the 100-year floodplain are anticipated from implementation of Project C6.

Biological Resources. Short- and long-term, direct, negligible, adverse effects on vegetation would be expected from activities associated with Project C6. The construction of the building associated with Project C6 would occur in a previously developed area and would primarily affect urbanized areas including manicured lawns, some mid-sized trees, and associated landscaping. The project would result in a permanent loss of approximately 3.5 acres of vegetation. All ground disturbed during construction activities that does not include site improvements would be reseeded with appropriate groundcover in accordance with the INRMP.

Short- and long-term, direct, negligible to minor, adverse effects on wildlife would be expected from activities associated with Project C6. Impacts would be disturbances from noise, demolition and construction activities, and heavy equipment use during construction. Disturbance would cause wildlife to engage in escape or avoidance behaviors. This project would primarily affect 3.5 acres of urbanized areas including manicured lawns, some mid-sized trees, and associated landscaping; therefore, wildlife in the vicinity would be expected to be acclimated to frequent disturbance. Most wildlife species would be expected to recover quickly once construction noise and disturbances have ceased. While a new building would be constructed where there was once some open area and asphalt, no long-term effects are anticipated.

No impacts on sensitive and protected species would occur as a result of Project C6 due to a lack of suitable or critical habitat in the project footprint. Short-term, indirect, negligible to minor, adverse effects on migratory bird species could occur as a result of noise and physical disturbance. If these activities occur during nesting season, the environmental protection measures under **Section 4.3.6** would help to avoid take under the MBTA.

Cultural Resources. This project has the potential to have a moderate adverse effect on cultural resources on JBSA-Lackland; however implementation of the JBSA-Lackland PA and ICRMP will result in no significant impacts on cultural resources under NEPA. The proposed location for this new construction is immediately adjacent to the NRHP-eligible World War II Chapel, Building 5432 (LAFB 2002a). Although the chapel is one of the types of structures covered in the 1986 PA for the Demolition of World War II Temporary Buildings (USAF 1992), this PA addresses only the demolition of structures. Other undertakings that could have an adverse effect on these buildings must be coordinated, and mitigated, if necessary, separately under Section 106 of the NHPA following the review processes laid out in the JBSA-Lackland ICRMP and the JBSA PA (DOD 1986).

The construction of a new 30,000 ft^2 building in close proximity to an NRHP-eligible building is likely to have an adverse effect on the NRHP-eligible Building 5432. Because its context has been altered, the magnitude of the potential adverse effect is lessened. The possible effect can also be minimized, or possibly avoided through sensitive design of the new facility in consultation with the SHPO in accordance with the JBSA-Lackland ICRMP and JBSA PA. If it is determined, through consultation, that an adverse effect cannot be avoided, JBSA-Lackland will develop mitigation measures acceptable to the SHPO under Section 4.5 of JBSA-Lackland ICRMP and Stipulation II.1.G of the JBSA PA, or otherwise implement the dispute resolution clause in the PA.

This area of JBSA-Lackland is highly developed with highly disturbed ground. Areas with disturbed ground have not been surveyed for archaeological resources, including those portions of Lackland Main Base west of Military Drive, as there is considered to be low potential for NRHP-eligible sites (LAFB 1996). If any unanticipated discoveries are made during the construction process, SOP #5 of the JBSA-Lackland ICRMP, "Unanticipated Discoveries of Archaeological Deposits," and Stipulation IV of the JBSA PA, "Inadvertent Discoveries and Emergencies" will be followed.

Socioeconomics and Environmental Justice. Short-term, minor, beneficial effects on socioeconomic resources would be expected from the construction of the AFOSI Administrative Support and Headquarters Facility. It is assumed that equipment and supplies necessary to complete the construction activities would primarily be obtained locally, and local contractors would primarily be used. The demand for workers as part of the construction would be minor and would not outstrip the local supply of workers, as there are more than 80,000 construction workers in the San Antonio-New Braunfels MSA. The proposed construction activities would occur entirely on JBSA-Lackland. Noise from this project would be short-term and would not be a disproportionate adverse effect. No long-term effects on socioeconomic resources are expected to result from the proposed construction of the AFOSI Administrative Support and Headquarters Facility.

Infrastructure. Short-term, negligible, adverse effects would be expected as a result of debris generated during construction activities. Construction debris is generally composed of clean materials, and most of this waste would be recycled. However, debris not recycled would be landfilled, which would be considered a long-term, irreversible, adverse effect. Long-term, negligible, adverse and beneficial effects would be expected to occur. Adverse effects would occur because utility demand would increase very slightly in terms of electricity demand for the new AFOSI facilities. This change in utility demand would be negligible when compared to the total installation usage. Beneficial effects would occur because the consolidation project would improve AFOSI operations.

Hazardous Materials and Waste. Short- to long-term, minor, adverse impacts associated with hazardous materials and waste would be expected from implementation of Project C6. There would be a short-term increase in the use of hazardous materials and petroleum products and the generation of hazardous and petroleum wastes associated with construction activities. Contractors would be responsible for the management of these materials, which would be handled in accordance with the with JBSA-Lackland hazardous materials management and hazardous waste management plans and Federal, state, local, and USAF regulations. There would be a long-term increase in the use of hazardous materials and the generation of hazardous wastes associated with operation of the facility. No impacts would be expected from ACMs, LBP, PCBs, pesticides, radon, storage tanks, ERP sites, or MMRP sites.

Safety. Short-term, negligible to minor, adverse effects associated with construction safety could occur during construction and demolition activities related to Project C6. Construction and demolition activities pose an increased risk of construction-related accidents, but this level of risk would be managed by adhering to established Federal, state, and local safety regulations. Workers would be required to wear PPE such as ear protection, steel-toed boots, hard hats, gloves, and other appropriate safety gear. Construction and demolition areas would be fenced and appropriately marked with signs. Construction and associated trucks transporting material to and from construction sites would be directed to roads and streets that have a lesser volume of traffic. Therefore, no long-term, adverse effects on safety would be expected.

4.4.2.7 C7. AAFES BX Project

Project C7 would not result in significant effects. The following subsections break down by resource areas the non-significant effects that would result from Project C7.

Noise. Short-term, minor, adverse impacts on the noise environment would be expected from construction of the AAFES BX Project. The noise emanating from construction equipment would be localized, short-term, and intermittent during machinery operations. **Table 3-2** shows the predicted noise levels for various pieces of construction equipment 50 feet from the source, and **Table 4-1** shows estimated noise levels that would be expected at varying distances from a construction site. Heavy construction equipment would not be operational during the entire construction period, which would limit the duration of increased noise levels. This area of JBSA-Lackland is currently used for administrative, medical, and commercial functions. Populations potentially affected by the increased noise levels would include USAF personnel in the adjacent building approximately 100 feet from the construction site. The closest personnel to the construction site would be exposed to noise levels of 84 to 88 dBA. The closest off-installation populations would be approximately 5,400 feet to the southwest, and would be exposed to noise levels of approximately 53 dBA from construction activities. Contractors and workers are responsible to follow noise regulations in accordance with Federal, state, and USAF guidelines.

Part of Project C7 is proposed in the zone between the 65 to 69 dBA DNL noise contours. According to USAF land use compatibility guidelines, government services and retail trade are generally considered a compatible land use in the zone between the 65 to 69 dBA DNL noise contours with noise level-reduction measures. However, measures to achieve an overall noise level reduction do not necessarily solve all noise difficulties (such as outdoor noise) and additional evaluation is warranted. It is recommended that USAF guidelines are referred to before or during the design of the BX. Long-term, minor, adverse effects on personnel could result if the proposed facility is built in the zone between the 65 to 69 dBA DNL noise contours; however, no significant impacts would be expected.

Land Use. Long-term, negligible, adverse impacts on land use would be expected from construction of the AAFES BX Project. The new facility would be constructed within the administrative, medical, community-commercial, housing unaccompanied, and open space land use categories, and would require a land use change to community-commercial. The proposed project would be compatible with surrounding development and overall development planning for JBSA-Lackland. Land use compatibility with respect to noise impacts is discussed in **Section 4.4.2**.

Air Quality. Short-term, minor, adverse effects on air quality would be expected from the construction of Project C7. Construction activities would result in temporary effects on local and regional air quality, primarily from site-disturbing activities, the operation of construction and paving equipment and haul trucks transporting building materials to the work site, and workers commuting to the job site. Appropriate fugitive dust-control measures would be employed during construction activities to suppress emissions. All emissions associated with construction activities would be temporary in nature.

Long-term, minor, adverse effects on air quality would be expected from the use of natural gas boilers to provide comfort heating to the proposed facility. It is not expected that emissions from Project C7 would affect local or regional attainment status with respect to the NAAQS. Emissions from the construction and operation of Project C7 are summarized in **Table 4-17**. Emissions estimation spreadsheets are included in **Appendix E**.

Table 4-17. Estimated Air Emissions Resulting from Project C7

Activity	NO_x (tpy)	VOC (tpy)	CO (tpy)	SO_2 (tpy)	PM_{10} (tpy)	$PM_{2.5}$ (tpy)	CO_2 (metric tons/year)	HAPs (tpy)
2017 Construction								
Total Construction Emissions	8.07	3.05	11.72	0.63	13.84	2.27	1,291.30	NA
Percentage of Total JBSA-Lackland Baseline Emissions	0.85	3.38	1.26	0.67	13.51	3.06	NA	NA
Percentage of Bexar County Emissions*	0.01	0.01	0.005	0.002	0.02	0.02	0.0002**	NA
2017 to 2018 Annual Operations								
Total Operations Emissions	3.589	0.277	1.067	0.209	0.257	0.257	617.53	0.012
Percentage of Total JBSA-Lackland Baseline Emissions	0.380	0.307	0.115	0.224	0.251	0.347	NA	NA
Percentage of Bexar County Emissions*	0.006	0.00045	0.0004	0.00076	0.0004	0.0027	0.0001**	NA

Notes: * Based on maximum year emissions.
** Percentage of State of Texas CO_2 emissions as the Bexar County CO_2 emissions inventory is not available.

Geological Resources. Short-term, moderate, and long-term, moderate, adverse effects on soils would be expected from construction of the BX. Short-term impacts during construction would result from disturbance of soils; clearing of vegetation; and grading, paving, and excavation or trenching. Vegetative clearing would increase erosion and sedimentation potential.

As a result of constructing the facility, long-term, minor to moderate, adverse effects would occur as soils would be compacted, and soil structure disturbed and modified. Soil productivity, which is the capacity of the soil to produce vegetative biomass, would decline in disturbed areas and would be eliminated in those areas within the footprints of buildings. Explosives may be used for excavation, and localized surface soil structure would be permanently altered once charges were detonated. Unless the soil is periodically compacted after explosives use, the soil would be less compacted, which could increase erosion from wind and water eroding bare, susceptible soils. Loss of soil structure due to compaction from foot and vehicle traffic could change local drainage patterns. Soil erosion- and sediment-control measures would be included in site plans to minimize long-term erosion and sediment production at each site. Use of storm water-control measures that favor reinfiltration would minimize erosion and sediment production from future storm events.

The Houston black gravelly clay complex is the only soil mapped at this project location. The soil was analyzed for building construction limitations associated with small commercial buildings, and was determined to be very limited by the NRCS due to its shrink-swell potential (NRCS 2012).

The site is not adjacent to any open ERP sites. No impacts on topography or geology would be anticipated.

Water Resources. Long-term, negligible to minor, indirect, adverse effects on groundwater and surface water would be expected from activities associated with Project C7. While no water resources are present on the area for Project C7, there would be an increase in amount of impervious surfaces and associated ground disturbance of 7.2 acres which would likely increase the amount of storm water runoff, which could affect groundwater and surface water quality. Because ground disturbance associated with this project is greater than 5 acres, General Stormwater Permit TXR1500000 would require the development and implementation of a SWPPP, submittal of a Notice of Intent (by mail or online) to the TCEQ, a posted Notice of Intent and site notice, and submittal of a copy of the Notice of Intent to any MS4 operator receiving the discharge. As part of the SWPPP, BMPs would be developed in accordance with applicable regulations to avoid and minimize pollution in storm water runoff both during and after construction. Additionally, spill prevention practices, consistent with the JBSA-Lackland SPCC plan (LAFB 2006b), would be implemented during all activities associated with the Proposed Action to avoid and minimize potential adverse effects on groundwater and surface water.

No impacts on wetlands, water features, or the 100-year floodplain are anticipated from implementation of Project C7.

Biological Resources. Short- and long-term, direct, negligible, adverse effects on vegetation would be expected from activities associated with Project C7. The construction of the buildings associated with Project C7 would occur in a previously developed area and would primarily affect urbanized areas including manicured lawns, some mid-sized trees, and associated landscaping. The project would result in a permanent loss of approximately 15 acres of vegetation. All trees and vegetation associated with the project footprint would be replaced or relocated as applicable. All ground disturbed during construction activities that do not include site improvements, would be reseeded with appropriate groundcover in accordance with the INRMP.

Short- and long-term, direct, negligible, adverse effects on wildlife would be expected from activities associated with Project C7. Impacts would be disturbances from noise, demolition and construction activities, and heavy equipment use during construction. Disturbance would cause wildlife to engage in escape or avoidance behaviors. This project would primarily affect 15 acres of urbanized areas including manicured lawns, some mid-sized trees, and associated landscaping; therefore, wildlife in the vicinity would be expected to be acclimated to frequent disturbance. Most wildlife species would be expected to recover quickly once construction noise and disturbances have ceased. While a new building would be constructed where there was once some open area and asphalt, no long-term effects are anticipated.

No impacts on sensitive and protected species would occur as a result of Project C7 due to a lack of suitable or critical habitat in the project footprint. Short-term, indirect, negligible to minor, adverse effects on migratory bird species could occur as a result of noise and physical disturbance. If these activities occur during nesting season, the environmental protection measures under **Section 4.3.6** would help to avoid take under the MBTA.

Cultural Resources. This project will not have significant impacts on cultural resources under NEPA. The construction of the AAFES BX will require the demolition of Building 1385, which has not been evaluated for NRHP eligibility, and does not require evaluation because it is not yet 50 years old. There are no NRHP-eligible buildings in the viewshed of the proposed project location. Areas of highly disturbed ground on JBSA-Lackland have not been surveyed for archaeological resources, including large portions of Lackland Main Base, as there is considered to be low potential for NRHP-eligible sites (LAFB 1996). If any unanticipated discoveries are made during the construction process, Stipulation 5 of the JBSA-Lackland ICRMP, "Unanticipated Discoveries of Archaeological Deposits," and Section IV of the JBSA PA, "Inadvertent Discoveries and Emergencies," would be followed.

Socioeconomics and Environmental Justice. Short-term, minor, beneficial effects on socioeconomic resources would be expected from the construction of the AAFES BX. It is assumed that equipment and supplies necessary to complete the construction activities would primarily be obtained locally, and local contractors would primarily be used. The demand for workers as part of the construction would be minor and would not outstrip the local supply of workers, as there are more than 80,000 construction workers in the San Antonio-New Braunfels MSA. The proposed construction activities would occur entirely on JBSA-Lackland. There is a possibility that residents along Fairchild Street approximately 100 feet to the east could experience short-term intermittent noise associated with the proposed construction activities, however, this noise would not be a disproportionate adverse effect. No long-term effects on socioeconomic resources are expected to result from the proposed construction of the AAFES BX.

Infrastructure. Short-term, negligible, adverse effects would be expected as a result of debris generated during construction activities. Construction debris is generally composed of clean materials, and most of this waste would be recycled. However, debris not recycled would be landfilled, which would be considered a long-term, irreversible, adverse effect. Long-term, negligible, adverse and beneficial effects would be expected to occur. Adverse effects would occur because utility demand would increase very slightly in terms of electricity demand for the new BX. This change in utility demand would be negligible when compared to the total installation usage. Beneficial effects would occur because Project C7 would include the demolition of outdated structures and associated utilities (e.g., electrical and heating systems) and would provide a satellite pharmacy for installation personnel.

Hazardous Materials and Waste. Short- to long-term, minor, adverse impacts associated with hazardous materials and waste would be expected from implementation of Project C7. There would be a short-term increase in the use of hazardous materials and petroleum products and the generation of hazardous and petroleum wastes associated with construction activities. Contractors would be responsible for the management of these materials, which would be handled in accordance with the JBSA-Lackland hazardous materials management and hazardous waste management plans and Federal, state, local, and USAF regulations. There would be a long-term increase in the use of hazardous materials and the generation of hazardous wastes associated with operation of the facility. No impacts would be expected from ACMs, LBP, PCBs, pesticides, radon, storage tanks, ERP sites, or MMRP sites.

Safety. Short-term, negligible to minor, adverse effects associated with construction safety could occur during construction and demolition activities related to Project C7. Construction and demolition activities pose an increased risk of construction-related accidents, but this level of risk would be managed by adhering to established Federal, state, and local safety regulations. Workers would be required to wear PPE such as ear protection, steel-toed boots, hard hats, gloves, and other appropriate safety gear. Construction and demolition areas would be fenced and appropriately marked with signs. Construction and associated trucks transporting material to and from construction sites would be directed to roads and streets that have a lesser volume of traffic. Therefore, no long-term, adverse effects on safety would be expected.

4.4.3 Selected Infrastructure Projects

4.4.3.1 I1. Pavement Projects

Project I1 would not result in significant effects. The following subsections break down by resource areas the non-significant effects that would result from Project I1.

Noise. Short-term, minor, adverse impacts on the noise environment would be expected as a result of Project I1. The noise emanating from construction equipment would be localized, short-term, and intermittent during machinery operations. **Table 3-2** shows the predicted noise levels for various pieces of construction equipment 50 feet from the source, and **Table 4-1** shows estimated noise levels that would be expected at varying distances from a construction site. Heavy construction equipment would not be operational during the entire construction and demolition period, which would limit the duration of increased noise levels. This project will occur throughout JBSA-Lackland in areas used for various functions. Populations potentially affected by the increased noise levels would include USAF personnel working in and using the adjacent facilities typically approximately 50 feet from the construction and demolition site. The closest personnel to the site could be exposed to noise levels of 90 to 94 dBA. No change in operations would be expected as a result of the proposed pavement projects; therefore, no long-term, adverse, impacts on the existing noise environment would be expected. The closest off-installation populations would be approximately 200 feet, and could be exposed to noise levels between 78 and 82 dBA from construction activities. Consequently, proposed construction activities would result in short-term, minor, adverse impacts on the noise environment in the vicinity of construction activities. However, noise generation would last only for the duration of construction activities and would be isolated to normal working hours (i.e., between 7:00 a.m. and 5:00 p.m.). The short-term increase in noise levels from construction at the proposed pavement projects would not cause significant adverse effects on the surrounding populations. Contractors and workers are responsible to follow noise regulations in accordance with Federal, state and USAF guidelines.

Land Use. Short-term, negligible, adverse impacts on land use could be expected from implementation of Project I1. The proposed pavement projects would be within various land use categories throughout JBSA-Lackland. No impacts on land use from roadway widening and bike lane installation would be expected. A land use designation change could be required for the resulting sidewalks, plazas, displays, and memorials, depending on the locations chosen for construction. Overall, the proposed project would be compatible with surrounding development and overall development planning for JBSA-Lackland. Portions of Project I1 are within the boundaries of ERP sites SA-40, SA-41, LF-11, LF-12, LF-37, SS-32, AOC-37, and AOC-50 and MMRP sites AL-240 and AL-722. Construction activities would take into account any land use restrictions in place due to the presence of the ERP or MMRP sites.

Air Quality. Short-term, minor to moderate, adverse effects on air quality would be expected from the pavements projects. Construction activities would result in temporary effects on local and regional air quality, primarily from site-disturbing activities, the operation of construction equipment and paving equipment and haul trucks transporting materials, and workers commuting to the job site. Appropriate fugitive dust-control measures would be employed during construction activities to suppress emissions. All emissions associated with construction activities would be temporary in nature. It is not expected that emissions from Project I1 would affect local or regional attainment status with respect to the NAAQS. Emissions from the construction of the pavements projects are summarized in **Table 4-18**. Emissions estimation spreadsheets are included in **Appendix E**. No long-term air emissions would be produced as a result of Project I1.

1 **Table 4-18. Estimated Air Emissions Resulting from Project I1**

Activity	NO_x (tpy)	VOC (tpy)	CO (tpy)	SO_2 (tpy)	PM_{10} (tpy)	$PM_{2.5}$ (tpy)	CO_2 (metric tons/year)
2013 Construction							
Roadway Expansion	10.60	2.82	14.35	0.87	158.99	16.85	1,842.22
Sidewalk Construction	1.76	0.68	4.56	0.12	22.26	2.37	565.02
Troop Walk Construction	0.75	0.43	3.42	0.04	6.05	0.66	417.67
Plaza, Display, Memorial Construction	5.19	0.83	5.30	0.39	0.64	0.39	866.42
Total 2013 Construction Emissions	**18.30**	**4.76**	**27.63**	**1.42**	**187.94**	**20.27**	**3,691.33**
Percentage of Total JBSA-Lackland Baseline Emissions	**1.94**	**5.27**	**2.98**	**1.52**	**183.46**	**27.33**	**NA**
Percentage of Bexar County Emissions*	**0.03**	**0.01**	**0.01**	**0.01**	**0.32**	**0.21**	**0.0006****
2014 Construction							
Roadway Expansion	10.60	2.82	14.35	0.87	158.99	16.85	1,842.22
Sidewalk Construction	1.76	0.68	4.56	0.12	22.26	2.37	565.02
Troop Walk Construction	0.75	0.43	3.42	0.04	6.05	0.66	417.67
Plaza, Display, Memorial Construction	5.19	0.83	5.30	0.39	0.64	0.39	866.42
Total 2014 Construction Emissions	**18.30**	**4.76**	**27.63**	**1.42**	**187.94**	**20.27**	**3,691.33**
Percentage of Total JBSA-Lackland Baseline Emissions	**1.94**	**5.27**	**2.98**	**1.52**	**183.46**	**27.33**	**NA**
Percentage of Bexar County Emissions*	**0.03**	**0.01**	**0.01**	**0.01**	**0.32**	**0.21**	**0.0006****
2015 Construction							
Roadway Expansion	10.60	2.82	14.35	0.87	158.99	16.85	1,842.22
Sidewalk Construction	1.76	0.68	4.56	0.12	22.26	2.37	565.02
Troop Walk Construction	0.75	0.43	3.42	0.04	6.05	0.66	417.67
Plaza, Display, Memorial Construction	5.19	0.83	5.30	0.39	0.64	0.39	866.42
Total 2015 Construction Emissions	**18.30**	**4.76**	**27.63**	**1.42**	**187.94**	**20.27**	**3,691.33**
Percentage of Total JBSA-Lackland Baseline Emissions	**1.94**	**5.27**	**2.98**	**1.52**	**183.46**	**27.33**	**NA**
Percentage of Bexar County Emissions*	**0.03**	**0.01**	**0.01**	**0.01**	**0.32**	**0.21**	**0.0006****
2016 Construction							
Roadway Expansion	10.60	2.82	14.35	0.87	158.99	16.85	1,842.22

Activity	NO_x (tpy)	VOC (tpy)	CO (tpy)	SO_2 (tpy)	PM_{10} (tpy)	$PM_{2.5}$ (tpy)	CO_2 (metric tons/year)
Sidewalk Construction	1.76	0.68	4.56	0.12	22.26	2.37	565.02
Troop Walk Construction	0.75	0.43	3.42	0.04	6.05	0.66	417.67
Plaza, Display, Memorial Construction	5.19	0.83	5.30	0.39	0.64	0.39	866.42
Total 2016 Construction Emissions	**18.30**	**4.76**	**27.63**	**1.42**	**187.94**	**20.27**	**3,691.33**
Percentage of Total JBSA-Lackland Baseline Emissions	**1.94**	**5.27**	**2.98**	**1.52**	**183.46**	**27.33**	**NA**
Percentage of Bexar County Emissions*	**0.03**	**0.01**	**0.01**	**0.01**	**0.32**	**0.21**	**0.0006****
2017 Construction							
Roadway Expansion	10.60	2.82	14.35	0.87	158.99	16.85	1,842.22
Sidewalk Construction	1.76	0.68	4.56	0.12	22.26	2.37	565.02
Troop Walk Construction	0.75	0.43	3.42	0.04	6.05	0.66	417.67
Plaza, Display, Memorial Construction	5.19	0.83	5.30	0.39	0.64	0.39	866.42
Total 2017 Construction Emissions	**18.30**	**4.76**	**27.63**	**1.42**	**187.94**	**20.27**	**3,691.33**
Percentage of Total JBSA-Lackland Baseline Emissions	**1.94**	**5.27**	**2.98**	**1.52**	**183.46**	**27.33**	**NA**
Percentage of Bexar County Emissions*	**0.03**	**0.01**	**0.01**	**0.01**	**0.32**	**0.21**	**0.0006****
2018 Construction							
Roadway Expansion	10.60	2.82	14.35	0.87	158.99	16.85	1,842.22
Sidewalk Construction	1.76	0.68	4.56	0.12	22.26	2.37	565.02
Troop Walk Construction	0.75	0.43	3.42	0.04	6.05	0.66	417.67
Plaza, Display, Memorial Construction	5.19	0.83	5.30	0.39	0.64	0.39	866.42
Total 2018 Construction Emissions	**18.30**	**4.76**	**27.63**	**1.42**	**187.94**	**20.27**	**3,691.33**
Percentage of Total JBSA-Lackland Baseline Emissions	**1.94**	**5.27**	**2.98**	**1.52**	**183.46**	**27.33**	**NA**
Percentage of Bexar County Emissions*	**0.03**	**0.01**	**0.01**	**0.01**	**0.32**	**0.21**	**0.0006****

Notes: * Based on maximum year emissions.
** Percentage of State of Texas CO_2 emissions as the Bexar County CO_2 emissions inventory is not available.

Geological Resources. Short-term, moderate, and long-term, moderate, adverse effects on soils would be expected from construction of the pavement projects on JBSA-Lackland. Short-term impacts during construction would result from disturbance of soils; clearing of vegetation; and grading, paving, and excavation or trenching. Vegetative clearing would increase erosion and sedimentation potential.

As a result of constructing the pavement projects, long-term, minor to moderate, adverse effects would occur as soils would be compacted, and soil structure disturbed and modified. Soil productivity, which is the capacity of the soil to produce vegetative biomass, would decline in disturbed areas and would be eliminated in those areas within the footprints of roadways, troop walks, sidewalks, and plazas. Loss of soil structure due to compaction from foot and vehicle traffic could change local drainage patterns. Soil erosion- and sediment-control measures would be included in site plans to minimize long-term erosion and sediment production at each site. Use of storm water control measures that favor reinfiltration would minimize erosion and sediment production from future storm events.

Additionally, some of the proposed pavement projects are within ERP sites. Therefore, short-term, minor, adverse effects on soils could occur from the disturbance of potentially contaminated soils. Project planning should include sampling and subsequent remediation within the project area to account for the discovery of contaminated soil. The handling, storage, transportation, and disposal of hazardous substances would be conducted in accordance with applicable Federal, state, and local regulations; USAF regulations; and JBSA-Lackland management procedures. No long-term effects would be expected.

The Houston black gravelly clay, Branyon clay, Lewisville silty clay, Tinn and Frio complex, Sunev clay loam, and the Loire clay loam are all present at the project location. Of these soils, all but the Sunev clay loam are rated very limited for local road construction and shallow excavations, for reasons of flooding, low strength, and shrink-swell potential. The Sunev clay loam is rated somewhat limited, due to low strength (NRCS 2012).

No impacts on topography or geology would be anticipated.

Water Resources. Short- and long-term, indirect and direct, negligible to moderate, adverse effects on groundwater, surface water, wetlands, and floodplains would be expected from activities associated with Project I1. There would be an increase in impervious surfaces (435.9 acres) throughout the installation, which would likely increase the amount of storm water runoff, which could affect groundwater and surface water quality. Because ground disturbance associated with this project is greater than 5 acres, General Stormwater Permit TXR1500000 would require the development and implementation of a SWPPP, submittal of a Notice of Intent (by mail or online) to the TCEQ, a posted Notice of Intent and site notice, and submittal of a copy of the Notice of Intent to any MS4 operator receiving the discharge. As part of the SWPPP, BMPs would be developed in accordance with applicable regulations to avoid and minimize pollution in storm water runoff both during and after construction. Additionally, spill prevention practices, consistent with the JBSA-Lackland SPCC plan (LAFB 2006b), would be implemented during all activities associated with the Proposed Action to avoid and minimize potential adverse effects on groundwater and surface water.

Short-term, minor, adverse effects could occur from impacts on 0.02 acre of non-jurisdictional wetlands from implementation of Project I1 (see **Figure 4-5**); therefore, this project would require a FONPA. Effects on wetlands would be reduced through design, siting, and proper implementation of environmental protection measures. These would include the following:

- Flagging the boundary of the wetland to avoid unnecessary construction equipment and personnel from entering the wetland area
- Phasing construction activities so that smaller areas of land are disturbed at the same time to limit soil exposure
- Installing sedimentation basins and detention or retention ponds to contain sediment and runoff in the construction area

- Following the procedures in the SPCC Plan to contain and clean up spills of fuels and other potentially hazardous material quickly
- Developing an ESCP
- Developing a construction-grading plan in order to divert storm water runoff away from nearby wetlands
- Utilizing docks or boardwalks across wetland areas, rather than filling in the wetland area to create a pathway
- Minimizing the use of heavy machinery in wetlands
- Restricting construction activities to drier periods of the year
- Disposing of construction debris in a non-wetland area.

Proper implementation of these measures would ensure that no effects on surrounding wetlands or other waters of the United States would occur. Correspondence with regulatory and resource agencies prior to commencing any ground-breaking construction activities would be completed and permits would be obtained, as necessary.

Construction of portions of Project I1 would occur within approximately 6.7 acres of the 100-year floodplain; therefore, this project would require a FONPA and approval from AETC. To minimize potential impacts, construction would follow guidelines for construction in the floodplain, including constructing sidewalks, roads, and parking lots with pervious materials; and creating new storm water retention areas for projects that create net impervious surface areas, to the maximum practicable extent. No mitigation measures would be required because no significant impacts would occur.

Biological Resources. Short- and long-term, direct, negligible, adverse effects on vegetation would be expected from activities associated with Project I1. The construction and expansion of the roadways (16.93 miles), troop walks (9.6 miles), sidewalks (71 miles), and plazas (0.9 acre) associated with Project I1 would occur in previously developed areas throughout the installation (see **Figures 2-1** through **2-5**). The construction would primarily affect urbanized areas including manicured lawns, some mid-sized trees, and associated landscaping. Habitat associated with riparian environments in Leon Creek would also be impacted as the project goes across the creek. However, all ground disturbed during construction activities that does not include site improvements would be reseeded with appropriate groundcover in accordance with the INRMP.

Short- and long-term, direct, negligible to minor, adverse effects on wildlife would be expected from activities associated with Project I1. Disturbance would cause wildlife to engage in escape or avoidance behaviors. However, most wildlife species would be expected to recover quickly once the disturbances from noise, demolition, and heavy equipment use have ceased. This project would result in an impact to habitat associated with roadways, troop walks, sidewalks, and plazas. Habitat associated with Project I1 would include manicured lawns, some mid-sized trees, and associated landscaping; however, the habitat quality associated with this project is generally low. Project I1 would also pass through riparian habitat associated with Leon Creek that would support birds, amphibians, reptiles, and small mammals. These impacts would be temporary in nature as disturbed areas would be reseeded with appropriate groundcover in accordance with the INRMP. Species that would normally occupy these areas would be expected to move to other locations on the installation.

Riparian habitat in Leon Creek could be suitable habitat for white-faced ibis, Cagle’s map turtle, the Texas indigo snake, and the timber rattlesnake (LAFB 2007). A majority of the infrastructure improvements as part of Project I1 would occur in urbanized areas, reducing the potential for impacts on these species. Some parts of Project I1 pass through riparian habitat but follow existing infrastructure and would likely have short-term impacts on potential habitat in Leon Creek. This area would be reseeded with appropriate groundcover. As such, no adverse effects are expected on threatened or endangered species on the installation from Project I1. Short-term, indirect, negligible to minor, adverse effects on migratory bird species could occur as a result of noise and physical disturbance. If these activities occur during nesting season, the environmental protection measures under **Section 4.3.6** would help to avoid take under the MBTA.

Cultural Resources. This project will not have significant impacts on cultural resources under NEPA. New troop walks will be installed on the same block as Building 5432, the NRHP-eligible World War II chapel (LAFB 2002a). However, these will be installed on sides of this block not immediately adjacent to the chapel, which fronts Wurtsmith Street, and therefore are unlikely to alter the setting that could contribute to the NRHP eligibility of the structure. Furthermore, the setting of Building 5432 has been altered to a degree and is not pristine. Areas of highly disturbed ground on JBSA-Lackland have not been surveyed for archaeological resources, including the proposed locations for new pavement, as there is considered to be low potential for NRHP-eligible sites (LAFB 1996) because of the high level of development. If any unanticipated discoveries are made during the construction process, Stipulation 5 of the JBSA-Lackland ICRMP, "Unanticipated Discoveries of Archaeological Deposits," and Section IV of the JBSA PA, "Inadvertent Discoveries and Emergencies," would be followed.

Socioeconomics and Environmental Justice. Short-term, negligible, beneficial effects on socioeconomic resources would be expected from the pavement projects. It is assumed that equipment and supplies necessary to complete the proposed activities would be obtained locally, and local contractors would be used. The demand for workers as part of the construction would be minor and would not outstrip the local supply of workers, as there are more than 80,000 construction workers in the San Antonio-New Braunfels MSA. The proposed construction activities would occur entirely on JBSA-Lackland, and it would have little potential to adversely affect on- or off-installation residents. Therefore, no environmental justice issues would be anticipated. No long-term effects on socioeconomic resources are expected to result from the proposed pavement projects.

Infrastructure. Short-term, negligible, adverse effects would be expected as a result of debris generated during this infrastructure improvement project. Construction debris is generally composed of clean materials, and most of this waste would be recycled. However, debris not recycled would be landfilled, which would be considered a long-term, irreversible, adverse effect. Long-term, minor, beneficial effects would be expected to occur because this project would improve vehicle, bicycle, and pedestrian transportation on the installation.

Hazardous Materials and Waste. Short-term, negligible, adverse effects associated with hazardous materials and waste would be expected from implementation of Project I1. There would be a short-term increase in the use of hazardous materials and petroleum products and the generation of hazardous and petroleum wastes from construction of the variety of proposed pavement-related projects. Contractors would be responsible for the management of these materials, which would be handled in accordance with the JBSA-Lackland hazardous materials management and hazardous waste management plans and Federal, state, local, and USAF regulations. The project area for Project I1 would overlap the boundaries of ERP sites SA-40, SA-41, LF-11, LF-12, LF-37, SS-32, AOC-37, and AOC-50; however, all of these ERP sites except for LF-12 have been closed and no further action has been recommended. An *ERP Waiver to Construct* would need to be obtained for construction within LF-12. If contamination were discovered during construction, work would be halted immediately and any contaminated materials would be handled, stored, transported, and disposed of in accordance with applicable Federal, state, local, and USAF regulations.

The project area for Project I1 overlaps MMRP sites AL-240 and AL-722. There is the potential for workers to encounter previously unknown UXO, MEC, or related materials during construction. If any UXO, MEC, or related materials were discovered, compliance with the DOD Environment, Safety, and Health UXO Safety Education Program should be maintained prior to and during clearing of the site and proper disposal methods should be followed to ensure maximum safety of clearing personnel.

No impacts would be expected from ACMs, LBP, PCBs, pesticides, storage tanks, or radon.

Safety. Short-term, negligible to minor, adverse effects associated with safety could occur during construction and demolition activities related to Project I1. Construction and demolition activities pose an increased risk of construction-related accidents, but this level of risk would be managed by adhering to established Federal, state, and local safety regulations. Workers would be required to wear PPE such as ear protection, steel-toed boots, hard hats, gloves, and other appropriate safety gear. Construction and demolition areas would be fenced and appropriately marked with signs. Construction and associated trucks transporting material to and from construction sites would be directed to roads and streets that have a lesser volume of traffic. Therefore, no long-term, adverse effects on safety would be expected.

Project I1 intersects with ERP sites SA-40, SA-41, LF-11, LF-12, LF-37, SS-32, AOC-37, and AOC-50, and MMRP sites AL-240 and AL-722. All of these sites, except for LF-12 haven been closed; however, there is a potential for workers to encounter previously unknown contaminated materials and UXO, MEC or related materials during construction activities within ERP and MMRP sites, respectively. If contamination is encountered, it would be handled, stored, transported, and disposed of in accordance with the installation’s Hazardous Waste Management Plan and all applicable Federal, state, and local regulations and policies.

ERP site LF-12 is still open and the monitoring of this could be affected by Project I1. There is also a greater potential of the inadvertent discovery of previously unknown contaminated materials by workers in this area.

4.4.3.2 I2. Golf Cart Path Upgrades

Project I2 would not result in significant effects. The following subsections break down by resource areas the non-significant effects that would result from Project I2.

Noise. Short-term, minor, adverse impacts on the noise environment would be expected as a result of Golf Cart Path Upgrades. The noise emanating from construction equipment would be localized, short-term, and intermittent during machinery operations. **Table 3-2** shows the predicted noise levels for various pieces of construction equipment 50 feet from the source, and **Table 4-1** shows estimated noise levels that would be expected at varying distances from a construction site. Heavy construction equipment would not be operational during the entire construction and demolition period, which would limit the duration of increased noise levels. This area of JBSA-Lackland is used for outdoor recreation. Populations potentially affected by the increased noise levels would include USAF personnel working in and using the adjacent golf facilities typically approximately 50 feet from the construction sites. The closest personnel to the site could be exposed to noise levels of 90 to 94 dBA. No change in operations would be expected as a result of the proposed upgrades to the golf cart paths; therefore, no long-term, adverse, impacts on the existing noise environment would be expected. The closest off-installation populations would be approximately 300 feet, and could be exposed to noise levels between 74 and 78 dBA from construction activities. Contractors and workers are responsible to follow noise regulations in accordance with Federal, state, and USAF guidelines.

Land Use. No impacts on land use would be expected from upgrades to the golf cart paths on JBSA-Lackland. The proposed upgrades are within the outdoor recreation land use category and would not require changes to implement. Portions of Project I2 are within the boundaries of ERP site AOC-43 and MMRP sites AL-240 and AL-722. Construction activities would take into any land use restrictions in place due to the presence of the ERP and MMRP sites.

Air Quality. Short-term, minor, adverse effects on air quality would be expected from construction of the golf cart path upgrades. Construction activities would result in temporary effects on local and regional air quality, primarily from site-disturbing activities, the operation of construction equipment and paving equipment and haul trucks transporting materials, and workers commuting to the job site. Appropriate fugitive dust-control measures would be employed during construction activities to suppress emissions. All emissions associated with construction activities would be temporary in nature. It is not expected that emissions from Project I2 would affect local or regional attainment status with respect to the NAAQS. Emissions from the construction of the golf cart path upgrades are summarized in **Table 4-19**. Emissions estimation spreadsheets are included in **Appendix E**. No long-term air emissions would be produced as a result of Project I2.

Table 4-19. Estimated Air Emissions Resulting from Project I2

Activity	NO_x (tpy)	VOC (tpy)	CO (tpy)	SO_2 (tpy)	PM_{10} (tpy)	$PM_{2.5}$ (tpy)	CO_2 (metric tons/year)
2014 Construction							
Total Construction Emissions	1.63	0.45	2.45	0.13	23.73	2.52	312.71
Percentage of Total JBSA-Lackland Baseline Emissions	0.17	0.50	0.26	0.14	23.16	3.40	NA
Percentage of Bexar County Emissions*	0.003	0.001	0.001	0.001	0.04	0.03	0.0001**

Notes: * Based on maximum year emissions.

** Percentage of State of Texas CO_2 emissions as the Bexar County CO_2 emissions inventory is not available.

Geological Resources. Short-term, minor, and long-term, minor, adverse effects on soils would be expected from construction of the golf cart path upgrades on JBSA-Lackland. Short-term impacts during construction would result from disturbance of soils; clearing of vegetation; and grading, paving, and excavation or trenching. Vegetative clearing would increase erosion and sedimentation potential.

As a result of upgrading the paths, long-term, minor, adverse effects would occur as soils would be compacted, and soil structure disturbed and modified. Soil productivity, which is the capacity of the soil to produce vegetative biomass, would decline in disturbed areas and would be eliminated in those areas within the footprints of the widened paths. Loss of soil structure due to compaction from foot and vehicle traffic could change local drainage patterns. Soil erosion- and sediment-control measures would be included in site plans to minimize long-term erosion and sediment production at each site. Use of storm water control measures that favor reinfiltration would minimize erosion and sediment production from future storm events, and, long-term, minor to moderate, beneficial impacts on soils would be expected from the erosion control provided by the upgrades.

The Houston black gravelly clay and Patrick soils are present at the project location. Of these soils, all are rated very limited shallow excavations, for reasons of instability. The Houston black gravelly clay is rated very limited for local roads for reasons of low strength and shrink-swell potential, while the Patrick soils are rated somewhat limited, due to flooding (NRCS 2012).

Portions of the paths to be upgraded under Project I2 lie within an ERP site. Therefore, short-term, minor to moderate, adverse effects on soils could occur from the disturbance of potentially contaminated soils.

Project planning should include sampling and subsequent remediation within the project area to account for the discovery of contaminated soil. The handling, storage, transportation, and disposal of hazardous substances would be conducted in accordance with applicable Federal, state, and local regulations; USAF regulations; and JBSA-Lackland management procedures. No long-term effects would be expected. Additionally, portions of the paths are adjacent to wetlands, therefore, short- and long-term, indirect, minor, adverse impacts on hydric soils could be expected from the upgrades.

No impacts on topography or geology would be anticipated.

Water Resources. Short- and long-term, indirect and direct, negligible to moderate, adverse effects on groundwater, surface water, wetlands, and floodplains would be expected as a result of activities associated with Project I2. Ground disturbance as a result of Project I2 would be 4.6 acres, with a corresponding increase in impervious surfaces. Ground disturbance could result in short-term, indirect effects on groundwater quality. The increase in impervious surface could result in a long-term increase in storm water, which could affect groundwater and stormwater quality. Because the project footprint is greater than 1 acre and less than 5 acres of ground disturbance, the project would be covered by the TXR1500000 General Stormwater Permit and require an individual SWPPP, a posted site notice, and submittal of a copy of the site notice to any MS4 operator receiving the discharge. The permit requires the implementation of BMPs to avoid and minimize pollution in storm water runoff both during and after construction. Additionally, spill prevention practices, consistent with the JBSA-Lackland SPCC plan (LAFB 2006b), would be implemented during all activities associated with the Proposed Action to avoid and minimize potential adverse effects on groundwater and surface water.

Construction of portions of Project I2 would occur within 1.7 acres of the 100-year floodplain; therefore, this project would require a FONPA and approval from AETC. To minimize potential impacts, construction would follow guidelines for construction in the floodplain, including constructing the paths with pervious materials; and creating new storm water retention areas for projects that create net impervious surface areas, to the maximum practicable extent. No mitigation measures would be required because no significant impacts would occur.

Short-term, minor, adverse effects could occur from impacts on 10 ft^2 of jurisdictional wetlands from implementation of Project I2 (see **Figure 4-7**); therefore, this project would require a FONPA. Effects on wetlands would be reduced through design, siting, and proper implementation of environmental protection measures. These would include the following:

- Flagging the boundary of the wetland to avoid unnecessary construction equipment and personnel from entering the wetland area
- Phasing construction activities so that smaller areas of land are disturbed at the same time to limit soil exposure
- Installing sedimentation basins and detention or retention ponds to contain sediment and runoff in the construction area
- Following the procedures in the SPCC Plan to contain and clean up spills of fuels and other potentially hazardous material quickly
- Developing an ESCP
- Developing a construction-grading plan in order to divert storm water runoff away from nearby wetlands
- Utilizing docks or boardwalks across wetland areas, rather than filling in the wetland area to create a pathway

- Minimizing the use of heavy machinery in wetlands
- Restricting construction activities to drier periods of the year
- Disposing of construction debris in a non-wetland area.

Proper implementation of these measures would ensure that no effects on surrounding wetlands or other waters of the United States would occur. Correspondence with regulatory and resource agencies prior to commencing any ground-breaking construction activities would be completed and permits would be obtained, as necessary.

Biological Resources. Short- and long-term, direct, minor, adverse and beneficial effects on vegetation would be expected as a result of activities associated with Project I2. The upgrades to the golf cart paths associated with Project I2 would occur in a previously developed area (see **Figure 2-7**). The project would result in a permanent loss of vegetation. Affected vegetation would consist primarily of manicured lawns and associated landscaping, and brush or scrub consistent with a golf course. Long-term impacts on vegetation would occur as a result of the widening of the golf cart paths.

Short- and long-term, direct, negligible to minor, adverse effects on wildlife would be expected as a result of activities associated with Project I2. The upgrades to the golf cart paths associated would occur on the highly disturbed environment of a golf course (see **Figure 2-7**). Disturbance during project activities would cause wildlife to engage in escape or avoidance behaviors. However, most wildlife species would be expected to recover quickly. Long-term impacts on habitat would occur as a result of the widening of the golf cart paths. This habitat is primarily made up of manicured lawns and brush or scrub and is not considered high-value habitat. Regardless, there would be a permanent loss of some habitat that might be used by wildlife species.

Habitat on the golf course and in Leon Creek could be suitable habitat for black-capped vireo, white-faced ibis, Cagle's map turtle, the Texas indigo snake, and the timber rattlesnake (LAFB 2007). The infrastructure improvements as part of Project I2 would occur in disturbed areas, reducing the potential for impacts on these species. As such, no adverse effects are expected on threatened or endangered species on the installation from Project I2. Short-term, indirect, negligible to minor, adverse effects on migratory bird species could occur as a result of noise and physical disturbance. If these activities occur during nesting season, the environmental protection measures under **Section 4.3.6** would help to avoid take under the MBTA.

Cultural Resources. This project has the potential for minor adverse effects on cultural resources at JBSA-Lackland; however, implementation of the JBSA-Lackland PA and ICRMP would result in no significant impact under NEPA. One NRHP-eligible archaeological site (41BX1108) is located within the northern end of the golf course. A second site (41BX1107) in the southern portion of the golf course was recommended by the NPS and the SHPO to undergo additional testing in order to determine its NRHP eligibility, and should be treated as eligible until further testing is completed (NPS 1997). Multiple other sites in the Leon Creek drainage area were recommended as NRHP-eligible as part of the 1996 archaeological survey of JBSA-Lackland but were determined to be ineligible for the NRHP with the concurrence of the SHPO (LAFB 2002a). The JBSA PA stipulates in Section III, "Exempt Undertakings," that all maintenance work on existing features greater than 100 feet from an identified NRHP-eligible archeological site will be considered to have No Effect or No Adverse Effect to historic resources and may proceed without formal notice to the SHPO. Projects that occur within 100 feet from NRHP-eligible sites must be coordinated with the SHPO. All portions of this project are more than 100 feet from any identified NRHP-eligible sites and therefore fall within this exemption. No project-specific coordination with the SHPO is required for this project.

Socioeconomics and Environmental Justice. Short-term, negligible, beneficial effects on socioeconomic resources would be expected from the golf cart path upgrades. It is assumed that equipment and supplies necessary to complete the proposed activities would be obtained locally, and local contractors would be used. The demand for workers as part of the construction would be minor and would not outstrip the local supply of workers, as there are more than 80,000 construction workers in the San Antonio-New Braunfels MSA. The proposed construction activities would occur entirely on JBSA-Lackland, and it would have little potential to affect on- or off-installation residents adversely. Therefore, no environmental justice issues would be anticipated. No long-term effects on socioeconomic resources are expected to result from the proposed golf cart path upgrades.

Infrastructure. Short-term, negligible, adverse effects would be expected as a result of debris generated during this infrastructure improvement project. Construction debris is generally composed of clean materials, and most of this waste would be recycled. However, debris not recycled would be landfilled, which would be considered a long-term, irreversible, adverse effect. Long-term, minor, beneficial effects would be expected to occur because this project would improve erosion issues because the new paths would be constructed using appropriate environmental protection measures to reduce storm drainage issues.

Hazardous Materials and Waste. Short-term, negligible, adverse effects associated with hazardous materials and waste would be expected from implementation of Project I2. There would be a short-term increase in the use of hazardous materials and petroleum products and the generation of hazardous and petroleum wastes during the installation of new golf cart paths. Contractors would be responsible for the management of these materials, which would be handled in accordance with the JBSA-Lackland hazardous materials management and hazardous waste management plans and Federal, state, local, and USAF regulations. The project area for Project I2 would overlap the boundaries of ERP site AOC-43; however, this ERP site has been closed and no further action has been recommended. Therefore, no impacts from ERP sites would be anticipated. If contamination were discovered during construction or demolition, work would be halted immediately and any contaminated materials would be handled, stored, transported, and disposed of in accordance with applicable Federal, state, local, and USAF regulations.

The area for Project I2 overlaps MMRP sites AL-240 and AL-722. There is the potential for workers to encounter previously unknown UXO, MEC, or related materials during construction. If any UXO, MEC, or related materials were discovered, compliance with the DOD Environment, Safety, and Health UXO Safety Education Program should be maintained prior to and during clearing of the site and proper disposal methods should be followed to ensure maximum safety of clearing personnel. No impacts would be expected from ACMs, LBP, PCBs, pesticides, storage tanks, or radon.

Safety. Short-term, negligible to minor, adverse effects associated with safety could occur during construction and demolition activities related to Project I2. Construction and demolition activities pose an increased risk of construction-related accidents, but this level of risk would be managed by adhering to established Federal, state, and local safety regulations. Workers would be required to wear PPE such as ear protection, steel-toed boots, hard hats, gloves, and other appropriate safety gear. Construction and demolition areas would be fenced and appropriately marked with signs. Construction and associated trucks transporting material to and from construction sites would be directed to roads and streets that have a lesser volume of traffic. Therefore, no long-term, adverse effects on safety would be expected.

Project I2 intersects with MMRP sites AL-722 and AL-240 which are closed. The status of AL-240 is "No Further Action" for human health and ecological risk screening; however, the site is still being investigated further for munitions debris (LAFB 2011l). Project I2 also runs through ERP site AOC-43. Refer to Project I1 for safety information related to this ERP site. There is a potential for workers to encounter previously unknown contaminated materials and UXO, MEC, or related materials during construction activities within ERP and MMRP sites, respectively.

4.4.3.3 I3. Airfield Lighting Upgrades

Project I3 would not result in significant effects. The following subsections break down by resource areas the non-significant effects that would result from Project I3.

Noise. Short-term, minor, adverse impacts on the noise environment would be expected as a result of Airfield Lighting Upgrades. The noise emanating from construction equipment would be localized, short-term, and intermittent during machinery operations. **Table 3-2** shows the predicted noise levels for various pieces of construction equipment 50 feet from the source, and **Table 4-1** shows estimated noise levels that would be expected at varying distances from a construction site. Heavy construction equipment would not be operational during the entire construction and demolition period, which would limit the duration of increased noise levels. This area of JBSA-Lackland is classified as runway/taxi/apron. Populations potentially affected by the increased noise levels would include USAF personnel working in and using the adjacent airfield facilities approximately 50 feet from the construction site. The closest personnel to the site would be exposed to noise levels of 90 to 94 dBA. No change in operations would be expected as a result of proposed upgrades to airfield lighting; therefore, no long-term, adverse, impacts on the existing noise environment would be expected. The closest off-installation populations would be approximately 400 feet in airport facilities, and could be exposed to noise levels between 72 and 76 dBA from construction activities. Contractors and workers are responsible to follow noise regulations in accordance with Federal, state, and USAF guidelines.

Land Use. No impacts on land use would be expected from upgrades to existing airfield lighting. The proposed upgrades are within the runway/taxi/apron and aircraft operations and maintenance land use category and would not require changes to implement. Portions of Project I3 are within the boundaries of MMRP sites AL-269 and TS-271 and the QD arc associated with the holding/inspection and aircraft explosive loading areas. Construction activities would take into any land use restrictions in place due to the presence of the MMRP sites and the QD arc.

Air Quality. Short-term, minor to moderate, adverse effects on air quality would be expected from construction of the airfield lighting upgrades. Construction activities would result in temporary effects on local and regional air quality, primarily from site-disturbing activities, the operation of construction equipment and paving equipment and haul trucks transporting materials, and workers commuting to the job site. Appropriate fugitive dust-control measures would be employed during construction activities to suppress emissions. All emissions associated with construction activities would be temporary in nature. It is not expected that emissions from Project I3 would affect local or regional attainment status with respect to the NAAQS. Emissions from the construction of the airfield lighting upgrades are summarized in **Table 4-20**. Emissions estimation spreadsheets are included in **Appendix E**. No long-term air emissions would be produced as a result of Project I3.

Geological Resources. Short-term, negligible to minor, and long-term, negligible, adverse effects on soils would be expected from construction of the pavement projects on JBSA-Lackland. Short-term impacts during construction would result from disturbance of soils; clearing of vegetation; and grading, paving, and excavation or trenching. Vegetative clearing would increase erosion and sedimentation potential.

As a result of the upgrades, long-term negligible, adverse effects would occur as soils would be compacted, and soil structure disturbed and modified. Soil productivity, which is the capacity of the soil to produce vegetative biomass, would decline in disturbed areas. Loss of soil structure due to compaction

Table 4-20. Estimated Air Emissions Resulting from Project I3

Activity	NO_x (tpy)	VOC (tpy)	CO (tpy)	SO_2 (tpy)	PM_{10} (tpy)	$PM_{2.5}$ (tpy)	CO_2 (metric tons/year)
2015 Construction							
Total Construction Emissions	6.68	1.74	8.69	0.55	100.52	10.65	1,120.49
Percentage of Total JBSA-Lackland Baseline Emissions	0.71	1.93	0.94	0.59	98.13	14.36	NA
Percentage of Bexar County Emissions*	0.0118	0.0028	0.0036	0.0020	0.1696	0.1100	0.0002**

Notes: * Based on maximum year emissions.
** Percentage of State of Texas CO_2 emissions as the Bexar County CO_2 emissions inventory is not available.

from foot and vehicle traffic could change local drainage patterns. Soil erosion- and sediment-control measures would be included in site plans to minimize long-term erosion and sediment production at each site. Use of storm water control measures that favor reinfiltration would minimize erosion and sediment production from future storm events.

The facilities to be constructed under Project I3 lie adjacent to an ERP site. Therefore, short-term, minor to moderate, adverse effects on soils could occur from the disturbance of potentially contaminated soils. Project planning should include sampling and subsequent remediation within the project area to account for the discovery of contaminated soil. The handling, storage, transportation, and disposal of hazardous substances would be conducted in accordance with applicable Federal, state, and local regulations; USAF regulations; and JBSA-Lackland management procedures. No long-term effects would be expected.

The Lewisville silty clay and Branyon clay are present at the project location, and are rated somewhat limited and very limited, respectively, for shallow excavations due to clay content and instability (NRCS 2012). No impacts on topography or geology would be anticipated.

Water Resources. No impacts on water resources would be expected from activities associated with Project I3. No ground disturbance would occur from this project.

Biological Resources. No adverse effects on vegetation, wildlife, or sensitive and protected species would be expected as a result of activities associated with Project I3. No permanent loss of vegetation would occur as a result of this project. Short-term, indirect, negligible to minor, adverse effects on migratory bird species could occur as a result of noise during construction activities. If these activities occur during nesting season, the environmental protection measures under **Section 4.3.6** would help to avoid take under the MBTA.

Cultural Resources. This project will not have significant impacts on cultural resources under NEPA. There are no identified NRHP-eligible resources in the vicinity of the project. No buildings in this portion of the Kelly Field Annex have been determined eligible for the NRHP. Areas of highly disturbed ground on the installation have not been surveyed for archaeological resources, including Kelly Field Annex, as there is considered to be low potential for NRHP-eligible sites (LAFB 1996). If any unanticipated discoveries are made during the construction process, Stipulation 5 of the JBSA-Lackland

ICRMP, "Unanticipated Discoveries of Archaeological Deposits," and Section IV of the JBSA PA, "Inadvertent Discoveries and Emergencies" will be followed.

Socioeconomics and Environmental Justice. Short-term, negligible, beneficial effects on socioeconomic resources would be expected from the airfield lighting upgrades. It is assumed that equipment and supplies necessary to complete the proposed activities would be obtained locally, and local contractors would be used. The demand for workers as part of the construction would be minor and would not outstrip the local supply of workers, as there are more than 80,000 construction workers in the San Antonio-New Braunfels MSA. The proposed construction activities would occur entirely on JBSA-Lackland, and it would have little potential to affect on- or off-installation residents adversely. Therefore, no environmental justice issues would be anticipated. No long-term effects on socioeconomic resources are expected to result from the proposed airfield lighting upgrades.

Infrastructure. Short-term, negligible, adverse effects would be expected as a result of debris generated during this infrastructure improvement project. Construction debris is generally composed of clean materials, and most of this waste would be recycled. However, debris not recycled would be landfilled, which would be considered a long-term, irreversible, adverse effect. Long-term, minor, beneficial effects would be expected to occur because this project would improve airfield operations by removing present airfield lighting and power systems that are between 25 and 60 years old.

Hazardous Materials and Waste. Short-term, negligible, adverse effects associated with hazardous materials and waste would be expected from implementation of Project I3. There would be a short-term increase in the use of hazardous materials and petroleum products and the generation of hazardous and petroleum wastes during the installation of the airfield lighting upgrades. Contractors would be responsible for the management of these materials, which would be handled in accordance with the JBSA-Lackland hazardous materials management and hazardous waste management plans and Federal, state, local, and USAF regulations.

The area for Project I3 overlaps MMRP sites TS-271 and AL-269. There is the potential for workers to encounter previously unknown UXO, MEC, or related materials during construction. If any UXO, MEC, or related materials were discovered, compliance with the DOD Environment, Safety, and Health UXO Safety Education Program should be maintained prior to and during clearing of the site and proper disposal methods should be followed to ensure maximum safety of clearing personnel. No impacts would be expected from ACMs, LBP, PCBs, pesticides, radon, storage tanks, or ERP sites.

Safety. Short-term, negligible to minor, adverse effects associated with safety could occur during construction and demolition activities related to Project I3. Construction and demolition activities pose an increased risk of construction-related accidents, but this level of risk would be managed by adhering to established Federal, state, and local safety regulations. Workers would be required to wear PPE such as ear protection, steel-toed boots, hard hats, gloves, and other appropriate safety gear. Construction and demolition areas would be fenced and appropriately marked with signs. Construction and associated trucks transporting material to and from construction sites would be directed to roads and streets that have a lesser volume of traffic. Therefore, no long-term, adverse effects on safety would be expected. There would be a long-term, minor, beneficial impact on safety for installation personnel by the replacing of possible faulty wiring and improvements to the electrical infrastructure on the airfield creating a better lighting situation.

Project I3 is located within the QD arc associated with the holding/inspection and aircraft explosive loading areas (LAFB 2010d). This puts workers at an increased risk of explosions in this area and could lead to minor to moderate, adverse impacts on safety to workers and personnel in this area; however, to minimize potential impacts on construction workers and the installation mission, this project would be coordinated with the installation Safety Office.

Project I3 is also located within MMRP site TS-271 and AL-269. Contaminated soils could still pose a risk to safety to construction workers in this area (LAFB undated e, LAFB 2011l). Inadvertent discovery of previously unknown MEC, UXO or related material could have minor to moderate, adverse impacts on safety.

4.4.3.4 I4. TANG Apron Repair

Project I4 would not result in significant effects. The following subsections break down by resource areas the non-significant effects that would result from Project I4.

Noise. Short-term, minor, adverse impacts on the noise environment would be expected as a result of TANG Apron Repair. The noise emanating from construction equipment would be localized, short-term, and intermittent during machinery operations. **Table 3-2** shows the predicted noise levels for various pieces of construction equipment 50 feet from the source, and **Table 4-2** shows estimated noise levels that would be expected at varying distances from a construction site. Heavy construction equipment would not be operational during the entire construction and demolition period, which would limit the duration of increased noise levels. This area of JBSA-Lackland is classified as runway/taxiway/apron. Populations potentially affected by the increased noise levels would include USAF personnel working in and using the adjacent airfield facilities approximately 50 feet from the construction site. The closest personnel to the site would be exposed to noise levels of 90 to 94 dBA. No change in operations would be expected as a result of repair to the TANG Apron; therefore, no long-term, adverse, impacts on the existing noise environment would be expected. The closest off-installation populations would be approximately 5,000 feet in airport facilities, and could be exposed to noise levels of approximately 54 dBA from construction activities. Contractors and workers are responsible to follow noise regulations in accordance with Federal, state, and USAF guidelines.

Land Use. No impacts on land use would be expected from repairs to the existing TANG Apron. The proposed repairs are within the runway/taxi/apron and aircraft operations and maintenance land use category and would not require changes to implement.

Air Quality. Short-term, minor, adverse effects on air quality would be expected from the TANG apron repair. Construction activities would result in temporary effects on local and regional air quality, primarily from site-disturbing activities, the operation of construction equipment and paving equipment and haul trucks transporting materials, and workers commuting to the job site. Appropriate fugitive dust-control measures would be employed during construction activities to suppress emissions. All emissions associated with construction activities would be temporary in nature. It is not expected that emissions from Project I4 would affect local or regional attainment status with respect to the NAAQS. Emissions from the TANG apron repair are summarized in **Table 4-21**. Emissions estimation spreadsheets are included in **Appendix E**. No long-term air emissions would be produced as a result of Project I4.

Geological Resources. Short-term, minor, and long-term, negligible, adverse effects on soils would be expected from construction of the pavement projects on JBSA-Lackland. Short-term impacts during construction would result from disturbance of soils; clearing of vegetation; and grading, paving, and excavation or trenching. Vegetative clearing would increase erosion and sedimentation potential.

As a result of repairing the concrete aprons, long-term negligible, adverse effects would occur as soils would be compacted, and soil structure disturbed and modified. Soil productivity, which is the capacity

Table 4-21. Estimated Air Emissions Resulting from Project I4

Activity	NO_x (tpy)	VOC (tpy)	CO (tpy)	SO_2 (tpy)	PM_{10} (tpy)	$PM_{2.5}$ (tpy)	CO_2 (metric tons/year)
2014 Construction							
Total Construction Emissions	1.66	0.46	2.48	0.13	24.23	2.57	317.31
Percentage of Total JBSA-Lackland Baseline Emissions	0.18	0.51	0.27	0.14	23.65	3.47	NA
Percentage of Bexar County Emissions*	0.003	0.001	0.001	0.001	0.04	0.03	0.0001**

Notes: * Based on maximum year emissions.
** Percentage of State of Texas CO_2 emissions as the Bexar County CO_2 emissions inventory is not available.

of the soil to produce vegetative biomass, would decline in disturbed areas and would be eliminated in those areas within the footprints of the aprons. Loss of soil structure due to compaction from foot and vehicle traffic could change local drainage patterns. Soil erosion- and sediment-control measures would be included in site plans to minimize long-term erosion and sediment production at each site. Use of storm water-control measures that favor reinfiltration would minimize erosion and sediment production from future storm events.

The Lewisville silty clay is present at the project location. This soil is rated somewhat limited for small commercial buildings due to shrink-swell potential (NRCS 2012).

The site is not adjacent to any open ERPs. No impacts on topography or geology would be anticipated.

Water Resources. Short-term, indirect, negligible to minor, adverse effects on groundwater and surface water would be expected from activities associated with Project I4. Ground disturbance as a result of Project I4 would be 9.4 acres, with a corresponding increase in impervious surfaces. Ground disturbance could result in short-term indirect effects on groundwater quality. The increase in impervious surface could result in a long-term increase in storm water, which could affect groundwater and stormwater quality. Because ground disturbance associated with this project is greater than 5 acres, for coverage under TXR1500000 General Stormwater Permit it would require the development and implementation of a SWPPP, submittal of a Notice of Intent (by mail or online) to the TCEQ, a posted Notice of Intent and site notice, and submittal of a copy of the Notice of Intent to any MS4 operator receiving the discharge. As part of the SWPPP, BMPs would be developed in accordance with applicable regulations to avoid and minimize pollution in storm water runoff both during and after construction. Additionally, spill prevention practices, consistent with the JBSA-Lackland SPCC plan (LAFB 2006b), would be implemented during all activities associated with the Proposed Action to avoid and minimize potential adverse effects on groundwater and surface water.

No impacts on wetlands, water features, or the 100-year floodplain are anticipated from implementation of Project I4.

Biological Resources. No adverse effects on vegetation, wildlife, or sensitive or protected species would be expected as a result of activities associated with Project I4. No permanent loss of vegetation would occur as a result of this project. Short-term, indirect, negligible to minor, adverse effects on migratory bird species could occur as a result of noise and physical disturbance. If these activities occur during nesting season, the environmental protection measures under **Section 4.3.6** would help to avoid take under the MBTA.

Cultural Resources. This project will not have significant impact on cultural resources under NEPA. There are no identified NRHP-eligible resources in the vicinity of the project. No buildings in this portion of Kelly Field Annex have been determined eligible for the NRHP. Areas of highly disturbed ground on JBSA-Lackland have not been surveyed for archaeological resources, including Kelly Field Annex, as there is considered to be low potential for NRHP-eligible sites (LAFB 1996). If any unanticipated discoveries are made during the construction process, Stipulation 5 of the JBSA-Lackland ICRMP, "Unanticipated Discoveries of Archaeological Deposits," and Section IV of the JBSA PA, "Inadvertent Discoveries and Emergencies," would be followed.

Socioeconomics and Environmental Justice. Short-term, negligible, beneficial effects on socioeconomic resources would be expected from the TANG apron repair. It is assumed that equipment and supplies necessary to complete the proposed activities would be obtained locally, and local contractors would be used. The demand for workers as part of the construction would be minor and would not outstrip the local supply of workers, as there are more than 80,000 construction workers in the San Antonio-New Braunfels MSA. The proposed construction activities would occur entirely on JBSA-Lackland, and it would have little potential to adversely affect on- or off-installation residents. Therefore, no environmental justice issues would be anticipated. No long-term effects on socioeconomic resources are expected to result from the proposed TANG apron repair.

Infrastructure. Short-term, negligible, adverse effects would be expected as a result of debris generated during this infrastructure improvement project. Construction debris is generally composed of clean materials, and most of this waste would be recycled. However, debris not recycled would be landfilled, which would be considered a long-term, irreversible, adverse effect. Long-term, minor, beneficial effects would be expected to occur because this project would improve airfield operations by replacing current deteriorating surfaces.

Hazardous Materials and Waste. Short-term, minor, adverse impacts associated with hazardous materials and waste would be expected from implementation of Project I4. There would be a short-term increase in the use of hazardous materials and petroleum products and the generation of hazardous and petroleum wastes during the repair of the TANG apron. Contractors would be responsible for the management of these materials, which would be handled in accordance with the JBSA-Lackland hazardous materials management and hazardous waste management plans and Federal, state, local, and USAF regulations. No impacts would be expected from ACMs, LBP, PCBs, pesticides, radon, storage tanks, ERP sites, or MMRP sites.

Safety. Short-term, negligible to minor, adverse effects associated with safety could occur during construction and demolition activities related to Project I4. Construction and demolition activities pose an increased risk of construction-related accidents, but this level of risk would be managed by adhering to established Federal, state, and local safety regulations. Workers would be required to wear PPE such as ear protection, steel-toed boots, hard hats, gloves, and other appropriate safety gear. Construction and demolition areas would be fenced and appropriately marked with signs. Construction and associated trucks transporting material to and from construction sites would be directed to roads and streets that have a lesser volume of traffic. Therefore, no long-term, adverse effects on safety would be expected. There would be long-term, minor to moderate, beneficial impacts on safety on aircraft and installation personnel as a result of improvements to the apron.

4.4.3.5 I5. Parking Lot Installation

Project I5 would not result in significant effects. The following subsections break down by resource areas the non-significant effects that would result from Project I5.

Noise. Short-term, minor, adverse impacts on the noise environment would be expected as a result of Project I5. The noise emanating from construction equipment would be localized, short-term, and intermittent during machinery operations. **Table 3-2** shows the predicted noise levels for various pieces of construction equipment 50 feet from the source, and **Table 4-2** shows estimated noise levels that would be expected at varying distances from a construction site. Heavy construction equipment would not be operational during the entire construction and demolition period, which would limit the duration of increased noise levels. Up to six parking lots installation wide would be constructed; these various sites are used for industrial functions and as open space. Populations potentially affected by the increased noise levels would include USAF personnel working in and using the adjacent facilities approximately 50 feet from the construction site. The closest personnel to the site would be exposed to noise levels of 90 to 94 dBA. No change in operations would be expected as a result of the construction due to parking lot installations; therefore, no long-term, adverse, impacts on the existing noise environment would be expected. The closest off-installation populations would be approximately 100 feet, and could be exposed to noise levels between 84 to 88 dBA from construction activities. Consequently, proposed construction activities would result in short-term, minor, adverse impacts on the noise environment in the vicinity of construction activities. However, noise generation would last only for the duration of construction activities and would be isolated to normal working hours (i.e., between 7:00 a.m. and 5:00 p.m.). The short-term increase in noise levels from construction at the proposed parking lots would not cause significant adverse effects on the surrounding populations. Contractors and workers are responsible to follow noise regulations in accordance with Federal, state and USAF guidelines.

Land Use. Long-term, negligible, adverse impacts on land use could be expected from parking lot installation. The proposed activities would be within industrial, outdoor recreation, and open space land use categories throughout JBSA-Lackland. Changes to land use designation could be required in the open space areas. Portions of Project I5 are within the boundaries of ERP site AOC-49, MMRP sites AL-722 and TS-667, and the QD arc associated with Lackland Training Annex munitions storage area. Construction activities would take into account any land use restrictions in place due to the presence of the ERP site, MMRP sites and the QD arc.

Air Quality. Short-term, minor, adverse effects on air quality would be expected from parking lot installation. Construction activities would result in temporary effects on local and regional air quality, primarily from site-disturbing activities, the operation of construction equipment and paving equipment and haul trucks transporting materials, and workers commuting to the job site. Appropriate fugitive dust-control measures would be employed during construction activities to suppress emissions. All emissions associated with construction activities would be temporary in nature. It is not expected that emissions from Project I5 would affect local or regional attainment status with respect to the NAAQS. Emissions from parking lot installation are summarized in **Table 4-22**. Emissions estimation spreadsheets are included in **Appendix E**. No long-term air emissions would be produced as a result of Project I5.

Geological Resources. Short-term, moderate, and long-term, moderate, adverse effects on soils would be expected from the installation of the parking lots. Short-term impacts during construction would result from disturbance of soils; clearing of vegetation; and grading, paving, and excavation or trenching. Vegetative clearing would increase erosion and sedimentation potential.

As a result of constructing the pavement projects, long-term, minor to moderate, adverse effects would occur as soils would be compacted, and soil structure disturbed and modified. Soil productivity, which is the capacity of the soil to produce vegetative biomass, would decline in disturbed areas and would be eliminated in those areas within the footprints of the proposed parking lots. Loss of soil structure due to compaction from foot and vehicle traffic could change local drainage patterns. Soil erosion- and sediment-control measures would be included in site plans to minimize long-term erosion and sediment

1 **Table 4-22. Estimated Air Emissions Resulting from Project I5**

Activity	NO_x (tpy)	VOC (tpy)	CO (tpy)	SO_2 (tpy)	PM_{10} (tpy)	$PM_{2.5}$ (tpy)	CO_2 (metric tons/year)
2013 Construction – 1.8 Acre Parking Lot							
Total 2013 Construction Emissions	0.41	0.16	1.09	0.03	4.66	0.5	136.02
Percentage of Total JBSA-Lackland Baseline Emissions	0.04	0.18	0.12	0.03	4.55	0.67	NA
Percentage of Bexar County Emissions*	0.0007	0.0003	0.0004	0.0001	0.0079	0.0052	0.00002**
2014 Construction – 1.8 Acre Parking Lot							
Total 2014 Construction Emissions	0.41	0.16	1.09	0.03	4.66	0.5	136.02
Percentage of Total JBSA-Lackland Baseline Emissions	0.04	0.18	0.12	0.03	4.55	0.67	NA
Percentage of Bexar County Emissions*	0.0007	0.0003	0.0004	0.0001	0.0079	0.0052	0.00002**
2015 Construction – 1.5 Acre Parking Lot							
Total 2015 Construction Emissions	0.35	0.14	1.03	0.02	3.88	0.42	128.04
Percentage of Total JBSA-Lackland Baseline Emissions	0.04	0.16	0.11	0.02	3.79	0.57	NA
Percentage of Bexar County Emissions*	0.0006	0.0002	0.0004	0.0001	0.0065	0.0043	0.00002**
2016 Construction – 3.1 Acre Parking Lot							
Total 2016 Construction Emissions	0.61	0.21	1.32	0.05	8.01	0.85	165.13
Percentage of Total JBSA-Lackland Baseline Emissions	0.07	0.23	0.14	0.05	7.82	1.15	NA
Percentage of Bexar County Emissions*	0.0011	0.0003	0.0005	0.0002	0.0135	0.0088	0.00003**
2017 Construction – 14.3 Acre Parking Lot							
Total 2017 Construction Emissions	2.41	0.66	3.37	0.2	36.93	3.91	428.54
Percentage of Total JBSA-Lackland Baseline Emissions	0.26	0.73	0.36	0.21	36.05	5.27	NA
Percentage of Bexar County Emissions*	0.0042	0.0011	0.0014	0.0007	0.0623	0.0404	0.0001**
2018 Construction – 12.9 Acre Parking Lot							
Total 2018 Construction Emissions	2.21	0.6	3.12	0.18	33.32	3.53	398.06
Percentage of Total JBSA-Lackland Baseline Emissions	0.23	0.67	0.34	0.19	32.53	4.76	NA
Percentage of Bexar County Emissions*	0.0039	0.0010	0.0013	0.0007	0.0562	0.0365	0.0001**

Notes: * Based on maximum year emissions.

** Percentage of State of Texas CO_2 emissions as the Bexar County CO_2 emissions inventory is not available.

production at each site. Use of storm water control measures that favor reinfiltration would minimize erosion and sediment production from future storm events.

Portions of the parking lots to be installed under Project I5 lie within ERP sites. Therefore, short-term, minor to moderate, adverse effects on soils could occur from the disturbance of potentially contaminated soils. Project planning should include sampling and subsequent remediation within the project area to account for the discovery of contaminated soil. The handling, storage, transportation, and disposal of hazardous substances would be conducted in accordance with applicable Federal, state, and local regulations; USAF regulations; and JBSA-Lackland management procedures. No long-term effects would be expected. Additionally, portions of the paths are adjacent to wetlands, therefore, short- and long-term, indirect, minor, adverse impacts on hydric soils could be expected from construction.

The Houston black gravelly clay, Branyon clay, and pits and quarries are present at the proposed parking lot locations. These soils are rated very limited for local roads due to low strength and shrink-swell potential (NRCS 2012). No impacts on topography or geology would be anticipated.

Water Resources. Short- and long-term, indirect and direct, negligible to minor, adverse effects on groundwater and surface water would be expected from activities associated with Project I5. Ground disturbance and an increase in impervious surfaces as a result of Project I5 would be 43.3 acres, with a corresponding increase in impervious surfaces. Ground disturbance could result in short-term, indirect effects on groundwater quality. The increase in impervious surface could result in a long-term increase in stormwater, which could affect groundwater and stormwater quality. Because ground disturbance associated with this project is greater than 5 acres, for coverage under TXR1500000 General Stormwater Permit it would require the development and implementation of an SWPPP, submittal of a Notice of Intent (by mail or online) to the TCEQ, a posted Notice of Intent and site notice, and submittal of a copy of the Notice of Intent to any MS4 operator receiving the discharge. As part of the SWPPP, BMPs would be developed in accordance with applicable regulations to avoid and minimize pollution in storm water runoff both during and after construction. Additionally, spill prevention practices, consistent with the JBSA-Lackland SPCC plan (LAFB 2006b), would be implemented during all activities associated with the Proposed Action to avoid and minimize potential adverse effects on groundwater and surface water.

This project does not occur within the 100-year floodplain or wetlands; as such, no impacts on floodplains or wetlands would occur. However, one non-jurisdictional wetland is adjacent to the proposed project area. Runoff from the construction site could result in indirect impacts on wetlands. However, adherence to the SWPPP and use of standard environmental protection measures would be implemented to minimize impacts.

Biological Resources. Short- and long-term, direct, negligible to minor, adverse effects on vegetation would be expected as a result of activities associated with Project I5. There would be an increase in impervious surfaces of approximately 43 acres across up to six new parking lots (see **Figures 2-2** and **2-3)**. All vegetation in the areas associated with the parking lots would be expected to be lost; however, the vegetation associated with this industrial land use would primarily consist of urban upland, non-forested upland communities, manicured lawns, and brush or scrub consistent with urbanized areas. The vegetation in areas associated with open space and outdoor recreation would primarily include urban upland, non-forested upland communities and brush or scrub consistent with urbanized areas. Because the areas identified for the parking lots are previously disturbed and urban in nature, minor impacts would be anticipated from the loss of vegetation.

Short- and long-term, direct, negligible to minor, adverse effects on wildlife would be expected as a result of activities associated with Project I5. Disturbance during Project I5 would cause wildlife to engage in escape or avoidance behaviors. Most wildlife species would be expected to recover quickly.

Approximately 43 acres of habitat would be permanently lost once the parking lots are completed. The habitat associated with the four parking lots on Lackland Main Base and the Kelly Field Annex (8.2 acres) is mainly made up of manicured lawns and brush or scrub and is not considered high-value habitat. The parking lot on the Lackland Training Annex (35 acres) would result in the permanent loss of urbanized upland, non-forested upland communities and brush or scrub, with some trees. While this habitat is a higher value habitat for wildlife, relative to the total area available for wildlife to use, species would be expected to move to adjacent habitat or other areas of the installation.

No impacts on sensitive or protected species would occur as a result of Project I5 due to a lack of suitable or critical habitat in the project footprint. Short-term, indirect, negligible to minor, adverse effects on migratory bird species could occur as a result of noise and physical disturbance. If these activities occur during nesting season, the environmental protection measures under **Section 4.3.6** would help to avoid take under the MBTA.

Cultural Resources. This project will not have significant impacts on cultural resources under NEPA. It is near to and is in the viewshed of multiple resources that contribute to the NRHP-eligible Medina Base Historic District (LAFB 2002a). However, given the industrial character of the built portions of the district, the basis of its historical significance on its associations, and the presence of existing parking lots, the impact of the proposed parking lot will be negligible and would not be considered to be adverse. Several archaeological sites in this portion of Lackland Training Annex were identified in a 1996 survey but determined to be NRHP ineligible with the concurrence of the SHPO (LAFB 2002a). If any unanticipated discoveries are made during the construction process, Stipulation 5 of the JBSA-Lackland ICRMP, “Unanticipated Discoveries of Archaeological Deposits,” and Section IV of the JBSA PA, “Inadvertent Discoveries and Emergencies,” would be followed.

Socioeconomics and Environmental Justice. Short-term, negligible, beneficial effects on socioeconomic resources would be expected from the parking lot installation. It is assumed that equipment and supplies necessary to complete the proposed activities would be obtained locally, and local contractors would be used. The demand for workers as part of the construction would be minor and would not outstrip the local supply of workers, as there are more than 80,000 construction workers in the San Antonio-New Braunfels MSA. The proposed construction activities would occur entirely on JBSA-Lackland, and it would have little potential to affect on- or off-installation residents adversely. Therefore, no environmental justice issues would be anticipated. No long-term effects on socioeconomic resources are expected to result from the proposed parking lot installation.

Infrastructure. Short-term, negligible, adverse effects would be expected as a result of debris generated during this infrastructure improvement project. Construction debris is generally composed of clean materials, and most of this waste would be recycled. However, debris not recycled would be landfilled, which would be considered a long-term, irreversible, adverse effect. Long-term, minor, beneficial effects would be expected to occur because this project would improve current parking insufficiencies on the installation.

Hazardous Materials and Waste. Short-term, negligible, adverse effects associated with hazardous materials and waste would be expected from implementation of Project I5. There would be a short-term increase in the use of hazardous materials and petroleum products and the generation of hazardous and petroleum wastes during the construction of new parking lots. Contractors would be responsible for the management of these materials, which would be handled in accordance with the JBSA-Lackland hazardous materials management and hazardous waste management plans and Federal, state, local, and USAF regulations. The project area for Project I5 would overlap the boundaries of ERP site AOC-49. AOC-49 is currently open and undergoing further action; therefore, an *ERP Waiver to Construct* would need to be obtained prior to construction. Construction could result in increased potential for exposure to contaminated soil; however, the project site would be surveyed for contamination prior to construction and any contaminated materials encountered would be handled, stored, transported, and disposed of in accordance with applicable Federal, state, local, and USAF regulations.

The project area for Project I5 overlaps MMRP sites AL-722 and TS-667. There is the potential for workers to encounter previously unknown UXO, MEC, or related materials during construction. If any UXO, MEC, or related materials were discovered, compliance with the DOD Environment, Safety, and Health UXO Safety Education Program should be maintained prior to and during clearing of the site and proper disposal methods should be followed to ensure maximum safety of clearing personnel. No impacts would be expected from ACMs, LBP, PCBs, pesticides, storage tanks, or radon.

Safety. The southeastern portion of the project overlaps MMRP sites AL-722 and TS-667. These sites have been remediated and closed (LAFB 2011l). The western portion of the project is within the QD arc associated with Lackland Training Annex munitions storage area which puts workers at an increased risk of explosions and results in minor, adverse impacts on safety; however, to minimize potential impacts on construction workers and the installation mission, this project would be coordinated with the installation Safety Office. This project would also completely encompass ERP site AOC-49. The constituents of concern for this area include lead and arsenic. The site is currently open and undergoing further action. Soil disturbance in this area could lead to minor to moderate, adverse impacts on workers' safety in this area (LAFB 2011a).

4.4.3.6 I6. Natural Gas Lines Upgrade

Project I6 would not result in significant effects. The following subsections break down by resource areas the non-significant effects that would result from Project I6.

Noise. Short-term, minor, adverse impacts on the noise environment would be expected as a result of upgrades to installation Natural Gas Lines. The noise emanating from construction equipment would be localized, short-term, and intermittent during machinery operations. **Table 3-2** shows the predicted noise levels for various pieces of construction equipment 50 feet from the source, and **Table 4-2** shows estimated noise levels that would be expected at varying distances from a construction site. Heavy construction equipment would not be operational during the entire construction and demolition period, which would limit the duration of increased noise levels. These areas of JBSA-Lackland are used for various functions. Populations potentially affected by the increased noise levels would include USAF personnel working in and using the adjacent facilities approximately 50 feet from the construction site. The closest personnel to the site would be exposed to noise levels of 90 to 94 dBA. No change in operations would be expected as a result of the construction due to natural gas line upgrades; therefore, no long-term, adverse, impacts on the existing noise environment would be expected. The closest off-installation populations would be approximately 100 feet, and could be exposed to noise levels between 84 to 88 dBA from construction activities. Consequently, proposed construction activities would result in short-term, minor, adverse impacts on the noise environment in the vicinity of construction activities. However, noise generation would last only for the duration of construction activities and would be isolated to normal working hours (i.e., between 7:00 a.m. and 5:00 p.m.). The short-term increase in noise levels from construction at the proposed natural gas line upgrades would not cause significant adverse effects on the surrounding populations. Contractors and workers are responsible to follow noise regulations in accordance with Federal, state, and USAF guidelines.

Land Use. No impacts on land use would be expected from upgrading the existing natural gas lines on JBSA-Lackland. The natural gas lines are within various land use categories; however, no changes to existing land use would be required to replace/upgrade existing lines. Portions of Project I6 are within the boundaries of ERP sites SA-38, SA-40, SA-41, LF-12, LF-44, AOC-18, RW-20, CF27-OU2, CF27-OU1, and ST-01; MMRP sites TS-271, AL-240, AL-269, AL-722, FR-242, TS-270, and SA-725, and QD arcs. Construction activities would take into account any land use restrictions in place due to the presence of the ERP sites, MMRP sites and the QD arcs.

Air Quality. Short-term, minor, adverse effects on air quality would be expected from natural gas lines upgrades. Construction activities would result in temporary effects on local and regional air quality, primarily from site-disturbing activities, the operation of construction equipment and paving equipment and haul trucks transporting materials, and workers commuting to the job site. Appropriate fugitive dust-control measures would be employed during construction activities to suppress emissions. All emissions associated with construction activities would be temporary in nature. It is not expected that emissions from Project I6 would affect local or regional attainment status with respect to the NAAQS. Emissions from upgrade of the natural gas lines are summarized in **Table 4-23**. Emissions estimation spreadsheets are included in **Appendix E**. No long-term air emissions would be produced as a result of Project I6.

Geological Resources. Upgrading the natural gas lines would involve disturbance to previously disturbed lands and would not result in the creation of additional impervious surfaces. Short-term impacts during construction would result from disturbance of soils; clearing of vegetation; and grading, paving, and excavation or trenching. Clearing of vegetation would increase erosion and sedimentation potential. As a result of the upgrades, long-term minor to moderate, adverse effects would occur as soils would be compacted, and soil structure disturbed and modified. Soil productivity, which is the capacity of the soil to produce vegetative biomass, would decline in disturbed areas. Loss of soil structure due to compaction

from foot and vehicle traffic could change local drainage patterns. Soil erosion- and sediment-control measures would be included in site plans to minimize long-term erosion and sediment production at each site. Use of storm water control measures that favor reinfiltration would minimize erosion and sediment production from future storm events. Additionally, short- and long-term, indirect, minor, adverse impacts on hydric soils could be expected from upgrading portions of the system adjacent to wetlands.

Portions of Project I6 would be installed within ERP sites. Therefore, short-term, minor to moderate, adverse effects on soils could occur from the disturbance of potentially contaminated soils. Project planning should include sampling and subsequent remediation within the project area to account for the discovery of contaminated soil. The handling, storage, transportation, and disposal of hazardous substances would be conducted in accordance with applicable Federal, state, and local regulations; USAF regulations; and JBSA-Lackland management procedures. No long-term effects would be expected. No impacts on topography and geology would be expected.

Water Resources. Short- and long-term, indirect and direct, negligible to moderate, adverse effects on groundwater, surface water, wetlands, and floodplains would be expected from activities associated with Project I6. Ground disturbance and an increase in impervious surfaces as a result of Project I6 would be 7.8 acres. Ground disturbance could result in short-term, indirect effects on groundwater quality. The increase in impervious surface could result in a long-term increase in storm water, which could affect groundwater and storm water quality. Because ground disturbance associated with this project is greater than 5 acres, for coverage under TXR1500000 General Stormwater Permit it would require the development and implementation of a SWPPP, submittal of a Notice of Intent (by mail or online) to the TCEQ, a posted Notice of Intent and site notice, and submittal of a copy of the Notice of Intent to any MS4 operator receiving the discharge. As part of the SWPPP, BMPs would be developed in accordance with applicable regulations to avoid and minimize pollution in storm water runoff both during and after construction. Additionally, spill prevention practices, consistent with the JBSA-Lackland SPCC plan (LAFB 2006b), would be implemented during all activities associated with the Proposed Action to avoid and minimize potential adverse effects on groundwater and surface water. Several of the areas associated with Project I6 are adjacent to, or cross through, ERP sites. However, no impacts on groundwater or

1 **Table 4-23. Estimated Air Emissions Resulting from Project I6**

Activity	NO_x (tpy)	VOC (tpy)	CO (tpy)	SO_2 (tpy)	PM_{10} (tpy)	$PM_{2.5}$ (tpy)	CO_2 (metric tons/year)
2013 Construction							
Total 2013 Construction Emissions	0.10	0.08	0.75	0.003	1.49	0.15	91.70
Percentage of Total JBSA-Lackland Baseline Emissions	0.01	0.09	0.08	0.003	1.45	0.20	NA
Percentage of Bexar County Emissions*	0.0002	0.0001	0.0003	0.0000	0.003	0.002	0.00002**
2014 Construction							
Total 2014 Construction Emissions	0.10	0.08	0.75	0.003	1.49	0.15	91.70
Percentage of Total JBSA-Lackland Baseline Emissions	0.01	0.09	0.08	0.003	1.45	0.20	NA
Percentage of Bexar County Emissions*	0.0002	0.0001	0.0003	0.0000	0.003	0.002	0.00002**
2015 Construction							
Total 2015 Construction Emissions	0.10	0.08	0.75	0.003	1.49	0.15	91.70
Percentage of Total JBSA-Lackland Baseline Emissions	0.01	0.09	0.08	0.003	1.45	0.20	NA
Percentage of Bexar County Emissions*	0.0002	0.0001	0.0003	0.0000	0.003	0.002	0.00002**
2016 Construction							
Total 2016 Construction Emissions	0.10	0.08	0.75	0.003	1.49	0.15	91.70
Percentage of Total JBSA-Lackland Baseline Emissions	0.01	0.09	0.08	0.003	1.45	0.20	NA
Percentage of Bexar County Emissions*	0.0002	0.0001	0.0003	0.0000	0.003	0.002	0.00002**
2017 Construction							
Total 2017 Construction Emissions	0.10	0.08	0.75	0.003	1.49	0.15	91.70
Percentage of Total JBSA-Lackland Baseline Emissions	0.01	0.09	0.08	0.003	1.45	0.20	NA
Percentage of Bexar County Emissions*	0.0002	0.0001	0.0003	0.0000	0.003	0.002	0.00002**
2018 Construction							
Total 2018 Construction Emissions	0.10	0.08	0.75	0.003	1.49	0.15	91.70
Percentage of Total JBSA-Lackland Baseline Emissions	0.01	0.09	0.08	0.003	1.45	0.20	NA
Percentage of Bexar County Emissions*	0.0002	0.0001	0.0003	0.0000	0.003	0.002	0.00002**

Notes: * Based on maximum year emissions.

** Percentage of State of Texas CO_2 emissions as the Bexar County CO_2 emissions inventory is not available.

2 surface water are expected. All contaminated materials would be handled in accordance with applicable
3 Federal, state, local, and USAF regulation.

4 Short-term, minor, adverse effects could occur from impacts on approximately 0.02 acres of jurisdictional
5 wetlands and 0.09 acre of non-jurisdictional wetlands from implementation of Project I6 (see **Figures 4-4,**
6 **4-5,** and **4-6**); therefore, this project would require a FONPA. Effects on wetlands would be reduced

through design, siting, and proper implementation of environmental protection measures. These would include the following:

- Flagging the boundary of the wetland to avoid unnecessary construction equipment and personnel from entering the wetland area
- Phasing construction activities so that smaller areas of land are disturbed at the same time to limit soil exposure
- Installing sedimentation basins and detention or retention ponds to contain sediment and runoff in the construction area
- Following the procedures in the SPCC Plan to contain and clean up spills of fuels and other potentially hazardous material quickly
- Developing an ESCP
- Developing a construction-grading plan in order to divert storm water runoff away from nearby wetlands
- Utilizing docks or boardwalks across wetland areas, rather than filling in the wetland area to create a pathway
- Minimizing the use of heavy machinery in wetlands
- Restricting construction activities to drier periods of the year
- Disposing of construction debris in a non-wetland area.

Proper implementation of these measures would ensure that no effects on surrounding wetlands or other waters of the United States would occur. Correspondence with regulatory and resource agencies prior to commencing any ground-breaking construction activities would be completed and permits would be obtained, as necessary.

Construction of portions of Project I6 would occur within approximately 5.3 acres of the 100-year floodplain; therefore, this project would require a FONPA and approval from AETC. To minimize potential impacts, construction would follow guidelines for construction in the floodplain, including creating new storm water retention areas for projects that create net impervious surface areas, to the maximum practicable extent. No mitigation measures would be required because no significant impacts would occur.

Biological Resources. Short- and long-term, direct, negligible to minor, adverse effects on vegetation would be expected from activities associated with Project I6. The removal and installation of the gas lines associated with Project I6 would occur in previously developed areas throughout the installation (see **Figures 2-1** through **2-5**) and would primarily affect urbanized areas including manicured lawns, some mid-sized trees, and associated landscaping. Habitat associated with riparian environments in Leon Creek and Medio Creek would also be impacted as the project extends across the creeks. However, all ground disturbed during construction activities that does not include site improvements would be reseeded with appropriate groundcover in accordance with the INRMP.

Short-term, direct, negligible to minor, adverse effects on wildlife would be expected from activities associated with Project I6. Disturbance would cause wildlife to engage in escape or avoidance behaviors. However, most wildlife species would be expected to recover quickly. Habitat associated with Project I6 would include manicured lawns, some mid-sized trees, and associated landscaping; however, the habitat quality associated with this project is generally low. Project I6 would also pass through riparian habitat associated with Leon Creek and Medio Creek that would support birds, amphibians, reptiles, and small mammals. These impacts would be temporary in nature as disturbed areas would be reseeded with appropriate groundcover in accordance with the INRMP. Species that would normally occupy these areas would be expected to move to other locations on the installation.

Riparian habitat to the east of Project I6 in Leon Creek could be suitable for white-faced ibis, Cagle's map turtle, the Texas indigo snake, and the timber rattlesnake (LAFB 2007). A majority of the infrastructure improvements as part of Project I6 would occur in urbanized areas. One part of Project I6 would not follow existing infrastructure in the Leon Creek and would impact potential habitat in Leon Creek. This area would be restored to conditions that were in place before Project I6 began. An area of Project I6 in Medio Creek would also pass through riparian habitat, but would follow existing infrastructure. As such, no adverse effects are expected on threatened or endangered species on the installation from Project I6.

Short-term, indirect, negligible to minor, adverse effects on migratory bird species could occur as a result of noise and physical disturbance. If these activities occur during nesting season, the environmental protection measures under **Section 4.3.6** would help to avoid take under the MBTA.

Cultural Resources. This project would not have significant impacts under NEPA on cultural resources on both Lackland Training Annex and Lackland Main Base. Areas of highly disturbed ground throughout JBSA-Lackland have not been surveyed for archaeological resources, as there is considered to be low potential for NRHP-eligible sites. This includes Lackland Main Base, the Kelly Field Annex and Lackland Training Annex (LAFB 1996). Most of the work associated with this project will occur in these developed areas.

There are two archaeological sites to the south and west of proposed work on Lackland Training Annex that have been designated for further testing as result of coordination with the NPS and SHPO. Until that testing is completed, these sites are to be treated as if they are NRHP-eligible (LAFB 1996, NPS 1997). With appropriate design, land use planning, and implementation, these sites would be avoided. Additionally, there are sites scattered throughout the Medio Creek terrace area of Lackland Training Annex that were identified as NRHP eligible as part of a 1996 survey but later determined ineligible for the NRHP in consultation with the SHPO (LAFB 1996, NPS 1997). JBSA-Lackland will consult with the SHPO in accordance with the ICRMP and JBSA-Lackland PA during the early planning for this project to ensure avoidance of archaeological sites. If the sites cannot be avoided, JBSA-Lackland will develop mitigation measures acceptable to the SHPO under Section 4.5 of the JBSA-Lackland ICRMP and Stipulation II.1.G of the JBSA PA. If any unanticipated discoveries are made during the construction process, SOP #5 of the JBSA-Lackland ICRMP, "Unanticipated Discoveries of Archaeological Deposits," and Section IV of the JBSA PA, "Inadvertent Discoveries and Emergencies," would be followed.

Socioeconomics and Environmental Justice. Short-term, negligible, beneficial effects on socioeconomic resources would be expected from the natural gas lines upgrade. It is assumed that equipment and supplies necessary to complete the proposed activities would be obtained locally, and local contractors would be used. The demand for workers as part of the construction would be minor and would not outstrip the local supply of workers, as there are more than 80,000 construction workers in the San Antonio-New Braunfels MSA. The proposed construction activities would occur entirely on JBSA-Lackland, and it would have little potential to affect on- or off-installation residents adversely. Therefore, no environmental justice issues would be anticipated. No long-term effects on socioeconomic resources are expected to result from the proposed natural gas lines upgrade.

Infrastructure. Short-term, negligible, adverse effects would be expected as a result of debris generated during this infrastructure improvement project. Construction debris is generally composed of clean materials, and most of this waste would be recycled. However, debris not recycled would be landfilled, which would be considered a long-term, irreversible, adverse effect. Long-term, minor, beneficial effects would be expected to occur because this project would upgrade the current natural gas distribution system and improve system reliability.

Hazardous Materials and Waste. Short-term, negligible, adverse effects associated with hazardous materials and waste would be expected from implementation of Project I6. There would be a short-term increase in the use of hazardous materials and petroleum products and the generation of hazardous and petroleum wastes during the upgrade of the natural gas lines. Contractors would be responsible for the management of these materials, which would be handled in accordance with the JBSA-Lackland hazardous materials management and hazardous waste management plans and Federal, state, local, and USAF regulations. The area for Project I6 would overlap the boundaries of ERP sites SA-38, SA-40, SA-41, LF-12, LF-44, AOC-18, RW-20, CF27-OU2, CF27-OU1, and ST-01; however, all of these ERP sites except for LF-12 have been closed and no further action has been recommended. An *ERP Waiver to Construct* would need to be obtained for construction within LF-12. If contamination were discovered during construction, work would be halted immediately and any contaminated materials would be handled, stored, transported, and disposed of in accordance with applicable Federal, state, local, and USAF regulations.

The area for Project I6 overlaps MMRP sites TS-271, AL-240, AL-269, AL-722, FR-242, TS-270, and SA-725. There is the potential for workers to encounter previously unknown UXO, MEC, or related materials during construction. If any UXO, MEC, or related materials were discovered, compliance with the DOD Environment, Safety, and Health UXO Safety Education Program should be maintained prior to and during clearing of the site and proper disposal methods should be followed to ensure maximum safety of clearing personnel. No impacts would be expected from ACMs, LBP, PCBs, pesticides, storage tanks, or radon.

Safety. Short-term, negligible to minor, adverse effects associated with safety could occur during construction and demolition activities related to Project I6. Construction and demolition activities pose an increased risk of construction-related accidents, but this level of risk would be managed by adhering to established Federal, state, and local safety regulations. Workers would be required to wear PPE such as ear protection, steel-toed boots, hard hats, gloves, and other appropriate safety gear. Construction and demolition areas would be fenced and appropriately marked with signs. Construction and associated trucks transporting material to and from construction sites would be directed to roads and streets that have a lesser volume of traffic. Therefore, no long-term, adverse effects on safety would be expected. There would be long-term, negligible, beneficial impacts on safety from the improvement of infrastructure reliability from this project.

Project I6 intersects ERP sites SA-38, SA-40, SA-41, LF-12, LF-44, AOC-18, RW-20, CF27-OU2, CF27-OU1, and ST-01; all are considered closed, except for LF-12 (LAFB 2011a, LAFB undated e). CF27-OU2 and CF27-OU1 are closed sites; however, they are under residential land use, soil and groundwater disturbance restrictions. There is a potential for workers to encounter previously unknown contaminated materials during construction. If contamination were discovered during construction, work would be halted immediately and any contaminated materials would be handled, stored, transported, and disposed of in accordance with applicable Federal, state, local, and USAF regulations.

ERP site LF-12 is currently open and under residential land use and soil and groundwater disturbance restriction. Project I6 could potentially affect the monitoring of this site. Workers in this area are at an increased risk of potential exposure to contaminated material which could have minor, adverse impacts on safety.

The area for Project I6 overlaps MMRP sites TS-271, AL-240, AL-269, AL-722, FR-242, TS-270, and SA-725. There is the potential for workers to encounter previously unknown UXO, MEC, or related materials during construction. If any UXO, MEC, or related materials were discovered, compliance with the DOD Environment, Safety, and Health UXO Safety Education Program should be maintained prior to and during clearing of the site and proper disposal methods should be followed to ensure maximum safety of clearing personnel. Portions of the project would be within QD arcs, which puts workers at an increased risk of explosions and would result in a minor, adverse impact on safety; however, to minimize potential impacts on construction workers and the installation mission, this project would be coordinated with the installation Safety Office.

4.4.3.7 I7. Electrical Distribution System Upgrades

Project I7 would not result in significant effects. The following subsections break down by resource areas the non-significant effects that would result from Project I7.

Noise. Short-term, minor, adverse impacts on the noise environment would be expected as a result of upgrades to the installation-wide electrical distribution system. The noise emanating from construction equipment would be localized, short-term, and intermittent during machinery operations. **Table 3-2** shows the predicted noise levels for various pieces of construction equipment 50 feet from the source, and **Table 4-2** shows estimated noise levels that would be expected at varying distances from a construction site. Heavy construction equipment would not be operational during the entire construction and demolition period, which would limit the duration of increased noise levels. These areas of JBSA-Lackland are used for various functions. Populations potentially affected by the increased noise levels would include USAF personnel working in and using the adjacent facilities approximately 50 feet from the construction site. The closest personnel to the site would be exposed to noise levels of 90 to 94 dBA. No change in operations would be expected as a result of the construction due to Electrical Distribution System upgrades; therefore, no long-term, adverse, impacts on the existing noise environment would be expected. The closest off-installation populations would be approximately 100 feet, and could be exposed to noise levels between 84 to 88 dBA from construction activities. Consequently, proposed construction activities would result in short-term, minor, adverse impacts on the noise environment in the vicinity of construction activities. However, noise generation would last only for the duration of construction activities and would be isolated to normal working hours (i.e., between 7:00 a.m. and 5:00 p.m.). The short-term increase in noise levels from upgrades of the proposed electrical distribution system would not cause significant adverse effects on the surrounding populations. Contractors and workers are responsible to follow noise regulations in accordance with Federal, state and USAF guidelines.

Land Use. No impacts on land use would be expected from upgrading the existing electrical distribution system on JBSA-Lackland. The electrical distribution system is within various land use categories; however, no changes to existing land use would be required to replace/upgrade existing system. Portions of Project I7 are within the boundaries of ERP sites SA-38, SA-40, SA-41, LF-36, LF-44, LF-46, LF-47, RW-16, RW-19, RW-18, AOC-15, AOC-20, AOC-26, AOC-45, AOC-47, RW-33, ST-07, and FT-23; MMRP sites AL-240, AL-722, FR-242, and SA-725; and QD arcs. Construction activities would take into account any land use restrictions in place due to the presence of the ERP sites, MMRP sites and the QD arcs.

Air Quality. Short-term, minor, adverse effects on air quality would be expected from the electrical distribution system upgrades. Construction activities would result in temporary effects on local and regional air quality, primarily from site-disturbing activities, the operation of construction equipment and paving equipment and haul trucks transporting materials, and workers commuting to the job site. Appropriate fugitive dust-control measures would be employed during construction activities to suppress emissions. All emissions associated with construction activities would be temporary in nature. It is not expected that emissions from Project I7 would affect local or regional attainment status with respect to the NAAQS. Emissions from the electrical distribution system upgrades are summarized in **Table 4-24**. Emissions estimation spreadsheets are included in **Appendix E**. No long-term air emissions would be produced as a result of Project I7.

Table 4-24. Estimated Air Emissions Resulting from Project I7

Activity	NO_x (tpy)	VOC (tpy)	CO (tpy)	SO_2 (tpy)	PM_{10} (tpy)	$PM_{2.5}$ (tpy)	CO_2 (metric tons/year)
2015 Construction							
Total Construction Emissions	0.15	0.09	0.77	0.01	5.22	0.53	96.18
Percentage of Total JBSA-Lackland Baseline Emissions	0.02	0.10	0.08	0.01	5.10	0.71	NA
Percentage of Bexar County Emissions*	0.0003	0.0001	0.0003	0.0000	0.009	0.006	0.00002**

Notes: * Based on maximum year emissions.

** Percentage of State of Texas CO_2 emissions as the Bexar County CO_2 emissions inventory is not available.

Geological Resources. Upgrading the electrical distribution system would involve disturbance to previously disturbed lands and would not result in the creation of additional impervious surfaces. Short-term impacts during construction would result from disturbance of soils; clearing of vegetation; and grading, paving, and excavation or trenching. Clearing of vegetation would increase erosion and sedimentation potential. As a result of the upgrades, long-term minor to moderate, adverse effects would occur as soils would be compacted, and soil structure disturbed and modified. Soil productivity, which is the capacity of the soil to produce vegetative biomass, would decline in disturbed areas. Loss of soil structure due to compaction from foot and vehicle traffic could change local drainage patterns. Soil erosion- and sediment-control measures would be included in site plans to minimize long-term erosion and sediment production at each site. Use of storm water-control measures that favor reinfiltration would minimize erosion and sediment production from future storm events. Additionally, short- and long-term, indirect, minor, adverse impacts on hydric soils could be expected from upgrading portions of the system adjacent to wetlands.

Portions of Project I7 would be installed within ERP sites. Therefore, short-term, minor to moderate, adverse effects on soils could occur from the disturbance of potentially contaminated soils. Project planning should include sampling and subsequent remediation within the project area to account for the discovery of contaminated soil. The handling, storage, transportation, and disposal of hazardous substances would be conducted in accordance with applicable Federal, state, and local regulations; USAF regulations; and JBSA-Lackland management procedures. No long-term effects would be expected.

No impacts on topography and geology would be expected.

Water Resources. Short-term, indirect and direct, negligible to moderate, adverse effects on groundwater, surface water, and floodplains would be expected from activities associated with Project I7. Ground disturbance and an increase in impervious surfaces as a result of Project I7 would be 4.6 acres. Ground disturbance could result in short-term indirect effects on groundwater quality. The increase in impervious surface could result in a long-term increase in storm water, which could affect groundwater and stormwater quality. Because the project footprint is greater than 1 acre and less than 5 acres of ground disturbance the project would be covered by the TXR1500000 General Stormwater Permit and require an individual SWPPP, a posted site notice, and submittal of a copy of the site notice to any MS4 operator receiving the discharge. The permit requires the implementation of BMPs to avoid and minimize pollution in storm water runoff both during and after construction. Additionally, spill prevention practices, consistent with the JBSA-Lackland SPCC plan (LAFB 2006b), would be implemented during all activities associated with the Proposed Action to avoid and minimize potential adverse effects on groundwater and surface water.

Short-term, minor, adverse effects could occur from impacts on 0.01 acre of jurisdictional wetlands and 0.25 acres of non-jurisdictional wetlands from implementation of Project I7 (see **Figures 4-2, 4-3,** and **4-5**); therefore, this project would require a FONPA. Effects on wetlands would be reduced through design, siting, and proper implementation of environmental protection measures. These would include the following:

- Flagging the boundary of the wetland to avoid unnecessary construction equipment and personnel from entering the wetland area
- Phasing construction activities so that smaller areas of land are disturbed at the same time to limit soil exposure
- Installing sedimentation basins and detention or retention ponds to contain sediment and runoff in the construction area
- Following the procedures in the SPCC Plan to contain and clean up spills of fuels and other potentially hazardous material quickly
- Developing an ESCP
- Developing a construction-grading plan in order to divert storm water runoff away from nearby wetlands
- Utilizing docks or boardwalks across wetland areas, rather than filling in the wetland area to create a pathway
- Minimizing the use of heavy machinery in wetlands
- Restricting construction activities to drier periods of the year
- Disposing of construction debris in a non-wetland area.

Proper implementation of these measures would ensure that no effects on surrounding wetlands or other waters of the United States would occur. Correspondence with regulatory and resource agencies prior to commencing any ground-breaking construction activities would be completed and permits would be obtained, as necessary.

Construction of portions of Project I7 would occur within approximately 4.36 acres of the 100-year floodplain; therefore, this project would require a FONPA and approval from AETC. To minimize potential impacts, construction would follow guidelines for construction in the floodplain, including creating new storm water retention areas for projects that create net impervious surface areas, to the maximum practicable extent. No mitigation measures would be required because no significant impacts would occur.

Biological Resources. Short- and long-term, direct, negligible to minor, adverse effects on vegetation would be expected from activities associated with Project I7. The removal and installation of the gas lines associated with Project I7 would occur in previously developed areas throughout the installation (see **Figures 2-1** through **2-5**) and would primarily affect urbanized areas including manicured lawns, some mid-sized trees, and associated landscaping. Habitat associated with riparian environments in Leon Creek and Medio Creek would also be impacted as the project extends across the creeks. However, all ground disturbed during construction activities that does not include site improvements would be reseeded with appropriate groundcover in accordance with the INRMP.

Short-term, direct, negligible to minor, adverse effects on wildlife would be expected from activities associated with Project I7. Disturbance would cause wildlife to engage in escape or avoidance behaviors. However, most wildlife species would be expected to recover quickly. Habitat associated with Project I7 would include manicured lawns, some mid-sized trees, and associated landscaping; however, the habitat quality associated with this project is generally low. Project I7 would also pass through riparian habitat associated with Leon Creek and Medio Creek that would support birds, amphibians, reptiles, and small mammals. These impacts would be temporary in nature as disturbed areas would be reseeded with appropriate groundcover in accordance with the INRMP. Also, the demolition of other buildings would increase the open space in other areas of the installation. Species that would normally occupy these areas would be expected to move to other locations on the installation.

Riparian habitat in Leon Creek and Medio Creek could be suitable for white-faced ibis, Cagle's map turtle, the Texas indigo snake, and the timber rattlesnake (LAFB 2007). A majority of the infrastructure improvements as part of Project I7 would occur in urbanized areas. Some parts of Project I7 pass through riparian habitat but follow existing infrastructure and would have short-term impacts on potential habitat in Leon Creek and Medio Creek. These areas would be restored to conditions that were in place before Project I7 began. As such, no adverse effects are expected to threatened or endangered species on the installation from Project I7.

Short-term, indirect, negligible to minor, adverse effects on migratory bird species could occur as a result of noise and physical disturbance. If these activities occur during nesting season, the environmental protection measures under **Section 4.3.6** would help to avoid take under the MBTA.

Cultural Resources. This project will not result in significant impacts on cultural resources on Lackland Main Base and Lackland Training Annex under NEPA. Most of the work associated with this project will occur in highly developed areas. However, there are two archaeological sites to the south and west of proposed work on Lackland Training Annex that have been designated for further testing as result of coordination with the NPS and SHPO. Until that testing is completed, these sites are to be treated as if they are NRHP-eligible (LAFB 1996, NPS 1997). Further, with appropriate design, land use planning, and implementation, these sites would be avoided. Additionally, there are sites scattered throughout the Medio Creek terrace area and along the western edge of Lackland Training Annex that were identified as NRHP-eligible as part of a 1996 survey but later determined ineligible for the NRHP in consultation with the SHPO (LAFB 1996, NPS 1997).

If any unanticipated discoveries are made during the construction process, SOP #5 of the JBSA-Lackland ICRMP, "Unanticipated Discoveries of Archaeological Deposits," and Section IV of the JBSA PA, "Inadvertent Discoveries and Emergencies" will be followed.

Socioeconomics and Environmental Justice. Short-term, negligible, beneficial effects on socioeconomic resources would be expected from the electrical distribution system upgrades. It is assumed that equipment and supplies necessary to complete the proposed activities would be obtained locally, and local contractors would be used. The demand for workers as part of the construction would be minor and would not outstrip the local supply of workers, as there are more than 80,000 construction workers in the San Antonio-New Braunfels MSA. The proposed construction activities would occur entirely on JBSA-Lackland, and it would have little potential to affect on- or off-installation residents adversely. Therefore, no environmental justice issues would be anticipated. No long-term effects on socioeconomic resources are expected to result from the proposed electrical distribution system upgrades.

Infrastructure. Short-term, negligible, adverse effects would be expected as a result of debris generated during this infrastructure improvement project. Construction debris is generally composed of clean materials, and most of this waste would be recycled. However, debris not recycled would be landfilled, which would be considered a long-term, irreversible, adverse effect. Long-term, minor, beneficial effects would be expected to occur because this project would upgrade the current natural gas distribution system and improve system reliability.

Hazardous Materials and Waste. Short-term, negligible, adverse effects associated with hazardous materials and waste would be expected from implementation of Project I7. There would be a short-term increase in the use of hazardous materials and petroleum products and the generation of hazardous and petroleum wastes during the upgrade of the electrical distribution system. Contractors would be responsible for the management of these materials, which would be handled in accordance with the JBSA-Lackland hazardous materials management and hazardous waste management plans and Federal, state, local, and USAF regulations. The project area for Project I7 would overlap the boundaries of ERP sites SA-38, SA-40, SA-41, LF-36, LF-44, LF-46, LF-47, RW-16, RW-19, RW-18, AOC-15, AOC-20, AOC-26, AOC-45, AOC-47, RW-33, ST-07, and FT-23; however, these ERP sites have been closed and no further action has been recommended. Therefore, no impacts from ERP sites would be anticipated. If contamination were discovered during construction, work would be halted immediately and any contaminated materials would be handled, stored, transported, and disposed of in accordance with applicable Federal, state, local, and USAF regulations.

The project area for Project I7 overlaps MMRP sites AL-240, AL-722, FR-242, and SA-725. There is the potential for workers to encounter previously unknown UXO, MEC, or related materials during construction. If any UXO, MEC, or related materials were discovered, compliance with the DOD Environment, Safety, and Health UXO Safety Education Program should be maintained prior to and during clearing of the site and proper disposal methods should be followed to ensure maximum safety of clearing personnel. No impacts would be expected from ACMs, LBP, PCBs, pesticides, storage tanks, or radon.

Safety. Short-term, negligible to minor, adverse effects associated with safety could occur during construction and demolition activities related to Project I7. Construction and demolition activities pose an increased risk of construction-related accidents, but this level of risk would be managed by adhering to established Federal, state, and local safety regulations. Workers would be required to wear PPE such as ear protection, steel-toed boots, hard hats, gloves, and other appropriate safety gear. Construction and demolition areas would be fenced and appropriately marked with signs. Construction and associated trucks transporting material to and from construction sites would be directed to roads and streets that have a lesser volume of traffic. Therefore, no long-term, adverse effects on safety would be expected. There would be long-term, minor, beneficial impacts on safety from the improvement of infrastructure reliability from this project.

Project I7 intersects with ERP sites ERP sites SA-38, SA-40, SA-41, LF-36, LF-44, LF-46, LF-47, RW-16, RW-19, RW-18, AOC-15, AOC-20, AOC-26, AOC-45, AOC-47, RW-33, ST-07, and FT-23; and MMRP sites AL-240, FR-242, AL-722, and SA-725. All the ERP and MMRP that this project intersect with are closed and under no restrictions (LAFB 2011a, LAFB undated e). These sites pose a possible minor, adverse impact on safety for workers in the area if there is an inadvertent discovery of previously unknown contaminated material. If contamination is encountered, it would be handled, stored, transported, and disposed of in accordance with the installation's Hazardous Waste Management Plan and all applicable Federal, state, and local regulations and policies. There is still a potential for workers to encounter previously unknown contaminated materials and UXO, MEC, or related materials during construction activities within ERP and MMRP sites, respectively. Portions of the project would be within QD arcs, which puts workers at an increased risk of explosions and would result in a minor, adverse impact on safety; however, to minimize potential impacts on construction workers and the installation mission, this project would be coordinated with the installation Safety Office.

4.4.3.8 I8. Main Water Lines Upgrades

Project I8 would not result in significant effects. The following subsections break down by resource areas the non-significant effects that would result from Project I8.

Noise. Short-term, minor, adverse impacts on the noise environment would be expected as a result of upgrades to installation-wide main water lines. The noise emanating from construction equipment would be localized, short-term, and intermittent during machinery operations. **Table 3-2** shows the predicted noise levels for various pieces of construction equipment 50 feet from the source, and **Table 4-2** shows estimated noise levels that would be expected at varying distances from a construction site. Heavy construction equipment would not be operational during the entire construction and demolition period, which would limit the duration of increased noise levels. These areas of JBSA-Lackland are used for various functions. Populations potentially affected by the increased noise levels would include USAF personnel working in and using the adjacent facilities approximately 50 feet from the construction site. The closest personnel to the site would be exposed to noise levels of 90 to 94 dBA. No change in operations would be expected as a result of the construction due to main water line upgrades; therefore, no long-term, adverse, impacts on the existing noise environment would be expected. The closest off-installation populations would be approximately 100 feet, and could be exposed to noise levels between 84 to 88 dBA from construction activities. Consequently, proposed construction activities would result in short-term, minor, adverse impacts on the noise environment in the vicinity of construction activities. However, noise generation would last only for the duration of construction activities and would be isolated to normal working hours (i.e., between 7:00 a.m. and 5:00 p.m.). The short-term increase in noise levels from construction at the proposed main water line upgrades would not cause significant adverse effects on the surrounding populations. Contractors and workers are responsible to follow noise regulations in accordance with Federal, state and USAF guidelines.

Land Use. No impacts on land use would be expected from upgrading the existing main water lines on JBSA-Lackland. The main water lines are within various land use categories; however, no changes to existing land use would be required to replace/upgrade existing lines. Portions of Project I8 are within the boundaries of ERP sites SA-38, SA-39, SA-41, RW-16, RW-18, RW-19, RW-20, RW-33, AOC-15, AOC-20, AOC-43, AOC-45, LF-36, LF-40, FR-242, GR-34, WP-13, ST-07, CF27-OU2, and CF27-OU1; MMRP sites AL-240, AL-722, and FR-242; and QD arcs. Construction activities would take into any land use restrictions in place due to the presence of the ERP sites, MMRP sites and the QD arcs.

Air Quality. Short-term, minor, adverse effects on air quality would be expected from upgrades to the main water lines. Construction activities would result in temporary effects on local and regional air quality, primarily from site-disturbing activities, the operation of construction equipment and paving equipment and haul trucks transporting materials, and workers commuting to the job site. Appropriate fugitive dust-control measures would be employed during construction activities to suppress emissions. All emissions associated with construction activities would be temporary in nature. It is not expected that emissions from Project I8 would affect local or regional attainment status with respect to the NAAQS. Emissions from the upgrades to the main water lines are summarized in **Table 4-25**. Emissions

1 estimation spreadsheets are included in **Appendix E**. No long-term air emissions would be produced as a
2 result of Project I8.

3 **Table 4-25. Estimated Air Emissions Resulting from Project I8**

Activity	NO_x (tpy)	VOC (tpy)	CO (tpy)	SO_2 (tpy)	PM_{10} (tpy)	$PM_{2.5}$ (tpy)	CO_2 (metric tons/year)
2013 Construction							
Total 2013 Construction Emissions	0.10	0.08	0.75	0.003	1.00	0.11	91.70
Percentage of Total JBSA-Lackland Baseline Emissions	0.01	0.09	0.08	0.003	0.98	0.15	NA
Percentage of Bexar County Emissions*	0.0002	0.0001	0.0003	0.0000	0.002	0.001	0.00002**
2014 Construction							
Total 2014 Construction Emissions	0.10	0.08	0.75	0.003	1.00	0.11	91.70
Percentage of Total JBSA-Lackland Baseline Emissions	0.01	0.09	0.08	0.003	0.98	0.15	NA
Percentage of Bexar County Emissions*	0.0002	0.0001	0.0003	0.0000	0.002	0.001	0.00002**
2015 Construction							
Total 2015 Construction Emissions	0.10	0.08	0.75	0.003	1.00	0.11	91.70
Percentage of Total JBSA-Lackland Baseline Emissions	0.01	0.09	0.08	0.003	0.98	0.15	NA
Percentage of Bexar County Emissions*	0.0002	0.0001	0.0003	0.0000	0.002	0.001	0.00002**
2016 Construction							
Total 2016 Construction Emissions	0.10	0.08	0.75	0.003	1.00	0.11	91.70
Percentage of Total JBSA-Lackland Baseline Emissions	0.01	0.09	0.08	0.003	0.98	0.15	NA
Percentage of Bexar County Emissions*	0.0002	0.0001	0.0003	0.0000	0.002	0.001	0.00002**
2017 Construction							
Total 2017 Construction Emissions	0.10	0.08	0.75	0.003	1.00	0.11	91.70
Percentage of Total JBSA-Lackland Baseline Emissions	0.01	0.09	0.08	0.003	0.98	0.15	NA
Percentage of Bexar County Emissions*	0.0002	0.0001	0.0003	0.0000	0.002	0.001	0.00002**
2018 Construction							
Total 2018 Construction Emissions	0.10	0.08	0.75	0.003	1.00	0.11	91.70
Percentage of Total JBSA-Lackland Baseline Emissions	0.01	0.09	0.08	0.003	0.98	0.15	NA
Percentage of Bexar County Emissions*	0.0002	0.0001	0.0003	0.0000	0.002	0.001	0.00002**

Notes: * Based on maximum year emissions.

** Percentage of State of Texas CO_2 emissions as the Bexar County CO_2 emissions inventory is not available.

Geological Resources. Upgrading the main water lines would involve disturbance to previously disturbed lands and would not result in the creation of additional impervious surfaces. Short-term impacts during construction would result from disturbance of soils; clearing of vegetation; and grading, paving, and excavation or trenching. Clearing of vegetation would increase erosion and sedimentation potential. As a result of the upgrades, long-term minor to moderate, adverse effects would occur as soils would be compacted, and soil structure disturbed and modified. Soil productivity, which is the capacity of the soil to produce vegetative biomass, would decline in disturbed areas. Loss of soil structure due to compaction from foot and vehicle traffic could change local drainage patterns. Soil erosion- and sediment-control measures would be included in site plans to minimize long-term erosion and sediment production at each site. Use of storm water control measures that favor reinfiltration would minimize erosion and sediment production from future storm events. Additionally, short- and long-term, indirect, minor, adverse impacts on hydric soils could be expected from upgrading portions of the system adjacent to wetlands.

Portions of Project I8 would be installed within ERP sites. Therefore, short-term, minor to moderate, adverse effects on soils could occur from the disturbance of potentially contaminated soils. Project planning should include sampling and subsequent remediation within the project area to account for the discovery of contaminated soil. The handling, storage, transportation, and disposal of hazardous substances would be conducted in accordance with applicable Federal, state, and local regulations; USAF regulations; and JBSA-Lackland management procedures. No long-term effects would be expected. No impacts on topography and geology would be expected.

Water Resources. Short- and long-term, indirect and direct, negligible to minor, adverse effects on groundwater, surface water, and floodplains would be expected from activities associated with Project I8. Ground disturbance and an increase in impervious surfaces as a result of Project I8 would be 5.2 acres. Ground disturbance could result in short-term, indirect effects on groundwater quality. The increase in impervious surface could result in a long-term increase in storm water, which could affect groundwater and storm water quality. Because ground disturbance associated with this project is greater than 5 acres, for coverage under TXR1500000 General Stormwater Permit it would require the development and implementation of a SWPPP, submittal of a Notice of Intent (by mail or online) to the TCEQ, a posted Notice of Intent and site notice, and submittal of a copy of the Notice of Intent to any MS4 operator receiving the discharge. As part of the SWPPP, BMPs would be developed in accordance with applicable regulations to avoid and minimize pollution in storm water runoff both during and after construction. Additionally, spill prevention practices, consistent with the JBSA-Lackland SPCC plan (LAFB 2006b), would be implemented during all activities associated with the Proposed Action to avoid and minimize potential adverse effects on groundwater and surface water.

Short-term, minor, adverse effects could occur from impacts on approximately 0.02 acres of jurisdictional wetlands and 0.04 acres of non-jurisdictional wetlands from implementation of Project I8 (see **Figures 4-3, 4-5,** and **4-7**); therefore, this project would require a FONPA. Effects on wetlands would be reduced through design, siting, and proper implementation of environmental protection measures. These would include the following:

- Flagging the boundary of the wetland to avoid unnecessary construction equipment and personnel from entering the wetland area
- Phasing construction activities so that smaller areas of land are disturbed at the same time to limit soil exposure
- Installing sedimentation basins and detention or retention ponds to contain sediment and runoff in the construction area

- Following the procedures in the SPCC Plan to contain and clean up spills of fuels and other potentially hazardous material quickly
- Developing an ESCP
- Developing a construction-grading plan in order to divert storm water runoff away from nearby wetlands
- Utilizing docks or boardwalks across wetland areas, rather than filling in the wetland area to create a pathway
- Minimizing the use of heavy machinery in wetlands
- Restricting construction activities to drier periods of the year
- Disposing of construction debris in a non-wetland area.

Proper implementation of these measures would ensure that no effects on surrounding wetlands or other waters of the United States would occur. Correspondence with regulatory and resource agencies prior to commencing any ground-breaking construction activities would be completed and permits would be obtained, as necessary.

Construction of portions of Project I8 would occur within approximately 3.62 acres of the 100-year floodplain; therefore, this project would require a FONPA and approval from AETC. To minimize potential impacts, construction would follow guidelines for construction in the floodplain, including creating new storm water retention areas for projects that create net impervious surface areas, to the maximum practicable extent. No mitigation measures would be required because no significant impacts would occur.

Biological Resources. Short-term, direct, negligible to minor, adverse effects on vegetation would be expected from activities associated with Project I8. The replacement of the water lines associated with Project I8 would occur in previously developed areas throughout the installation (see **Figures 2-1** through **2-5**). The construction would primarily affect urbanized areas including manicured lawns, some mid-sized trees, and associated landscaping. Habitat associated with riparian environments in Leon Creek and Medio Creek would also be impacted as the project extends across the creeks. However, all ground disturbed during construction activities that does not include site improvements would be reseeded with appropriate groundcover in accordance with the INRMP.

Short-term, direct, negligible to minor, adverse effects on wildlife would be expected from activities associated with Project I8. Disturbance would cause wildlife to engage in escape or avoidance behaviors. However, most wildlife species would be expected to recover quickly. Habitat associated with Project I8 would include manicured lawns, some mid-sized trees, and associated landscaping; however, the habitat quality associated with this project is generally low. Project I8 would also pass through riparian habitat associated with Leon Creek and Medio Creek that would support birds, amphibians, reptiles, and small mammals. These impacts would be temporary in nature as disturbed areas would be reseeded with appropriate groundcover in accordance with the INRMP. Species that would normally occupy these areas would be expected to move to other locations on the installation.

Riparian habitat in Leon Creek and Medio Creek could be suitable habitat for white-faced ibis, Cagle's map turtle, the Texas indigo snake, and the timber rattlesnake (LAFB 2007). A majority of the infrastructure improvements as part of Project I8 would occur in urbanized areas. Some parts of Project I8 pass through riparian habitat but follow existing infrastructure and would have short-term impacts on potential habitat in Leon Creek and Medio Creek. These areas would be restored to conditions that were in place before Project I8 began. As such, no adverse effects are expected on threatened or endangered species on the installation from Project I8.

Short-term, indirect, negligible to minor, adverse effects on migratory bird species could occur as a result of noise and physical disturbance. If these activities occur during nesting season, the environmental protection measures under **Section 4.3.6** would help to avoid take under the MBTA.

Cultural Resources. This project will have no adverse impacts on cultural resources under Section 106 of the NHPA and would result in no significant impact on cultural resources under NEPA. Portions of the proposed water lines on Lackland Main Base, to the northeast, in the golf course area, are located immediately adjacent to an NRHP-eligible archaeological site, 41BX1108. A second site in the golf course area, 41BX1107, was determined, in consultation with the NPS and SHPO to be in need of further testing. This site is to be treated as NRHP-eligible until such testing is completed (LAFB 1996, NPS 1997). Other potentially NRHP-eligible sites were identified in Leon Creek drainage area as part of the 1996 archaeological survey but were later determined to be ineligible for the NRHP with the concurrence of the SHPO (LAFB 2002a).

On Lackland Training Annex, proposed water lines are in the immediate vicinity of both NRHP-eligible sites and sites that have been designated for further testing in the Leon Creek drainage area. Again, sites in need of testing are to be treated as eligible until archaeological testing is completed and sites have been evaluated in consultation with the SHPO. Portions of these lines are also in proximity to sites that were identified and later determined to be NRHP-ineligible with the concurrence of the SHPO (LAFB 1996, NPS 1997). Additional water lines will be upgraded in areas of highly developed portions of JBSA-Lackland that have not been surveyed for archaeological resources and are considered to have been highly disturbed and have low potential for NRHP-eligible sites (LAFB 1996).

The JBSA PA stipulates, in Section III, “Exempt Undertakings,” that all maintenance work on existing features greater than 100 feet away from an identified NRHP-eligible archeological site will be considered to have No Effect or No Adverse Effect to historic resources and may proceed without formal notice to the SHPO. Projects that occur within 100 feet of NRHP-eligible sites must be coordinated with the SHPO. Site 41BX1107 is greater than 100 feet away from the nearest section of the proposed water line replacement and therefore is exempt from SHPO coordination requirements. Site 41BX1108 is 82 feet away from the nearest section of the project. As such, a letter was submitted by the JBSA-Lackland CRM to the SHPO on October 4, 2012. This letter, with supporting documentation, outlined the project and the potential for adverse effect to the site. The letter proposes that JBSA will have appropriate staff on site during the construction to monitor the project in order to avoid an adverse effect. The SHPO concurred with this letter on October 5, 2012 (**Appendix D**).

Barring unanticipated discoveries during the construction process, coordination under Section 106 for this project has been completed. If any unanticipated discoveries are made, Stipulation 5 of the JBSA-Lackland ICRMP, “Unanticipated Discoveries of Archaeological Deposits,” and Section IV of the JBSA PA, “Inadvertent Discoveries and Emergencies,” would be followed.

Socioeconomics and Environmental Justice. Short-term, negligible, beneficial effects on socioeconomic resources would be expected from the main water lines upgrades. It is assumed that equipment and supplies necessary to complete the proposed activities would be obtained locally, and local contractors would be used. The demand for workers as part of the construction would be minor and would not outstrip the local supply of workers, as there are more than 80,000 construction workers in the San Antonio-New Braunfels MSA. The proposed construction activities would occur entirely on JBSA-Lackland, and it would have little potential to affect on- or off-installation residents adversely.

Therefore, no environmental justice issues would be anticipated. No long-term effects on socioeconomic resources are expected to result from the proposed main water lines upgrades.

Infrastructure. Short-term, negligible, adverse effects would be expected as a result of debris generated during this infrastructure improvement project. Construction debris is generally composed of clean materials, and most of this waste would be recycled. However, debris not recycled would be landfilled, which would be considered a long-term, irreversible, adverse effect. Long-term, minor, beneficial effects would be expected to occur because this project would upgrade the current water distribution system and improve system reliability.

Hazardous Materials and Waste. Short-term, negligible, adverse effects associated with hazardous materials and waste would be expected from implementation of Project I8. There would be a short-term increase in the use of hazardous materials and petroleum products and the generation of hazardous and petroleum wastes during the upgrade of the water mains. Contractors would be responsible for the management of these materials, which would be handled in accordance with the JBSA-Lackland hazardous materials management and hazardous waste management plans and Federal, state, local, and USAF regulations. The project area for Project I8 would overlap the boundaries of ERP sites SA-38, SA-39, SA-41, RW-16, RW-18, RW-19, RW-20, RW-33, AOC-15, AOC-20, AOC-43, AOC-45, LF-36, LF-40, FR-242, GR-34, WP-13, ST-07, CF27-OU2, and CF27-OU1. All of these sites except for GR-34 have been closed and no further action has been recommended. An *ERP Waiver to Construct* would need to be obtained for construction within GR-34. If contamination were discovered during construction, work would be halted immediately and any contaminated materials would be handled, stored, transported, and disposed of in accordance with applicable Federal, state, local, and USAF regulations.

The project area for Project I8 overlaps MMRP sites AL-240, AL-722, and FR-242. There is the potential for workers to encounter previously unknown UXO, MEC, or related materials during construction. If any UXO, MEC, or related materials were discovered, compliance with the DOD Environment, Safety, and Health UXO Safety Education Program should be maintained prior to and during clearing of the site and proper disposal methods should be followed to ensure maximum safety of clearing personnel. No impacts would be expected from ACMs, LBP, PCBs, pesticides, storage tanks, or radon.

Safety. Short-term, negligible to minor, adverse effects associated with safety could occur during construction and demolition activities related to Project I8. Construction and demolition activities pose an increased risk of construction-related accidents, but this level of risk would be managed by adhering to established Federal, state, and local safety regulations. Workers would be required to wear PPE such as ear protection, steel-toed boots, hard hats, gloves, and other appropriate safety gear. Construction and demolition areas would be fenced and appropriately marked with signs. Construction and associated trucks transporting material to and from construction sites would be directed to roads and streets that have a lesser volume of traffic. Therefore, no long-term, adverse effects on safety would be expected. There would be long-term, minor, beneficial impacts on safety from the improvement of infrastructure reliability from this project.

Project I8 intersects with ERP sites SA-38, SA-39, SA-41, RW-16, RW-18, RW-19, RW-20, RW-33, AOC-15, AOC-20, AOC-43, AOC-45, LF-36, LF-40, FR-242, GR-34, WP-13, ST-07, CF27-OU2, and CF27-OU1 and MMRP sites AL-240, FR-242, and AL-722, which are closed sites and under no restrictions (LAFB 2011a, LAFB undated e). Only ERP site GRP-34 is open. These sites pose a possible minor, adverse impact on safety for workers in the area if there is an inadvertent discovery of previously unknown contaminated material. If contamination is encountered, it would be handled, stored, transported, and disposed of in accordance with the installation's Hazardous Waste Management Plan and all applicable Federal, state, and local regulations and policies. Portions of the project would be within QD arcs, which puts workers at an increased risk of explosions and would result in a minor, adverse impact on safety; however, to minimize potential impacts on construction workers and the installation mission, this project would be coordinated with the installation Safety Office.

4.4.3.9 I9. Sanitary Sewer Lines Upgrades

Project I9 would not result in significant effects. The following subsections break down by resource areas the non-significant effects that would result from Project I9.

Noise. Short-term, minor, adverse impacts on the noise environment would be expected as a result of upgrades to installation-wide sanitary sewer lines. The noise emanating from construction equipment would be localized, short-term, and intermittent during machinery operations. **Table 3-2** shows the predicted noise levels for various pieces of construction equipment 50 feet from the source, and **Table 4-2** shows estimated noise levels that would be expected at varying distances from a construction site. Heavy construction equipment would not be operational during the entire construction and demolition period, which would limit the duration of increased noise levels. These areas of JBSA-Lackland are used for various functions. Populations potentially affected by the increased noise levels would include USAF personnel working in and using the adjacent facilities approximately 50 feet from the construction site. The closest personnel to the site would be exposed to noise levels of 90 to 94 dBA. No change in operations would be expected as a result of the upgrades to sanitary sewer lines; therefore, no long-term, adverse, impacts on the existing noise environment would be expected. The closest off-installation populations would be approximately 100 feet, and could be exposed to noise levels between 84 to 88 dBA from construction activities. Consequently, proposed construction activities would result in short-term, minor, adverse impacts on the noise environment in the vicinity of construction activities. However, noise generation would last only for the duration of construction activities and would be isolated to normal working hours (i.e., between 7:00 a.m. and 5:00 p.m.). The short-term increase in noise levels from construction at the proposed sanitary sewer line upgrades would not cause significant adverse effects on the surrounding populations. Contractors and workers are responsible to follow noise regulations in accordance with Federal, state and USAF guidelines.

Land Use. No impacts on land use would be expected from upgrading the existing sanitary sewer lines on JBSA-Lackland. The sanitary sewer lines are within various land use categories; however, no changes to existing land use would be required to replace/upgrade existing lines. Portions of Project I8 are within the boundaries of ERP sites SA-41, SA-39, LF-47, RW-18, WP-13, RW-16, and AOC-47 and QD arcs. Construction activities would take into account any land use restrictions in place due to the presence of the ERP sites and the QD arcs.

Air Quality. Short-term, minor, adverse effects on air quality would be expected from the upgrades to the sanitary sewer lines. Construction activities would result in temporary effects on local and regional air quality, primarily from site-disturbing activities, the operation of construction equipment and paving equipment and haul trucks transporting materials, and workers commuting to the job site. Appropriate fugitive dust-control measures would be employed during construction activities to suppress emissions. All emissions associated with construction activities would be temporary in nature. It is not expected that emissions from Project I9 would affect local or regional attainment status with respect to the NAAQS. Emissions from the sanitary sewer lines upgrades are summarized in **Table 4-26**. Emissions estimation spreadsheets are included in **Appendix E**. No long-term air emissions would be produced as a result of Project I9.

Geological Resources. Upgrading the sewer lines would involve disturbance to previously disturbed lands and would not result in the creation of additional impervious surfaces. Short-term impacts during construction would result from disturbance of soils; clearing of vegetation; and grading, paving, and excavation or trenching. Clearing of vegetation would increase erosion and sedimentation potential. As a

Table 4-26. Estimated Air Emissions Resulting from Project I9

Activity	NO_x (tpy)	VOC (tpy)	CO (tpy)	SO_2 (tpy)	PM_{10} (tpy)	$PM_{2.5}$ (tpy)	CO_2 (metric tons/year)
2013 Construction							
Total 2013 Construction Emissions	0.10	0.08	0.75	0.003	0.90	0.10	91.70
Percentage of Total JBSA-Lackland Baseline Emissions	0.01	0.09	0.08	0.003	0.98	0.15	NA
Percentage of Bexar County Emissions*	0.0002	0.0001	0.0003	0.0000	0.002	0.001	0.00002**
2014 Construction							
Total 2014 Construction Emissions	0.10	0.08	0.75	0.003	0.90	0.10	91.70
Percentage of Total JBSA-Lackland Baseline Emissions	0.01	0.09	0.08	0.003	0.98	0.15	NA
Percentage of Bexar County Emissions*	0.0002	0.0001	0.0003	0.0000	0.002	0.001	0.00002**
2015 Construction							
Total 2015 Construction Emissions	0.10	0.08	0.75	0.003	0.90	0.10	91.70
Percentage of Total JBSA-Lackland Baseline Emissions	0.01	0.09	0.08	0.003	0.98	0.15	NA
Percentage of Bexar County Emissions*	0.0002	0.0001	0.0003	0.0000	0.002	0.001	0.00002**
2016 Construction							
Total 2016 Construction Emissions	0.10	0.08	0.75	0.003	0.90	0.10	91.70
Percentage of Total JBSA-Lackland Baseline Emissions	0.01	0.09	0.08	0.003	0.98	0.15	NA
Percentage of Bexar County Emissions*	0.0002	0.0001	0.0003	0.0000	0.002	0.001	0.00002**
2017 Construction							
Total 2017 Construction Emissions	0.10	0.08	0.75	0.003	0.90	0.10	91.70
Percentage of Total JBSA-Lackland Baseline Emissions	0.01	0.09	0.08	0.003	0.98	0.15	NA
Percentage of Bexar County Emissions*	0.0002	0.0001	0.0003	0.0000	0.002	0.001	0.00002**
2018 Construction							
Total 2018 Construction Emissions	0.10	0.08	0.75	0.003	0.90	0.10	91.70
Percentage of Total JBSA-Lackland Baseline Emissions	0.01	0.09	0.08	0.003	0.98	0.15	NA
Percentage of Bexar County Emissions*	0.0002	0.0001	0.0003	0.0000	0.002	0.001	0.00002**

Notes: * Based on maximum year emissions.
** Percentage of State of Texas CO_2 emissions as the Bexar County CO_2 emissions inventory is not available.

result of the upgrades, long-term minor to moderate, adverse effects would occur as soils would be compacted, and soil structure disturbed and modified. Soil productivity, which is the capacity of the soil to produce vegetative biomass, would decline in disturbed areas. Loss of soil structure due to compaction from foot and vehicle traffic could change local drainage patterns. Soil erosion- and sediment-control measures would be included in site plans to minimize long-term erosion and sediment production at each site. Use of storm water control measures that favor reinfiltration would minimize erosion and sediment production from future storm events. Additionally, short- and long-term, indirect, minor, adverse impacts on hydric soils could be expected from upgrading portions of the system adjacent to wetlands.

Portions of Project I9 would be installed within ERP sites. Therefore, short-term, minor to moderate, adverse effects on soils could occur from the disturbance of potentially contaminated soils. Project planning should include sampling and subsequent remediation within the project area to account for the

discovery of contaminated soil. The handling, storage, transportation, and disposal of hazardous substances would be conducted in accordance with applicable Federal, state, and local regulations; USAF regulations; and JBSA-Lackland management procedures. No long-term effects would be expected. No impacts on topography and geology would be expected**.**

Water Resources. Short-term, indirect and direct, negligible to minor, adverse effects on groundwater, surface water, and floodplains would be expected from activities associated with Project I9. Ground disturbance and an increase in impervious surfaces as a result of Project I9 would be 4.7 acres. Ground disturbance could result in short-term indirect effects on groundwater quality. The increase in impervious surface could result in a long-term increase in storm water, which could affect groundwater and storm water quality. Because the project footprint is greater than 1 acre and less than 5 acres of ground disturbance the project would be covered by the TXR1500000 General Stormwater Permit and require an individual SWPPP, a posted site notice, and submittal of a copy of the site notice to any MS4 operator receiving the discharge. The permit requires the implementation of BMPs to avoid and minimize pollution in storm water runoff before and after construction. Additionally, spill prevention practices, consistent with the JBSA-Lackland SPCC plan (LAFB 2006b), would be implemented during all activities associated with the Proposed Action to avoid and minimize potential adverse effects on groundwater and surface water.

Short-term, minor, adverse effects could occur from impacts on 0.02 acres of jurisdictional wetlands and 0.01 acre of non-jurisdictional wetlands from implementation of Project I9 (see **Figures 4-1** and **4-3**); therefore, this project would require a FONPA. Effects on wetlands would be reduced through design, siting, and proper implementation of environmental protection measures. These would include the following:

- Flagging the boundary of the wetland to avoid unnecessary construction equipment and personnel from entering the wetland area
- Phasing construction activities so that smaller areas of land are disturbed at the same time to limit soil exposure
- Installing sedimentation basins and detention or retention ponds to contain sediment and runoff in the construction area
- Following the procedures in the SPCC Plan to contain and clean up spills of fuels and other potentially hazardous material quickly
- Developing an ESCP
- Developing a construction-grading plan in order to divert storm water runoff away from nearby wetlands
- Utilizing docks or boardwalks across wetland areas, rather than filling in the wetland area to create a pathway
- Minimizing the use of heavy machinery in wetlands

- Restricting construction activities to drier periods of the year
- Disposing of construction debris in a non-wetland area.

Proper implementation of these measures would ensure that no effects on surrounding wetlands or other waters of the United States would occur. Correspondence with regulatory and resource agencies prior to commencing any ground-breaking construction activities would be completed and permits would be obtained, as necessary.

Construction of portions of Project I9 would occur within approximately 1.9 acres of the 100-year floodplain; therefore, this project would require a FONPA and approval from AETC. To minimize potential impacts, construction would follow guidelines for construction in the floodplain, including creating new storm water retention areas for projects that create net impervious surface areas, to the maximum practicable extent. No mitigation measures would be required because no significant impacts would occur.

Biological Resources. Short-term, direct, negligible to minor, adverse effects on vegetation would be expected from activities associated with Project I9. The removal and installation of the water lines associated with Project I9 would occur in previously developed areas throughout the installation (see **Figures 2-1** through **2-5**). The construction would primarily affect urbanized areas including manicured lawns, some mid-sized trees, and associated landscaping. Habitat associated with riparian environments in Medio Creek and Long Hollow would also be impacted as the project goes across the creeks. However, all ground disturbed during construction activities that does not include site improvements would be reseeded with appropriate groundcover in accordance with the INRMP.

Short-term, direct, negligible to minor, adverse effects on wildlife would be expected from activities associated with Project I9. Disturbance would cause wildlife to engage in escape or avoidance behaviors. However, most wildlife species would be expected to recover quickly. Habitat associated with Project I9 would include manicured lawns, some mid-sized trees, and associated landscaping; however, the habitat quality associated with this project is generally low. Project I9 would also pass through riparian habitat associated with Medio Creek that would support birds, amphibians, reptiles, and small mammals. These impacts would be temporary in nature as disturbed areas would be reseeded with appropriate groundcover in accordance with the INRMP. Species that would normally occupy these areas would be expected to move to other locations on the installation

Riparian habitat in Medio Creek and Long Hollow could potentially be suitable habitat for white-faced ibis, Cagle's map turtle, the Texas indigo snake, and the timber rattlesnake (LAFB 2007). A majority of the infrastructure improvements as part of Project I9 would occur in urbanized areas, reducing the potential for impacts on these species. Some parts of Project I9 pass through riparian habitat but follow existing infrastructure and would have short-term impacts on potential habitat in Leon Creek and Medio Creek. These areas would be restored to conditions that were in place before Project I9 began. As such, no adverse effects are expected to threatened or endangered species on the installation from Project I9.

Short-term, indirect, negligible to minor, adverse effects on migratory bird species could occur as a result of noise and physical disturbance. If these activities occur during nesting season, the environmental protection measures under **Section 4.3.6** would help to avoid take under the MBTA.

Cultural Resources. This project is unlikely to result in significant impacts on cultural resources on Lackland Training Annex under NEPA. Two archaeological sites, 41BX1102 and 41BX1103, are located outside of the northernmost developed area on Lackland Training Annex. Other sites, 41BX1092 and 41BX1093, further south and west of the developed areas, have been designated, in consultation with the

NPS and SHPO, as in need of further testing. Until that testing is completed, these sites are to be treated as NRHP-eligible. Further, with appropriate design, land use planning, and implementation, these sites would be avoided. Additionally, there are NRHP-ineligible sites scattered throughout undisturbed areas of the Medio Creek terrace area and the western edge of Lackland Training Annex. Due to a low potential for archaeological resources, developed areas with disturbed ground have not been surveyed (LAFB 1996, NPS 1997).

If any unanticipated discoveries are made during the construction process, SOP #5 of the JBSA-Lackland ICRMP, "Unanticipated Discoveries of Archaeological Deposits," and Section IV of the JBSA PA, "Inadvertent Discoveries and Emergencies," would be followed.

Socioeconomics and Environmental Justice. Short-term, negligible, beneficial effects on socioeconomic resources would be expected from the sanitary sewer lines upgrades. It is assumed that equipment and supplies necessary to complete the proposed activities would be obtained locally, and local contractors would be used. The demand for workers as part of the construction would be minor and would not outstrip the local supply of workers, as there are more than 80,000 construction workers in the San Antonio-New Braunfels MSA. The proposed construction activities would occur entirely on JBSA-Lackland, and it would have little potential to affect on- or off-installation residents adversely. Therefore, no environmental justice issues would be anticipated. No long-term effects on socioeconomic resources are expected to result from the proposed sanitary sewer lines upgrades.

Infrastructure. Short-term, negligible, adverse effects would be expected as a result of debris generated during this infrastructure improvement project. Construction debris is generally composed of clean materials, and most of this waste would be recycled. However, debris not recycled would be landfilled, which would be considered a long-term, irreversible, adverse effect. Long-term, minor, beneficial effects would be expected to occur because this project would upgrade the current sanitary sewer system and improve system reliability.

Hazardous Materials and Waste. Short-term, negligible, adverse effects associated with hazardous materials and waste would be expected from implementation of Project I9. There would be a short-term increase in the use of hazardous materials and petroleum products and the generation of hazardous and petroleum wastes during the upgrade of the sanitary sewer lines. Contractors would be responsible for the management of these materials, which would be handled in accordance with the JBSA-Lackland hazardous materials management and hazardous waste management plans and Federal, state, local, and USAF regulations. The project area for Project I9 would overlap the boundaries of ERP sites SA-41, SA-39, LF-47, RW-18, WP-13, RW-16, and AOC-47; however, these ERP sites have been closed and no further action has been recommended. Therefore, no impacts from ERP sites would be anticipated. If contamination were discovered during construction, work would be halted immediately and any contaminated materials would be handled, stored, transported, and disposed of in accordance with applicable Federal, state, local, and USAF regulations. No impacts would be expected from ACMs, LBP, PCBs, pesticides, storage tanks, MMRP sites, or radon.

Safety. Short-term, negligible to minor, adverse effects associated with safety could occur during construction and demolition activities related to Project I9. Construction and demolition activities pose an increased risk of construction-related accidents, but this level of risk would be managed by adhering to established Federal, state, and local safety regulations. Workers would be required to wear PPE such as ear protection, steel-toed boots, hard hats, gloves, and other appropriate safety gear. Construction and demolition areas would be fenced and appropriately marked with signs. Construction and associated trucks transporting material to and from construction sites would be directed to roads and streets that have a lesser volume of traffic. Therefore, no long-term, adverse effects on safety would be expected. There would be long-term, minor, beneficial impacts on safety from the improvement of infrastructure reliability from this project.

Project I9 is within ERP sites SA-41, SA-39, LF-47, RW-18, WP-13, RW-16, and AOC-47; however, these sites are closed and under no restrictions. These sites pose a possible minor, adverse impact on safety for workers in the area if there is an inadvertent discovery of previously unknown contaminated material. If contamination is encountered, it would be handled, stored, transported, and disposed of in accordance with the installation's Hazardous Waste Management Plan and all applicable Federal, state, and local regulations and policies. Portions of the project would be within QD arcs, which puts workers at an increased risk of explosions and would result in a minor, adverse impact on safety; however, to minimize potential impacts on construction workers and the installation mission, this project would be coordinated with the installation Safety Office.

4.4.4 Selected Natural Infrastructure Projects

4.4.4.1 NI1. Medio Creek Erosion Control

Project NI1 would not result in significant effects. The following subsections break down by resource areas the non-significant effects that would result from Project NI1.

Noise. Short-term, minor, adverse impacts on the noise environment would be expected as a result of Medio Creek erosion control construction. The noise emanating from construction equipment would be localized, short-term, and intermittent during machinery operations. **Table 3-2** shows the predicted noise levels for various pieces of construction equipment 50 feet from the source, and **Table 4-2** shows estimated noise levels that would be expected at varying distances from a construction site. Heavy construction equipment would not be operational during the entire construction and demolition period, which would limit the duration of increased noise levels. This area of JBSA-Lackland is classified as open space. Populations potentially affected by the increased noise levels would include USAF personnel working in and using the adjacent facilities approximately 200 feet from the construction site. The closest personnel to the site would be exposed to noise levels of 78 to 82 dBA. No change in operations would be expected as a result of the construction due to Medio Creek erosion control activities; therefore, no long-term, adverse, impacts on the existing noise environment would be expected. The closest off-installation populations would be approximately 900 feet, and they could be exposed to noise levels of approximately 68 dBA from construction activities. Contractors and workers are responsible to follow noise regulations in accordance with Federal, state and USAF guidelines.

Land Use. No impacts on land use would be expected from implementation of Project NI1. Proposed erosion control for Medio Creek is within the open space land use category and implementation of the project would not require changes to the land use designation. Project NI1 is within the boundaries of ERP site AOC-26. Construction activities would take into account any land use restrictions in place due to the presence of the ERP site.

Air Quality. Short-term, negligible to minor, adverse effects on air quality would be expected from Project NI1 at JBSA-Lackland. Medio Creek erosion control construction activities would result in temporary effects on local and regional air quality primarily from site-disturbing activities, the operation of construction equipment and haul trucks transporting materials, and workers commuting to the job site. Appropriate fugitive dust-control measures would be employed during work activities to suppress emissions. All emissions associated with the proposed Medio Creek erosion control project would be temporary in nature. It is not expected that emissions from Project NI1 would affect local or regional attainment status with respect to the NAAQS. Emissions from the Medio Creek erosion control construction activities are summarized in **Table 4-27**. Emissions estimation spreadsheets are included in **Appendix E**. No long-term air emissions would be produced as a result of Project NI1.

Table 4-27. Estimated Air Emissions Resulting from Project NI1

Activity	NO_x (tpy)	VOC (tpy)	CO (tpy)	SO_2 (tpy)	PM_{10} (tpy)	$PM_{2.5}$ (tpy)	CO_2 (tpy)
2013 Construction							
Total Construction Emissions	4.87	0.48	2.91	0.38	0.51	0.36	584.43
Percentage of Total JBSA-Lackland Baseline Emissions	0.52	0.53	0.31	0.41	0.50	0.49	NA
Percentage of Bexar County Emissions*	0.009	0.001	0.001	0.001	0.001	0.004	0.0001**

Notes: * Based on maximum year emissions.
** Percentage of State of Texas CO_2 emissions as the Bexar County CO_2 emissions inventory is not available.

Geological Resources. Short-term, minor, adverse and long-term, moderate, beneficial effects on soils would be expected from Project NI1. As a result of construction long-term minor, adverse effects would occur as soils would be compacted, and soil structure disturbed and modified. Loss of soil structure due to compaction from foot and vehicle traffic could change local drainage patterns. However, restoration of the streambed to its natural configuration and the installation of permanent erosion controls would minimize future erosion and sedimentation, resulting in long-term, moderate, beneficial impacts on soils.

Project NI1 lies within an ERP site. Therefore, short-term, minor to moderate, adverse effects on soils could occur from the disturbance of potentially contaminated soils. Project planning should include sampling and subsequent remediation within the project area to account for the discovery of contaminated soil. The handling, storage, transportation, and disposal of hazardous substances would be conducted in accordance with applicable Federal, state, and local regulations; USAF regulations; and JBSA-Lackland management procedures. No long-term effects would be expected. The Tinn and Frio soils and Branyon clay are present at the proposed site, and are rated very limited for road construction (NRCS 2012). No impacts on topography and geology would be expected.

Water Resources. Short- and long-term, direct, negligible to minor, adverse effects on surface water and long-term beneficial effects on surface water and floodplains would be expected from activities associated with Project NI1. Short-term, adverse effects would occur from removal of vegetation, ground disturbance for construction of new culverts, and grading ditches. This would result in erosion of disturbed soils and increase turbidity in Medio Creek. Ground disturbance as a result of Project NI1 would be 0.3 acres. However, there would be a net decrease of impervious surfaces by 0.05 acres. Because the project footprint has less than 1 acre of ground disturbance, the project would not require coverage under TXR1500000 General Stormwater Permit. The project would use BMPs to avoid and minimize pollution in storm water runoff. Additionally, spill prevention practices, consistent with the JBSA-Lackland SPCC plan (LAFB 2006b), would be implemented during all activities associated with the Proposed Action to avoid and minimize potential adverse effects on groundwater and surface water.

Part of the area associated with Project NI1 is in an ERP site. However, no impacts on groundwater or surface water are expected. All contaminated materials would be handled in accordance with applicable Federal, state, local, and USAF regulation.

No wetlands are present within the project area for Project NI1; therefore no direct or indirect adverse effects on wetlands would be expected as a result of Project NI1. However, Medio Creek was designated as a waters of the United States and the project would require coverage under an individual or nationwide Section 404 permit for the discharge of dredged or fill material into Medio Creek. Correspondence with regulatory and resource agencies prior to commencing any ground-breaking construction activities would be completed and individual or nationwide Section 404 permits would be obtained, as necessary.

Construction of Project NI1 would occur within approximately 4.1 acres of the 100-year floodplain; therefore, this project would require a FONPA and approval from AETC. During significant rain events, flooding primarily occurs due to water backing up behind the existing culverts. By replacing the existing undersized culverts with a low-water crossing, repairing the washed out area adjacent to the stream, installing gabions and erosion-control matting where needed to prevent further erosion, and restoring the original configuration of the natural streambed, the potential for flooding in the area would be decreased. As a result, there would be a long-term beneficial effect on the floodplain due to a reduction in the impacts of flooding. This configuration would match the current modeled floodplain as depicted on the DFIRM panels and restore the water surface elevation to the pre-developed state. Removal and reconfiguration should not require review by FEMA as this would restore the floodplain to what is shown on the current DFIRM panels.

Biological Resources. Short- and long-term, direct, negligible to minor, adverse and long-term, beneficial effects on vegetation would be expected from activities associated with Project NI1 (see **Figure 2-26**). This project would result in the temporary loss of approximately 2 acres of vegetation. Affected vegetation would consist primarily of grassy areas and some forested areas containing small to mid-sized trees such as sugarberry, and basswood (LAFB 2007). The removal and installation of erosion control measures, and removal of the existing bridge over Medio Creek would permanently alter the banks of the creek. All ground disturbed during construction activities that does not include site improvements, would be reseeded with appropriate groundcover in accordance with the INRMP. Once construction is complete, there would be a long-term beneficial impact due to a restoration of a more natural flow to the creek and restoration of the banks of the creek. There would be an expected increase in the presence of riparian and aquatic vegetation and species due to an improvement of downstream hydrology (Bouska and Paukert 2009, Roni et al. 2002).

Short- and long-term, direct, negligible to minor, adverse effects on wildlife would be expected from activities associated with Project NI1. Disturbance would cause wildlife to engage in escape or avoidance behaviors. Most wildlife species would be expected to recover quickly. The removal and installation of erosion control measures, and removal and replacement of the bridge over Medio Creek with a low-water crossing would permanently alter the banks of the river and the surrounding habitat by approximately 2 acres. Any habitat removed during Project NI1 activities would be would be reseeded with appropriate species for the area following completion of demolition and construction activities in accordance with the INRMP. Low-water crossings have been shown to be barriers to fish movement when compared with other forms of water crossings (Bohn and Kershner 2002). The creek supports numerous species of aquatic life including bluegill (*Lepomis macrochirus*), *Gambusia* sp., blackstripe top minnow (*Fundulus notatus*), Rio Grande cichlid (*Cichlasoma cyanoguttatum*), and other aquatic and semi-aquatic species (LAFB 2007). Since these species generally do not make large-scale movements, the impacts are expected to be negligible to minor because a low-water crossing would restrict free movement up- and down-stream. Once construction is complete, there would be a long-term, beneficial impact on the downstream habitats by improving hydrology.

Riparian habitat in Leon Creek could be suitable habitat for white-faced ibis, Cagle's map turtle, the Texas indigo snake, and the timber rattlesnake (LAFB 2007). All of Project NI1 would occur in riparian and adjacent habitat. However, upon completion of Project NI1, impacted areas would be restored to conditions that were in place before Project NI1 began, and the low water crossing would restore a more natural flow and improve the habitat in the area. As such, no adverse effects are expected to threatened or endangered species on the installation from Project NI1.

Short-term, indirect, negligible to minor, adverse effects on migratory bird species could occur as a result of noise and physical disturbance. If these activities occur during nesting season, the environmental protection measures under **Section 4.3.6** would help to avoid take under the MBTA.

Cultural Resources. This will not have significant impacts on cultural resources at Lackland Training Annex under NEPA. The proposed project is just southeast of two NRHP-eligible archaeological sites, 41BX1102 and 41BX1103, in the northeastern portion of the Lackland Training Annex, sites (LAFB 1996). The project site is at a sufficient distance that these sites are avoidable. Additionally, there are sites scattered throughout the Medio Creek terrace area that were identified as NRHP-eligible as part of a 1996 survey but later determined ineligible for the NRHP in consultation with the NPS and the Texas SHPO (LAFB 1996, NPS 1997). If any unanticipated discoveries are made during the construction process, SOP #5 of the JBSA-Lackland ICRMP, "Unanticipated Discoveries of Archaeological Deposits," and Section IV of the JBSA PA, "Inadvertent Discoveries and Emergencies" will be followed.

Socioeconomics and Environmental Justice. Short-term, negligible, beneficial effects on socioeconomic resources would be expected from the Medio Creek erosion control. It is assumed that equipment and supplies necessary to complete the proposed activities would be obtained locally, and local contractors would be used. The demand for workers as part of the construction would be minor and would not outstrip the local supply of workers, as there are more than 80,000 construction workers in the San Antonio-New Braunfels MSA. The proposed construction activities would occur entirely on JBSA-Lackland, and it would have little potential to adversely affect on- or off-installation residents. Therefore, no environmental justice issues would be anticipated. No long-term effects on socioeconomic resources are expected to result from the proposed Medio Creek erosion control.

Infrastructure. Short-term, negligible, adverse effects would be expected as a result of debris generated during this infrastructure improvement project. Debris would generally be composed of clean materials, and most of this waste would be recycled. However, debris not recycled would be landfilled, which would be considered a long-term, irreversible, adverse effect. Long-term, minor, beneficial effects would be expected to occur because this project would install measures to prevent future flooding and erosion issues and improve the installation's storm drainage system.

Hazardous Materials and Waste. Short-term, negligible, adverse effects associated with hazardous materials and waste would be expected from implementation of Project NI1. There would be a short-term increase in the use of hazardous materials and petroleum products and the generation of hazardous and petroleum wastes from removal of culverts and concrete structures and construction of the variety of proposed erosion-control measures. Contractors would be responsible for the management of these materials, which would be handled in accordance with the JBSA-Lackland hazardous materials management and hazardous waste management plans and Federal, state, local, and USAF regulations. The project area for Project NI1 would overlap the boundaries of ERP site AOC-26; however, this ERP site has been closed and no further action has been recommended. Therefore, no impacts from ERP sites would be anticipated. If contamination were discovered during construction, work would be halted immediately and any contaminated materials would be handled, stored, transported, and disposed of in accordance with applicable Federal, state, local, and USAF regulations.

No impacts would be expected from ACMs, LBP, PCBs, pesticides, radon, storage tanks, or MMRP sites.

Safety. Short-term, negligible to minor, adverse effects associated with safety could occur during construction and demolition activities related to Project NI1. Construction and demolition activities pose an increased risk of construction-related accidents, but this level of risk would be managed by adhering to established Federal, state, and local safety regulations. Workers would be required to wear PPE such as ear protection, steel-toed boots, hard hats, gloves, and other appropriate safety gear. Construction and demolition areas would be fenced and appropriately marked with signs. Construction and associated trucks transporting material to and from construction sites would be directed to roads and streets that have a lesser volume of traffic. Therefore, no long-term, adverse effects on safety would be expected.

This site is located within ERP site AOC-26, which is closed and recommended for "No Further Action," (LAFB 2011a). This site poses a possible minor, adverse impact on safety for workers in the area if there is an inadvertent discovery of previously unknown contaminated material. If contamination is encountered, it would be handled, stored, transported, and disposed of in accordance with the installation's Hazardous Waste Management Plan and all applicable Federal, state, and local regulations and policies.

4.4.4.2 NI2. Warrior Week Road – Leon Creek Bridge

Project NI2 would not result in significant effects. The following subsections break down by resource areas the non-significant effects that would result from Project NI2.

Noise. Short-term, minor, adverse impacts on the noise environment would be expected as a result of Project NI2. The noise emanating from construction equipment would be localized, short-term, and intermittent during machinery operations. **Table 3-2** shows the predicted noise levels for various pieces of construction equipment 50 feet from the source, and **Table 4-2** shows estimated noise levels that would be expected at varying distances from a construction site. Heavy construction equipment would not be operational during the entire construction and demolition period, which would limit the duration of increased noise levels. These areas of JBSA-Lackland are classified as training outdoor and open space. Populations potentially affected by the increased noise levels would include USAF personnel working in and using the adjacent facilities approximately 100 feet from the construction site. The closest personnel to the site would be exposed to noise levels of 84 to 88 dBA. No change in operations would be expected as a result of the construction due to Project NI2; therefore, no long-term, adverse, impacts on the existing noise environment would be expected. The closest off-installation populations would be approximately 2,000 feet, and could be exposed to noise levels of approximately 62 dBA from construction activities. Contractors and workers are responsible to follow noise regulations in accordance with Federal, state, and USAF guidelines.

Land Use. No impacts on land use would be expected from implementation of Project NI2 Areas for the proposed repair of eroded areas near Leon Creek and installation of a bridge over Leon Creek are in the open space and training outdoor land use categories. Implementation of these projects would not require changes to the land use designations. Project NI2 is within the boundaries of ERP site LF-36 and MMRP site AL-240. Construction activities would take into account any land use restrictions in place due to the presence of the ERP site and the MMRP site.

Air Quality. Short-term, negligible to minor, adverse effects on air quality would be expected from Project NI2 at JBSA-Lackland. Warrior Week Road – Leon Creek Bridge construction activities would result in temporary effects on local and regional air quality primarily from site-disturbing activities, the operation of construction equipment and haul trucks transporting materials, and workers commuting to the job site. Appropriate fugitive dust-control measures would be employed during work activities to suppress emissions. All emissions associated with the proposed Warrior Week Road – Leon Creek Bridge project would be temporary in nature. It is not expected that emissions from Project NI2 would affect local or regional attainment status with respect to the NAAQS. Emissions from the Warrior Week Road – Leon Creek Bridge construction activities are summarized in **Table 4-28**. Emissions estimation spreadsheets are included in **Appendix E**. No long-term air emissions would be produced as a result of Project NI2.

Table 4-28. Estimated Air Emissions Resulting from Project NI2

Activity	NO_x (tpy)	VOC (tpy)	CO (tpy)	SO_2 (tpy)	PM_{10} (tpy)	$PM_{2.5}$ (tpy)	CO_2 (tpy)
2013 Construction							
Total Construction Emissions	4.94	0.52	3.08	0.39	0.87	0.40	599.00
Percentage of Total JBSA-Lackland Baseline Emissions	0.52	0.58	0.33	0.42	0.85	0.54	NA
Percentage of Bexar County Emissions*	0.009	0.001	0.001	0.001	0.002	0.004	0.0001**

Notes: * Based on maximum year emissions.
** Percentage of State of Texas CO_2 emissions as the Bexar County CO_2 emissions inventory is not available.

Geological Resources. Short-term, minor, adverse and long-term, moderate, beneficial effects on soils would be expected from Project NI2. As a result of construction long-term minor, adverse effects would occur as soils would be compacted, and soil structure disturbed and modified. Loss of soil structure due to compaction from foot and vehicle traffic could change local drainage patterns. However, restoration of the streambed to its natural configuration and the installation of permanent erosion controls would minimize future erosion and sedimentation, resulting in long-term, moderate, beneficial impacts on soils.

Project NI2 lies within an ERP site. Therefore, short-term, minor to moderate, adverse effects on soils could occur from the disturbance of potentially contaminated soils. Project planning should include sampling and subsequent remediation within the project area to account for the discovery of contaminated soil. The handling, storage, transportation, and disposal of hazardous substances would be conducted in accordance with applicable Federal, state, and local regulations; USAF regulations; and JBSA-Lackland management procedures. No long-term effects would be expected. The Tinn and Frio soils and Patrick soils are present at the proposed site, and are rated very limited for road construction (NRCS 2012). Long-term, minor, beneficial impacts on topography would be expected from the removal of concrete from the streambed. No impacts on geology would be expected.

Water Resources. Short- and long-term, direct, negligible to minor, adverse and beneficial effects on groundwater and surface water and long-term, beneficial effects on the floodplain would be expected from activities associated with Project NI2. Short-term adverse effects would occur from removal of vegetation, ground disturbance for construction of new culverts, and grading ditches. This would result in an increase in turbidity in Leon Creek. Ground disturbance and an increase in impervious surfaces as a result of Project NI2 would be 0.09 acres. Because the project footprint has less than 1 acre of ground disturbance the project would not require coverage under TXR1500000 General Stormwater Permit. The project would use BMPs to avoid and minimize pollution in storm water runoff. Additionally, spill prevention practices, consistent with the JBSA-Lackland SPCC plan (LAFB 2006b), would be implemented during all activities associated with the Proposed Action to avoid and minimize potential adverse effects on groundwater and surface water.

No wetlands are present within the project area for Project NI2; therefore no direct or indirect adverse effects on wetlands would be expected as a result of Project NI2. However, Leon Creek was designated as a water of the United States and the project would require coverage under an individual or nationwide Section 404 permit for the discharge of dredged or fill material into Leon Creek. Correspondence with regulatory and resource agencies prior to commencing any ground-breaking construction activities would be completed and individual or nationwide Section 404 permits would be obtained, as necessary.

Construction of Project NI2 would occur within 0.4 acres of the 100-year floodplain; therefore, this project would require a FONPA and approval from AETC. The disturbed areas associated with Project NI2 would impact approximately 0.3 acres in the 100-year floodplain associated with Leon Creek. Short-term effects would occur from the removal of vegetation and grading, and excavation of soil for Project NI2. During significant rain events, flooding primarily occurs due to water backing up behind the existing culverts. By repairing eroded areas with erosion-control matting or surface hardening, and replacing the existing undersized culvert with a bridge over Leon Creek, the potential for flooding in the area would be decreased. As a result, there would be a long-term beneficial effect on the floodplain due to a reduction in the impacts of flooding. In addition, this project would require the acquisition of a CLOMR and possibly a LOMR from FEMA. The CLOMR and potential LOMR would be required because the current DFIRM panels show this culvert constricts water flow within this reach of Leon Creek causing a backwater effect. The revised floodplain would need to be approved by FEMA. As necessary, coordination with a local floodplain administrator would also need to take place. No significant impacts on water resources would occur from Project NI2.

Biological Resources. Short- and long-term, direct, negligible to minor, adverse and long-term beneficial effects on vegetation would be expected from activities associated with Project NI2 (see **Figure 2-25**). This project would result in the temporary loss of approximately 0.4 acres of vegetation. Affected vegetation would consist primarily of grassy areas and some forested areas containing small to mid-sized trees such as sugarberry, and basswood (LAFB 2007). The removal and installation of erosion control measures, and removal and replacement of the bridge over Leon Creek, would permanently alter the banks of the creek. All ground disturbed during construction activities that does not include site improvements, would be reseeded with appropriate species and groundcover in accordance with the INRMP. Once construction is complete, there would be a long-term beneficial impact due to a restoration of the natural flow of the creek. There would be an expected increase in the presence of riparian and aquatic vegetation and species (Bouska and Paukert 2009, Roni et al 2002) due to an increase in open space beneath the new bridge and improvement of downstream hydrology.

Short- and long-term, direct, negligible to minor, adverse effects on wildlife would be expected from activities associated with Project NI2. Disturbance would cause wildlife to engage in escape or avoidance behaviors. Most wildlife species would be expected to recover quickly. The removal and installation of erosion control measures, and removal and replacement of the bridge over Leon Creek with a new bridge would permanently alter the banks of the river and the surrounding habitat by approximately 0.4 acre. Any habitat removed during Project NI2 activities would be would be reseeded with appropriate species and groundcover for the area following completion of demolition and construction activities in accordance with the INRMP. The creek supports numerous species of aquatic life including sunfish (*Lepomis* sp.), channel catfish (*Ictalurus punctatus*), blue catfish (*Ictalurus furcatus*), yellow bullhead (*Ameiurus natalis*), black bullhead (*Ameiurus melas*), flathead catfish (*Pylodictis olivaris*), largemouth bass (*Micropterus salmoides*), and other species (LAFB 2007). There would likely be some restrictions to movement during construction, but the fish species found in the creek do not make large-scale migrations. As a result, the long-term impacts are expected to be negligible to minor because free movement of aquatic species up- and down-stream would not be restricted. Once construction is complete, there would be a long-term, beneficial impacts on the downstream habitats, because the new bridge would improve hydrology.

Riparian habitat in Leon Creek could be suitable for white-faced ibis, Cagle's map turtle, the Texas indigo snake, and the timber rattlesnake (LAFB 2007). All of Project NI2 would occur in riparian and adjacent habitat. However, upon completion of Project NI2, impacted areas would be restored to conditions that were in place before Project NI2 began, and the replacement bridge would improve habitat in the area. As such, no adverse effects are expected on threatened or endangered species on the installation from Project NI2.

Short-term, indirect, negligible to minor, adverse effects on migratory bird species could occur as a result of noise and physical disturbance. If these activities occur during nesting season, the environmental protection measures under **Section 4.3.6** would help to avoid take under the MBTA.

Cultural Resources. This project will not have significant impacts on cultural resources on Lackland Main Base under NEPA. There is one NRHP-eligible archaeological site on Leon Creek, within the golf course, another identified for further testing, and two sites that have been determined ineligible for the NRHP (LAFB 1996, NPS 1997). However, these identified sites are at a sufficient distance that they can be easily avoided. If any unanticipated discoveries are made during the construction process, SOP #5 of the JBSA-Lackland ICRMP, "Unanticipated Discoveries of Archaeological Deposits," and Section IV of the JBSA PA, "Inadvertent Discoveries and Emergencies" will be followed.

Socioeconomics and Environmental Justice. Short-term, negligible, beneficial effects on socioeconomic resources would be expected from the Warrior Week Road – Leon Creek Bridge. It is assumed that equipment and supplies necessary to complete the proposed activities would be obtained locally, and local contractors would be used. The demand for workers as part of the construction would be minor and would not outstrip the local supply of workers, as there are more than 80,000 construction workers in the San Antonio-New Braunfels MSA. The proposed construction activities would occur entirely on JBSA-Lackland, and it would have little potential to affect on- or off-installation residents adversely. Therefore, no environmental justice issues would be anticipated. No long-term effects on socioeconomic resources are expected to result from the proposed Warrior Week Road – Leon Creek Bridge.

Infrastructure. Short-term, negligible, adverse effects would be expected as a result of debris generated during this infrastructure improvement project. Construction debris is generally composed of clean materials, and most of this waste would be recycled. However, debris not recycled would be landfilled, which would be considered a long-term, irreversible, adverse effect. Long-term, minor, beneficial effects would be expected to occur because this project would install measures to prevent future flooding and erosion issues and improve the installation's storm drainage system.

Hazardous Materials and Waste. Short-term, negligible, adverse effects associated with hazardous materials and waste would be expected from implementation of Project NI2. There would be a short-term increase in the use of hazardous materials and petroleum products and the generation of hazardous and petroleum wastes from removal of culverts and concrete structures and construction of the variety of proposed erosion-control measures. Contractors would be responsible for the management of these materials, which would be handled in accordance with the with JBSA-Lackland hazardous materials management and hazardous waste management plans and Federal, state, local, and USAF regulations. The project area for Project NI2 would overlap the boundaries of ERP site LF-36; however, this ERP site has been closed and no further action has been recommended. Therefore, no impacts from ERP sites would be anticipated. If contamination were discovered during construction, work would be halted immediately and any contaminated materials would be handled, stored, transported, and disposed of in accordance with applicable Federal, state, local, and USAF regulations.

The project area for Project NI2 overlaps MMRP site AL-240. There is the potential for workers to encounter previously unknown UXO, MEC, or related materials during construction. If any UXO, MEC, or related materials were discovered, compliance with the DOD Environment, Safety, and Health UXO Safety Education Program should be maintained prior to and during clearing of the site and proper disposal methods should be followed to ensure maximum safety of clearing personnel. No impacts would be expected from ACMs, LBP, PCBs, pesticides, storage tanks, or radon.

Safety. Short-term, negligible to minor, adverse effects associated with safety could occur during construction and demolition activities related to Project NI2. Construction and demolition activities pose an increased risk of construction-related accidents, but this level of risk would be managed by adhering to established Federal, state, and local safety regulations. Workers would be required to wear PPE such as ear protection, steel-toed boots, hard hats, gloves, and other appropriate safety gear. Construction and demolition areas would be fenced and appropriately marked with signs. Construction and associated trucks transporting material to and from construction sites would be directed to roads and streets that have a lesser volume of traffic. Therefore, no long-term, adverse effects on safety would be expected.

This site is located within ERP site LF-36 which is closed and recommended for "No Further Action," (LAFB 2011a). This site poses a possible minor, adverse impact on safety for workers in the area if there is an inadvertent discovery of previously unknown contaminated material.

The area for Project I6 overlaps MMRP site AL-240. There is the potential for workers to encounter previously unknown UXO, MEC, or related materials during construction. If any UXO, MEC, or related materials were discovered, compliance with the DOD Environment, Safety, and Health UXO Safety Education Program should be maintained prior to and during clearing of the site and proper disposal methods should be followed to ensure maximum safety of clearing personnel.

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5. Cumulative Effects, Best Management Practices, and Adverse Effects

5.1 Cumulative Effects

CEQ regulations stipulate that the cumulative effects analysis in an EA should consider the potential environmental effects resulting from "the incremental impacts of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency or person undertakes such other actions" (40 CFR 1508.7). CEQ guidance in considering cumulative effects affirms this requirement, stating that the first step in assessing cumulative effects involves defining the scope of the other actions and their interrelationship with a proposed action. The scope must consider other projects that coincide with the location and timetable of a proposed action and other actions. Cumulative effects analyses must also evaluate the nature of interactions among these actions (CEQ 1997).

5.1.1 Projects Identified with the Potential for Cumulative Effects

The scope of the cumulative effects analysis involves both timeframe and geographic extent in which effects could be expected to occur, and a description of what resources could be cumulatively affected. For the purposes of this analysis, the temporal span of the Proposed Action is 6 years (i.e., FY 2013 to FY 2018). For most resources, the spatial area for consideration of cumulative effects is JBSA-Lackland, though a larger area is considered for some resources. An effort was undertaken to identify projects at JBSA-Lackland and in the areas surrounding the installation for evaluation in the context of the cumulative effects analysis.

5.1.1.1 Past Actions at JBSA-Lackland

Past activities are those actions that occurred within the geographic scope of cumulative effects that have shaped the current environmental conditions of the project area. Military operations began at JBSA-Lackland in the 1920s when portions of what are now Lackland Main Base and Kelly Field Annex were used as a bombing range. In 1942, the area that would become Lackland Main Base was established and developed for aircrew training (LAFB 2002a). JBSA-Lackland has undergone several major realignments and mission changes over the decades. Medina Base, now referred to as Lackland Training Annex, was used primarily for the storage of munitions. The airfield portion of Kelly AFB, now referred to as Kelly Field Annex, was realigned to Lackland AFB following the 1995 BRAC recommendations. The 2005 BRAC recommendations called for the joint management of Lackland AFB, Randolph AFB, and Fort Sam Houston (including Camp Bullis under Fort Sam Houston) as JBSA. JBSA-Lackland has been intensely developed and redeveloped as mission requirements changed. For many resource areas, such as biological resources and hazardous materials and waste, the effects of past actions are now part of the existing environment and are included in the description of the affected environment.

In 2006, 37th Training Wing, then the host wing of Lackland AFB, prepared the *Environmental Assessment of Installation Development at Lackland Air Force Base Texas* (LAFB 2006). The 2006 IDEA analyzed the environmental effects of implementing the requirements of the 2005 Base Closure and Realignment Committee's Recommendations and other installation development activities based on the Capital Improvements Program to construct, demolish, upgrade, replace, or supplement facilities. The 2006 IDEA also included a development scenario that considered the maximum development acreage available within each land use category, and the maximum sustainable flying mission levels. The IDEA specifically identified 38 projects throughout Lackland Main Base, Lackland Training Annex, and Kelly Field Annex. The projects totaled 3.76 million ft^2 of new facility space and 1.24 million ft^2 of new pavements constructed, 855,000 ft^2 of facility space and 365,000 ft^2 of pavements demolished, and 497,000 ft^2 facility space vacated. The timeline for the 2006 IDEA was 2006 through 2011, so most of these projects have already been implemented and are part of the existing conditions.

5.1.1.2 Present and Reasonably Foreseeable Future Actions at JBSA-Lackland

Construction, demolition, and infrastructure upgrades are a continuously occurring activity at JBSA-Lackland. There are several ongoing and reasonably foreseeable future projects, which are summarized in the following text. It is anticipated that construction and implementation of these projects could occur concurrently with the Proposed Action.

Other Installation Development Activities

Many installation development projects are planned and reasonably foreseeable at JBSA-Lackland. In addition to the Proposed Action, **Appendix A** includes a compilation of all other demolition (see **Table A-1**), construction (see **Table A-2**), and infrastructure improvement (see **Table A-3**) projects that could be completed during the lifespan of this IDEA, as funding becomes available. These projects are reasonably foreseeable; thus, they are included in this cumulative effects analysis. **Table 5-1** summarizes the areas of disturbance and changes in impervious surfaces from the Proposed Action and all other present and reasonably foreseeable future installation development activities that have been identified to date.

Table 5-1. Project Areas and Changes in Impervious Surfaces for all Present and Reasonably Foreseeable Installation Development Actions (including the Proposed Action)

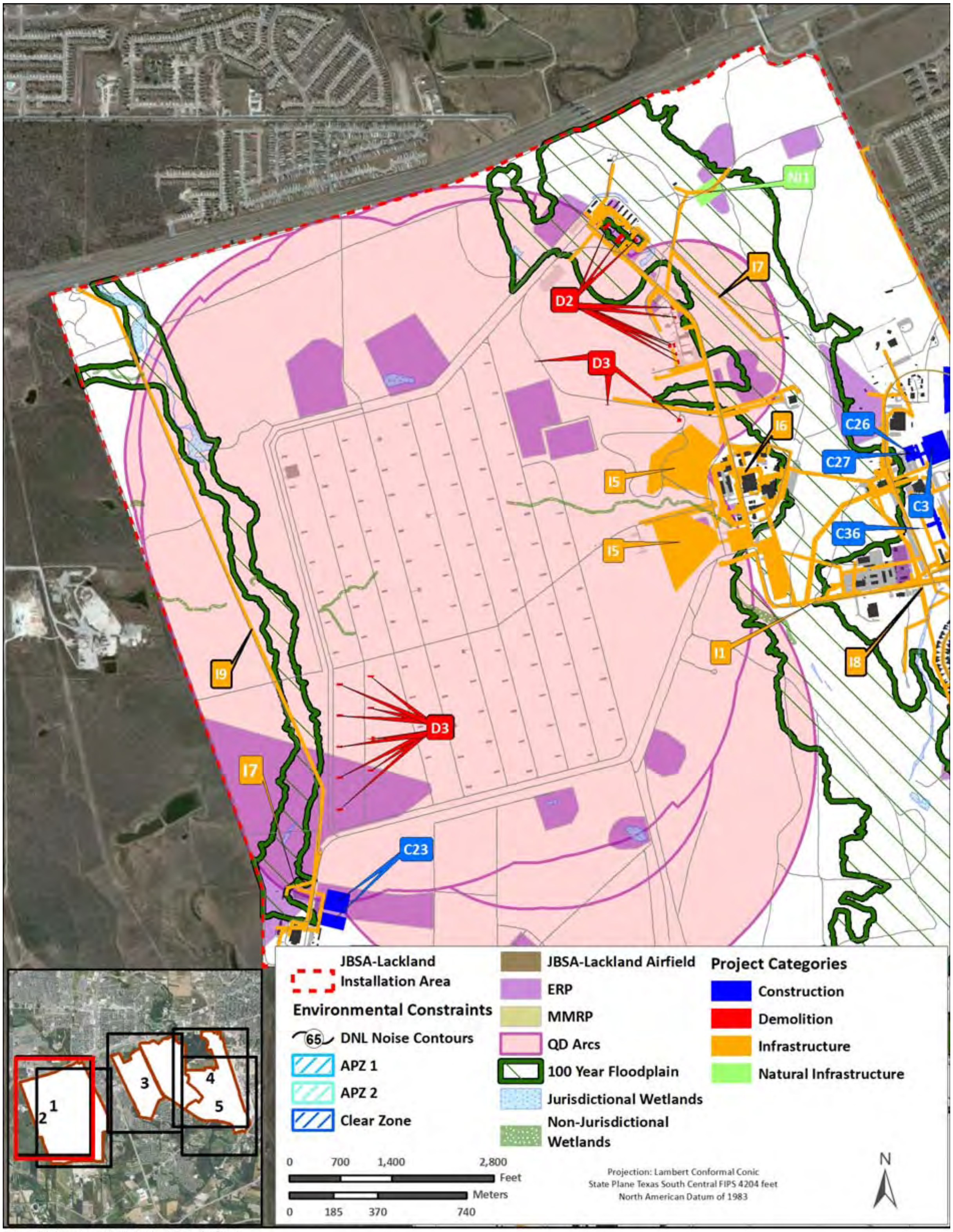
Project Type	Total Project Area (ft^2)	Change in Impervious Surfaces (ft^2)
Proposed Action [1]	36,186,785	+22,871,929
All Other Demolition Projects [2]	616,732	-616,732
All Other Construction Projects [2]	1,233,876	+1,143,465
All Other Infrastructure Improvement Projects [2]	687,928	+679,530
Total of All Projects	**38,725,321**	**+24,078,192**

Notes: Changes in impervious surfaces are not necessarily equivalent to the project area square footage because some facilities proposed for demolition are multiple stories, and many new facilities would be multiple stories. Furthermore, some projects would disturb area but not add impervious surfaces.

1. See **Table 2-8**. No other natural infrastructure or strategic sustainability performance projects are planned, other than those analyzed as part of the Proposed Action.

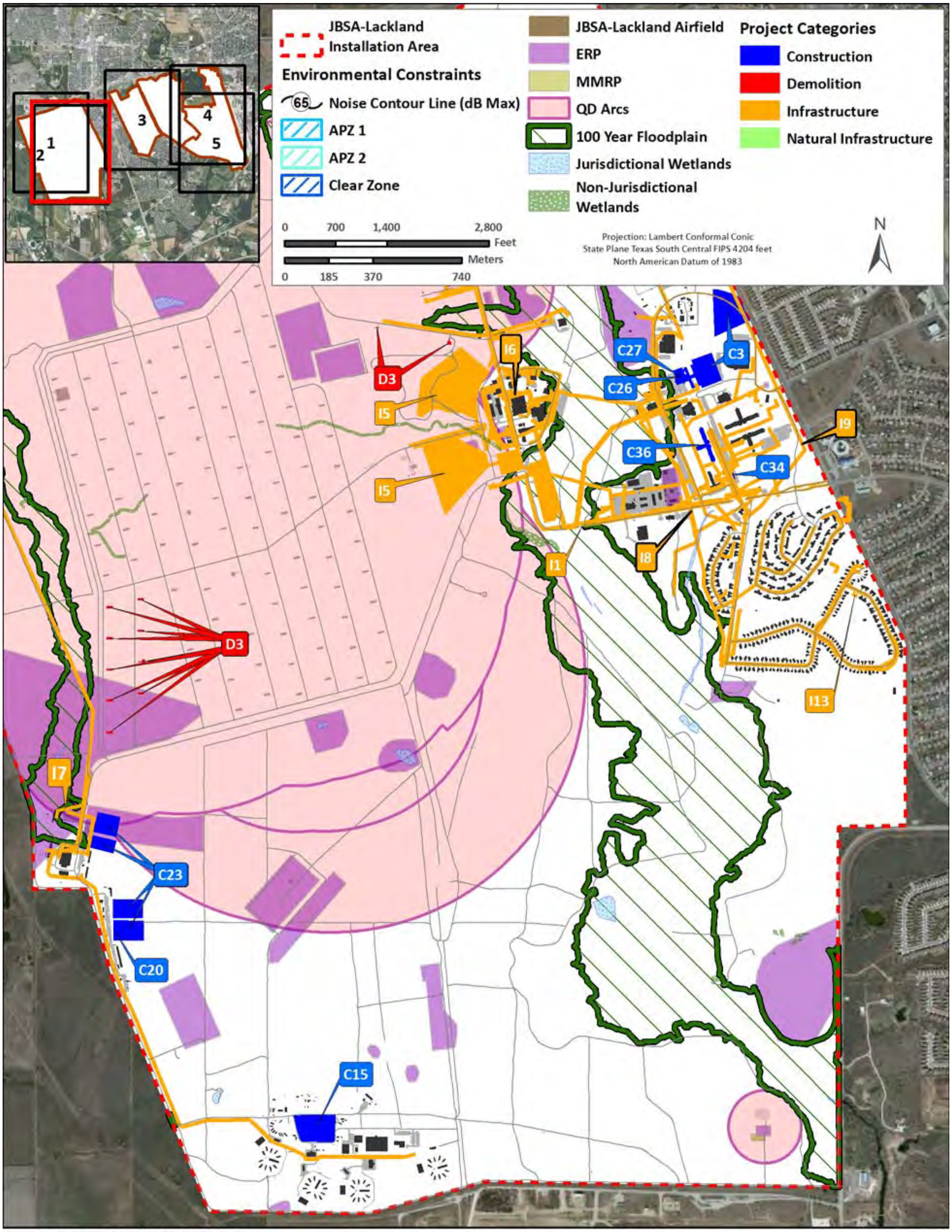
2. Calculated from Tables A-1, A-2, and A-3 in **Appendix A**.

Figures 5-1 through **5-5** show the proposed project locations as currently planned. Some of these projects are in the early planning stages, so the final siting has not been completed for all projects. **Table 5-2** summarizes in tabular form the potential environmental consequences associated with the installation development projects that are identified in **Appendix A**, but not analyzed as a selected project in **Section 4** of this IDEA as a part of the Proposed Action.



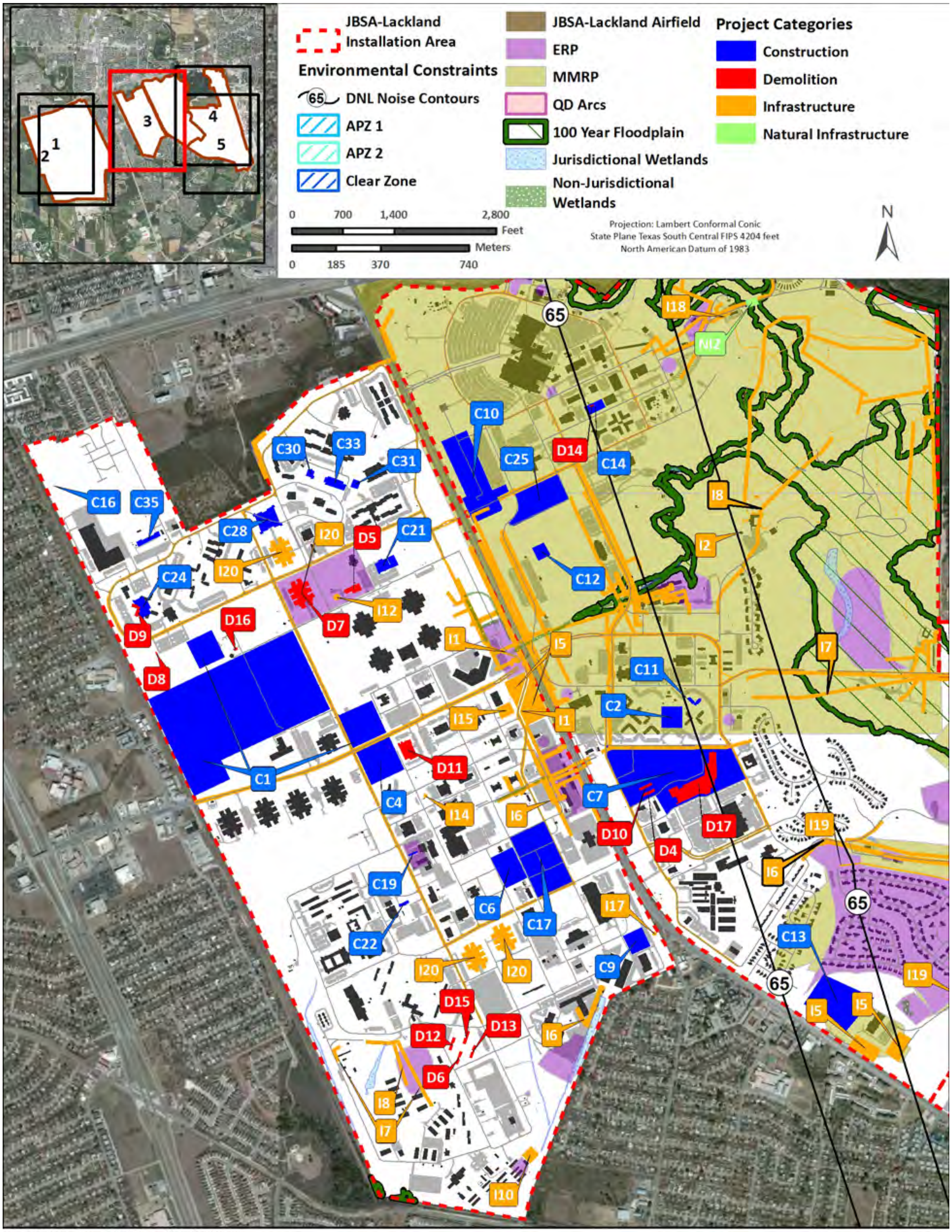
1

2 **Figure 5-1. Possible Locations and Environmental Constraints Associated with Other Installation**
3 **Development Projects**



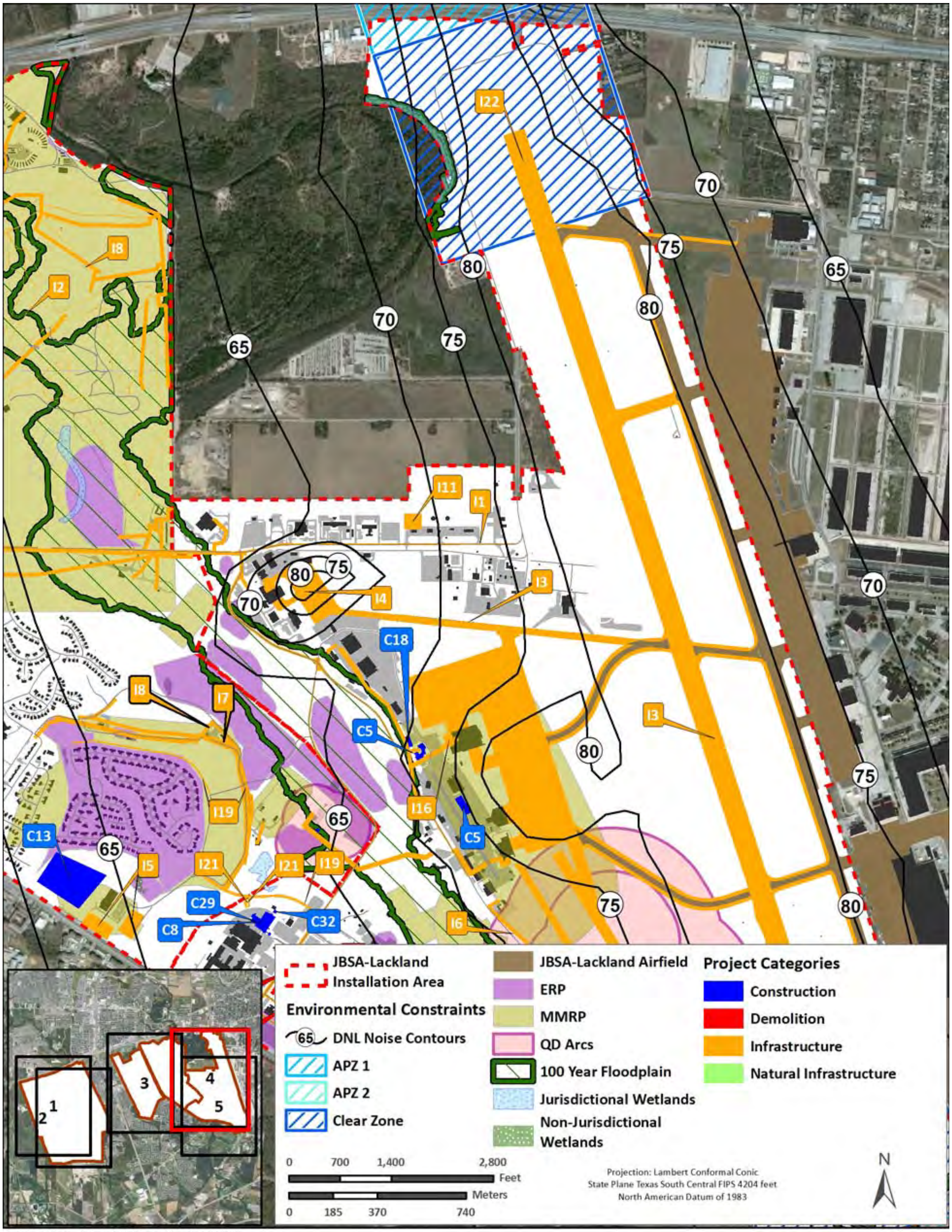
Source: ESRI StreetMap USA 2007, Bing Maps Hybrid 2010

Figure 5-2. Possible Locations and Environmental Constraints Associated with Other Installation Development Projects



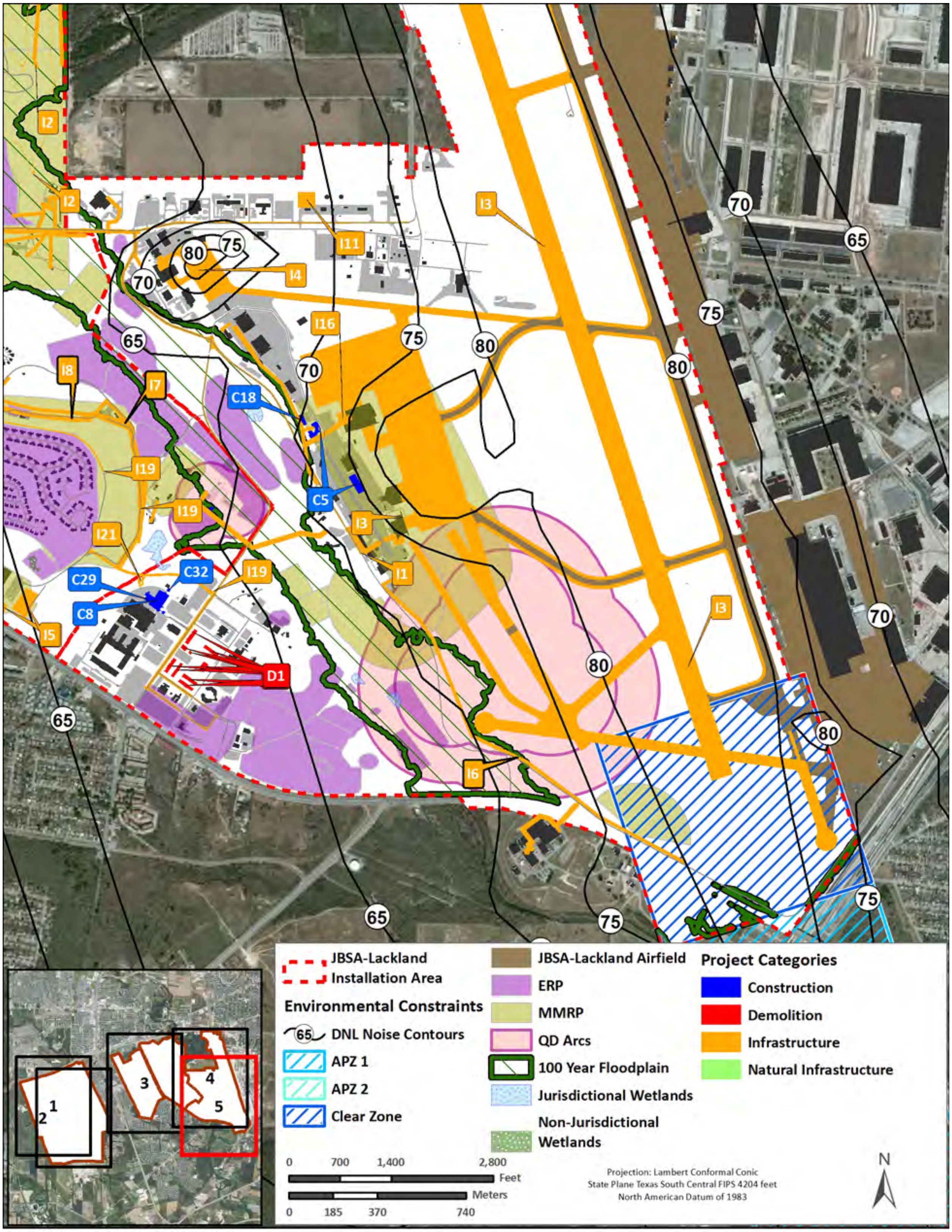
Source: ESRI StreetMap USA 2007, Bing Maps Hybrid 2010

Figure 5-3. Possible Locations and Environmental Constraints Associated with Other Installation Development Projects



Source: ESRI StreetMap USA 2007, Bing Maps Hybrid 2010

Figure 5-4. Possible Locations and Environmental Constraints Associated with Other Installation Development Projects



Source: ESRI StreetMap USA 2007, Bing Maps Hybrid 2010

Figure 5-5. Possible Locations and Environmental Constraints Associated with Other Installation Development Projects

1 **Table 5-2. Potential Environmental Consequences Associated with Constraints to Development**
2 **from All Other Proposed Projects Listed in Appendix A**

Project Identification Number and Title	Noise	Land Use	Air Quality	Geological Resources	Water Resources	Biological Resources	Cultural Resources	Socioeconomics and Environmental Justice	Transportation and Infrastructure	Hazardous Materials and Wastes	Safety
Other Demolition Projects											
D4. Demolish Building 1251, Exchange Administration	♦ CD	+	♦	-	-	-	-	+	♦ CD	♦ LBP	-
D5. Demolish Building 6576, Recreation Center	♦ CD	+	♦	-	-	♦ CD + IS	-	+	♦ CD	♦ LBP - ERP	- ERP
D6. Demolish Building 7368, AETC Technical Training Support	♦ CD	+	♦	-	-	♦ CD + IS	-	+	♦ CD	-	-
D7. Demolish Building 9085, BMT Recruit Dormitory	♦ CD	+	♦	♦ LPA	-	-	-	+	♦ CD	♦ LBP - ERP	- ERP

Legend:
- No effects or negligible effects + Potential minor beneficial effects ♦ Potential minor adverse effects ■ Potential moderate adverse effects

Key:

ACM	Might disturb asbestos-containing material	FP	Near 100-year floodplain	LPA	Large project area	QD	Within QD arcs
CD	Construction- or demolition- related	HAZ	Change in quantity or storage for hazardous materials or wastes	MMRP	In a Military Munitions Response Program Site	Veg	Effects from vegetation removal
CZ	Within Clear Zone	IS	Change in Impervious Surface	NZ	Within 65 dBA or greater noise zone	VS	Within viewshed of an architectural resource
ERP	In an Environmental Restoration Program Site	LBP	Might disturb lead-based paint	PCB	Might disturb PCB-containing equipment	W	Near wetlands

Project Identification Number and Title	Noise	Land Use	Air Quality	Geological Resources	Water Resources	Biological Resources	Cultural Resources	Socioeconomics and Environmental Justice	Transportation and Infrastructure	Hazardous Materials and Wastes	Safety
Other Demolition Projects (continued)											
D8. Demolish Building 10903, Latrine	♦ CD	+	♦	-	-	♦ CD + IS	-	+	♦ CD	-	-
D9. Demolish Building 10806, Technical Training Student Housing	♦ CD	+	♦	-	-	-	-	+	♦ CD	-	-
D10. Demolish Building 1250, Offices	♦ CD	+	♦	-	-	-	-	+	♦ CD	♦ LBP	-
D11. Demolish Building 6612, Clinic	♦ CD	+	♦	♦ LPA	-	♦ CD + IS	-	+	♦ CD	-	-
D12. Demolish Building 7364, Technical Training Shop	♦ CD	+	♦	-	-	♦ CD + IS	-	+	♦ CD	-	-
D13. Demolish Building 7366, Technical Training Shop	♦ CD	+	♦	-	-	♦ CD + IS	-	+	♦ CD	-	-

Legend:
- No effects or negligible effects + Potential minor beneficial effects ♦ Potential minor adverse effects ■ Potential moderate adverse effects

Key:

ACM	Might disturb asbestos-containing material	FP	Near 100-year floodplain	LPA	Large project area	QD	Within QD arcs
CD	Construction- or demolition- related	HAZ	Change in quantity or storage for hazardous materials or wastes	MMRP	In a Military Munitions Response Program Site	Veg	Effects from vegetation removal
CZ	Within Clear Zone	IS	Change in Impervious Surface	NZ	Within 65 dBA or greater noise zone	VS	Within viewshed of an architectural resource
ERP	In an Environmental Restoration Program Site	LBP	Might disturb lead-based paint	PCB	Might disturb PCB-containing equipment	W	Near wetlands

Project Identification Number and Title	Noise	Land Use	Air Quality	Geological Resources	Water Resources	Biological Resources	Cultural Resources	Socioeconomics and Environmental Justice	Transportation and Infrastructure	Hazardous Materials and Wastes	Safety
Other Demolition Projects (continued)											
D14. Demolish Building 3662, Animal Clinic	- NZ	+	♦	-	-	-	-	+	♦ CD	♦ MMRP	♦ MMRP
D15. Demolish Building 7362, TV Production Facility	♦ CD	+	♦	-	-	♦ CD + IS	-	+	♦ CD	-	-
D16. Demolish Building 9278, Base Engineering Storage Shed	♦ CD	+	♦	-	-	♦ CD + IS	-	+	♦ CD	- ERP	- ERP
D17. Demolish Building 1385, Base Exchange	- NZ	+	♦	♦ LPA	-	-	-	+	♦ CD	♦ LBP	-
Other Construction Projects											
C8. Construct Addition to Centralized Cryptologic Maintenance Facility (Building 2058)	♦ NZ	-	♦	-	♦ W FP	-	-	+	-	♦ LBP	-

Legend:
- No effects or negligible effects + Potential minor beneficial effects ♦ Potential minor adverse effects ■ Potential moderate adverse effects

Key:

ACM	Might disturb asbestos-containing material	FP	Near 100-year floodplain	LPA	Large project area	QD	Within QD arcs
CD	Construction- or demolition- related	HAZ	Change in quantity or storage for hazardous materials or wastes	MMRP	In a Military Munitions Response Program Site	Veg	Effects from vegetation removal
CZ	Within Clear Zone	IS	Change in Impervious Surface	NZ	Within 65 dBA or greater noise zone	VS	Within viewshed of an architectural resource
ERP	In an Environmental Restoration Program Site	LBP	Might disturb lead-based paint	PCB	Might disturb PCB-containing equipment	W	Near wetlands

Project Identification Number and Title	Noise	Land Use	Air Quality	Geological Resources	Water Resources	Biological Resources	Cultural Resources	Socioeconomics and Environmental Justice	Transportation and Infrastructure	Hazardous Materials and Wastes	Safety
Other Construction Projects (continued)											
C9. Construct Telephone Maintenance Facility	♦ CD	+	♦	-	-	-	-	+	+	-	-
C10. Renovate Luke Gate	♦ CD	-	♦	♦ LPA	-	-	-	+	+	- ERP ♦ MMRP	- ERP ♦ MMRP
C11. Renovation of Building 1400, Technical Training Student Housing	♦ NZ	-	♦	-	-	-	-	+	-	♦ LBP MMRP	♦ MMRP
C12. Parade Field Concrete Pad	♦ CD	+	♦	-	-	-	-	+	-	♦ MMRP	♦ MMRP
C13. Construct Consolidated Air Force Information Operations Center	♦ NZ	+	♦	♦ LPA	♦ W	♦ Veg	-	+	-	- ERP ♦ MMRP	- ERP ♦ MMRP

Legend:
- No effects or negligible effects + Potential minor beneficial effects ♦ Potential minor adverse effects ■ Potential moderate adverse effects

Key:

ACM	Might disturb asbestos-containing material	FP	Near 100-year floodplain	LPA	Large project area	QD	Within QD arcs
CD	Construction- or demolition- related	HAZ	Change in quantity or storage for hazardous materials or wastes	MMRP	In a Military Munitions Response Program Site	Veg	Effects from vegetation removal
CZ	Within Clear Zone	IS	Change in Impervious Surface	NZ	Within 65 dBA or greater noise zone	VS	Within viewshed of an architectural resource
ERP	In an Environmental Restoration Program Site	LBP	Might disturb lead-based paint	PCB	Might disturb PCB-containing equipment	W	Near wetlands

Project Identification Number and Title	Noise	Land Use	Air Quality	Geological Resources	Water Resources	Biological Resources	Cultural Resources	Socioeconomics and Environmental Justice	Transportation and Infrastructure	Hazardous Materials and Wastes	Safety
Other Construction Projects (continued)											
C14. Construct U.S. Air Force Reserve Medical Training Complex	♦ NZ	+	♦	-	-	-	-	+	-	♦ HAZ MMRP	♦ MMRP
C15. Construct Mask Confidence Training Facility and Administrative/ Classroom Facility	♦ CD	+	♦	-	-	-	-	+	-	-	-
C16. Evasion Laboratory Bathroom and Shower Facility	♦ CD	-	♦	-	-	-	-	+	-	-	-
C17. Construct Child Development Center	♦ CD	+	♦	-	-	♦ Veg	♦ VS	+	-	-	-
C18. Construct Building Addition to Building 830	♦ NZ	+	♦	-	♦ W FP	-	-	+	-	♦ MMRP	♦ MMRP

Legend:
- No effects or negligible effects + Potential minor beneficial effects ♦ Potential minor adverse effects ■ Potential moderate adverse effects

Key:

ACM	Might disturb asbestos-containing material	FP	Near 100-year floodplain	LPA	Large project area	QD	Within QD arcs
CD	Construction- or demolition- related	HAZ	Change in quantity or storage for hazardous materials or wastes	MMRP	In a Military Munitions Response Program Site	Veg	Effects from vegetation removal
CZ	Within Clear Zone	IS	Change in Impervious Surface	NZ	Within 65 dBA or greater noise zone	VS	Within viewshed of an architectural resource
ERP	In an Environmental Restoration Program Site	LBP	Might disturb lead-based paint	PCB	Might disturb PCB-containing equipment	W	Near wetlands

Project Identification Number and Title	Noise	Land Use	Air Quality	Geological Resources	Water Resources	Biological Resources	Cultural Resources	Socioeconomics and Environmental Justice	Transportation and Infrastructure	Hazardous Materials and Wastes	Safety
Other Construction Projects (continued)											
C19. Construct Addition to Building 7241, Car Wash	♦ CD	-	♦	-	-	-	-	+	-	- ERP	- ERP
C20. Construct Addition to Facilities 956, 957, and 958, Small Arms Ranges	♦ CD	+	♦	-	-	-	-	+	-	-	-
C21. Construct an addition to the Bowling Alley	♦ CD	-	♦	-	-	-	-	+	-	-	-
C22. Construct cover for Building 7342, Chaparral Pool	♦ CD	+	♦	-	-	-	-	+	-	-	-
C23. Construct Combat Arms Training Range	♦ CD	-	♦	♦ LPA	♦ FP	♦ Veg	-	+	-	♦ ERP	♦ ERP QD

Legend:
- No effects or negligible effects + Potential minor beneficial effects ♦ Potential minor adverse effects ■ Potential moderate adverse effects

Key:

ACM	Might disturb asbestos-containing material	FP	Near 100-year floodplain	LPA	Large project area	QD	Within QD arcs
CD	Construction- or demolition- related	HAZ	Change in quantity or storage for hazardous materials or wastes	MMRP	In a Military Munitions Response Program Site	Veg	Effects from vegetation removal
CZ	Within Clear Zone	IS	Change in Impervious Surface	NZ	Within 65 dBA or greater noise zone	VS	Within viewshed of an architectural resource
ERP	In an Environmental Restoration Program Site	LBP	Might disturb lead-based paint	PCB	Might disturb PCB-containing equipment	W	Near wetlands

Project Identification Number and Title	Noise	Land Use	Air Quality	Geological Resources	Water Resources	Biological Resources	Cultural Resources	Socioeconomics and Environmental Justice	Transportation and Infrastructure	Hazardous Materials and Wastes	Safety
Other Construction Projects (continued)											
C24. Construct 37th Training Group Headquarters/ Classroom Facility	♦ CD	+	♦	-	-	♦ IS	-	+	-	-	-
C25. Construct Heritage Museum	♦ CD	+	♦	-	-	♦ Veg	-	+	-	♦ MMRP	♦ MMRP
C26. Construct 342d Training Squadron Administrative/ Classroom Facility	♦ CD	+	♦	♦ LPA	♦ W FP	♦ Veg	-	+	-	-	-
C27. Construct the 342d Training Squadron Warehouse/ Parachute Packing Facility	♦ CD	+	♦	-	♦ W FP	♦ Veg	-	+	-	-	-
C28. Construct the 37th Training Wing Joint Services Training Facility	♦ CD	+	♦	-	-	♦ Veg	-	+	-	-	-

Legend:
- No effects or negligible effects + Potential minor beneficial effects ♦ Potential minor adverse effects ■ Potential moderate adverse effects

Key:

ACM	Might disturb asbestos-containing material	FP	Near 100-year floodplain	LPA	Large project area	QD	Within QD arcs
CD	Construction- or demolition- related	HAZ	Change in quantity or storage for hazardous materials or wastes	MMRP	In a Military Munitions Response Program Site	Veg	Effects from vegetation removal
CZ	Within Clear Zone	IS	Change in Impervious Surface	NZ	Within 65 dBA or greater noise zone	VS	Within viewshed of an architectural resource
ERP	In an Environmental Restoration Program Site	LBP	Might disturb lead-based paint	PCB	Might disturb PCB-containing equipment	W	Near wetlands

Project Identification Number and Title	Noise	Land Use	Air Quality	Geological Resources	Water Resources	Biological Resources	Cultural Resources	Socioeconomics and Environmental Justice	Transportation and Infrastructure	Hazardous Materials and Wastes	Safety
Other Construction Projects (continued)											
C29. Construct addition to Building 2058, Centralized Maintenance Facility	♦ NZ	-	♦	-	♦ W FP	-	-	+	+	♦ LBP	-
C30. Construct 343d Training Squadron Vehicle Operator Simulator Facility	♦ CD	+	♦	-	-	- Veg	-	+	-	-	-
C31. 343d Training Squadron Virtual Use of Force Laboratory and Firearms Training Simulator Facility	♦ CD	-	♦	-	-	- Veg	-	+	-	-	-
C32. Cryptologic Systems Division Vehicle Forklift Accessibility Ramp	♦ NZ	-	♦	-	♦ W FP	-	-	+	-	-	-

Legend:
- No effects or negligible effects + Potential minor beneficial effects ♦ Potential minor adverse effects ■ Potential moderate adverse effects

Key:

ACM	Might disturb asbestos-containing material	FP	Near 100-year floodplain	LPA	Large project area	QD	Within QD arcs
CD	Construction- or demolition- related	HAZ	Change in quantity or storage for hazardous materials or wastes	MMRP	In a Military Munitions Response Program Site	Veg	Effects from vegetation removal
CZ	Within Clear Zone	IS	Change in Impervious Surface	NZ	Within 65 dBA or greater noise zone	VS	Within viewshed of an architectural resource
ERP	In an Environmental Restoration Program Site	LBP	Might disturb lead-based paint	PCB	Might disturb PCB-containing equipment	W	Near wetlands

Project Identification Number and Title	Noise	Land Use	Air Quality	Geological Resources	Water Resources	Biological Resources	Cultural Resources	Socioeconomics and Environmental Justice	Transportation and Infrastructure	Hazardous Materials and Wastes	Safety
Other Construction Projects (continued)											
C33. 343d Training Squadron Security Forces Academy Facility	♦ CD	+	♦	-	-	- Veg	-	+	-	-	-
C34. 344d Training Squadron High-Bay Facility	♦ CD	+	♦	-	-	-	-	+	-	-	-
C35. 344d Training Squadron Vehicle Maintenance Schoolhouse	♦ CD	+	♦	-	-	- Veg	-	+	-	♦ HAZ	-
C36. 300 Room Pipeline Student Dormitory	♦ CD	-	♦	-	♦ FP	♦ Veg	-	+	-	-	-
Other Infrastructure Projects											
I10. Construct Gravel Parking Lot for Military Working Dog Training Area	♦ CD	+	♦	-	♦ W	-	-	+	+	-	-

Legend:
- No effects or negligible effects + Potential minor beneficial effects ♦ Potential minor adverse effects ■ Potential moderate adverse effects

Key:

ACM	Might disturb asbestos-containing material	FP	Near 100-year floodplain	LPA	Large project area	QD	Within QD arcs
CD	Construction- or demolition- related	HAZ	Change in quantity or storage for hazardous materials or wastes	MMRP	In a Military Munitions Response Program Site	Veg	Effects from vegetation removal
CZ	Within Clear Zone	IS	Change in Impervious Surface	NZ	Within 65 dBA or greater noise zone	VS	Within viewshed of an architectural resource
ERP	In an Environmental Restoration Program Site	LBP	Might disturb lead-based paint	PCB	Might disturb PCB-containing equipment	W	Near wetlands

Project Identification Number and Title	Noise	Land Use	Air Quality	Geological Resources	Water Resources	Biological Resources	Cultural Resources	Socioeconomics and Environmental Justice	Transportation and Infrastructure	Hazardous Materials and Wastes	Safety
Other Infrastructure Projects (continued)											
I11 Construct 25,000 gallon diesel storage tank	- NZ	-	♦	-	-	-	-	+	-	♦ HAZ	-
I12. Replace Elevated Water Tank at Building 6676	♦ CD	-	♦	-	-	-	-	+	+	- ERP	- ERP
I13. Replace Elevated Water Tanks at Building 1506	♦ CD	-	♦	-	-	-	-	+	+	-	-
I14. Replace Elevated Water Tanks at Building 5710	♦ CD	-	♦	-	-	-	-	+	+	-	-
I15. Expand Base Library Parking Lot	♦ CD	-	♦	-	-	- Veg	-	+	+	-	-
I16. Construct Building 826 Parking Spaces	- NZ	-	♦	-	-	- Veg	-	+	+	♦ MMRP	♦ MMRP
I17. Replace Elevated Water Tanks at Building 5084	♦	-	♦	-	-	-	-	+	+	-	-

Legend:
- No effects or negligible effects + Potential minor beneficial effects ♦ Potential minor adverse effects ■ Potential moderate adverse effects

Key:

ACM	Might disturb asbestos-containing material	FP	Near 100-year floodplain	LPA	Large project area	QD	Within QD arcs
CD	Construction- or demolition- related	HAZ	Change in quantity or storage for hazardous materials or wastes	MMRP	In a Military Munitions Response Program Site	Veg	Effects from vegetation removal
CZ	Within Clear Zone	IS	Change in Impervious Surface	NZ	Within 65 dBA or greater noise zone	VS	Within viewshed of an architectural resource
ERP	In an Environmental Restoration Program Site	LBP	Might disturb lead-based paint	PCB	Might disturb PCB-containing equipment	W	Near wetlands

Project Identification Number and Title	**Noise**	**Land Use**	**Air Quality**	**Geological Resources**	**Water Resources**	**Biological Resources**	**Cultural Resources**	**Socioeconomics and Environmental Justice**	**Transportation and Infrastructure**	**Hazardous Materials and Wastes**	**Safety**
Other Infrastructure Projects (continued)											
I18. Construct Warrior Week Gate Parking Lot	♦ NZ	+	♦	-	-	-	-	+	+	♦ MMRP	♦ MMRP
I19. Construct Connector Road from Hall Street to Range Road	- NZ	+	♦	♦ LPA	♦ W FP	♦ Veg	-	+	+	- ERP MMRP	- ERP MMRP
I20. Construct Mini-wall at Buildings 9085, 10416, 5570, and 7065	♦	-	♦	-	-	-	-	+	-	- ERP	- ERP
I21. Construct Security Hill Truck Turn-around Point	- NZ	+	♦	-	♦ W FP	♦ Veg	-	+	-	-	-
I22. Runway 15/33 Extension	- NZ	- CZ	♦	♦ LPA	♦ W FP	♦ Veg	-	+	+	-	- CZ

Legend:

- No effects or negligible effects + Potential minor beneficial effects ♦ Potential minor adverse effects ■ Potential moderate adverse effects

Key:

ACM	Might disturb asbestos-containing material	FP	Near 100-year floodplain	LPA	Large project area	QD	Within QD arcs
CD	Construction- or demolition- related	HAZ	Change in quantity or storage for hazardous materials or wastes	MMRP	In a Military Munitions Response Program Site	Veg	Effects from vegetation removal
CZ	Within Clear Zone	IS	Change in Impervious Surface	NZ	Within 65 dBA or greater noise zone	VS	Within viewshed of an architectural resource
ERP	In an Environmental Restoration Program Site	LBP	Might disturb lead-based paint	PCB	Might disturb PCB-containing equipment	W	Near wetlands

All demolition and construction activities generally would be expected to result in some increased noise, increased air emissions, potential for erosion and transport of sediment into surface water bodies, generation of small amounts of hazardous materials and wastes, and generation of construction and demolition waste. All demolition and construction activities generally would be expected to result in short-term job creation and materials procurement. These types of short-term, construction-related effects would occur regardless of project location and are not constraints to development. In the absence of unique constraints, the potential for environmental effects of a demolition or construction project smaller in scope than those analyzed as selected projects in this IDEA would be expected to result in less than significant environmental effects.

Ambulatory Care Center

In 2010, the USAF prepared the *Final Environmental Assessment Addressing the Proposed Construction of an Ambulatory Care Center*, *Lackland Air Force Base*, *Texas* (LAFB 2010d). Under this project, an Ambulatory Care Center (ACC) complex and associated infrastructure will be constructed at the San Antonio Military Medical Center South Campus, which will ultimately replace the Wilford Hall Medical Center complex. No new civilian or military personnel are planned once the Wilford Hall Medical Center has been vacated, but the new ACC will be capable of providing medical services to 57,000 patients annually, an increase of 2,000 patients. The existing Wilford Hall Medical Center and associated buildings and infrastructure will be demolished to accommodate the ACC. **Table 5-3** summarizes the construction, demolition, and infrastructure associated with the new ACC.

Table 5-3. ACC Project Construction and Demolition Summary

Project Element	Building Size (ft^2)	Footprint (ft^2)
Construct ACC Complex (4 buildings and ambulance shelter)	+646,500	+192,200
Construct parking garage	+344,000	+108,000
Construct Central Energy Plant	+11,260	+11,260
Construct surface lots, pads, sidewalks	--	+1,300,000
Demolish Buildings 4550, 4895, 4552, 4604, 3460, 3350, 3450, 4600, and 4602	–1,546,891	–555,079
Demolish surface lots, pads, sidewalks	--	–955,026
	Total	**+101,355**

Source: LAFB 2010d

Defense Language Institute English Language Center and Inter-American Air Forces Academy Area Development Plan

In 2012, the USAF prepared the *Final Environmental Assessment Addressing the Defense Language Institute English Language Center (DLIELC) and Inter-American Air Forces Academy (IAAFA) Area Development Plan (ADP) at Lackland Air Force Base*, *Texas* (LAFB 2012b). Under this project, the USAF would implement the ADP for the DLIELC and IAAFA academic campus, which will include the construction of new facilities and infrastructure, facility demolition, the installation of temporary modular trailers, and an increase in student and administrative populations. The new facilities and academic campus footprint will be of sufficient size and capacity to accommodate approximately 4,600 students and 1,675 administrative staff, an increase in 3,705 students and 1,096 staff upon full implementation.

Construction and demolition will occur in phases over the next 20 years until 2031. Temporary facilities will be installed immediately and removed upon completion of the facilities that will permanently accommodate the additional students and staff. ADP projects that are anticipated to be implemented during the timeframe of this IDEA (i.e., over the next 6 years) are summarized in **Table 5-4**. Full build-out in 2031 of the ADP is anticipated to require approximately 579,000 ft^2 of new facility construction and 450,750 ft^2 of facility demolition, plus supporting pavements and infrastructure.

As analyzed as part of the ADP, the area of JBSA-Lackland known as Hotel Row, which includes Buildings 9110, 9210, 9310 and 9410, would be demolished. Each 215,824 ft^2 dormitory was constructed in 1969; each has a footprint of 89,600 ft^2. Demolition would include termination of utilities, demolition of supporting infrastructure south of Truemper Street and north of McGuire Street, and restoration of the site to match the surrounding area. Demolition would result in a reduction of impervious surfaces of approximately 515,699 ft^2, including sidewalks, parking, and other infrastructure.

Table 5-4. DLIELC and IAAFA AFP Project Construction and Renovation Summary for Current Projects

Project	Area Renovated (ft^2)	New Construction or New Addition (ft^2)
Temporary Classroom and Administrative Space	--	50,000 (facilities)
DLIELC Logistics Center	--	40,000 (facilities) 178,200 (sidewalks and pavements)
DLIELC Academic Center	30,000 (facilities)	30,000 (sidewalks and pavements)
Visiting Quarters	--	630,000 (three facilities) 157,700 (sidewalks and pavement)
AMIGO Inn Expansion	--	17,360 (facility addition)
Dining Hall	--	49,700 (facility)
International Student Ministries Facility	39,800 facilities)	--
Airman’s Gate	--	35,000 (facilities and barriers) 242,500 (pavement)
Maintenance Facilities/Storage Yard	37,500	--
Two Thermal Energy Storage System Facilities	(not provided)	(not provided)

Source: LAFB 2012b

Military Working Dog Campus Revitalization

The 341st Training Squadron proposes to revitalize and upgrade the Military Working Dog (MWD) Campus at JBSA-Lackland. The MWD training environment consists of 90 training areas and laboratories, encompassing 400 acres, 1,000 kennel runs, and an average population of about 800 dogs located at Lackland Main Base and Lackland Training Annex. This action would consist of 13 individual projects on Lackland Main Base and Lackland Training Annex. Nine projects would be on Lackland Main Base, including construction of a grooming station, a vehicle wash rack, three training labs, new latrines near Building 7650, a new headquarters building (26,200 ft^2), one training lab north of the proposed headquarters building, a physical therapy center adjacent to the MWD hospital, a drug vehicle training lot, an indoor recovery kennel, and a parking lot (81,000 ft^2); demolition of Buildings 7561, 7562, 7563, 7481, 7485, 7570, 7475, 7594, and 7700 would also be required. Four projects would be on Lackland Training Annex, including the relocation of eight kennels, a handlers course, two search labs, a vet clinic, a kitchen, an indoor kennel, a lab, a cement pad, three obstacle courses, four exercise pens, and four shade structures; demolition of Buildings 435, 436, 437, 450, 452, 454, 456, 458, 462, 464, 466, 468, 470, 471, and 472, which are all within the 100-year floodplain; use of a mobile grooming station; and construction of an MWD lab. All operations at the Lackland Training Annex would be moved outside of the 100-year floodplain. Infrastructure upgrades would be included with all of these projects, as needed. An EA is being prepared for this project (LAFB 2012c).

Transportation Security Administration Canine Academy

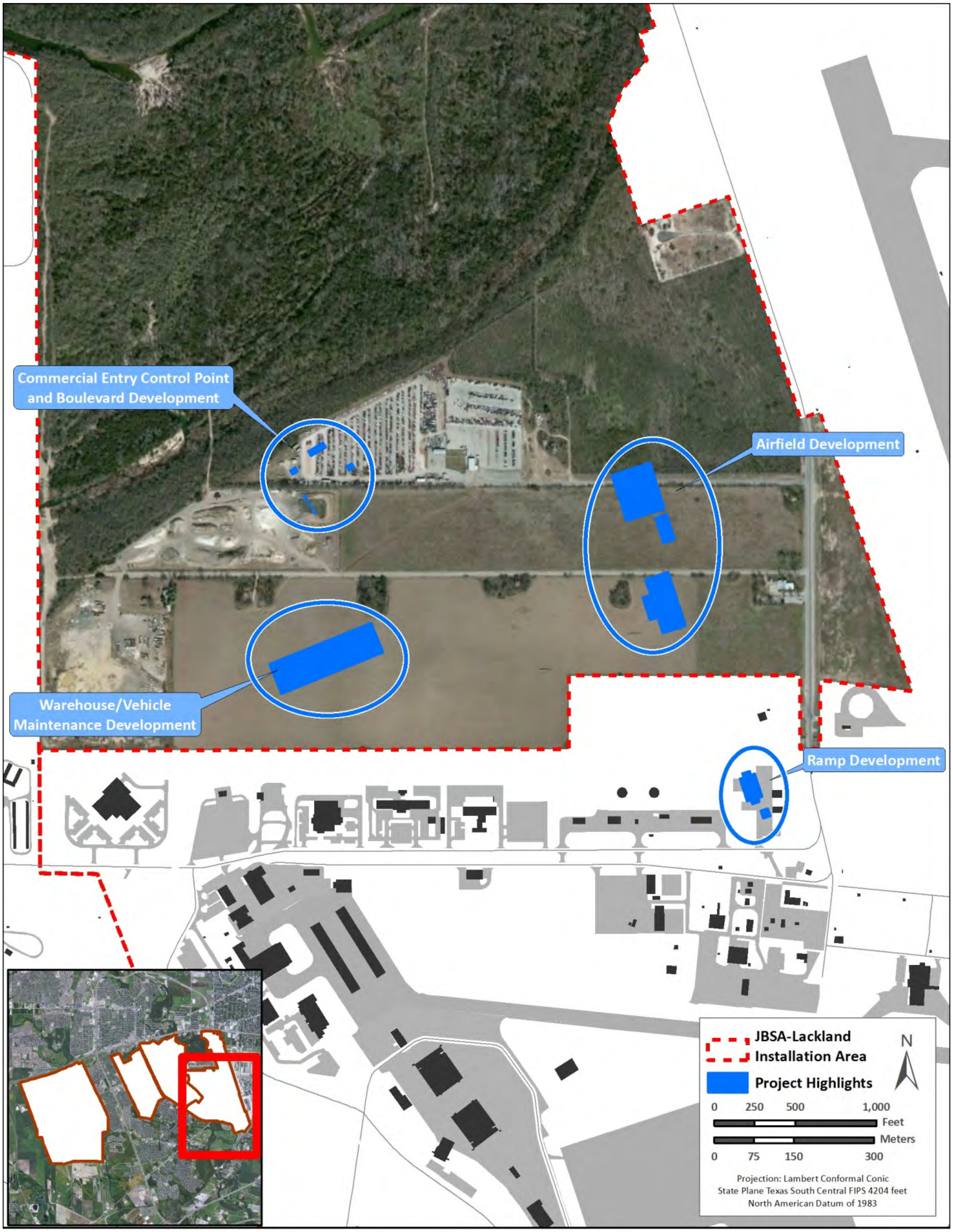
The USAF and Transportation Security Administration (TSA) are proposing to construct a Canine Academy and associated training facilities on the South Campus of JBSA-Lackland, near the MWD campus. The Canine Academy would be constructed (approximately 90,300 ft^2 of impervious surfaces) on the site of the current recreational vehicle storage area on the South Campus. Construction would require moving the recreational vehicles currently stored on site and removing the fencing surrounding the site. Additionally, the USAF and TSA propose to construct a new kennel (2,040 ft^2) at the current location of the 802d Security Forces Squadron kennel (Building 7497) to house TSA dogs. Finally, a new recreational vehicle storage area (approximately 13 acres) would be constructed in the 8600 Area of the JBSA-Lackland. This new storage area would require demolishing Buildings 8850, 8853, and 8860; and two small out-buildings. The total demolition area would be approximately 6,000 ft^2. Construction would take approximately 12 months. Operation would involve approximately 45 new permanent staff working at the TSA Canine Academy and additional kennel (an increase from 55 to 100 staff). Additionally, the amount of students at the TSA canine training program would increase from 250 to 275 per year. An EA is being prepared for this project.

Northwest Airfield Annex

The USAF has developed a strategic plan to relocate approximately 6,000 USAF and DOD personnel from Port San Antonio to JBSA-Lackland. The plan calls for development of the Northwest Airfield Annex as a new location for key flightline operational activities (see **Figure 5-6**). Within this area, JBSA-Lackland would construct a commercial entry control point; a warehouse/vehicle maintenance development; various airfield development, including a transient hangar facility, a passenger/air freight terminal, an air traffic control tower, fire station, and base operations facility; and development of a ramp and taxiway extension for operational units.

5.1.1.3 Actions Outside JBSA-Lackland

Port San Antonio occupies a large portion of land east of Kelly Field Annex. Occupants include Lockheed Martin, Boeing, General Dynamics, StandardAero, Pratt & Whitney, and the USAF (Port San Antonio 2011). In the mid- to long-term, USAF plans to obtain up to 591 acres of property that would bridge the gap of land between Lackland Main Base and Kelly Field Annex south of Highway 90 (MTTF 2010). These parcels are called the Old Van de Walle Property and the Leon Creek Flood Zone Property. Eventually, the 2.0 million ft^2 of facility space that the USAF occupies at Port San Antonio would be transferred to this area, and the area previously occupied at Port San Antonio would become available for other occupants.

1 

Source: ESRI StreetMap USA 2007, Bing Maps Hybrid 2010

2 **Figure 5-6. Proposed Northwest Airfield Annex Projects**

An EA is being prepared for the acquisition of approximately 232 acres of land located northwest of the existing Growdon Road Commercial Vehicle Inspection Area and Entry Control Point (CVIA/ECP). A new CVIA/ECP would be constructed and operated on 80 acres on the western edge of the acquired property, and the existing Growdon Road CVIA/ECP would be demolished. Demolition would include Building 1213 and associated canopy, Building 1217, and the Vehicle Inspection Canopy for a total of approximately 4,230 ft^2. A new 9,000-foot-long road would be constructed from U.S. Highway 90 at the Callaghan overpass, and the new road would be routed along the eastern edge of the Leon Creek floodplain buffer zone around to the new gate location. A portion of this road would be concurrent with existing Growdon Road. Approximately 249,033 ft^2 of Growdon Road from the existing CVIA/ECP to the location of the new Growdon Road concurrence would be demolished.

The San Antonio area is a growing urban area. San Antonio is the seventh largest city in the nation and one of the fastest growing cities in Texas. Population growth in the San Antonio-New Braunfels MSA is forecasted at approximately 28 percent between 2000 and 2020 (TAMU 2012). The Proposed Action would result in negligible changes in personnel and students. Furthermore, environmental effects of installation development activities associated with the Proposed Action would not be expected to impact areas off the installation. Proposed installation development activities would be negligible in the context of this urban setting. Therefore, potential cumulative effects associated with development activities in the San Antonio area are not considered in detail in this EA.

5.1.2 Cumulative Effects Analysis

A cumulative effects analysis must be conducted within the context of the resource areas. The magnitude and context of the effect on a resource area depends on whether the cumulative effects exceed the capacity of a resource to sustain itself and remain productive (CEQ 1997). The following discusses potential cumulative effects that could occur as a result of implementing the Proposed Action and other past, present, and reasonably foreseeable future actions. No significant adverse, cumulative effects were identified in the cumulative effects analysis.

Noise

Military training and development activities have occurred at JBSA-Lackland since the 1940s. Military aircraft operations, airfield maintenance activities, and automobile traffic are the dominant noise sources. Construction and demolition activities occurring at the same time and in the same vicinity could have short-term, minor, adverse cumulative effects on the noise environment. Most installation development activities would occur at different times and different locations over the next 6 years. Construction activities would result in short-term, localized increased noise levels. Cumulative effects from construction noise would not be significant.

There are several development projects that are proposed within noise zones on JBSA-Lackland, in addition to Projects C5 and C7 (see **Sections 4.4.2.5** and **4.4.2.7**). Projects D14, D17, C8, C11, C13, C14, C29, C32, I18, I19, and I21 are inside the 65 dBA noise contour. Project I11 is in the zone between the 65 to 70 dBA noise contours. Projects C18 and I16 are in the zone between the 70 to 75 dBA noise contours. Project I22 (Runway 15/33 Extension) is inside the 80 dBA noise contours, though aircraft operations and associated noise would be very limited, if at all, during construction activities associated with this project because of safety concerns. There would be no long-term effects from removing structures or pavement or from infrastructure upgrades within the noise contours. Construction and renovation projects within the 65 dBA noise contour would incorporate acoustical design considerations for façade elements and interior design requirements per UFC 3-101-01. Air Force Pamphlet 32-1010, *Land Use Planning*, recommends using the AICUZ guidance in installation planning. According to USAF land use compatibility guidelines, which are outlined in the AICUZ guidance, transient lodging facilities, government services, education and cultural activities, and dining facilities are generally considered compatible land uses within the noise contours that they are proposed, if noise level-reduction measures are incorporated into the design and construction of the facility. However, measures to achieve an overall noise level reduction do not necessarily solve all noise difficulties, such as outdoor noise, and additional evaluation is warranted. Building location, site planning, and the use of barriers can help mitigate outdoor exposure. Cumulatively, projects located within noise zones would not be expected to change the noise environment noticeably; aircraft operations will continue to be the most noticeable contributor to noise levels at JBSA-Lackland.

Land Use

Military training and development activities have occurred at JBSA-Lackland since the 1940s. Land use at JBSA-Lackland is guided by the General Plan to ensure safe, compatible development. Cumulatively, implementation of all installation development projects would be expected to result in long-term, beneficial effects on land use. Demolition projects would remove old, outdated facilities and make land available in previously disturbed areas for new construction. Some projects would require changes in land use designations. Cumulative installation development activities would be compatible with existing and future land uses.

Several planned demolition, construction, infrastructure, and natural infrastructure management projects are sited in areas with safety concerns, including airfield infrastructure, ERP sites and AOCs, QD arcs, and MMRP sites (see **Figures 5-1** through **5-5**). From a land use perspective, development activities that would violate existing USAF plans or policies would be incompatible and adverse. Project I22 would be within the CZ, but this project would not violate obstacle clearance criteria. Any ground-disturbing activities in and around ERP sites or AOCs have the potential to encounter contaminated soil or groundwater (see projects identified in **Table 5-2** and discussion in the *Hazardous Materials and Wastes* cumulative effects subsection). Development activities must comply with applicable land use restrictions. Some proposed construction activities would occur within QD arcs (see projects identified in **Table 5-2** and discussion in the *Safety* cumulative effects subsection); none of these projects conflict with land use planning criteria. Any ground-disturbing activities in and around MMRP sites (see projects identified in **Table 5-2** and discussion in the *Hazardous Materials and Wastes* and *Safety* cumulative effects subsections) must be surveyed for UXO, discarded munitions, or munitions constituents prior to construction. No long-term, adverse, cumulative effects on land use from construction in QD arcs, ERP sites or AOCs, or MMRP sites are expected.

The planned Growdon Road CVIA/ECP project would occur on land that is currently not USAF property. An Environmental Baseline Survey could be required for projects occurring on lands off of JBSA-Lackland.

Air Quality

Historically, air quality in the MSIA AQCR has not been significantly adversely affected from anthropogenic sources. JBSA-Lackland is within an unclassified/attainment area for all criteria pollutants. Individual installation development projects would be expected to have short-term, minor, adverse effects on air quality while demolition and construction activities are occurring. Construction and demolition activities occurring at the same time and in the same vicinity could have short-term, minor to moderate, adverse cumulative effects on air quality. To provide a cumulative air quality analysis, the estimated emissions for implementation of all planned installation development projects are shown in **Table 5-5** and **5-6** on a year by year cumulative basis with regard to operational emissions**.** **Table 5-5** shows all construction activity and operational activity emissions combined, while **Table 5-6** is strictly operational activity emissions.

1 **Table 5-5. Estimated Annual Air Emissions Construction and Operations Resulting from the**
2 **Proposed Action and Other Installation Development Projects**

Project	NO_x (tpy)	VOC (tpy)	CO (tpy)	SO_2 (tpy)	PM_{10} (tpy)	$PM_{2.5}$ (tpy)	CO_2 (metric tons/year)	HAPs (tpy)
2013 Construction Emissions								
Total 2013 Selected Projects	41.09	8.88	48.39	3.18	206.5	23.8	6,947.12	--
Total 2013 Other Demolition Projects	4.11	1.16	5.55	0.32	5.57	0.95	671.31	--
Total 2013 Other Construction Projects	8.29	2.45	9.84	0.66	33.32	4.12	1,225.21	--
Total 2013 Other Infrastructure Projects	5.51	0.77	4.15	0.43	6.93	1.09	701.72	--
2013 Operational Emissions								
Total 2013 Selected Projects	3.313	0.262	0.812	0.207	0.237	0.237	321.67	0.006
Total 2013 Other Demolition Projects	-0.170	-0.010	-0.072	-0.001	-0.014	-0.014	-196.57	-0.003
Total 2013 Other Construction Projects	0.278	0.015	0.233	0.002	0.021	0.021	302.49	0.005
Total 2013 Construction and Operations Emissions	**62.42**	**13.53**	**68.90**	**4.80**	**252.56**	**30.20**	**9,972.94**	**0.01**
Percentage of Total JBSA-Lackland Baseline Emissions	**6.61**	**14.99**	**7.42**	**5.14**	**246.55**	**40.73**	**NA**	**NA**
Percentage of Bexar County Emissions	**0.11**	**0.02**	**0.03**	**0.02**	**0.43**	**0.31**	**0.002***	**NA**
2014 Construction Emissions								
Total 2014 Selected Projects	48.78	13.21	65.25	3.78	285.05	32.7	8,588.55	--
Total 2014 Other Demolition Projects	0.42	0.17	1.12	0.03	0.44	0.08	137.47	--
Total 2014 Other Construction Projects	5.95	1.49	5.99	0.46	4.12	0.92	827.62	--
Total 2014 Other Infrastructure Projects	0.13	0.09	0.77	0.00	0.11	0.02	94.64	--
2014 Operational Emissions								
Total 2014 Selected Projects	16.609	1.314	4.141	1.037	1.185	11.670	1,621.99	0.033
Total 2014 Other Demolition Projects	-0.013	-0.001	-0.006	0.000	-0.001	-0.001	-15.08	0.000
Total 2014 Other Construction Projects	0.171	0.009	0.144	0.001	0.013	0.013	186.08	0.003
Total 2014 Construction and Operations Emissions	**72.05**	**16.28**	**77.41**	**5.31**	**290.91**	**45.40**	**11,441.28**	**0.04**
Percentage of Total JBSA-Lackland Baseline Emissions	**7.63**	**18.04**	**8.34**	**5.68**	**283.98**	**61.22**	**NA**	**NA**
Percentage of Bexar County Emissions	**0.13**	**0.03**	**0.03**	**0.02**	**0.49**	**0.47**	**0.002***	**NA**
2015 Construction Emissions								
Total 2015 Selected Projects	47.79	13.16	65.7	3.73	349.72	39.14	8,544.51	--
Total 2015 Other Demolition Projects	0.33	0.14	1.02	0.02	0.32	0.06	124.51	--
Total 2015 Other Construction Projects	6.90	2.25	8.72	0.54	7.40	1.42	1042.73	--
Total 2015 Other Infrastructure Projects	6.05	0.86	4.59	0.48	16.69	2.10	772.12	--
2015 Operational Emissions								

Project	NO_x (tpy)	VOC (tpy)	CO (tpy)	SO_2 (tpy)	PM_{10} (tpy)	$PM_{2.5}$ (tpy)	CO_2 (metric tons/year)	HAPs (tpy)
Total 2015 Selected Projects	40.173	3.196	9.634	2.553	2.861	13.125	3,157.04	0.056
Total 2015 Other Demolition Projects	-0.009	-0.001	-0.004	0.000	-0.001	-0.001	-10.85	0.000
Total 2015 Other Construction Projects	0.320	0.018	0.269	0.002	0.024	0.024	348.16	0.006
Total 2015 Construction and Operations Emissions	**101.55**	**19.62**	**89.92**	**7.32**	**377.01**	**55.87**	**13,978.22**	**0.06**
Percentage of Total JBSA-Lackland Baseline Emissions	**10.76**	**21.75**	**9.69**	**7.84**	**368.03**	**75.34**	**NA**	**NA**
Percentage of Bexar County Emissions	**0.18**	**0.03**	**0.04**	**0.03**	**0.64**	**0.58**	**0.002***	**NA**
2016 Construction Emissions								
Total 2016 Selected Projects	46.12	12.88	63.29	3.57	242.86	28.37	8,139.54	--
Total 2016 Other Demolition Projects	6.83	1.88	8.78	0.54	9.31	1.58	1,064.13	--
Total 2016 Other Construction Projects	7.13	2.43	9.39	0.56	8.20	1.55	1,095.09	--
2016 Operational Emissions								
Total 2016 Selected Projects	43.754	3.472	10.794	2.762	3.116	13.159	3,750.21	0.067
Total 2016 Other Demolition Projects	-0.28	-0.017	-0.12	-0.002	-0.023	-0.023	-328.80	-0.0057
Total 2016 Other Construction Projects	0.36	0.020	0.30	0.002	0.027	0.027	388.03	0.007
Total 2016 Construction and Operations Emissions	**103.91**	**20.67**	**92.43**	**7.43**	**263.49**	**44.66**	**14,108.21**	**0.07**
Percentage of Total JBSA-Lackland Baseline Emissions	**11.01**	**22.90**	**9.96**	**7.96**	**257.21**	**60.23**	**NA**	**NA**
Percentage of Bexar County Emissions	**0.18**	**0.03**	**0.04**	**0.03**	**0.44**	**0.46**	**0.002***	**NA**
2017 Construction Emissions								
Total 2017 Selected Projects	46.6	14.51	68.45	3.62	277.82	32.16	8,438.77	--
Total 2017 Other Demolition Projects	0.55	0.20	1.28	0.04	0.63	0.11	155.82	--
Total 2017 Other Construction Projects	5.20	0.83	3.79	0.41	1.74	0.54	655.89	--
2017 Operational Emissions								
Total 2017 Selected Projects	51.058	4.034	13.069	3.181	3.640	13.461	5,116.90	0.093
Total 2017 Other Demolition Projects	-0.019	-0.0011	-0.0080	-0.0001	-0.0015	-0.0015	-21.82	-0.0004
Total 2017 Other Construction Projects	0.047	0.0027	0.0199	0.0003	0.004	0.004	54.16	0.0009
Total 2017 Construction and Operations Emissions	**103.44**	**19.58**	**86.60**	**7.25**	**283.83**	**46.27**	**14,399.72**	**0.09**
Percentage of Total JBSA-Lackland Baseline Emissions	**10.96**	**21.69**	**9.33**	**7.77**	**277.07**	**62.40**	**NA**	**NA**
Percentage of Bexar County Emissions	**0.18**	**0.03**	**0.04**	**0.03**	**0.48**	**0.48**	**0.002***	**NA**
2018 Construction Emissions								

Project	NO_x (tpy)	VOC (tpy)	CO (tpy)	SO_2 (tpy)	PM_{10} (tpy)	$PM_{2.5}$ (tpy)	CO_2 (metric tons/year)	HAPs (tpy)
Total 2018 Selected Projects	20.81	5.60	33.00	1.60	224.65	24.16	4,364.48	--
Total 2018 Other Demolition Projects	5.05	1.41	6.66	0.40	6.85	1.16	807.48	--
Total 2018 Other Construction Projects	6.23	1.72	6.81	0.49	5.10	1.07	891.62	--
2018 Operational Emissions								
Total 2018 Selected Projects	51.058	4.034	13.069	3.181	3.640	13.461	5,116.90	0.093
Total 2018 Other Demolition Projects	-0.21	-0.012	-0.09	0.001	-0.017	-0.017	-241.78	0.00
Total 2018 Other Construction Projects	0.22	0.012	0.18	0.001	0.016	0.016	234.81	0.004
Total 2018 Construction and Operations Emissions	**83.15**	**12.76**	**59.63**	**5.67**	**240.24**	**39.85**	**11,173.52**	**0.09**
Percentage of Total JBSA-Lackland Baseline Emissions	**8.81**	**14.14**	**6.42**	**6.07**	**234.52**	**53.74**	**NA**	**NA**
Percentage of Bexar County Emissions	**0.15**	**0.02**	**0.02**	**0.02**	**0.41**	**0.41**	**0.002***	**NA**

Note: Total Year emissions are the sum of mobile and stationary source emissions.
* Percentage of State of Texas CO_2 emissions as Bexar County CO_2 emissions inventory is not available.

Table 5-6. Estimated Annual Operational Air Emissions Resulting from the Proposed Action and Other Installation Development Projects

Project	NO_x (tpy)	VOC (tpy)	CO (tpy)	SO_2 (tpy)	PM_{10} (tpy)	$PM_{2.5}$ (tpy)	CO_2 (metric tons/year)	HAPs (tpy)
2013 Operational Emissions								
Total 2013 Selected Projects	3.313	0.262	0.812	0.207	0.237	0.237	321.67	0.006
Total 2013 Other Demolition Projects	-0.170	-0.010	-0.072	-0.001	-0.014	-0.014	-196.57	-0.003
Total 2013 Other Construction Projects	0.28	0.015	0.233	0.002	0.021	0.021	302.49	0.005
Total 2013 Operational Emissions	**3.42**	**0.27**	**0.97**	**0.21**	**0.24**	**0.24**	**427.59**	**0.01**
Percentage of Total JBSA-Lackland Baseline Emissions	**0.36**	**0.30**	**0.10**	**0.22**	**0.24**	**0.33**	**NA**	**NA**
Percentage of Bexar County Emissions	**0.0060**	**0.0004**	**0.0004**	**0.0008**	**0.0004**	**0.0025**	**0.0001***	**NA**
2014 Operational Emissions								
Total 2014 Selected Projects	16.609	1.314	4.141	1.037	1.185	11.670	1,621.99	0.033
Total 2014 Other Demolition Projects	-0.013	-0.001	-0.006	0.0001	-0.001	-0.001	-15.08	0.0003
Total 2014 Other Construction Projects	0.17	0.009	0.14	0.001	0.013	0.013	186.08	0.003
Total 2014 Operational Emissions	**16.77**	**1.32**	**4.28**	**1.04**	**1.20**	**11.68**	**1,793.00**	**0.04**

Project	NO_x (tpy)	VOC (tpy)	CO (tpy)	SO_2 (tpy)	PM_{10} (tpy)	$PM_{2.5}$ (tpy)	CO_2 (metric tons/year)	HAPs (tpy)
Percentage of Total JBSA-Lackland Baseline Emissions	**1.78**	**1.47**	**0.46**	**1.11**	**1.17**	**15.75**	**NA**	**NA**
Percentage of Bexar County Emissions	**0.0295**	**0.0022**	**0.0018**	**0.0038**	**0.0020**	**0.1207**	**0.0003***	**NA**
2015 Operational Emissions								
Total 2015 Selected Projects	40.173	3.196	9.634	2.553	2.861	13.125	3,157.04	0.056
Total 2015 Other Demolition Projects	-0.009	-0.0005	-0.004	-0.0001	-0.001	-0.001	-10.85	0.0002
Total 2015 Other Construction Projects	0.32	0.018	0.27	0.002	0.024	0.024	383.78	0.006
Total 2015 Operational Emissions	**40.48**	**3.21**	**9.90**	**2.56**	**2.88**	**13.15**	**3,494.37**	**0.06**
Percentage of Total JBSA-Lackland Baseline Emissions	**4.29**	**3.56**	**1.07**	**2.74**	**2.82**	**17.73**	**NA**	**NA**
Percentage of Bexar County Emissions	**0.0712**	**0.0052**	**0.0041**	**0.0093**	**0.0049**	**0.1358**	**0.0006***	**NA**
2016 Operational Emissions								
Total 2016 Selected Projects	43.754	3.472	10.794	2.762	3.116	13.159	3,750.21	0.067
Total 2016 Other Demolition Projects	-0.284	-0.017	-0.121	-0.002	-0.023	-0.023	-328.80	-0.006
Total 2016 Other Construction Projects	0.36	0.020	0.30	0.002	0.027	0.027	388.03	0.007
Total 2016 Operational Emissions	**43.83**	**3.48**	**10.97**	**2.76**	**3.12**	**13.16**	**3,809.44**	**0.07**
Percentage of Total JBSA-Lackland Baseline Emissions	**4.64**	**3.85**	**1.18**	**2.96**	**3.05**	**17.75**	**NA**	**NA**
Percentage of Bexar County Emissions	**0.0771**	**0.0057**	**0.0045**	**0.0100**	**0.0053**	**0.1360**	**0.0006***	**NA**
2017 Operational Emissions								
Total 2017 Selected Projects	51.058	4.034	13.069	3.181	3.640	13.461	5,116.90	0.093
Total 2017 Other Demolition Projects	-0.019	-0.001	-0.008	0.0001	-0.002	-0.002	-21.82	0.0004
Total 2017 Other Construction Projects	0.047	0.003	0.020	0.0003	0.004	0.004	54.16	0.001
Total 2017 Operational Emissions	**51.09**	**4.04**	**13.08**	**3.18**	**3.64**	**13.46**	**5,149.24**	**0.09**
Percentage of Total JBSA-Lackland Baseline Emissions	**5.41**	**4.47**	**1.41**	**3.41**	**3.56**	**18.15**	**NA**	**NA**
Percentage of Bexar County Emissions	**0.0899**	**0.0066**	**0.0054**	**0.0115**	**0.0061**	**0.1391**	**0.0009***	**NA**
2018 Operational Emissions								

Project	NO_x (tpy)	VOC (tpy)	CO (tpy)	SO_2 (tpy)	PM_{10} (tpy)	$PM_{2.5}$ (tpy)	CO_2 (metric tons/year)	HAPs (tpy)
Total 2018 Selected Projects	51.058	4.034	13.069	3.181	3.640	13.461	5,116.90	0.093
Total 2018 Other Demolition Projects	-0.21	-0.01	-0.09	0.001	-0.017	-0.017	-241.78	0.004
Total 2018 Other Construction Projects	0.22	0.012	0.18	0.001	0.016	0.016	234.81	0.004
Total 2018 Operational Emissions	**51.06**	**4.03**	**13.16**	**3.18**	**3.64**	**13.46**	**5,109.93**	**0.09**
Percentage of Total JBSA-Lackland Baseline Emissions	**5.41**	**4.47**	**1.42**	**3.41**	**3.55**	**18.15**	**NA**	**NA**
Percentage of Bexar County Emissions	**0.0899**	**0.0066**	**0.0054**	**0.0115**	**0.0061**	**0.1390**	**0.0009***	**NA**
Total 2018 and Later Emissions (stationary sources only)	**5.38**	**0.29**	**4.70**	**0.03**	**0.41**	**0.41**	**5,822.33**	**0.12**
PSD Permit Significance Criteria (stationary sources only) **	**40**	**40**	**100**	**100**	**15**	**10**	**68,038.86**	**NA**

Notes: * Percentage of State of Texas CO_2 emissions as Bexar County CO_2 emissions inventory is not available.
** This PSD permit criteria ultimately applies to the net increase in emissions, which accounts for new and removed emissions sources.

The implementation of all planned installation development activities would include tens of millions of square feet of demolition, construction, and paving, and hundreds of acres of soil disturbance over a 5 year period. These activities would generate a relatively large level of particulate emissions; however, they would be intermittent, transient in nature, dispersed over a wide area, and temporary. Estimated PM_{10} emissions, which are most notably from construction activities, are significantly higher than estimated emissions of other pollutants; therefore, the ambient impact for this pollutant merits further discussion. The Federal and state ambient air quality standard for PM_{10} is 150 micrograms per cubic meter ($\mu g/m^3$) averaged over a 24-hour period. The historical maximum 24-hour PM_{10} concentration in the San Antonio area, is 128 $\mu g/m^3$ measured in 2009 in Bexar County (USEPA 2012a).[2]

As shown in **Table 5-5**, the highest estimated PM_{10} emissions for all projects (select and other) are 374 tons in 2015. As shown in **Table 3-5**, the PM_{10} emissions inventory for Bexar County is 59,275 tpy. The highest annual PM_{10} estimate for all installation development projects would therefore be 0.63% of the Bexar County Inventory. Assuming the contribution to ambient concentrations is roughly proportional to the contribution to the emission inventory, it may be reasonably concluded that temporary construction emissions from all installation development projects are highly unlikely to cause or significantly contribute to an exceedance of the PM_{10} ambient air quality standard. In mathematical terms, by conservatively using the highest historical maximum 24-hour PM_{10} concentration as a baseline (i.e., 128 $\mu g/m^3$) plus 0.0063 times 128 $\mu g/m^3$ (i.e., 129 $\mu g/m^3$), the ambient air quality standard of 150 $\mu g/m^3$ is unlikely to be exceeded. **Table 5-5** also shows that other than PM_{10} discussed above, all other pollutants regulated under the PSD program in attainment areas are below the 250 tpy major source threshold and

[2] This website also reports that the average 24-hour PM_{10} concentration over the past five years has been approximately 10 $\mu g/m^3$, and the 98th percentile has been approximately 25 $\mu g/m^3$.

100,000 tpy major source threshold for CO_2 for each analysis year, even though PSD would only apply to operational emissions, i.e. stationary sources.

Considering facility demolition and construction cumulatively, there would be an increase in the amount of occupied facility space on JBSA-Lackland (approximately 1.6 million ft^2). New facilities would generate operational air emissions from the use of boilers, furnaces, and possibly emergency generators. However, the demolition of older and less energy-efficient buildings would remove older and more emissive boilers, furnaces, and emergency generators from the installation and decrease energy intensity for JBSA-Lackland. It is anticipated that long-term, minor, adverse cumulative effects on air quality could occur considering this overall increase in occupied space. However, as shown in **Table 5-6** for operational emissions, this overall increase is not expected to be significant enough for the installation to reach the PSD major modification threshold of 40 tpy of NO_x or the PSD major modification thresholds for other pollutants. All required state-level air permits would be obtained prior to construction of each project and revisions to the JBSA-Lackland Title V air permit would follow. In addition, the increase in stationary source HAP emissions is expected to be well below any thresholds of significance. The increase in annual total HAP emissions is estimated at 0.12 tpy, which when added to the JBSA-Lackland baseline inventory of 4.68 tpy results in 4.80 tpy.

The selected and other projects would cumulatively generate GHG emissions during construction activities. All installation development activities would generate an estimated 14,399 metric tons/year of CO_2 in 2017, the highest anticipated year. Estimated gross CO_2 emissions in the State of Texas were 596.4 million metric tons in 2009 (USEPA 2012a). Cumulative estimated CO_2 emissions in 2017 would represent 0.002 percent of the State of Texas's 2009 CO_2 emissions and less than 0.0003 percent of the United States' 2009 CO_2 emissions. The overall increases in GHG emissions from stationary sources would generate an estimated 5,149 metric tons/year of CO_2 in 2017, the highest anticipated year, which equates to 0.0010 percent of the State of Texas's 2009 CO_2 emissions and less than 0.0001 percent of the United States' 2009 CO_2 emissions. This GHG operational emissions increase is demonstrated to be well below the PSD major modification threshold for GHGs, which is 68,038 metric tons/year (75,000 tpy). Cumulatively, GHG emissions would not be significant for the installation development activities at JBSA-Lackland.

Geological Resources

Soils at JBSA-Lackland have undergone extensive modifications as a result of development and military activities. The Houston black soil series is the most common at JBSA-Lackland; this series has moderate erosion potential at steeper slopes, low strength, and high shrink-swell potential (see **Section 3.4.2** for more information about soil series). Individually, all construction and demolition activities could have short- and long-term, minor to moderate, adverse effects as a result of vegetation removal, compaction of surrounding soils, modified soil structure, and increased soil erosion and sedimentation. Larger projects, such as Projects D7, D11, D17, C10, C23, C26, I19, and I22 (see projects identified in **Table 5-2**), would have a greater potential for adverse effects on soils and topography. Considered cumulatively, planned installation development activities have the potential for short-term, minor, adverse effects and long-term, minor, adverse effects on soils. Construction and demolition activities occurring at the same time and in the same vicinity could have short-term, minor, adverse cumulative effects on soil resources, but implementation of erosion- and sediment-control environmental protection measures would be expected to limit potentially adverse cumulative effects.

Demolition of facilities would partially offset potentially long-term, adverse, cumulative effects from construction of facilities by providing areas of previously disturbed soil requiring minimal grading. Site plans are not available for all projects since most are in the early planning stages. Based on the planned demolition and construction footprints, and the infrastructure improvement and natural infrastructure management project sizes, it is estimated that, cumulatively, the Proposed Action and all other installation development activities (see **Appendix A** for project sizes) have the potential to disturb as much as 746 acres of soil over the next 6 years; this is 8 percent of the total installation area. Considering the ACC, DLIESC and IAAFA ADP, MWD Revitalization, and TSA Canine Academy, the cumulative area disturbed could be 914 acres, or 10 percent of the total installation area. These are conservative estimates of disturbed areas that were calculated by assuming that the area disturbed would be approximately double construction and demolition areas and approximately equal to infrastructure and natural infrastructure improvement areas. The largest project, and therefore the project that has the greatest individual contribution to cumulative effects, is Project I1 (Pavements Project). Project I1 has an estimated project area of 436 acres by itself, which accounts for approximately 48 percent of the anticipated cumulative soil disturbance.

Any ground-disturbing activities in and around ERP sites and AOCs have the potential to encounter contaminated soil or groundwater (see projects identified in **Table 5-2** and discussion in the Hazardous Materials and Wastes cumulative effects subsection). If contaminated soil or groundwater from nearby ERP sites or AOCs is encountered during construction or demolition activities, the handling, storage, transportation, and disposal of hazardous substances would be conducted in accordance with applicable Federal, state, and local regulations; USAF regulations; and JBSA-Lackland management procedures.

Water Resources

Military land uses at JBSA-Lackland and urban land uses in San Antonio have affected groundwater and surface water resources. JBSA-Lackland receives potable water from the Edwards Aquifer, a regional sole-source aquifer. The main discharge point for JBSA-Lackland is Leon Creek, which is an impaired water body due to decreased levels of dissolved oxygen and increased levels of bacteria (TCEQ 2012). It is USAF policy to avoid, where possible, constructing new facilities in wetlands or the 100-year floodplain to protect the functional uses of those resources.

Individual projects disturbing more than 1 acre would require an individual SWPPP that includes BMPs to avoid and minimize pollution in storm water runoff. Construction and demolition activities occurring at the same time and in the same vicinity could have short-term, minor, adverse cumulative effects on water resources. Use of BMPs to control erosion and sedimentation and minimize storm water from leaving the construction site (for projects greater than 1 acre) would minimize the potential for short-term, adverse, cumulative effects on water quality.

Demolition of facilities would partially offset potentially long-term, adverse, cumulative effects from construction of facilities and infrastructure by reducing the overall creation of impervious surfaces. Site plans are not available for all projects since most are in the early planning stages. Individual construction projects disturbing more than 5,000 ft^2 would be subject to EISA Section 438, which requires that predevelopment site hydrology be maintained or restored to the greatest extent possible following construction. Based on the planned demolition and construction footprints, and the infrastructure improvement and natural infrastructure management project sizes, it is estimated that, cumulatively, the Proposed Action and other installation development activities have the potential to create approximately 561 acres of impervious surfaces, which is approximately 6.3 percent of the total installation area, over the next 6 years (see **Section 5.1.1.2** for summaries and **Appendix A** for individual project sizes). Considering the ACC, DLIESC and IAAFA ADP, MWD Revitalization, and TSA Canine Academy, the cumulative increase in impervious surfaces could be 577 acres, or 6.5 percent of the total installation area. The largest project, and therefore the project that has the greatest individual contribution to cumulative effects, is Project I1 (Pavements Project). Project I1 has an estimated project footprint of 436 acres, which accounts for approximately 76 percent of the anticipated cumulative increase in impervious surfaces. The increase in impervious surfaces of 575 acres over the next 6 years is a long-term, minor to moderate, adverse cumulative effect. Adherence to storm water BMPs and EISA Section 438 regulations, which could include the use of bioretention, permeable pavements, green roofs, or other low-impact development features, would reduce the potential for long-term, adverse, cumulative effects on water quality.

Any ground-disturbing activities in and around ERP sites and AOCs have the potential to encounter contaminated soil or groundwater (see projects identified in **Table 5-2** and discussion in the *Hazardous Materials and Wastes* cumulative effects subsection). Groundwater monitoring wells that have been installed around ERP sites or AOCs would need to be protected from damage or replaced during construction and demolition activities. If contaminated groundwater or soil from nearby ERP sites is encountered during construction or demolition activities, the handling, storage, transportation, and disposal of hazardous substances would be conducted in accordance with applicable Federal, state, and local regulations; USAF regulations; and JBSA-Lackland management procedures.

As discussed in **Section 4.3.5**, six infrastructure projects under the Proposed Action would cross over, or through, wetlands (Projects I1, I2, I6, I7, I8, and I9), and four projects under the Proposed Action would be adjacent to wetlands (Projects D2, C3, C5, and I5). Together, these projects would impact up to 0.33 acres of non-jurisdictional wetlands and 0.14 acres of jurisdictional wetlands. Other installation development activities are planned near wetlands (Projects C8, C9, C13, C15, C18, C26, C26, C27, C29, I10, I19, I21, and I22; see **Table 5-2**). Projects that are adjacent to wetlands have the potential for indirect, adverse effects during any ground-disturbing activities. During final project planning, impacts on wetlands and other water resources would be avoided to the greatest extent possible through design, siting, and proper implementation of appropriate environmental protection measures and BMPs. Cumulatively, multiple construction activities occurring on JBSA-Lackland affecting wetlands, both directly and indirectly, would be considered both a short- and long-term, adverse effect.

As discussed in **Section 4.3.5**, some projects under the Proposed Action would occur within the 100-year floodplain (Projects I1, I2, I6, I7, I8, I9, NI1, and NI2). Projects I1 (Pavements Project) and I2 (Golf Cart Path Updates) would be expected to have long-term, adverse, cumulative effects on floodplains as a result of the creation of impervious surfaces. Project I1 would create approximately 6.7 acres of new impervious surfaces within the floodplain, so this project would have a large individual contribution to cumulative effects. Project I2 would create approximately 0.85 acres of new impervious surfaces within the floodplain. Project D2 would remove pavements in the floodplain, which would be beneficial, and Projects I6, I7, I8, and I9 would have only temporary ground-disturbance during trenching, so no long-term, adverse, cumulative effects on the floodplain would occur. Projects NI1 (Medio Creek Erosion Control) and NI2 (Warrior Week Road – Leon Creek Bridge) would contribute to long-term, beneficial cumulative effects by correcting bank-erosion and stability problems and removing poorly functioning culverts. The MWD Campus Revitalization project would remove numerous existing facilities in the 100-year floodplain on Lackland Training Annex and relocate those functions outside the floodplain, which would have a beneficial effect on the floodplain. The cumulative creation of impervious surfaces within the floodplain as a result of installation development activities is a long-term, adverse effect due to increased storm water runoff and the potential for storm-related damage to infrastructure, facilities, and possibly human safety.

Projected increases in water demand are managed by the Edwards Aquifer Authority. The San Antonio metropolitan area is growing, which increases pressure to sustain the needs of all that are dependent on the Edwards Aquifer. The Proposed Action and other installation development activities identified in **Appendix A** would result in negligible increases in personnel, if any. No mission changes are associated with planned demolition and construction. Therefore, the Proposed Action would have a negligible contribution to cumulative effects on the Edwards Aquifer. Several other projects would increase personnel in the mid- to long-term at JBSA-Lackland. The ACC would increase patients by an estimated 2,000 annually; the DLIESC and IAAFA would increase students by 3,705 and staff by 1,096 upon full implementation, and the TSA Canine Academy would increase students by 25 and staff by 45. These projects would increase water demand, but the increased demand is expected to be within allocated limits for JBSA-Lackland. Regional demand for water will continue to increase in the future as population and industry increase in San Antonio. Adverse cumulative effects would be expected as a result of increased use of the Edwards Aquifer. The use of the aquifer is monitored and evaluated by several entities, including the Edwards Aquifer Authority, the SAWS, the Texas Water Development Board, and county and city water boards, to ensure that future water demands can be met. Assuming continued research, investment in alternative sources of water, and water conservation efforts for the San Antonio area, the projects presented on top of regional population growth would not cumulatively overburden the Edwards Aquifer beyond its capacity.

Biological Resources

Most of the natural vegetation at JBSA-Lackland has been highly modified by past development and military operations. Most vegetated areas are maintained, and wildlife species present are urban-adapted and disturbance-tolerant. No federally listed threatened or endangered species or special status species are known to inhabit JBSA-Lackland, though several species have the potential to occur. Water withdrawals from the Edwards Aquifer have the potential to affect threatened and endangered species in the Comal Springs and San Marcos Springs areas, 35 and 50 miles, respectively, outside the City of San Antonio. JBSA is currently developing a new Biological Assessment to analyze the impact of future actions at JBSA-Lackland, Fort Sam Houston, and JBSA-Randolph on threatened and endangered species in the springs systems. However, withdrawals from the aquifer are not projected to exceed the current allocation or impact any endangered or threatened species. JBSA-Lackland has an INRMP that is a reference and planning document for managing the installation’s natural resources while maintaining mission readiness (LAFB 2007).

Considered cumulatively, planned installation development activities have the potential for short-term, minor, adverse effects, and long-term, minor, adverse effects on vegetation and wildlife, including migratory birds, as a result of vegetation removal (see projects identified in **Table 5-2**). The majority of all planned installation development projects would occur in the improved areas of JBSA-Lackland, which would primarily affect non-forested upland and urban upland communities that are modified, landscaped, and regularly mowed. The permanent removal of modified and landscaped areas would be a long-term, negligible to minor, adverse, cumulative effect. Demolition of facilities would partially offset potentially long-term, adverse, cumulative effects from construction of facilities by providing previously developed areas that require less vegetation removal. Cumulative effects from vegetation removal would not be significant.

Construction and demolition activities occurring at the same time and in the same vicinity could have short-term, minor, adverse cumulative effects on wildlife, including migratory birds, as a result of noise. Construction-related noise emissions would only last during those activities and would not be cumulatively significant. Installation development projects could generate noise from new mechanical equipment or changes in vehicle traffic accessing different facilities; these changes in noise would have negligible long-term, cumulative effects on wildlife because wildlife inhabiting the installation are accustomed to noise disturbances in developed areas. Cumulative effects on wildlife would not be significant.

Threatened and endangered species are unlikely to occur on JBSA-Lackland; however, riparian areas along Leon Creek and Medio Creek would be most likely to provide suitable habitat. The Proposed Action would not be expected to result in direct adverse effects on threatened and endangered species as a result of on-installation projects or indirect adverse effects as a result in increased use of the Edwards Aquifer. Other installation development activities (as identified in **Appendix A**) at JBSA-Lackland would also be unlikely to result in direct or indirect adverse effects on threatened and endangered species. The Proposed Action and other installation development activities identified in **Appendix A** would result in negligible increases in personnel, if any. No mission changes are associated with the planned demolition and construction. Several other projects would increase personnel in the mid- to long-term at JBSA-Lackland. The ACC would increase patients by 2,000 annually; the DLIESC and IAAFA would increase students by 3,705 and staff by 1,096 upon full implementation, and the TSA Canine Academy would increase students by 25 and staff by 45. These projects would increase water demand, but the increased demand is expected to be within allocated limits. Cumulative water needs would not be expected to exceed pumping allocations because the Proposed Action and other installation development activities would not increase installation personnel or change the existing mission, so adverse cumulative effects on threatened and endangered species would not be expected.

Cultural Resources

JBSA-Lackland has and continues to meet its stewardship responsibilities toward cultural resources under Section 110 of the NHPA. The majority of Lackland Main Base is highly developed with previously disturbed ground and has low potential for NRHP-archaeological sites. Five archaeological sites have been identified and evaluated as NRHP-eligible, and 10 additional sites require further evaluation. A total of 175 built resources have been identified as NRHP-eligible or potentially NRHP-eligible, the majority of which are located on Lackland Training Annex. Refer to **Section 3.7.2** for more information about historical context and identified archaeological and architectural resources at JBSA-Lackland. Management of cultural resources at JBSA-Lackland follows procedures identified in the ICRMP (LAFB 2002a) and the 2011 PA between the 502 ABW and the SHPO (USAF 2011).

As described in **Section 4.3.7**, implementation of some projects under the Proposed Action could have moderate adverse effects on cultural resources, though development of avoidance or mitigation measures acceptable to the SHPO would minimize adverse effects. Projects D2, I2, I6, I7, I8, I9, and NI2 (see analyses in **Section 4**) would be in the vicinity of known archaeological sites that are treated as NRHP-eligible, but it is anticipated that these sites could be completely avoided during ground-disturbing activities. Cumulative effects are not anticipated with use of proper avoidance. The ICRMP and 2011 PA outline procedures to be followed in the event of inadvertent discoveries.

Projects D2 and D3 would result in the demolition of structures that are NRHP-eligible as contributing resources to the Medina Base Historic District on Lackland Training Annex (i.e., demolition of Buildings 425, 426, 427, 433, 442, and 443 under Project D2; and Buildings 402, 403, 404, 585, 586, 587, 595, 596, 597, 598, and 599 under Project D3). Additionally, the MWD Campus Revitalization Project would result in the demolition of Buildings 435, 436, and 437, which are also NRHP-eligible as contributing resources to the Medina Base Historic District. Cumulatively, the demolition of multiple facilities that are contributing resources to the Medina Base Historic District would be a long-term, adverse effect. Development of avoidance or mitigation measures acceptable to the SHPO in accordance with the 2011 PA would minimize adverse, cumulative effects.

Project C6 would result in the construction of a new facility that is adjacent to the NRHP-eligible World War II Chapel (Building 5432). Moderate adverse effects could occur because Project C6 would be immediately adjacent to the NRHP-eligible World War II Chapel, Building 5432. Project C17 is directly across the street from and within the viewshed of the chapel. Any effects on the chapel would be indirect and can likely be avoided through consultation with the SHPO regarding the design of the new buildings. The cumulative effects of both C6 and C17 could require the USAF to undertake mitigation in accordance with the 2011 PA if the buildings cannot be designed in such a way as to minimize their impacts on the chapel.

Socioeconomics and Environmental Justice

JBSA-Lackland contributes substantially to the local economy. Cumulatively, installation development activities would have short-term, minor to moderate, beneficial effects on the local community through the procurement of goods and services. Larger construction projects would be expected to have a larger contribution to overall beneficial effects. Construction-related expenditures would not generate any long-lasting cumulative benefits. Implementation of the projects identified in this cumulative effects discussion would occur entirely on JBSA-Lackland; any adverse environmental effects that would occur, such as air emissions or noise during construction activities, would be short-term and negligible outside the installation boundaries. Disproportionate impacts on minority or low-income populations would not occur.

Infrastructure

JBSA-Lackland has well-developed infrastructure systems that are maintained and improved as needed. Generally, infrastructure systems are in good condition and support the military mission and population. Existing deficiencies include occasional conflicts with major roadways and troop walkways on Lackland Main Base, inadequate capacity of storm water systems during heavy rainfalls on Lackland Main Base, deficiencies in the electrical system on Lackland Main Base, and old and outdated equipment in the electrical system at Lackland Training Annex. Many of the installation development activities planned over the next 6 years would provide necessary maintenance and increase capacity. Individually, installation development activities could have short-term, negligible, adverse effects during construction, demolition, or installation activities on infrastructure systems (e.g., power supply or communications connections could be temporarily lost while new facilities are connected).

Numerous infrastructure improvement projects are planned that would improve reliability and safety of utilities, communications, and transportation systems to support the population and military mission. Specific projects that would contribute to long-term, minor to moderate, beneficial cumulative effects on infrastructure systems include the following:

- Improving installation gates, roadways, and parking (Projects C10, I1, I2, I5, I10, I15, I16, I18, and I19; and the Growdon Road CVIA/ECP Project)
- Improving the airfield infrastructure (Projects I4 and I22)
- Upgrading the natural gas lines (Project I6)
- Upgrading the electrical distribution system (Projects I7)
- Improving the water supply system (Projects I8, I12, I13, I14, and I17)
- Upgrading the sanitary sewer system (Project I9)
- Improving communications infrastructure (Project C9)
- Improving centralized maintenance (Project C29)
- Constructing liquid fuels storage (Project I11).

Considering installation development under the Proposed Action and as presented in **Appendix A** cumulatively, there would be an increase in the amount of facility space (approximately 1.7 million ft^2) and impervious surfaces (approximately 24 million ft^2 or 561 acres) on JBSA-Lackland. Increases in facility space and impervious surfaces could be expected to slightly increase use of electrical supply, natural gas, water supply, sanitary sewer and wastewater treatment, storm water, and communications systems, although there would be negligible increases in personnel associated with the installation development projects. However, older and less efficient buildings would be removed, and newer facilities would be expected to be more energy- and water-efficient, offsetting long-term, minor, adverse, cumulative effects on utility systems. Storm water systems on Lackland Main Base, in particular, could experience long-term, adverse, cumulative effects from increased development and impervious surfaces since existing storm systems are inadequate to handle storm flows during heavy events.

Implementation of all planned installation development projects and other development activities would result in short- and long-term, adverse, cumulative effects as a result of increased solid waste generation. Demolition projects, in particular, can generate large amounts of debris and waste. As shown in **Table 5-7**, approximately 334,178 tons of construction and demolition debris would be generated over the next 6 years. The ACC project alone would generate approximately 35 percent of the cumulative construction and demolition debris. Demolition waste is managed by individual contracts, but it is anticipated that much of the clean demolition and construction debris could be recycled instead of disposed of in a landfill or rubble fill. Construction and demolition waste is a short-term, adverse effect in that it would only be generated during those activities, but the disposal of construction and demolition waste in a landfill would be a permanent effect.

Table 5-7. Cumulative Estimated Generation of Construction and Demolition Debris

Project	Estimated Waste Generated (tons)
Installation Development Activities	
Proposed Action [a]	51,202
All Other Demolition Projects [b]	45,709
All Other Construction Projects (includes buildings and pavements) [b]	1,874
All Other Infrastructure Projects [b]	330
Other Projects at LBSA-Lackland	
ACC [c]	115,757
DLIELC and IIAFA ADP [d]	71,355
MWD Campus Revitalization	13,331
TSA Canine Academy [f]	32,450
Northwest Airfield Annex [f]	2,170
Total Estimated Tons of Construction and Demolition Debris from All Projects [e]	**334,178**

Sources and Notes:

a. See **Table 4-4**

b. Project areas calculated from Tables A-1, A-2, and A-3 in **Appendix A**. Waste generated was estimated using the same waste multipliers as identified in **Table 4-4**.

c. See Table 3-12 in LAFB 2010d.

d. Estimated using projects anticipated over next 6 years from Table 3-11 in LAFB 2012b.

e. Estimated using the same waste multipliers as identified in **Table 4-4**.

f. Preliminary project estimates.

Hazardous Materials and Wastes

Seventy ERP sites (11 are open and under remediation and 59 are closed with no further action), 27 AOCs, and 20 MMRP sites occur at JBSA-Lackland as a result of its historic use as a military installation. JBSA-Lackland has a Hazardous Materials Management Plan; Hazardous Waste Management Plan; Integrated Solid Waste Management Plan; SWPPP; Pollution Prevention Management Action Plan; SPCC Plan; Asbestos Management Plan; Lead-Based Paint Management Plan; and Integrated Pest Management Plan that guide the use, handling, storage, and disposal of regulated materials in accordance with USAF, Federal, state, and local laws and regulations.

Individual installation development projects would require the use of small quantities of hazardous materials and generate small quantities of hazardous wastes, resulting in short-term, negligible, adverse effects. Construction and demolition activities occurring at the same time and in the same vicinity could have short-term, negligible to minor, adverse cumulative effects on hazardous materials and waste management. Adherence to construction site management plans for hazardous materials and wastes would limit potentially adverse cumulative effects. Some installation development projects could increase the use or storage of hazardous or petroleum materials, including the U.S. Air Force Reserve Command Medical Training Complex (Project C14), the 344d Training Squadron Vehicle Maintenance Schoolhouse (Project C35), and the 25,000-gallon Diesel Storage Tank (Project I11). It is anticipated that increased hazardous or petroleum material used and wastes generated would be managed by existing JBSA-Lackland management plans and practices. Cumulatively, long-term effects would not be significant.

Buildings constructed prior to 1980 could contain asbestos. Buildings constructed prior to 1978 should be assumed to contain LBP. Buildings constructed prior to 1979 could have PCB-containing equipment. Projects likely to involve ACMs, LBP, or PCBs are indicated in **Table 5-2**; however, all buildings proposed for demolition or renovation activities would be surveyed for ACMs, LBP, or PCBs prior to any action. The risk of exposure to ACMs, LBP, or PCBs during demolition activities would be a short-term, adverse effect. The appropriate identification, handling, removal, and disposal of ACMs and LBP would occur in accordance with JBSA-Lackland management plans and USAF, Federal, state, and local laws and regulations. PCBs must be disposed of at a hazardous waste disposal facility. Cumulatively, long-term, beneficial effects would be expected from the removal of ACMs, LBP, and PCBs from JBSA-Lackland.

Any ground-disturbing activities in and around ERP sites, AOCs, or MMRP sites have the potential to encounter contaminated soil or groundwater. Under the Proposed Action (see **Table 3-13** and **Section 4.3.10**), Projects I1, I5, I6, and I8 would be in the vicinity of open ERP sites and AOCs. Other projects in the vicinity of ERP sites and AOCs include D5, D7, D16, C10, C13, C19, C23, I12, I19, and I20. ERP sites LF-37 (Projects D5, D7, I12, and I20), ST-05 (Project D16), ST-03 (Project C10), CF27-OU2 (Projects C13 and I19), TU-42 (Project C19), and LF-45 (Project I19) are closed with no further action, so activities in these ERP sites would be expected to have negligible effects. Site GR-34 (Project C23) is open, so there is potential to encounter contamination during this project; restrictions for this ERP site have not been determined (LAFB 2011a). The risk of exposure to soil or groundwater contamination during ground-disturbing activities would be a short-term, adverse effect; the increased risk would not necessarily be considered an adverse cumulative effect when considering all installation development projects together.

Under the Proposed Action (see **Table 3-14** and **Section 4.3.10**), Projects C2, C5, I1, I2, I3, I5, I6, I7, I8, and NI2 would be in the vicinity of open MMRP sites. Other projects in the vicinity of MMRP sites include D14, C10, C11, C12, C13, C14, C18, C25, I16, I18, and I19. MMRP site FR-242 (Project I19) is closed with no further action, so activities in this MMRP site would be expected to have negligible effects

(LAFB 2011a). All project areas in an open MMRP site should be surveyed for UXO, discarded munitions, or munitions constituents prior to ground-disturbing activities. The risk of encountering munitions-related components during ground-disturbing activities would be a short-term, adverse effect; the increased risk would not necessarily be considered an adverse cumulative effect when considering all installation development projects together.

Safety

JBSA-Lackland complies with all applicable USAF AFOSH and OSHA regulations and munitions safety criteria to provide a safe working environment while supporting military readiness and training activities. Individual installation development projects could pose an increased risk for a safety mishap during construction and demolition activities. Construction and demolition activities occurring at the same time and in the same vicinity could have short-term, minor, adverse cumulative effects by increasing local construction traffic accessing sites, increasing the number of maintenance and repair activities, and creating highly noisy environs that could mask verbal or mechanical warning signals. Adherence to USAF AFOSH and OSHA regulations would minimize the potential for adverse effects on construction workers. Cumulative effects on construction safety would be short-term and negligible to minor.

Installation development activities in some areas of JBSA-Lackland inherently pose a greater risk because of operational or environmental safety issues, including QD arcs, MMRP sites, and ERP sites and AOCs. Some proposed construction activities would occur within QD arcs (Projects D2, D3, I3, and I5), which are all analyzed in **Section 4**. Project C23 (Construct Combat Arms Training Range) is shown in **Figures 5-1** and **5-2** as overlapping with QD arcs. Final siting of this facility should be done to avoid being within the QD arcs. If Project C23 is within QD arcs, then a waiver or exemption for new construction would be required; this would be a long-term, adverse effect on safety. Construction activities within QD arcs must be coordinated with appropriate airfield or weapons safety personnel to ensure the safety of construction workers. No long-term, adverse, cumulative effects would be expected.

Ground-disturbing activities that are near or within MMRP sites increase the potential for construction workers to encounter UXO, discarded munitions, or munitions constituents (see projects identified in **Table 5-2** and discussion in the *Hazardous Materials and Wastes* cumulative effects subsection). All project areas in an open MMRP site should be surveyed for UXO, discarded munitions, or munitions constituents prior to ground-disturbing activities. The risk of munitions-related components during ground-disturbing activities would be a short-term, adverse effect; the increased risk would not necessarily be considered an adverse cumulative effect when considering all installation development projects together.

Ground-disturbing activities that are near or within ERP sites and AOCs increase the potential for construction workers to encounter contaminated soil or groundwater (see projects identified in **Table 5-2** and discussion in the *Hazardous Materials and Wastes* cumulative effects subsection). If contaminated groundwater or soil from nearby ERP sites or AOCs is encountered during construction or demolition activities, the handling, storage, transportation, and disposal of hazardous substances would be conducted in accordance with applicable Federal, state, and local regulations; USAF regulations; and JBSA-Lackland management procedures. Prior to commencement of construction and demolition activities at or within the vicinity of active ERP sites or AOCs, a health and safety plan should be prepared in accordance with OSHA regulations. Workers performing soil-removal activities within ERP sites or AOCs would be required to have OSHA 40-hour Hazardous Waste Operations and Emergency Response certification. In addition, supervisors would be required to have an OSHA Site Supervisor Certification. The risk of exposure to soil or groundwater contamination during ground-disturbing activities would be a short-term, adverse effect; the increased risk would not necessarily be considered an adverse cumulative effect when considering all installation development projects together.

Installation development activities would be expected to have long-term, beneficial, cumulative effects on safety by maintaining and improving facilities, pavements, and infrastructure systems. Demolition of old and underused facilities would remove ACMs, LBP, and other health and safety concerns. Many planned projects would upgrade force protection and security measures (Projects C10, Renovate Luke Gate, and the Growdon Road CVIA/ECP Project). Cumulatively, installation development projects would improve military training and contribute to a safer working environment for all personnel at JBSA-Lackland.

5.2 Best Management Practices and Environmental Protection Measures

BMPs and environmental protection measures are discussed to describe how the level of impact of a project on a resource area could be minimized. BMPs are actions used to minimize impacts that are associated with statutes or regulations, or to fulfill permitting requirements. Environmental protection measures are those actions that are used to minimize impacts that are not required as a part of statutes or regulations, or to fulfill permitting requirements, but are typically measures taken during design and construction phases of a project to reduce impacts on the environment.

The Proposed Action is not expected to result in significant adverse effects on the land or the surrounding area. BMPs and environmental protection measures would not be required to reduce environmental effects below the threshold for significance, but they would be implemented to eliminate or reduce the impacts of non-significant adverse effects.

General environmental protection measures that would be included, as applicable, as parts of installation development projects are summarized as follows:

- All projects identified in this IDEA should be performed outside of migratory bird nesting season (from February 1 through August 31), if possible. If project activities are scheduled during nesting season, a survey of migratory birds should be performed no more than 72 hours prior to project activities begin. If bird nests are found during surveys, an avoidance buffer should be established around nests. Project activities should be deferred from the avoidance buffers until birds have left the nest. Confirmation that all young have fledged should be made by a qualified biologist.
- If project activities are scheduled to start during migratory bird nesting season, steps should be taken to prevent the establishment of nests in the potential impact area. These steps could include covering equipment and structures, use of various excluders (e.g., noise), and removing nesting material as birds attempt to build nests. Birds can be harassed to prevent them from nesting within the project area. Once a nest is established (with eggs), they should not be harassed until all young have fledged and are capable of leaving the nest site.
- Clearing and grubbing would be timed with construction to minimize the exposure of cleared surfaces. Such activities would not be conducted during periods of wet weather. Construction activities would be staged to allow for the stabilization of disturbed soils. These environmental protection measures would minimize adverse effects associated with soil and water resources.
- Fugitive dust-control techniques such as watering and stockpiling would be used to minimize adverse effects. All such techniques would comply with applicable regulations. These environmental protection measures would minimize adverse effects associated with air quality, soil, and water resources.
- Soil erosion-control measures, such as soil erosion-control mats, silt fences, straw bales, diversion ditches, riprap channels, water bars, water spreaders, vegetative buffer strips, and hardened stream crossings, would be used as appropriate. These environmental protection measures would minimize adverse effects associated with soil and water resources.

- Storm water management would be used as appropriate during construction to minimize off site runoff. Following construction, storm water management systems would ensure that predevelopment site hydrology is maintained or restored to the maximum extent technically feasible with respect to temperature, rate, volume, and duration of flow. These environmental protection measures would minimize adverse effects associated with water resources.
- Minimize the disturbance of environmental resources and topography by integrating existing vegetation, trees, and topography into site design. These environmental protection measures would minimize adverse effects associated with soil and biological resources.
- Where feasible, minimize areas of impervious surface through shared parking, decked or structured parking, increased building height, or other measures as appropriate. These environmental protection measures would minimize adverse effects associated with soil and water resources.
- Provisions would be taken to prevent pollutants from reaching the soil, groundwater, or surface water. During project activities, contractors would be required to perform daily inspections of equipment, maintain appropriate spill-containment materials on site, and store all fuels and other materials in appropriate containers. Equipment maintenance activities would not be conducted on construction sites. These environmental protection measures would minimize adverse effects associated with soil, water resources, and hazardous materials and waste.
- Physical barriers and “no trespassing” signs would be placed around the demolition and construction sites to deter children and unauthorized personnel. All construction vehicles and equipment would be locked or otherwise secured when not in use. These environmental protection measures would minimize adverse effects associated with health and safety.
- Construction equipment would be used only as necessary during the daylight hours and would be maintained to the manufacturer’s specifications to minimize noise impacts. These environmental protection measures would minimize adverse effects associated with health and safety.

5.3 Unavoidable Adverse Effects

Unavoidable adverse effects would result from implementation of the Proposed Action. As discussed in detail in **Section 4**, the Proposed Action would result in short-term, adverse effects associated with construction activities, including increased noise, increased air emissions, minor interruptions to traffic flow, use and generation of small amounts of hazardous materials and wastes, and generation of construction and demolition waste. The construction of facilities and parking areas would result in the loss of some biological habitat that is characterized as highly disturbed and of low quality. None of these effects would be significant.

Wetlands. The Proposed Action would entail construction or ground-disturbing activities in wetlands (Projects I1, I2, I6, I7, I8, and I9); several other projects are in close proximity to wetlands. Effects on wetlands from these projects would not be significant, and proper implementation of environmental protection measures and construction BMPs would minimize impacts.

Floodplains. The Proposed Action would entail construction of structures or impervious surfaces in the 100-year floodplain (Projects I1 and I2). Other projects would also be within the floodplain but would remove structures (Project D2), would not create impervious surfaces (Projects I6, I7, I8, and I9), or would correct existing eroded areas and poorly functioning culverts (Projects NI1 and NI2). Effects on floodplains from these projects would not be significant, and proper implementation of environmental protection measures would minimize impacts.

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

Effects on the ground surface as a result of the Proposed Action would occur within the boundaries of JBSA-Lackland. The Proposed Action would be consistent with all applicable land use ordinances.

5.5 Relationship between the Short-term Use of the Environment and Long-term Productivity

Short-term uses of the biophysical components of the human environment include direct construction-related disturbances and direct effects associated with an increase in activity that occurs over a period of less than 5 years. Long-term uses of human environment are those effects occurring over a period of more than 5 years, including permanent resource loss.

The Proposed Action would not result in an intensification of land use in the surrounding area. Development of the Proposed Action would not represent a significant loss of open space. The long-term beneficial effects of implementing the Proposed Action and other planned installation development activities would support the ongoing and future training missions and other readiness training and operational assignments. Demolition projects would contribute to the USAF goal of reducing the physical plant footprint on the installation according to the "20/20 by 2020" initiative or making space available for future development.

5.6 Irreversible and Irretrievable Commitments of Resources

The irreversible environmental changes that would result from implementation of the Proposed Action involve the consumption of material resources, energy resources, and human resources. The use of these resources is considered to be permanent. Irreversible and irretrievable resource commitments are related to the use of nonrenewable resources and the effects that use of these resources will have on future generations. Irreversible effects primarily result from use or destruction of a specific resource that cannot be replaced within a reasonable timeframe (e.g., energy and minerals).

Wetlands. The Proposed Action would entail construction or ground-disturbing activities in wetlands (Projects I1, I2, I6, I7, I8, and I9); several other projects are in close proximity to wetlands. Effects on wetlands from these projects would not be significant, and proper implementation of environmental protection measures and construction BMPs would minimize impacts.

Floodplains. The Proposed Action would entail construction of structures or impervious surfaces in the 100-year floodplain (Projects I1 and I2), which would be considered irreversible and irretrievable effects. Other projects (Projects D2, I6, I7, I8, I9, NI1, and NI2) would also be within the floodplain but would not result in irreversible or irretrievable effects on the floodplain. Effects on floodplains from these projects would not be significant, and proper implementation of environmental protection measures would minimize impacts.

Biological Habitat. The Proposed Action would result in the loss of vegetation and wildlife habitat. This is an adverse effect, but affected habitat would be highly disturbed and of low quality. Losses would not be significant.

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

Energy Resources. No significant effects would be expected on energy resources used as a result of the Proposed Action, though any energy resources consumed would be irretrievably lost. These include petroleum-based products (e.g., gasoline and diesel fuel) and electricity. During construction, gasoline and diesel fuel would be used for the operation of construction vehicles. During operation, gasoline or diesel fuel would be used for the operation of privately owned and government-owned vehicles. Electricity would be used by operational activities. Consumption of these energy resources would not place a significant demand on their availability in the region.

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

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7. References

ACHP 2006a	Advisory Council on Historic Preservation (ACHP). 2006. *Program Comment for World War II and Cold War Era Ammunition Storage Facilities*. Executed by ACHP, 18 August 2006.
ACHP 2006b	ACHP. 2006. *Program Comment for Cold War Era Unaccompanied Personnel Housing (1946-1974)*. Executed by ACHP, 18 August 2006.
Bohn and Kershner 2002	Bohn, B. A., and J. L. Kershner. 2002. Establishing Aquatic Restoration Priorities Using a Watershed Approach. Journal of Environmental Management. 64(4):355-3630
Bouska and Paukert 2009	Bouska and Paukert. 2009. Road Crossing Designs and Their Impact on Fish Assemblages of Great Plains Streams. Transactions of the American Fisheries Society 139:214–222
BLS 2011	Bureau of Labor Statistics (BLS). 2011. “Local Area Unemployment Statistics.” Texas, San Antonio-New Braunfels Metropolitan Statistical Area, and Bexar County. U.S. Department of Labor. Available online: <http://www.bls.gov/lau/data.htm>. Accessed 3 July 2012.
Campbell 2003	Campbell, L. 2003. Endangered and Threatened Animals of Texas. Texas Parks and Wildlife Division: 127 pp.
CEQ 1997	Council on Environmental Quality (CEQ). 1997. *Considering Cumulative Effects under the National Environmental Policy Act*. January 1997.
DOD 1986	Department of Defense (DOD). 1986. Programmatic Memorandum of Agreement and 1991 Amendment among the US Department of Defense, the Advisory Council on Historic Preservation, and the National Conference of State Historic Preservation Officers regarding demolition of World War II Temporary Buildings. June 1986.
DOD 2009	DOD. 2009. *Phases II, III, and IV of the Construction of the Ambulatory Care Center*. 8 May 2009. Form 1391 Available online: <https://pax.mech.disa.mil/~1391WEB/cgi/stdrept.cgirexx>. Accessed June 15, 2012.
DOD 2010a	DOD. 2010. Memorandum from Dorothy Robyn (Office of the Under Secretary of Defense) regarding DOD Implementation of Storm Water Requirements under Section 439 of the Energy Independence and Security Act. 19 January 2010.
DOD 2010b	DOD. 2010. *Unified Facilities Criteria (UFC): Low Impact Development*. 6 April 2010.
DOD 2012	DOD. 2012. Unified Facilities Criteria (UFC) *DOD Minimum Antiterrorism Standards for Buildings*. Issued 9 February 2012. Available online: <http://www.wbdg.org/ccb/DOD/UFC/ufc_4_010_01.pdf>. Accessed on 13 April 2012.

DOE 2009 — U.S. Department of Energy (DOE). 2009. Energy Information Administration State Level Energy-Related Carbon Dioxide Emissions, 2000-2009, Table 1 State energy-related carbon dioxide emissions by year (2000-2009). Available online: <http://www.eia.gov/environment/emissions/state/state_emissions.cfm>. Accessed June 28, 2012.

Eckhardt 2010 — Eckhardt, Gregg. 2010. "The Edwards Aquifer Website." Available online: <http://www.edwardsaquifer.net/intro.html>. Accessed 26 January 2010.

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

HQ USAF 2007 — Headquarters U.S. Air Force (HQ USAF). 2007. *Air Force Sustainable Development and Design Policy*. Memorandum from HQ USAF/A7C. July 31. Available online: <http://www.afcee.af.mil/shared/media/document/AFD-080609-022.pdf>. Accessed 13 April 2012.

LAFB 1996 — Lackland Air Force Base (LAFB). 1996. *1996 Lackland Air Force Base Archaeological Survey*. 1996.

LAFB 2002a — LAFB. 2002. *Lackland Air Force Base Integrated Cultural Resources Management Plan.* October 2002.

LAFB 2002b — LAFB. 2002. *General Plan*. July 2002.

LAFB 2005a — LAFB. 2005. *Entry Control Facility Security, Safety, and Capacity Traffic Engineering Study*. January 2005.

LAFB 2005b — LAFB. 2005. LAFB Asbestos Containing Materials Management Plan. 2005.

LAFB 2005c — LAFB. 2005. LAFB Lead Based Paint Management Plan. 2005

LAFB 2006a — LAFB. 2006. *Final Environmental Assessment for Installation Development at Lackland Air Force Base, Texas*. Prepared by Science Applications International Corporation (SAIC). 1 December 2006.

LAFB 2006b — LAFB. 2006. LAFB Spill Prevention, Control and Countermeasure Plan. February 200

LAFB 2007 — LAFB. 2007. Integrated Natural Resources Management Plan. 27 June 2007.

LAFB 2008a — LAFB. 2008. *Air Installation Compatible Use Zone Study (AICUZ).* Kelly Field Annex at Lackland Air Force Base, Texas. August 2008.

LAFB 2008b — LAFB. 2008. Lackland AFB Installation Layout Map. February 2008.

LAFB 2009a — LAFB. 2009. 2008 Air Emissions Summary, Lackland AFB. June 2009.

LAFB 2009b — LAFB. 2009. Texas Pollutant Discharge Elimination System Small Municipal Separate Storm Sewer System (MS4) General Permit. Permit No. TXR040068. Issued: 8 June 2009. Expires: 13 August 2012.

LAFB 2009c	LAFB. 2009. Facts and Stats, End of Fiscal Year 2008. Prepared by 37th Comptroller Squadron/FMA. 26 January 2009. Available online: <http://www.lackland.af.mil/shared/media/document/AFD-090220-043.pdf>. Accessed 28 January 2012.
LAFB 2009d	LAFB. 2009. *Ambulatory Surgery Center Traffic Study*. Draft Report. 22 July 2009.
LAFB 2009e	LAFB. 2009. Storm Water Pollution Prevention Plan Certification. 22 January 2009**.**
LAFB 2010a	LAFB. 2010. *LAFB Facts and Stats Card FY2009.* 29 March 2010. Available online: <http://www.lackland.af.mil/shared/media/document/AFD-100702-037.pdf>. Accessed 6 July 2012.
LAFB 2010b	LAFB. 2010. 2008 Mobile Source Air Emissions Inventory for Lackland Air Force Base. August 2010.
LAFB 2010c	LAFB. 2010. 2009 Air Emissions Summary, Lackland AFB. March 2010.
LAFB 2010d	LAFB. 2010. *Environmental Assessment Addressing the Proposed Construction of an Ambulatory Care Center, Lackland Air Force Base, Texas*. July 2010.
LAFB 2010e	LAFB. 2010. Integrated Solid Waste Management Plan. February 2010.
LAFB 2011a	LAFB. 2011. Environmental Restoration Sites Construction Constraints Map. July 2011.
LAFB 2011b	LAFB. 2011. *Draft Lackland Air Force Base Inventory and Assessment of Select Buildings and Structures Dating Through 1976.* 2011. Prepared by Geo-Marine, Inc. for Lackland Air Force Base. December 2011.
LAFB 2011c	LAFB. 2011. 2010 Air Emissions Summary, Lackland AFB. March 2011.
LAFB 2011d	LAFB. 2011. *Lackland Air Force Base Bird/Wildlife Aircraft Strike Hazard (BASH) Plan 91-212*. 14 October 2011.
LAFB 2011e	LAFB. 2011. *Final LAFB Training Annex Wildlife Habitat Study Report.* July 2011.
LAFB 2011f	LAFB. 2011. Economic Impact Analysis for Lackland AFB 2010, as of September 30, 2010. Dated March 30, 2011. Available online: <http://www.jbsa.af.mil/shared/media/document/AFD-120412-060.pdf>. Accessed July 21, 2012.
LAFB 2011g	LAFB. 2011. Maintenance, Upgrade, and Repair of Storm Drainage System (MUDS) Report Update. October 2011.
LAFB 2011h	LAFB. 2011. LAFB Draft Hazardous Materials Management Plan. November 2011.

LAFB 2011i	LAFB. 2011. LAFB Hazardous Waste Management Plan. December 2011.
LAFB 2011j	LAFB. 2011. LAFB Storm Water Pollution Prevention Plan. January 2011.
LAFB 2011k	LAFB. 2011. LAFB Pollution Prevention Management Action Plan. March 2011.
LAFB 2011l	LAFB. 2011. LAFB Evaluation of Military Munitions Response Program Sites. March 2011.
LAFB 2011m	LAFB. 2011. Real Property 7115 Report. September 2011.
LAFB 2012a	LAFB. 2012. 2011 Air Emissions Summary, Lackland AFB. March 2012.
LAFB 2012b	LAFB. 2012. *Final Environmental Assessment Addressing the Defense Language Institute English Language Center (DLIELC) and Inter-American Air Forces Academy (IAAFA) Area Development Plan at Lackland Air Force Base, Texas*. January 2012.
LAFB 2012c	LAFB. 2012. *Military Working Dog Campus Revitalization Draft Environmental Assessment.* October 2012.
LAFB undated a	LAFB. Undated. The Official Web site of Lackland Air Force Base: "Lackland Air Force Base Units." Available online: <http://www.lackland.af.mil/units/>. Accessed on 15 February 2012.
LAFB undated b	LAFB. Undated. 1391 – Repair Water Mains Basewide.
LAFB undated c	LAFB. Undated. 1391 – Replace Overhead Electrical with Underground electrical. Undated.
LAFB undated d	LAFB. Undated. 1391 – Repair Basewide Gas Lines. Undated.
LAFB undated e	LAFB. Undated. Lackland AFB IRP/MMRP Construction Constraints Map. Prepared by Tetra Tech.
MTTF 2010	Military Transformation Task Force (MTTF). 2010. Military Transformation Task Force, Office of Military Affairs Slide Presentation. October 15, 2010. Available online: <http://www.sanantonio.gov/oma/pdf/MTTF%20Action%20Item%20Slides%20(FINAL)--10.15.2010.pdf>. Accessed July 17, 2012.
NPS 1997	National Park Service (NPS). 1997. National Park Service and Texas State Historic Preservation Office comments on Archaeological Survey of Lackland AFB. September 1997.
NRCS 2012	Natural Resource Conservation Service (NRCS). 2012. "Web Soil Survey." Available online: <http://webbsoilsurvey.nrcs.usda.gov/app/websoilsurvey.aspx> Accessed 25 June 2012.

Port San Antonio undated	Port San Antonio. Undated. *Kelly Field (SKF)*. Available online: <http://www.portsanantonio.us/StoreImages/collateral/kellyfield-pg1-2-compact.pdf> Accessed 19 Jul 2012.
Port San Antonio 2011	Port San Antonio. 2011. Map of Major Port San Antonio Customers. March 2011. Available online: <http://www.portsanantonio.us/>. Accessed July 17, 2012.
Riley 2011	Riley, Andrew. 2011. Email from Mr. Andrew Riley (Lackland AFB) to Mr. Stephen Pyle (HDR) with updated information regarding Lackland utilities and infrastructure information. 22 July 2011.
Roni et al. 2002	Roni, P., T. J. Beechie, R. E. Bilby, F. E. Leonetti, M. M. Pollock, and G. R. Pess. 2002. A Review of Stream Restoration Techniques and a Hierarchical Strategy for Prioritizing Restoration in Pacific Northwest Watersheds. North American Journal of Fisheries Management. 22:1–20
San Antonio 2012	San Antonio. 2012. San Antonio, Texas – Code of Ordinances. Section 21-52. Available online: http://library.municode.com/index.aspx?clientId=11508. Accessed 2 July 2012.
TAMU 2011	Texas A&M University (TAMU). 2012. *Market Report 2012*. Prepared by the Real Estate Center at Texas A&M University. Available online: <http://recenter.tamu.edu/mreports/>. Accessed July 17, 2012.
TCEQ 2008a	Texas Commission on Environmental Quality (TCEQ). 2008. “2008 Texas 303(d) List March 19, 2008.” Available online: <http://www.tceq.state.tx.us/assets/public/compliance/monops/water/08twqi/2008_303d.pdf> Accessed 30 June 2012.
TCEQ 2008b	TCEQ. 2008. General Permit to Discharge Wastes under provisions of Section 402 of the Clean Water Act and Chapter 26 of the Texas Water Code. Renewal of TPDES General Permit No. TXR150000, issued March 5, 2008.
TCEQ 2011	TCEQ. 2011. *General Permit to Discharge Under the Texas Pollutant Discharge Elimination System*. 22 July 2011.
TCEQ 2012	TCEQ. 2012. “Lower Leon Creek: A TMDL Project for Bacteria and Dissolved Oxygen” Available online: < http://www.tceq.texas.gov/waterquality/tmdl/84-lowerleonbactdo.html>. Accessed 30 June 2012.
THC 2005	Texas Historical Commission (THC). 2005. Letter from Lawrence Oaks, Executive Director regarding “Project review under Section 106 of the National Historic Preservation Act of 1966, Draft Report: Archaeological Eligibility Testing of 23 Sites on Lackland Air Force Base, Bexar County, Texas (Air Force).” Dated January 18, 2005.
THC 2009	THC. 2009. Letter from Caroline Wright regarding “Project review under Section 106 of the National Historic Preservation Act of 1966: Proposed demolition of structures 402, 403, 404, 440, and 441.” Dated July 8, 2009.

TPWD 2012	Texas Parks and Wildlife Division (TPWD). 2012. "Annotated County Lists of Rare Species; Bexar County" Rare, Threatened, and Endangered Species of Texas. Last updated 25 May 2011. Available online: <http://gis.tpwd.state.tx.us/TpwEndangeredSpecies/DesktopDefault.aspx?tabindex=0&tabid=9&type=countylist&parm=bexar>. Accessed 1 July 2012.
USACE 1994	U.S. Army Corps of Engineers (USACE). 1994. Final Wetland Delineation Report, Kelly Air Force Base, San Antonio, Texas. December 1994.
USACE 2012	USACE. 2012. Lackland Jurisdictional Determination Report. Prepared 2008, revised January 2012.
USAF 1992	U.S. Air Force (USAF). 1992. Policy Memo for the Demolition of World War II Temporary Buildings. November 1992.
USAF 1998	USAF. 1998. Land Use Planning. Air Force Pamphlet 32-1010 (AFPAM32-1010). 1 November 1998. Available online: <http://www.epublishing.af.mil/shared/media/epubs/AFPAM32-1010.pdf>. Accessed 21 November 2011.
USAF 2007	USAF. 2007. *United States Air Force Architectural Compatibility Guide.* June 2007.
USAF 2011	USAF. 2011. Programmatic Agreement Among the US Air Force and the Texas State Historic Preservation Officer for the Operation, Maintenance, and Development of Joint Base San Antonio, Texas. June 2011
U.S. Census Bureau 1990a	U.S. Bureau of the Census (U.S. Census Bureau). 1990. 1990 Census of Population: General Population Characteristics. Available online: <http://www.census.gov/prod/cen1990/cp1/cp-1.html>. Accessed 29 June 2012.
U.S. Census Bureau 1990b	U.S. Census Bureau. 1990. 1990 Census of Population and Housing Public Law 94-171 Data. Available online: <http://censtats.census.gov/cgi-bin/pl94/pl94data.pl>. Accessed on 2 July 2012.
U.S. Census Bureau 2000	U.S. Census Bureau. 2000. Profile of General Demographic Characteristics. 2000 Summary File 1 (SF 1). Accessed via American FactFinder. Available online: < http://factfinder2.census.gov/faces/nav/jsf/pages/index.xhtml >. Accessed 29 June 2012.
U.S. Census Bureau 2010a	U.S. Census Bureau. 2010. Profile of General Population and Housing Characteristics. 2010 Demographics Profile Data (DP-1). Accessed via American FactFinder. Available online: <http://factfinder2.census.gov/faces/nav/jsf/pages/index.xhtml >. Accessed 29 June 2010.

U.S. Census Bureau 2010b	U.S. Census Bureau. 2010. DP03. Selected Economic Characteristics. 2010 American Community Survey 1-Year Estimates. Accessed via American FactFinder 2. Available online: <http://factfinder2.census.gov/faces/nav/jsf/pages/index.xhtml>. Accessed 3 July 2012.
USEPA 1971	U.S. Environmental Protection Agency (USEPA). 1971. Noise from Construction Equipment and Operations, Building Equipment, and Home Appliances. 31 December 1971.
USEPA 1974	USEPA. 1974. *Information on Levels of Environmental Noise Requisite to Protect Public Health and Welfare with an Adequate Margin of Safety*. Publication No. 550/9-74-004, Washington D.C. March 1974.
USEPA 1981a	USEPA. 1981. Noise Effects Handbook. A Desk Reference to Health and Welfare Effects of Noise. Office of Noise Abatement and Control. October 1979, Revised July 1981. Available online: <http://nonoise.org/epa/Roll7/roll7doc27.pdf>. Accessed 15 July 2012.
USEPA 1981b	USEPA. 1981. "Noise and its Measurement." January 1981. Available online: <http://nonoise.org/epa/Roll19/roll19doc49.pdf>. Accessed 10 July 2012.
USEPA 2009a	USEPA. 2009. *Technical Guidance on Implementing the Stormwater Runoff Requirements for Federal Projects under Section 438 of the Energy Independence and Security Act*. December 2009
USEPA 2009b	USEPA. 2009. *Estimating 2003 Building-Related Construction and Demolition Materials Amounts*. March 2009.
USEPA 2011	USEPA. 2011. National Ambient Air Quality Standards. Last updated on 04 August 2011. Available online: <http://www.epa.gov/air/criteria.html>. Accessed June 15, 2012.
USEPA 2012a	USEPA. 2012. National Emissions Inventory (NEI) Browser. Available online: http://www.epa.gov/ttn/chief/net/2008inventory.html. Accessed June 27, 2012.
USEPA 2012b	USEPA. 2012. Stormwater Discharges From Municipal Separate Storm Sewer Systems (MS4s). Last updated on 12 March 2012. Available online: <http://cfpub.epa.gov/npdes/stormwater/munic.cfm>. Accessed 30 June 2012.
USEPA 2012c	USEPA. 2012. EPA Map of Radon Zones. Available online: http://www.epa.gov/radon/zonemap.html. Accessed 15 July 2012.
USFWS 1999	U.S. Fish and Wildlife Service (USFWS). 1999. Biological Opinion (2-15-98-759). 17 November 1999.
USFWS 2008a	USFWS. 2008. Biological Opinion (21450-2007-F-0056). 11 January 2008.

USFWS 2008b	USFWS. 2008. "Journal Entry: Biological Opinion Covering DoD Edwards Aquifer Pumping Completed." Fish and Wildlife Journal. Southwest Region. 11 January 2008. Available online: <http://www.fws.gov/arsnew/regmap.cfm?arskey=23326>. Accessed 01 July 2012.
USFWS 2012a	USFWS. 2012. "Species by County Report for Bexar County, Texas." Environmental Conservation Online System. Last updated 15 June 2011. Available online: <http://ecos.fws.gov/tess_public/countySearch!speciesByCountyReport.action?fips=48029>. Accessed 1 July 2012.
USFWS 2012b	USFWS. 2012. "Migratory Bird Flyways" Migratory Birds and Habitat Programs. Last Updated 29 June 2012. Available online: <http://www.fws.gov/migratorybirds/Flyways.html>. Accessed 01 July 2012.
WM 2012	Waste Management, Inc. (WM). 2012. *Covel Gardens Landfill – Facility Information*. 2012. Available online: <http://covelgardenslandfill.wm.com/index.jsp.>. Accessed 18 July 2012.

APPENDIX A

INVENTORY OF INSTALLATION DEVELOPMENT PROJECTS

Table A-1. Selected and Other Proposed Demolition Projects

Project Identification Number and Title	Installation Project Number	FY	Land Use	Description	Potential Constraints	Project Area (ft^2)	Change in Impervious Surface (ft^2)
Selected Demolition Projects							
D1. Security Hill Dormitory Complex Demolition	N/A	2016	Housing Unaccompanied, Administrative, Community-Commercial	Demolish vacant Buildings 2009, 2012, 2013, 2014, 2015, 2018, 2020, and 2041.	Noise	100,321	-100,321
D2. Atomic Energy Commission Facilities Demolition	N/A	2016	Training Indoor, Industrial	Demolish Buildings 424, 425, 426, 427, 433, 442, and 443.	Cultural Resources (NHPA Section 106 Consultation), QD Arc, ERP Site	13,625	13,625
D3. Demolish Munitions Storage Igloos	N/A	2015	Open Space, Industrial	Demolition of igloos 402, 403, 404, 584, 585, 586, 587, 595, 596, 597, 598, and 599.	QD Arc, ERP Site	34,643	-34,643
Other Demolition Projects							
D4. Demolish Building 1251, Exchange Administration	MPLS081008B	2013	Administrative	Demolish Building 1251	None	8,210	-8,210
D5. Demolish Building 6576, Recreation Center	N/A	2013	Commercial Common	Demolish Building 6576	ERP Site	22,352	-22,352

Project Identification Number and Title	Installation Project Number	FY	Land Use	Description	Potential Constraints	Project Area (ft^2)	Change in Impervious Surface (ft^2)
Other Demolition Projects (continued)							
D6. Demolish Building 7368, AETC Technical Training Support	N/A	2013	Training Indoor	Demolish Building 7368	None	8,257	-8,257
D7. Demolish Building 9085, BMT Recruit Dormitory	N/A	2013	Housing Unaccompanied	Demolish Building 9085	ERP Site	108,268	-108,268
D8. Demolish Building 10903, Latrine	N/A	2013	Open Space	Demolish Building 10903	None	1,680	-1,680
D9. Demolish Building 10806, Technical Training Student Housing	N/A	2014	Housing Unaccompanied	Demolish Building 10806	None	11,413	-11,413
D10. Demolish Building 1250, Offices	N/A	2015	Administrative	Demolish Building 1250	None	8,210	-8,210
D11. Demolish Building 6612, Clinic	N/A	2016	Medical	Demolish Building 6612	None	248,842	-248,842
D12. Demolish Building 7364, Technical Training Shop	N/A	2017	Training Indoor	Demolish Building 7364	None	8,257	-8,257
D13. Demolish Building 7366, Technical Training Shop	N/A	2017	Training Indoor	Demolish Building 7366	None	8,257	-8,257

Project Identification Number and Title	Installation Project Number	FY	Land Use	Description	Potential Constraints	Project Area (ft^2)	Change in Impervious Surface (ft^2)
Other Demolition Projects (continued)							
D14. Demolish Building 3662, Animal Clinic	N/A	2018	Medical	Demolish Building 3662	MMRP Site	1,806	-1,806
D15. Demolish Building 7362, TV Production Facility	N/A	2018	Training Indoor	Demolish Building 7362	None	8,257	-8,257
D16. Demolish Building 9278	N/A	2018	Industrial	Demolish Building 9278	ERP Site	2,019	-2,019
D17. Demolish Building 1385	N/A	2018	Commercial Common	Demolish Building 1385	Noise	170,904	-170,904
					Total Square Feet	**771,367**	**-771,367**

Note: *Project area in this context refers to the footprint of the project; building square footage is a separate number and is discussed in the project description for each project, as appropriate.

Key:

ERP = Environmental Restoration Program

ft^2 = square feet

FY = Fiscal Year

MMRP = Military Munitions Response Program

NHPA = National Historic Preservation Act

QD = quantity-distance

Table A-2. Selected and Other Proposed Construction Projects

Project Identification Number and Title	Installation Project Number	FY	Land Use	Description	Potential Constraints	Project Area (ft^2)	Change in Impervious Surface (ft^2)
Selected Construction Projects							
C1. Airman Training Complex West Campus	MPLS083737 MPLS083006	2014 to 2017	Open Space, Industrial, Training Outdoor, Training Indoor, Outdoor Recreation	Construction of the ATC West Campus and the Interfaith Religious Center and demolition of Buildings 9020, 9028, 9121, 9140, 9142, 9144, and 9255.	None	1,842,848	+1,758,348
C2. Permanent Party Dormitory	MPLS083008	2013	Housing Unaccompanied	Construction of a 144-room, permanent party dormitory for unaccompanied enlisted personnel.	MMRP Site	13,640	+13,640
C3. Battlefield Airman Aquatic Training Complex	MPYJ043895 MPYJ043895A MPYJ043895A1	2013	Housing Unaccompanied, Industrial, Open Space, Training Indoor	Construction of an enclosed aquatic training facility with a swimming pool, deck, and bathhouse to train up to 60 students and demolition of Building 146.	None	134,159	+104,464
C4. Reid Medical Clinic	MPLS123014	2015	Open Space	Construction of a new Reid Medical Clinic.	None	243,936	+243,936
C5. 433rd Airlift Wing Building Additions and Renovations	KELL060005BK ELL083012	2016	Aircraft Operations and Maintenance, Administrative	Construction of an addition to and renovation of Building 828 and Building 898.	MMRP Site, Noise	15,768	+15,768

Project Identification Number and Title	Installation Project Number	FY	Land Use	Description	Potential Constraints	Project Area (ft^2)	Change in Impervious Surface (ft^2)
Selected Construction Projects (continued)							
C6. AFOSI Administrative Support and Headquarters Facilities	MPLS113003 MPLS123015	2014 to 2015	Industrial, Community-Commercial, Open Space	Construction of a Headquarters Building and an Administrative Support Facility for the AFOSI.	Adjacent to NRHP-eligible resources	Support Facility: 61,899 Headquarters Facility: 87,866	Support Facility: +61,899 Headquarters Facility: +87,866
C7. AAFES BX Project	MPLS125004	2017	Administrative, Medical, Community-Commercial, Housing Unaccompanied, Open Space	Construction of a new BX and Satellite Pharmacy.	Noise	315,600	+315,600
Other Construction Projects							
C8. Construct Addition to Centralized Cryptologic Maintenance Facility (Building 2058)	KELL023001	2013	Administrative	Construction of a 10,000 ft^2 addition to and renovation of Building 2058. Construction will meet sensitive compartmented information facility standards.	None	10,000	+10,000
C9. Construct Telephone Maintenance Facility	MPLS113003A	2013	Industrial, Open Space	Construct a single-story building for maintenance and warehousing of communications equipment.	None	10,980	+10,980

Project Identification Number and Title	Installation Project Number	FY	Land Use	Description	Potential Constraints	Project Area (ft^2)	Change in Impervious Surface (ft^2)
Other Construction Projects (continued)							
C10. Renovate Luke Gate	MPLS110103/ MPLS110102	2013	Open Space, Medical, Administrative	Renovation of the parking lot at Luke Gate, installation of a speed table, and construction of a new inbound lane.	ERP Site, MMRP Site	442,000	+442,000
C11. Renovation of Building 1400, Technical Training Student Housing	MPLS100121	2013	Housing Unaccompanied	Expansion of Building 1400 by construction of a 2nd and 3rd floor.	MMRP Site	11,470	+11,470
C12. Parade Field Concrete Pad	MPLS031010E2	2013	Open Space	Construct a concrete pad and sidewalk at the Parade Field to accommodate handicapped visitors on parade days.	MMRP Site	1,500	+1,500
C13. Construct Consolidated Air Force Information Operations Center	MPLS043070	2013	Outdoor Recreation	Construct a two-story facility to accommodate 535 Air Forces Information Operations Center personnel.	ERP Site, MMRP Site, Noise	85,837	+85,837
C14. Construct U.S. Air Force Reserve Medical Training Complex	MPLS093004	2013	Medical	Construct a 37,000 ft^2 annex for administrative support to the U.S. Air Force Reserve Medical Group.	MMRP Site	22,200	+22,200

Project Identification Number and Title	Installation Project Number	FY	Land Use	Description	Potential Constraints	Project Area (ft^2)	Change in Impervious Surface (ft^2)
Other Construction Projects (continued)							
C15. Construct Mask Confidence Training Facility and Administrative/ Classroom Facility	MPYJ123016/ MPYJ123017	2013	Training Outdoor	Construction of a Mask Confidence Training Facility and Administrative/ Classroom Facility.	None	21,420	+21,420
C16. Evasion Laboratory Bathroom and Shower Facility	TBD	2013	Training Outdoor	Construct bathroom and shower facility adjacent to the Evasion Laboratory to provide shower, bathroom, and laundry facilities.	None	2,000	+2,000
C17. Construct Child Development Center	MPYJ013290/ MPLS013290	2014	Open Space, Industrial, Community-Commercial, Community-Service	Construct a single story, 300-space Child Development Center including multipurpose, isolation and storage rooms, kitchen, fenced playground area, shade pavilions and supporting infrastructure.	None	54,315	+54,315
C18. Construct Building Addition to Building 830	KELL083011	2014	Open Space, Administrative	Construct an addition to Building 830 for Life Support and Survival Equipment.	Noise, MMRP Site	27,600	+27,600
C19. Construct Addition to Building 7241, Car Wash	MPLS085004	2014	Community-Commercial	Construct an addition to Building 7241, Car Wash. Includes extending bay wall, upgrading electrical and plumbing, and installing automatic car wash.	ERP Site	3,806	+3,806

Project Identification Number and Title	Installation Project Number	FY	Land Use	Description	Potential Constraints	Project Area (ft^2)	Change in Impervious Surface (ft^2)
Other Construction Projects (continued)							
C20. Construct Addition to Facilities 956, 957, and 958, Small Arms Ranges	KELL982004	2014	Training Outdoor	Construct an addition to and repair Facilities 956, 957, and 958.	None	1,515	+1,515
C21. Construct an addition to the Bowling Alley	MPLS123002	2014	Community-Commercial	Construct an addition to the Bowling Alley (Building 6476).	None	8,240	+8,240
C22. Construct cover for Building 7342, Chaparral Pool	MPLS100127	2015	Outdoor Recreation	Construct a cover over the Chaparral Pool to create a fully enclosed climate controlled training area.	None	25,000	No Change
C23. Construct Combat Arms Training Range	MPYJ083007	2015	Training Outdoor, Open Space	Construct a fully-contained small arms range for USAF weapons training.	ERP Site, QD Arcs	100,000	+100,000
C24. Construct 37th Training Group Headquarters/ Classroom Facility	MPLS123003	2015	Housing Unaccompanied	Construct a new central headquarters facility and classrooms for the 37th Training Group/Training Support Services.	None	53,635	+53,635
C25. Construct Heritage Museum	MPLS123001	2016	Open Space	Construct a USAF museum to support the BMT mission.	MMRP Site	40,800	+40,800
C26. Construct 342d Training Squadron Administrative/ Classroom Facility	KELL123004	2016	Housing Unaccompanied	Construct an administrative/ classroom facility to consolidate 342d Training Squadron administrative functions.	None	93,983	+93,983

Project Identification Number and Title	Installation Project Number	FY	Land Use	Description	Potential Constraints	Project Area (ft^2)	Change in Impervious Surface (ft^2)
Other Construction Projects (continued)							
C27. Construct the 342d Training Squadron Warehouse/ Parachute Packing Facility	KELL123005	2016	Housing Unaccompanied	Construct a warehouse to store, repack, and distribute parachutes in support of 342d Training Squadron training requirements.	None	40,124	+40,124
C28. Construct the 37th Training Wing Joint Services Training Facility	MPYJ123012	2016	Training Indoor, Open Space	Construct the 37th Training Wing Joint Services Training Facility to house training functions from the Navy Technical Training Center and the U.S. Marine Corps.	None	13,182	+13,182
C29. Construct addition to Building 2058, Centralized Maintenance Facility	KELL123013	2016	Administrative	Construct two-floor addition to Building 2058, Centralized Maintenance Facility.	Noise	11,000	No Change
C30. Construct 343d Training Squadron Vehicle Operator Simulator Facility	KELL123006	2017	Open Space	Construct facility to simulate vehicle operations and training to support the 343d Training Squadron mission.	None	13,182	+13,182

Project Identification Number and Title	Installation Project Number	FY	Land Use	Description	Potential Constraints	Project Area (ft^2)	Change in Impervious Surface (ft^2)
Other Construction Projects (continued)							
C31. 343d Training Squadron Virtual Use of Force Laboratory and Firearms Training Simulator Facility	KELL123007/KELL123008	2017	Training Indoor, Housing Unaccompanied	Construct the Virtual Use of Force Laboratory and Firearms Training Simulator and Firearms Training Simulator Facility in support of 343d Training Squadron mission requirements.	None	14,608	+14,068
C32. Cryptologic Systems Division Vehicle Forklift Accessibility Ramp	KELL120005	2017	Administrative	Construct new concrete ramp in support of forklift accessibility.	Noise	5,000	+5,000
C33. 343d Training Squadron Security Forces Academy Facility	KELL123009	2018	Open Space	Construct new consolidated 343d Training Squadron training facility.	None	39,957	+39,957
C34. 344d Training Squadron High-Bay Facility	KELL123010	2018	Housing Unaccompanied	Construct high-bay facility for indoor cargo/loadmaster training, two dry work area canopy structures, and a central training area.	100-year floodplain	4,824	+4,824
C35. 344d Training Squadron Vehicle Maintenance Schoolhouse	KELL123011	2018	Training Outdoor	Construct facility to support vehicle maintenance training requirements.	None	27,148	+27,148

Project Identification Number and Title	Installation Project Number	FY	Land Use	Description	Potential Constraints	Project Area (ft^2)	Change in Impervious Surface (ft^2)
Other Construction Projects (continued)							
C36. 300 Room Pipeline Student Dormitory	MPLS083730	2018	Administrative, Housing Unaccompanied	Construct a 300-room Pipeline Student Dormitory to house 600 Technical Training Students.	None	48,550	+48,550
					Total Square Feet	**3,949,592**	**3,744,592**

Note: *Project area in this context refers to the footprint of the project; building square footage is a separate number and is discussed in the project description for each project, as appropriate.

Key:

AAFES = Army and Air Force Exchange Service

ERP = Environmental Restoration Program

ft^2 = square feet

FY = Fiscal Year

MMRP = Military Munitions Response Program

QD = quantity-distance

TBD = to be determined

Table A-3. Selected and Other Proposed Infrastructure Improvement Projects

Project Identification Number and Title	Installation Project Number	FY	Land Use	Description	Potential Constraints	Project Area (ft^2)	Change in Impervious Surface (ft^2)
Selected Infrastructure Improvement Projects							
I1. Pavements Projects	XX-1010, where XX is the year that the project is to be awarded	2013 to 2018	Various	Project would include expansion of roadways by two additional lanes, installation of a dedicated bike lane, installation of new troop walks and sidewalks, and construction of plazas, memorials, and displays.	MMRP Sites, ERP Sites, Noise. Non-Jurisdictional Wetlands: 0.02 acre. 100-year Floodplain: 6.7 acres.	Roads: 16,088,659 Troop walks: 608,781 Sidewalks: 2,249,280 Plazas, Memorials, Displays: 40,000 Total: 18,986,720	+18,986,720
I2. Golf Cart Path Upgrades	MPLS105009A	2014	Outdoor Recreation, Industrial	Upgrade the golf cart paths at the Lackland Gateway Hills Golf Course.	ERP Site, MMRP Site, Noise, Adjacent to NRHP-eligible resources. Jurisdictional Wetlands: 10 ft^2. 100-year Floodplain: 1.7 acres.	400,190	+200,095

Project Identification Number and Title	Installation Project Number	FY	Land Use	Description	Potential Constraints	Project Area (ft^2)	Change in Impervious Surface (ft^2)
Selected Infrastructure Improvement Projects (continued)							
I3. Airfield Lighting Upgrades	KELL069001	2015	Runway/ Taxi/ Apron, Open Space, Aircraft Operations and Maintenance	Replace the edge lighting and cabling along the runway and adjacent taxiways.	Noise, QD Arcs, MMRP Sites	11,302,077	No Change
I4. TANG Apron Repair	KELL070646	2014	Runway/ Taxiway/ Apron, Aircraft Operations and Maintenance, Open Space	Repair the TANG Aprons A15B, A98C, and A99C.	Noise	408,592	+9,800
I5. Parking Lot Installation	N/A	2013 to 2018	Industrial, Open Space, Outdoor Recreation	Construction of up to six parking lots installationwide.	QD arcs, ERP Sites, MMRP site, Noise	1,542,024	+1,542,024
I6. Natural Gas Line Upgrades	MPLS0609038	2013 to 2018	Various	Upgrade all natural gas lines.	MMRP Sites, ERP Sites, Noise, QD Arcs. Jurisdictional Wetlands: 0.02 acre. Non-Jurisdictional Wetlands: 0.09 acre. 100-year Floodplain: 5.3 acres.	340,578	No Change

Project Identification Number and Title	Installation Project Number	FY	Land Use	Description	Potential Constraints	Project Area (ft^2)	Change in Impervious Surface (ft^2)
Selected Infrastructure Improvement Projects (continued)							
I7. Electrical Distribution System Upgrades	MPLS110082	2015	Various	Replacement of all overhead electrical distribution lines with underground lines.	MMRP Sites, ERP Sites, Noise, QD Arcs. Jurisdictional Wetlands: 0.01 acre. Non-Jurisdictional Wetlands: 0.25 acre. 100-year Floodplain: 4.36 acres.	198,963	+198,963
I8. Main Water Lines Upgrades	MPLS090014	2013 to 2018	Various	Upgrade all main water lines.	MMRP Sites, ERP Sites, Noise, QD Arcs. Jurisdictional Wetlands: 0.02 acre. Non-Jurisdictional Wetlands: 0.04 acre. 100-year Floodplain: 3.62 acres.	227,574	No Change

Project Identification Number and Title	Installation Project Number	FY	Land Use	Description	Potential Constraints	Project Area (ft^2)	Change in Impervious Surface (ft^2)
Selected Infrastructure Improvement Projects (continued)							
I9. Sanitary Sewer Lines Upgrades	MPJY069206	2013 to 2018	Various	Replace sanitary sewer lines at the Lackland Training Annex.	ERP Sites, QD Arcs. Jurisdictional Wetlands: 0.02 acre. Non-Jurisdictional Wetlands: 0.01 acre. 100-year Floodplain: 1.9 acres.	204,420	No Change
Other Infrastructure Improvement Projects							
I10. Construct Gravel Parking Lot for Military Working Dog Training Area	MPLS100174J	2013	Open Space, Training Indoor	Construct a six inch compacted gravel parking lot south of Knight Street and north of Building 7646.	None	70,000	+70,000
I11 Construct 25,000 gallon diesel storage tank	KELL112001	2013	Industrial	Installation of one 25,000 gallon diesel storage tank.	Noise	900	+900
I12. Replace Elevated Water Tank at Building 6676	MPLS079008	2013	Industrial	Replace elevated water tank at Building 6676, includes demolition of the old tank, foundations, pumps, pipes and cathodic protection for the new tanks.	ERP Site	6,724	No Change

Project Identification Number and Title	Installation Project Number	FY	Land Use	Description	Potential Constraints	Project Area (ft^2)	Change in Impervious Surface (ft^2)
Other Infrastructure Improvement Projects (continued)							
I13. Replace Elevated Water Tanks at Building 1506	MPLS079009	2013	Housing Accompanied	Replace the elevated water tank at Building 1506, includes demolition of the old tank, foundations, pumps, pipes and cathodic protection for the new tanks.	Noise	6,724	No Change
I14. Replace Elevated Water Tanks at Building 5710	MPLS079006	2013	Community-Commercial	Replace 3 elevated water tanks at Building 5710, includes demolition of the old tank, foundations, pumps, pipes and cathodic protection for the new tanks.	None	6,724	No Change
I15. Expand Base Library Parking Lot	MPLS031010R	2013	Administrative, Community-Service	Expand existing parking lot at the Base Library from 40 to 70 parking spots.	None	13,500	+13,500
I16. Construct Building 826 Parking Spaces	KELL081010J	2013	Aircraft Operations and Maintenance	Construct 20 new parking spaces at Building 826.	MMRP Site, Noise	9,000	+9,000

Project Identification Number and Title	Installation Project Number	FY	Land Use	Description	Potential Constraints	Project Area (ft^2)	Change in Impervious Surface (ft^2)
Other Infrastructure Improvement Projects (continued)							
I17. Replace Elevated Water Tanks at Building 5084	MPLS079005	2013	Open Space	Replace three elevated water tanks at Building 5084, includes demolition of the old tank, foundations, pumps, pipes and cathodic protection for the new tanks.	None	6,724	No Change
I18. Construct Warrior Week Gate Parking Lot	MPLS031010A	2014	Open Space, Industrial	Construct gravel parking at the Warrior Week entry gate.	MMRP Site	1,600	+1,600
I19. Construct Connector Road from Hall Street to Range Road	MPLS051010B1	2015	Outdoor Recreation, Industrial, Open Space, Aircraft Operations and Maintenance	Construct new connector road from Hall Street to Range Road.	ERP Sites, MMRP Site, Noise	310,032	+310,032

Project Identification Number and Title	Installation Project Number	FY	Land Use	Description	Potential Constraints	Project Area (ft^2)	Change in Impervious Surface (ft^2)
Other Infrastructure Improvement Projects (continued)							
I20. Construct Mini-wall at Buildings 9085, 10416, 5570, and 7065	MPLS031010E4/ MPLS031010E6/ MPLS031010E8	2015	Training Indoor, Administrative, Housing Unaccompanied	Construct a mini-wall around Buildings 9085, 10416, 5570, and 7065. Protect openings in the wall with steel retractable and/or fixed bollards as necessary at all parking entrances, delivery vehicle docks and sidewalks. Install supporting electrical systems and rework utilities as necessary.	ERP Site	19,398	+19,398
I21. Construct Security Hill Truck Turn-around Point	KELL120007	2015	Outdoor Recreation, Administrative	Construct Security Hill turn-around point for trucks.	Noise	1,000	+1,000
I22. Runway 15/33 Extension	TBD	2015	Airfield	Extend the north overrun of Runway 15/33 from 150 feet to 1,000 feet.	APZ I, Noise	255,000	+255,000
					Total Square Feet	**34,299,066**	**+21,617,132**

Key:

APZ = Accident Potential Zone
ERP = Environmental Restoration Program
ft^2 = square feet
FY = Fiscal Year
MMRP = Military Munitions Response Program
QD = quantity-distance
TBD = to be determined

Table A-4. All Proposed Natural Infrastructure Management Projects

Project Identification Number and Title	Installation Project Number	FY	Land Use	Description	Potential Constraints	Project Area (ft^2)	Change in Impervious Surface (ft^2)
NI1. Medio Creek Erosion Control	MPYJ100177	2013	Open Space	Installation of erosion-control measures along Medio Creek and removal of the existing concrete structure and culverts near the intersection of an unpaved patrol road and Medio Creek.	ERP Sites, Waters of the United States. 100-year Floodplain: 4.1 acres.	12,000	-2,100
NI2. Warrior Week Road – Leon Creek Bridge	MPLS031010	2013	Open Space, Training Outdoor	This project would entail repair of eroded areas near Leon Creek, removal of the existing culvert, and installation of a bridge over Leon Creek near its intersection with Warrior Week Road	MMRP Sites, ERP Sites, Waters of the United States. 100-year Floodplain: 0.4 acres.	3,750	+3,900
					Total Square Feet	**15,750**	**+1,800**

Key:

ERP = Environmental Restoration Program

ft^2 = square feet

FY = Fiscal Year

MMRP = Military Munitions Response Program

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APPENDIX B

Interagency and Intergovernmental Coordination for Environmental Planning (IICEP), Native American Tribal Consultation, and Public Involvement Correspondence

IICEP Distribution List

The Description of the Proposed Action and Alternatives was made available to the agencies listed below for a 30-day review period. Responses received follow the distribution list in this appendix. The Draft IDEA and FONSI will be made available for a 30-day review period.

Ms. Lisa P. Jackson, Administrator
USEPA Region 6
1445 Ross Avenue, Suite 1200
Dallas, Texas 75202

Mr. David C. Frederick
Field Supervisor
U.S. Fish and Wildlife Service
10711 Burnet Road, Suite 200
Austin, Texas 78758

Mr. Stephen Brooks
U.S. Army Corps of Engineers
Regulatory Branch, Permit Section
Attn: CESWF-PER-R
P.O. Box 17300
Fort Worth, Texas 76102-0300

Mr. Richard A. Hyde, Deputy Director
Office of Permitting and Registration
Texas Commission on Environmental Quality
MC 122
P.O. Box 13087
Austin, Texas 78711-3087

Mr. F. Lawrence Oaks
State Historic Preservation Office
Texas Historical Commission
P.O. Box 12276
Austin, Texas 78111-2276

Ms. Denise S. Francis
TRACs-Single Point of Contact
P.O. Box 12428
Room 441-A
Austin, Texas 78711-2428

Ms. Kyle Mills
Federal Emergency Management Agency
800 North Loop 288
Denton, Texas 76209

Ms. Tiffany Pickens
Alamo Area Council of Governments
Community Relations Coordinator
8700 Tesoro Drive, Suite 700
San Antonio, Texas 78217

Dr. David Sager
Texas Parks and Wildlife Department
Chief, Ecosystem/Habitat Assessment Branch
4200 Smith School Road
Austin, Texas 78744-3291

Mr. Nefi Garza, P.E., CFM
Assistant Director of Public Works/FPA
P.O. Box 839966
San Antonio, Texas 78283

Mr. Michael Segner
Texas Water Development Board
State National Flood Insurance Flood Program Coordinator
1700 North Congress Avenue
P.O. Box 13231
Austin, TX 78711-3231

U. S. Department of Homeland Security
FEMA Region 6
800 North Loop 288
Denton, TX 76209-3698

FEMA

FEDERAL EMERGENCY MANAGEMENT AGENCY
REGION VI
MITIGATION DIVISION

PUBLIC NOTICE REVIEW/ENVIRONMENTAL CONSULTATION

☐ We have no comments to offer. ☒ We offer the following comments:

WE WOULD REQUEST THE REVIEW OF EXECUTIVE ORDER 11988 & EXECUTIVE ORDER 11990. These orders place special importance on floodplains and direct federal agencies to avoid conducting, allowing or supporting actions on a floodplain. Inform Local and County Floodplain Administrator. We suggest contacting the state National Flood Insurance Coordinator,

Texas Water Development Board
Mike Segner, State NFIP Coordinator
(512) 463-3509
michael.segner@twdb.state.tx.us

REVIEWER:

DATE: August 29, 2012

Mayra G. Diaz, **CFM**
Floodplain Management & Insurance Branch
Mitigation Division
Phone 940-898-5541 | Mobile 940-390-0587 |
mayra.diaz@dhs.gov |www.floodsmart.gov

U. S. Department of Homeland Security
FEMA Region 6
800 North Loop 288
Denton, TX 76209-3698

FEMA

FEDERAL EMERGENCY MANAGEMENT AGENCY
REGION VI
MITIGATION DIVISION

PUBLIC NOTICE REVIEW/ENVIRONMENTAL CONSULTATION

☐ We have no comments to offer. ☒ We offer the following comments:

WE WOULD REQUEST THE REVIEW OF EXECUTIVE ORDER 11988 & EXECUTIVE ORDER 11990. These orders place special importance on floodplains and direct federal agencies to avoid conducting, allowing or supporting actions on a floodplain. Inform Local and County Floodplain Administrator. We suggest contacting the state National Flood Insurance Coordinator,

Texas Water Development Board
Mike Segner, State NFIP Coordinator
(512) 463-3509
michael.segner@twdb.state.tx.us

REVIEWER: DATE: October 4, 2012

Mayra G. Diaz, **CFM**
Floodplain Management & Insurance Branch
Mitigation Division
Phone 940-898-5541 | Mobile 940-390-0587 |
mayra.diaz@dhs.gov |www.floodsmart.gov

TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

Protecting Texas by Reducing and Preventing Pollution

August 30, 2012

Mr. Edward L. Roberson
Section Chief, Asset Optimization
802 CES/CEAO
1555 Gott Street
Lackland AFB, Texas 78236-5645

Re: TCEQ Grant and Texas Review and Comment System (TRACS) #2012-348, City of San Antonio, Bexar County – Final Description of the Proposed Action and Alternatives for an Environmental Assessment of Installation Development at Joint Base San Antonio-Lackland, Texas

Dear Mr. Roberson:

The Texas Commission on Environmental Quality (TCEQ) has reviewed the above-referenced project and offers following comments:

A review of the project for General Conformity impact in accordance with 40 CFR Part 93 indicates that the proposed action is located in the City of San Antonio, Bexar County, which is currently unclassified or in attainment of the National Ambient Air Quality Standards for all six criteria air pollutants. Therefore, General Conformity does not apply.

Although any demolition, construction, rehabilitation or repair project will produce dust and particulate emissions, these actions should pose no significant impact upon air quality standards. Any and particulate emissions should be easily controlled by using standard dust mitigation techniques.

Any debris or waste disposal should be at an appropriately authorized disposal facility.

We have no comment on this project.

Thank you for the opportunity to review this project. If you have any questions, please contact Ms. Janie Roman at (512)239-0604 or Janie.roman@tceq.texas.gov.

Sincerely,

Jim Harrison, Director
Intergovernmental Relations Division

DEPARTMENT OF THE ARMY
FORT WORTH DISTRICT, CORPS OF ENGINEERS
P.O. BOX 17300
FORT WORTH, TEXAS 76102-0300

REPLY TO
ATTENTION OF

August 30, 2012

Planning, Environmental, and Regulatory Division
Regulatory Branch

SUBJECT: Project Number SWF-2012-00370, Proposed Action and Alternatives for FY 2013 to FY 2018

Nicholas Smith
802 CES/CEAOP
1555 Gott Street
Lackland AFB, TX 78236

Dear Mr. Smith:

Thank you for your letter received August 28, 2012 concerning a proposal by U.S. Air Force, Air Education and Training Command, 502d Air Base Wing, and Joint Base San Antonio - Lackland to implement demolition, construction activities, infrastructure improvements, and natural infrastructure management activities located in the City of San Antonio, Bexar County, Texas.. This project has been assigned Project Number SWF-2012-00370. Please include this number in all future correspondence concerning this project.

Mr. Scott Kelly has been assigned as the regulatory project manager for your request and will be evaluating it as expeditiously as possible.

You may be contacted for additional information about your request. For your information, please reference the Fort Worth District Regulatory Branch homepage at http://www.swf.usace.army.mil/regulatory and particularly guidance on submittals at http://www.swf.usace.army.mil/pubdata/environ/regulatory/introduction/submital.pdf, and mitigation at http://www.usace.army.mil/CECW/Pages/final_cmr.aspx that may help you supplement your current request or prepare future requests.

If you have any questions about the evaluation of your submittal or would like to request a copy of one of the documents referenced above, please contact Mr. Scott Kelly at the address above or telephone 817-886-1662 and refer to your assigned project number. Please note that it is unlawful to start work without a Department of the Army permit if one is required.

Please help the Regulatory Program improve its service by completing the survey on the following website: http://per2.nwp.usace.army.mil/survey.html.

Stephen L Brooks
Chief, Regulatory Branch

DEPARTMENT OF THE ARMY
FORT WORTH DISTRICT, CORPS OF ENGINEERS
P. O. BOX 17300
FORT WORTH, TEXAS 76102-0300

REPLY TO
ATTENTION OF

September 19, 2012

Planning, Environmental, and Regulatory Division
Regulatory Branch

SUBJECT: SWF-2012-000370

Mr. Nicholas Smith
802 CES/CEAOP
1555 Gott Street
Lackland AFB, Texas 78236

Dear Mr. Smith:

Thank you for your letter received on August 28, 2012, concerning a proposal by U.S. Air Force, Air Education and Training Command, 502d Air Base Wing, and Joint Base San Antonio-Lackland to implement demolition, construction activities, infrastructure improvements, and natural infrastructure management activities located in the City of San Antonio, Bexar County, Texas. This project has been assigned Project Number SWF-2012-00370. Please include this number in all future correspondence concerning this project. Failure to reference the project number may result in a delay.

We have reviewed this project in accordance with Section 404 of the Clean Water Act and Section 10 of the Rivers and Harbors Act of 1899. Under Section 404, the U. S. Army Corps of Engineers (USACE) regulates the discharge of dredged and fill material into waters of the United States, including wetlands. Our responsibility under Section 10 is to regulate any work in, or affecting, navigable waters of the United States. Any such discharge or work requires Department of the Army authorization in the form of a permit. For more information on the USACE Regulatory Program, please see our Internet homepage at www.swf.usace.army.mil and select "Regulatory Program".

We are unable to determine from the information provided whether Department of the Army authorization will be required. Please provide a more detailed description of the entire proposed project, a suitable map of the proposed project area showing the location of proposed discharges, the type and amount of material (temporary or permanent), if any, to be discharged, and plan and cross-section views of the proposed project. Please refer to the enclosed guidance for Department of the Army submittals for additional details about what you should submit for this and future projects. For more information on the USACE Regulatory Program, please refer to our Internet homepage at www.swf.usace.army.mil and select "Regulatory Program."

If a Department of the Army permit is required, the project may be authorized by one or more general permits. For work to be authorized by general permit it must comply with the specifications and conditions of the permit. Projects that would not meet the specifications and conditions of a general permit may require authorization by individual permit.

We encourage you to avoid and minimize adverse impacts to streams, wetlands, and other waters of the United States in planning this project. Please forward your response to us as soon as possible so that we may continue our evaluation of your request. Please note that it is unlawful to start work without a Department of the Army permit when one is required.

Thank you for your interest in our nation's water resources. If you have any questions concerning our regulatory program, please contact Mr. Scott Kelly at the address above or telephone (817) 886-1662.

Sincerely,

for Stephen L Brooks
Chief, Regulatory Branch

Native American Tribal Consultation Distribution List

The Description of the Proposed Action and Alternatives was made available to the following Native American tribes as part of JBSA-Lackland's on-going program of tribal consultation and to facilitate early planning of the project. The Draft IDEA and FONSI will be made available for a 30-day review period. A summary of comments received will be included in the Final IDEA.

Mr. Mark Chino
President
Mescalero Apache and Affiliated Tribes
PO Box 227
Mescalero, New Mexico 88340

Mr. Donald Patterson
President
Tonkawa Tribe
1 Rush Buffalo Road
Tonkawa, Oklahoma 74653

Mr. Leslie Standing
President
Wichita and Affiliated Tribes
PO Box 729
Anadarko, Oklahoma 73005

Mr. Johnny Wauqua
Chairman
Comanche Tribe
PO Box 908
Lawton, Oklahoma 73502

APPENDIX C

NATIONAL REGISTER OF HISTORIC PLACES ELIGIBILITY STATUS FOR FACILITIES ON JBSA-LACKLAND SCHEDULED FOR DEMOLITION WITHIN THE NEXT 6 YEARS

Table C-1. National Register of Historic Places Eligibility Status for Facilities on JBSA-Lackland Scheduled for Demolition within the Next 6 Years

Facility Number	Structure Name	Construction Date	CAT Code	National Register of Historic Places Status	Citation
146	Administrative Office	1966	610811	Not eligible under Criterion Consideration G; Unlikely to become NRHP eligible upon reaching 50 years of age	LAFB 2011b
402	Munitions Storage Igloo	1955	422253	Covered by ACHP program comment for pre-1975 ammunition storage facilities.	ACHP 2006a
403	Munitions Storage Igloo	1955	422253	Covered by ACHP program comment for pre-1975 ammunition storage facilities.	ACHP 2006a
404	Munitions Storage Igloo	1955	422253	Covered by ACHP program comment for pre-1975 ammunition storage facilities.	ACHP 2006a
424	Inert Spares Storage	1986	422265	Not eligible	LAFB 2002b
425	Inert Spares Storage	1954	422265	Eligible; contributing element to proposed Medina Base Historic District	LAFB 2002b
426	Logistics Facility Depot Operations	1954	610675	Eligible; contributing element to proposed Medina Base Historic District	LAFB 2002b
427	Inert Spares Storage	1954	422265	Eligible; contributing element to proposed Medina Base Historic District	LAFB 2002b
433	Base Engineer Covered Storage Facility	1959	219946	Eligible; contributing element to proposed Medina Base Historic District.	LAFB 2002b
442	Inert Spares Storage	1961	422265	Eligible; contributing element to proposed Medina Base Historic District	LAFB 2002b
443	Air Conditioning Central Plant	1955	890123	Eligible; contributing element to proposed Medina Base Historic District	LAFB 2002b
584	Munitions Storage Igloo	1955	422264	Covered by ACHP program comment for pre-1975 ammunition storage facilities.	ACHP 2006a
586	Munitions Storage Igloo	1955	422264	Covered by ACHP program comment for pre-1975 ammunition storage facilities.	ACHP 2006a
587	Munitions Storage Igloo	1955	422264	Covered by ACHP program comment for pre-1975 ammunition storage facilities.	ACHP 2006a

Facility Number	Structure Name	Construction Date	CAT Code	National Register of Historic Places Status	Citation
595	Munitions Storage Igloo	1955	422264	Covered by ACHP program comment for pre-1975 ammunition storage facilities.	ACHP 2006a
596	Munitions Storage Igloo	1955	422264	Covered by ACHP program comment for pre-1975 ammunition storage facilities.	ACHP 2006a
597	Munitions Storage Igloo	1955	422264	Covered by ACHP program comment for pre-1975 ammunition storage facilities.	ACHP 2006a
598	Munitions Storage Igloo	1955	422264	Covered by ACHP program comment for pre-1975 ammunition storage facilities.	ACHP 2006a
599	Munitions Storage Igloo	1955	422264	Covered by ACHP program comment for pre-1975 ammunition storage facilities.	ACHP 2006a
1250	Offices	1951	610915	Not eligible; lacks architectural integrity	LAFB 2002b
1251	Exchange Administration	1951	740386	Not eligible; lacks architectural integrity	LAFB 2002b
1385	Base Exchange	1971	740388	Not eligible under Criterion Consideration G; Unlikely to become NRHP eligible upon reaching 50 years of age	LAFB 2011b
2009	Airmen Permanent Party/PCS-Student Dormitory	1953	721312	Covered under ACHP Program Comment for Unaccompanied Personnel Housing (1946-1974)	LAFB 2002b
2012	Headquarters, Major Command	1953	610284	Not eligible under Criteria A to D	LAFB 2011b
2013	Airmen Permanent Party/PCS-Student Dormitory	1953	721312	Covered under ACHP Program Comment for Unaccompanied Personnel Housing (1946-1974)	LAFB 2011b
2014	Air Conditioning Plant Building	1953	890123	Not eligible	LAFB 2002b
2015	Airmen Permanent Party/PCS-Student Dormitory	1953	721312	Covered under ACHP Program Comment for Unaccompanied Personnel Housing (1946-1974)	LAFB 2011b
2018	Airmen Permanent Party/PCS-Student Dormitory	1953	721312	Covered under ACHP Program Comment for Unaccompanied Personnel Housing (1946–1974)	LAFB 2011b

Facility Number	Structure Name	Construction Date	CAT Code	National Register of Historic Places Status	Citation
2020	Airmen Permanent Party/PCS-Student Dormitory	1953	721312	Covered under ACHP Program Comment for Unaccompanied Personnel Housing (1946–1974)	LAFB 2011b
2041	Dining Hall	1980	722351	Not eligible	LAFB 2002b
3662	Animal Clinic	1971	740270	Not eligible under Criterion Consideration G; Unlikely to become NRHP eligible upon reaching 50 years of age	LAFB 2011b
6576	Recreation Center	1969	740316	Not eligible under Criterion Consideration G; Unlikely to become NRHP eligible upon reaching 50 years of age	LAFB 2011b
6612	Clinic	1967	510411	Not eligible under Criterion Consideration G; Unlikely to become NRHP eligible upon reaching 50 years of age	LAFB 2011b
7362	TV Production Facility	1951	141389	Not eligible; lacks architectural integrity	LAFB 2002b
7364	Technical Training Shop	1951	171623	Not eligible; lacks architectural integrity	LAFB 2002b
7366	Technical Training Shop	1951	171623	Not eligible; lacks architectural integrity	LAFB 2002b
7368	AETC Technical Training Support	1951	171627	Not eligible; lacks architectural integrity	LAFB 2002b
7475	Technical Training Lab/Shop	1951	171623	Not eligible; lacks architectural integrity	LAFB 2002b
7481	Technical Training Lab/Shop	1951	171623	Not eligible; lacks architectural integrity	LAFB 2002b
7485	Technical Training Lab/Shop	1951	171623	Not eligible; lacks architectural integrity	LAFB 2002b
9020	Medical Command and Administration	1960	510125	Not eligible under Criteria A-D	LAFB 2011b
9028	Band Center	1962	171158	Not eligible under Criterion Consideration G; Unlikely to become NRHP eligible upon reaching 50 years of age	LAFB 2011b
9085	BMT Recruit Dormitory	1971	721311	Covered under ACHP Program Comment for Unaccompanied Personnel Housing (1946–1974)	LAFB 2011b

Facility Number	Structure Name	Construction Date	CAT Code	National Register of Historic Places Status	Citation
9121	Base Engineering Maintenance Shop	1994	219944	Too recent, post-50 years of age and post-Cold War era.	N/A
9140	Latrine	1975	723392	Not eligible	LAFB 2002b
9142	Athletic Field	1976	750179	Not eligible	LAFB 2002b
9144	Athletic Field	1976	750179	Not eligible	LAFB 2002b
9255	Disaster Preparation	1961	610243	Not eligible under Criterion Consideration G; Unlikely to become NRHP eligible upon reaching 50 years of age according to LAFB 2011b. However since building is 50 years at this time, SHPO should concur on NRHP ineligibility under Criteria A-D.	LAFB 2011b
9278	Base Engineering Storage Shed	1951	219947	Not eligible; lacks architectural integrity	LAFB 2002b
10806	Technical Training Student Housing	1986	721313	Not eligible	LAFB 2002b
10903	Latrine	2005	723392	Too recent, post-50 years of age and post-Cold War era.	N/A

Notes:

1. All unevaluated buildings are considered to be eligible for listing on the NRHP until a determination has been made.
2. Gray shading identifies selected demolition projects to be analyzed in this IDEA.
3. Information compiled using AF Form 7115 and the references listed.

APPENDIX D

Documentation of NRHP Eligibility Evaluations, SHPO Concurrence, and Memorandums of Agreement for Selected Projects

7/10/09 2

TEXAS HISTORICAL COMMISSION

real places telling real stories

July 8, 2009

Matt Kramm
Chief of Conservation
37 CES/CEANN
1555 Gott Street
Lackland AFB TX 78236-5645

Re: *Project review under Section 106 of the National Historic Preservation Act of 1966*
Proposed demolition of structures 402, 403, 404, 440, and 441. Lackland Training Annex, Lackland AFB, Bexar County (Air Force)

Dear Mr. Kramm,

Thank you for your correspondence describing the above referenced project. This letter serves as comment on the proposed undertaking from the State Historic Preservation Officer, the Executive Director of the Texas Historical Commission.

The review staff, led by Caroline Wright, has completed its review of the project documentation provided. Buildings 402, 403, and 404 fall under the Program Comment for World War II and Cold War Era Ammunition Storage Facilities enacted by the Department of Defense and the Advisory Council for Historic Preservation. These specific building types at Lackland Training Annex are identified in the 2005 inventory created for this Program Comment. Demolition may therefore be undertaken at the Air Force's convenience as mitigation measures have been previously agreed upon and completed by the DOD and the Air Force.

Structures 440 and 441 however, do not appear to be included under that agreement as they are a less common type of ammunition storage structure. As contributing buildings to a potential National Register District, their demolition will have an Adverse Effect. To proceed with this undertaking, we will need to see an analysis of alternatives and proposed mitigation measures along with preparation of a Memorandum of Agreement.

We look forward to further consultation with your office and hope to maintain a partnership that will foster effective historic preservation. Thank you for your cooperation in this federal review process, and for your efforts to preserve the irreplaceable heritage of Texas. **If you have any questions concerning our review or if we can be of further assistance, please contact Caroline Wright at 512/463-6214.**

Sincerely,

Caroline Wright, Project Reviewer for:
Mark Wolfe, Chief Deputy State Historic Preservation Officer

cc: Deborah Tharp, Randolph AFB, via email

RICK PERRY, GOVERNOR • JON T. HANSEN, CHAIRMAN • F. LAWERENCE OAKS, EXECUTIVE DIRECTOR
P.O. BOX 12276 • AUSTIN, TEXAS • 78711-2276 • P 512.463.6100 • F 512.475.4872 • TDD 1.800.735.2989 • www.thc.state.tx.us

DEPARTMENT OF THE AIR FORCE
AIR EDUCATION AND TRAINING COMMAND

Mr. Matt Kramm
Lackland AFB Chief of Conservation
37 CES/CEANN
1555 Gott Street
Lackland AFB TX 78236

Mr. F. Lawerence Oaks
Director, Texas Historic Commission
P.O. Box 12276
Austin TX 78711-2276

Dear Mr. Oaks

As required by the National Historic Preservation Act, we request your review of our project to demolish buildings 402, 403, 404, 440 and 441 (Lackland Training Annex), all of which are considered obsolete. The facilities were constructed during the Cold War Era history of the United States, and either has eligible status in the National Register of Historic Places or is a contributing element to a historic district or proposed historic district. The proposed demolition may create an adverse effect to the historic district(s) because of the buildings disappearance from the scene.

- Buildings 402, 403, and 404 are identical "A" type buildings constructed in 1955 by the Atomic Energy Commission (AEC) and located at what was then called Medina Base. The buildings were originally designed and constructed as nuclear weapons inspection and storage facilities under the auspices of the Armed Forces Special Weapons Project (AFSWP). The buildings measure 53 feet wide by 41.5 feet deep. Each interior contains approximately 2,900 square feet of space. The buildings are constructed of reinforced concrete. Character-defining features that make these buildings contributors to the proposed Medina Base Historic District include a large formed concrete face and an inset entry area with its own concrete face and solid single door. A cantilevered concrete canopy extends from the face of the buildings over a raised concrete loading dock with metal handrails, stair rails and four equally sized rooms accessed by steel vault doors. In 1966 the AEC vacated Medina Base and the buildings were acquired by the Air Force and used as storage and were never again used to store nuclear material.

- Buildings 440 and 441 are identical and constructed in 1961. Age and rain have caused deterioration to the roofs and their structural integrity is not sound. Also, because of the roof leaks, the buildings are plagued with a serious mold problem. Presently, the condition of the roofs and mold poses a safety and health hazard and occupants have vacated the buildings.

The buildings have surpassed their service life, and are beyond economical repair. No rehabilitation or reuse is feasible. We request approval for complete demolition; no replacements shall be considered. We are prepared to analyze cumulative impacts, and to prepare appropriate documentation (memorandum of agreement) as required for demolition projects.

Request your approval and/or concurrence to proceed with these important demolition projects. If you have any questions or require additional information, please contact me at (210) 671-5337 or email at mathew.kramm@lackland.af.mil.

Sincerely

MATT M. KRAMM

Attachments:
1. Building Location Maps
2. Exterior View of Buildings
3. Floor Plans and Design Description
4. Various Photos Inside Buildings

DEPARTMENT OF THE AIR FORCE
AIR EDUCATION AND TRAINING COMMAND

2 December 2010

Mr. Jason Rose
Lackland AFB Cultural Resources Manager
802 CES/CEANC
1555 Gott Street
Lackland AFB TX 78236

CONCUR
by
for Mark Wolfe
State Historic Preservation Officer
Date 1/10/11

Mr. F. Lawerence Oaks
Director, Texas Historic Commission
P.O. Box 12276
Austin TX 78711-2276

Subject: Advisory Council on Historic Preservation Program Comment for World War II and Cold War Era (1939 – 1974) Ammunition Storage Facilities

Dear Mr. Oaks

A Program Comment by the Advisory Council on Historical Preservation (ACHP) provided the Department of Defense and its Military Departments with an alternative way to comply with their responsibilities under Section 106 of the National Historic Preservation Act with regard to the effect of the following management actions on World War II and Cold War Era ammunition storage facilities that may be eligible for listing on the National Register of Historic Places: ongoing operations, maintenance and repair, rehabilitation, renovation, mothballing, cessation of maintenance, new construction, demolition, deconstruction and salvage, remediation activities, transfer, sale, lease, and closure of such facilities.

In accordance with this Program Comment, the Air Force developed a supplemental context study which:

- Covers the Cold War Era, from 1946 to 1974;
- Explores the changes in ammunition storage resulting from the Cold War;
- Examines the changes required for ammunition storage due to technological advancement in weaponry during the Cold War;
- Considers the importance of major builders, architects or engineers that may have been associated with design and construction of Ammunition Storage Facilities; and
- Describes the inventory of Ammunition Storage Facilities in detail, providing information on the various types of buildings and architectural styles and the quantity of each.

Lackland AFB is asking for verification that the Texas Historic Commission concurs with the ACHP's alternative way to comply with the responsibilities under Section 106 of the

National Historic Preservation Act in regards to our 99 ammunition storage igloos, Facilities 501 thru 571 and 573 thru 599. With this concurrence, Lackland will consider itself to have met the responsibilities under Section 106 with regard to the aforementioned management actions at these facilities located on the Lackland Training Annex. If you have any questions or require additional information, please contact me at (210) 671-5305 or email at jason.rose.9@us.af.mil.

Sincerely

JASON ROSE, CRM

Attachment:

ACHP Program Comment for World War II and Cold War Era (1939 – 1974) Ammunition Storage Facilities, signed August 2006

Preserving America's Heritage

**PROGRAM COMMENT FOR
WORLD WAR II AND COLD WAR ERA (1939 – 1974)
AMMUNITION STORAGE FACILITIES**

I. Introduction

This Program Comment provides the Department of Defense (DoD) and its Military Departments with an alternative way to comply with their responsibilities under Section 106 of the National Historic Preservation Act with regard to the effect of the following management actions on World War II and Cold War Era ammunition storage facilities that may be eligible for listing on the National Register of Historic Places: ongoing operations, maintenance and repair, rehabilitation, renovation, mothballing, cessation of maintenance, new construction, demolition, deconstruction and salvage, remediation activities, and transfer, sale, lease, and closure of such facilities.

The term Ammunition Storage Facilities means all buildings and structures, listed in or eligible for listing in the National Register of Historic Places, that were designed and built as ammunition storage facilities within the years 1939-1974, regardless of current use, and that are identified by a DoD Category Group (2 digit) code of 42, Ammunition Storage (category code 42XXXX), in the Military Service's Real Property Inventory currently or at the time of construction. Table 1 (attached) provides all such buildings and structures associated with ammunition storage, by Military Department, that are applicable to this program comment.

In order to take into account the effects on Ammunition Storage Facilities, DoD and its Military Departments will conduct documentation in accordance with The Secretary of the Interior's Standards and Guidelines for Archeology and Historic Preservation. As each Military Department will be responsible for conducting its own mitigation actions, the following required documentation is structured by Military Department, followed by DoD-wide requirements.

II. Treatment of Properties

A. Army Mitigation

1. The Army shall expand and revise its existing context study, Army Ammunition and Explosives Storage in the United States, 1775-1945 to include the Cold War Era. This document provides background information and criteria for evaluating the historic significance of such buildings. The updated context study will:

identify the changes in ammunition storage during the Cold War;

ADVISORY COUNCIL ON HISTORIC PRESERVATION

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focus on the changes required for ammunition storage due to technological advancement in weaponry;

consider the importance of major builders, architects or engineers that may have been associated with design and construction of Ammunition Storage Facilities throughout the Army or at specific Army installations; and

describe the inventory of Ammunition Storage Facilities in detail, providing information on the various types of buildings and architectural styles and the quantity of each.

2. The Army shall undertake in-depth documentation on Ammunition Storage Facilities at nine installations. The existing context study concluded that the Army possessed "only a few basic types and an abundance of examples" of Ammunition Storage Facilities, due to the standardization of ammunition storage facilities beginning in the 1920s. The context study suggests that six geographically dispersed installations contain an array of primary examples of both aboveground and underground magazines with a high degree of integrity:

Hawthorne Army Depot, Nevada – early igloos;

McAlester Army Ammunition Plant, Oklahoma – Corbetta Beehive;

Pine Bluff Arsenal, Arkansas – biological and chemical igloos;

Ravenna Army Ammunition Plant, Ohio – standard World War II and aboveground magazines;

Blue Grass Army Ammunition Plant, Kentucky – standard World War II igloos and aboveground magazines; and

Louisiana Army Ammunition Plant, Louisiana – Stradley special weapons.

The Army shall document these six as well as three additional installations that possess Cold War Era Ammunition Storage Facilities. Documentation at the three additional installations will be determined after completion of the expanded context study described in section II.A.1., above. This study will include a brief history of the installation and the surrounding community, if appropriate, and a detailed history of the storage facilities and documentation of the buildings. The documentation will primarily consist of historic photographs and existing plans. Documentation will be tailored to address the different natures of aboveground and underground storage.

B. Navy Mitigation

1. The Navy will develop a supplemental context study that will be attached as an appendix to the Army's existing context study, Army Ammunition and Explosives Storage in the United States, 1775-1945. The final product will be a separately bound volume of additional information and photographs and tabular appendices that, when presented with the Army's and Air Force's context studies, provide a clear picture of the Department of Defense's Ammunition Storage facilities. This context study appendix will:

cover both World War II and the Cold War Era, from 1939-1974;

explore the changes in ammunition storage resulting from World War II;

examine the changes required for ammunition storage due to technological advancement in weaponry during the Cold War;

consider the importance of major builders, architects or engineers that may have been associated with design and construction of Ammunition Storage Facilities; and

describe the inventory of Ammunition Storage Facilities in detail, providing information on the various types of buildings and architectural styles and the quantity of each.

2. The Navy shall document a representative sample of the basic types of both aboveground and underground ammunition storage facilities. The Navy will choose three geographically dispersed installations with the greatest number and variety of such resources. The Marines will choose one such installation. The sample chosen shall be the best representative examples of the range of Ammunition Storage types constructed during World War II and the Cold War era. This documentation will include collecting existing plans and drawings, writing a historic description in narrative or outline format, and compiling existing historic photographs of the structures. Documentation will be tailored to address the different natures of aboveground and underground storage.

C. Air Force Mitigation

1. The Air Force will develop a supplemental context study that will be attached as an appendix to the Army's existing context study, Army Ammunition and Explosives Storage in the United States, 1775-1945. The final product will be a separately bound volume of additional information and photographs and tabular appendices that, when presented with the Army's and Navy's context studies, provide a clear picture of the Department of Defense's Ammunition Storage facilities. This context study appendix will:

cover the Cold War Era, from 1946-1974;

explore the changes in ammunition storage resulting from the Cold War;

examine the changes required for ammunition storage due to technological advancement in weaponry during the Cold War;

consider the importance of major builders, architects or engineers that may have been associated with design and construction of Ammunition Storage Facilities; and

describe the inventory of Ammunition Storage Facilities in detail, providing information on the various types of buildings and architectural styles and the quantity of each.

2. The Air Force shall document a representative sample of the basic types of both aboveground and underground ammunition storage facilities. The Air Force will choose three geographically dispersed installations with the greatest number and variety of such resources. The sample chosen shall be the best representative examples of the range of Ammunition Storage types constructed during the Cold War era. This documentation would include collecting existing plans and drawings, writing a historic description in narrative or outline format, and compiling existing historic photographs of the structures. Documentation will be tailored to address the different natures of aboveground and underground storage.

3. The Air Force will not be required to consider its World War II Era facilities in these mitigation actions. The Air Force was established in September 1947 and therefore was not associated with structures constructed during this era. Rather the Air Force has inherited its current inventory of 263 World War II Era Ammunition Storage facilities from former Army installations. Given the substantial

mitigation actions that will be undertaken by the Army to document its facilities, further documentation for the small number of similar facilities located at Air Force installations provides no additional historic value. While no documentation will be done on World War II facilities under the Air Force's control, all of the 263 facilities in its inventory are covered under this Program Comment.

D. DoD-Wide Mitigation

1. Copies of the documentation described above will be made available electronically, to the extent possible under security concerns, and hard copies will be placed in a permanent repository, such as the Center for Military History.

2. In addition, as a result of on-going consultations, each Military Department will provide a list of properties covered by the Program Comment, by State, to State Historic Preservation Officers, Tribal Historic Preservation Officers, and other interested parties, as appropriate. Each Military Department will be responsible for determining how to convey its information.

3. All Military Departments will encourage adaptive reuse of the properties as well as the use of historic tax credits by private developers under lease arrangements. Military Departments will also incorporate adaptive reuse and preservation principles into master planning documents and activities.

The above actions satisfy DoD's requirement to take into account the effects of the following management actions on World War II and Cold War Era ammunition storage facilities that may be eligible for listing on the National Register of Historic Places: ongoing operations, maintenance and repair, rehabilitation, renovation, mothballing, cessation of maintenance, new construction, demolition, deconstruction and salvage, remediation activities, and transfer, sale, lease, and closure of such facilities.

III. Applicability

A. 1. This Program Comment applies solely to Ammunition Storage Facilities as defined in Section I, above. The Program Comment does not apply to the following properties that are listed, or eligible for listing, on the National Register of Historic Places: (1) archeological properties, (2) properties of traditional religious and cultural significance to federally recognized Indian tribes or Native Hawaiian organizations, and/or (3) ammunition storage facilities in listed or eligible National Register of Historic Places districts where the ammunition storage facility is a contributing element of the district and the proposed undertaking has the potential to adversely affect such historic district. This third exclusion does not apply to historic districts that are made up solely of ammunition storage facility properties. In those cases the Program Comment would be applicable to such districts.

Since the proposed mitigation for the Ammunition Storage facilities documents site plans, building designs, and the spatial arrangement of ammunition storage facilities, along with the events and actions that lead to the development of standardized ammunition storage facilities in DoD, the important aspects of ammunition storage, whether single buildings or districts made up entirely of ammunition storage, will be addressed regardless of the type of undertaking that may affect this particular property type. The one currently known ammunition storage district, at Hawthorne Army Ammunition Plant, has been identified for further study, as outlined in Section II(A)(2) above.

2. An installation with an existing Section 106 agreement document in place that addresses ammunition storage facilities can choose to:

(i) continue to follow the stipulations in the existing agreement document for the remaining period of the agreement; or

(ii) seek to amend the existing agreement document to incorporate, in whole or in part, the terms of this Program Comment; or

(iii) terminate the existing agreement document, and re-initiate consultation informed by this Program Comment if necessary.

3. All future Section 106 agreement documents developed by the Military Departments related to the undertakings and properties addressed in this Program Comment shall include appropriate provisions detailing whether and how the terms of this Program Comment apply to such undertakings.

IV. Completion Schedule

On or before 60 days following issuance of the Program Comment, DoD, its Military Department and ACHP will establish a schedule for completion of the treatments outlined above.

V. Effect of the Program Comment

By following this Program Comment, DoD and its Military Departments meet their responsibilities for compliance under Section 106 regarding the effect of the following management actions on World War II and Cold War Era ammunition storage facilities that may be eligible for listing on the National Register of Historic Places: ongoing operations, maintenance and repair, rehabilitation, renovation, mothballing, cessation of maintenance, new construction, demolition, deconstruction and salvage, remediation activities, and transfer, sale, lease, and closure of such facilities. Accordingly, DoD installations are no longer required to follow the case-by-case Section 106 review process for such effects. As each of the Military Departments is required under this Program Comment to document their own facilities, failure of any one Military Department to comply with the terms of the Program Comment will not adversely affect the other Departments' abilities to continue managing their properties under the Program Comment.

This Program Comment will remain in effect until such time as the Office of the Secretary of Defense determines that such comments are no longer needed and notifies ACHP in writing, or ACHP withdraws the comments in accordance with 36 CFR § 800.14(e)(6). Following such withdrawal, DoD and its Military Departments would be required to comply with the requirements of 36 CFR §§ 800.3 through 800.7 regarding the effects under this Program Comments' scope.

DoD, its Military Departments and ACHP will review the implementation of the Program Comment seven years after its issuance and determine whether to take action to terminate the Program Comment as detailed in the preceding paragraph.

John L. Nau, III
Chairman

August 18, 2006
Date

Attachment: Table

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TEXAS
HISTORICAL
COMMISSION

The State Agency for Historic Preservation

RICK PERRY, GOVERNOR

JOHN L. NAU, III, CHAIRMAN

F. LAWERENCE OAKS, EXECUTIVE DIRECTOR

January 18, 2005

Ms. Deborah Tharp
AFCEE Headquarters
3300 Sidney Brooks
Brooks City-Base TX 78235

Re: Project review under Section 106 of the National Historic Preservation Act of 1966
Draft Report: *Archeological Eligibility Testing of 23 Sites on Lackland Air Force Base, Bexar County, Texas* (Air Force)

Dear Ms. Tharp

Thank you for providing us with the above draft report. This letter serves as comment from the State Historic Preservation Officer, the Executive Director of the Texas Historical Commission.

We were surprised to receive a draft report on digging at 23 archeological sites, since no one had consulted with this office prior to the undertaking. Please state how responsibilities under Section 106 and Section 110 of the National Historic Preservation Act, as well as 36 CFR Part 800, were met with regard to consultation with the Public, the State Historic Preservation Office, and Indian Tribes.

We will need more information regarding 41BX1061, 41BX1069, 41BX1092, 41BX1093, 41BX1104, 41BX1107, 41BX1121, 41BX1122, 41BX1125, 41BX1127, and 41BX1130, before we can complete our review of National Register eligibility.

We concur that 41BX1060, 41BX1082, 41BX1086, 41BX1087, 41BX1100, 41BX1101, 41BX1120, 41BX1124, 41BX1128, are ineligible for the National Register or further work.

We concur that 41BX1108 and 41BX1001/41BX1126 may be eligible for the National Register and should be treated as if they are. Our technical comments on the draft are attached and should be addressed in another draft for review.

Thank you for your cooperation in this federal review process, and for your efforts to preserve the irreplaceable heritage of Texas. **If you have any questions concerning our review or if we may be of further assistance, please contact Edward Baker at 512/463-5866.**

Sincerely,

William A. Martin

for
F. Lawerence Oaks, State Historic Preservation Officer
FLO/elb

cc: Lt. Col. Bruce Harding and Mr. Santos Madrigal, Lackland AFB; Dr. James Wild, AFCEE; Dr. Chris Lintz, GMI, Inc.; Nancy Kochan, ACHP Western Office

P.O. BOX 12276 · AUSTIN, TX 78711-2276 · 512/463-6100 · FAX 512/475-4872 · TDD 1-800/735-2989
www.thc.state.tx.us

DEPARTMENT OF THE AIR FORCE
502D AIR BASE WING
JOINT BASE SAN ANTONIO

October 4, 2012

Mr. Gabriel Gonzales
JBSA – Lackland Chief of Conservation
802 CES/CEANC
1555 Gott Street
JBSA – Lackland, TX 78236-5646

Mr. Mark Wolfe
Director, Texas Historic Commission
P.O. Box 12276
Austin, TX 78711-2276

Dear Mr. Wolfe,

As required by the National Historic Preservation Act and per the 2011 Joint Base San Antonio (JBSA) Programmatic Agreement (PA), we request your review of a project for the replacement of an existing water line, part of which will occur within 100 feet of an National Register of Historic Places (NRHP)-eligible archeological site. The current water distribution system is deteriorating, unreliable, and requires constant repair. In the next five years, a replacement water line will be installed within the current water line right of way. A portion of this right of way is approximately 82 feet from archeological site 41BX1108 (see Attachment 2). Since part of this undertaking is within 100 feet of the NRHP-eligible site, it is not exempt per stipulations of the JBSA PA.

JBSA-Lackland considers there is a potential for adverse impact to the 41BX1108 site due to the proximity of the undertaking. We propose to have staff on site during the portion of the water line replacement to ensure the site is not adversely impacted. Request your concurrence to proceed with this important project. If you have any questions or require additional information, please contact me at (210) 671-2901 or email at Gabriel.Gonzales@us.af.mil, or contact George Bauml at (210) 671-5337 or email at George.Bauml.ctr@us.af.mil.

Sincerely

Gabriel D Gonzales

GABRIEL D. GONZALES

Attachments:
1. Site Location Map
2. Site Map

CONCUR
by William A. Martin
for Mark Wolfe
State Historic Preservation Officer
Date 10/5/12
Track#

DEPARTMENT OF THE AIR FORCE
502D AIR BASE WING
JOINT BASE SAN ANTONIO

October 4, 2012

Mr. Gabriel Gonzales
JBSA – Lackland Chief of Conservation
802 CES/CEANC
1555 Gott Street
JBSA – Lackland, TX 78236-5646

Mr. Mark Wolfe
Director, Texas Historic Commission
P.O. Box 12276
Austin, TX 78711-2276

Dear Mr. Wolfe,

As required by the National Historic Preservation Act and per the 2011 Joint Base San Antonio (JBSA) Programmatic Agreement (PA), we request your review of a project for the construction of two facilities on a parcel immediately adjacent to a National Register of Historic Places (NRHP)-eligible Building 5432, the World War II temporary building Chapel No. 5. The facilities proposed for construction are an Air Force Office of Special Investigations (AFOSI) headquarters building and an AFOSI administrative support facility. These will be approximately 40,000 ft^2 and 30,000 ft^2 in size, respectively. Building 5432 (Chapel No.5) was dedicated on September 13, 1942, and is a representative example of the wooden temporary buildings characteristic of the type of construction used as the U.S. rapidly responded to the global crises of World War II. This chapel is a single-story, frame-type, rectangular structure with a modest spire on the north end main entrance. Chapel No. 5 had significant deterioration primarily caused by termites, but, with SHPO concurrence, underwent an extensive restoration project in 2000, restoring the structure to its original World War II architectural integrity. A location map, aerial images, and photos of Building 5432 are attached. A construction diagram is not available for the proposed facilities.

JBSA-Lackland does not consider this undertaking to have an adverse impact to Building 5432 due to the Program Comment for World War II Temporary Buildings and due to the viewshed already having been compromised. Request your concurrence to proceed with this important project. If you have any questions or require additional information, please contact me at (210) 671-2901 or email at Gabriel.Gonzales@us.af.mil, or contact George Bauml at (210) 671-5337 or email at George.Bauml.ctr@us.af.mil.

Sincerely

GABRIEL D. GONZALES

Attachments:
1. Location Map
2. Aerial Images
3. Photos

DEPARTMENT OF THE AIR FORCE
502D AIR BASE WING
JOINT BASE SAN ANTONIO

October 23, 2012

Mr. Gabriel Gonzales
Lackland AFB Chief of Conservation
802 CES/CEANC
1555 Gott Street
Lackland AFB TX 78236

Mr. Mark Wolfe
Director, Texas Historic Commission
P.O. Box 12276
Austin TX 78711-2276

Dear Mr. Wolfe,

As required by the National Historic Preservation Act and per the 2011 Joint Base San Antonio (JBSA) Programmatic Agreement, we request your review of our project to demolish seven buildings. The project date has not been set, but is projected to take place within the next five years. These buildings at the Lackland Training Annex are considered obsolete, hazardous, and beyond reasonable repair/reuse. The facilities were constructed during the Cold War Era and include Building 433 at Plant 1, and Buildings 424, 425, 426, 427, 442, and 443 at Plant 2. With the exception of building 424, these facilities are eligible for the National Register of Historic Places. Although these facilities are considered eligible they do not embody the criteria for significance typically associated with National Register Nominated Facilities.

The buildings proposed for demolition have surpassed their service life and are no longer needed to support mission requirements at JBSA-Lackland. There is no foreseeable reuse of these buildings. The remoteness and the past security restrictions of the facility, as well as the hazardous materials previously stored and worked on within the facilities greatly reduce the possible future uses of the facility. The continuing deterioration of these buildings and the resulting health and safety hazards from mold and potential structural failure make it necessary to demolish these facilities. It is not cost effective to renovate or bring these facilities up to code for new use. The DOD has called for significant transformation in all services to strengthen U.S. warfighting capabilities and to operate more efficiently. USAF Civil Engineering currently manages more infrastructure than is necessary and must focus limited time and funding on only the infrastructure and facilities needed to perform the USAF mission. In order to achieve this goal, the USAF must divert its resources away from excess, obsolete, and underutilized infrastructure.

JBSA-Lackland has considered the following alternatives to demolition of these buildings:

No action. Despite current mothballing efforts all of these buildings continue to deteriorate. Taking no action will result in continued deterioration and an increase in health and safety hazards.

Additional preservation effort. The DoD has called for increased efficiency, so the USAF must divert resources away from excess, obsolete, and underutilized infrastructure. These buildings match this targeted infrastructure from which the USAF needs to divert its limited resources. Increasing preservation efforts is not a feasible option.

Adaptive reuse. These buildings have been in adaptive reuse, usually as storage facilities, since their original use ended in 1965, when the Atomic Energy Commission (AEC) vacated the Medina facility. The mission in the Plant I and II areas has diminished over time, and now the buildings are in disuse with no foreseeable reuse. Potential reuse scenarios are hampered by the high security access requirements of Plants I and II, as well as the potentially contaminated state of these buildings due to the hazardous materials that were worked on and stored within the facilities during both their initial use and multiple reuses. Both of these situations severely limit reuse options.

Upgrade: There are no foreseeable mission needs for which an upgrade of these buildings would be considered. Additionally, upgrading is not a viable option due to significant repairs that would be needed prior to upgrading. See Attachment 2, which includes photos of the current state of the buildings. All buildings are experiencing structural issues such as leaking roofs and shifting foundations, and show evidence of animal invasion. Building 433 is the last Gravel Gertie structure at JBSA-Lackland and is in particular disrepair, as the unique design features of this building to make it collapse upon itself for explosion containment also make it prone to deterioration and failure over time. The exterior "roof" is buckling and has led to leaks, mold, and partial collapses of the interior ceiling.

Due to the lack of reuse potential and the difficulties with preservation, JBSA-Lackland believes documenting the history of these NRHP-eligible facilities and surrounding area is a better alternative than attempting to save these facilities. JBSA-Lackland understands that the demolition of these facilities constitutes an adverse effect and consequently we wish to consult with you as to the appropriate mitigation for this action. We also want to assure the Texas Historic Commission that any agreed upon mitigation will be completed in its entirety before demolition occurs. If you have any questions or require additional information, please contact me at (210) 671-2901 or email at Gabriel.Gonzales@us.af.mil, or contact George Bauml at (210) 671-5337 or email at George.Bauml.ctr@us.af.mil.

Sincerely

GABRIEL D. GONZALES

Attachments:
1. Location Map and Aerial Images
2. Photos

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APPENDIX E

SUMMARY OF AIR EMISSIONS CALCULATIONS

Air Quality Analysis Methodology

1. Introduction

This appendix describes construction (including demolition activities) and operational emissions sources and calculation methodology applicable to the proposed action. Each emission calculation spreadsheet that follows has a summary spreadsheet which includes the estimated emissions of the following construction and operational emission source types:

- Combustion Emissions from Construction Equipment
- Fugitive Dust Emissions from Construction Equipment
- Haul Truck On-Road Vehicle Emissions
- Construction Commuting Vehicle Emissions
- Stationary External Combustion Emissions (Operational Emissions)
- Stationary Internal Combustion Emissions (Operational Emissions)

Each source type will be discussed in the following sub-sections to include calculation methodology, emission factors, sample calculations, and references. For more detailed calculations see the individual spreadsheets that follow.

2. Combustion Emissions from Construction Equipment

Calculation Methodology. Details on the specific type, number, and operating schedule of each piece of construction and demolition equipment are not typically available for proposed projects. However, equipment combustion emissions calculations were conducted utilizing data from the USEPA NONROAD Emissions Model and California's Sacramento Metropolitan Air Quality Management District (SMAQMD) Guide to Air Quality Assessment (SMAQMD 2004). The combination of these two references provides emission factors for various types of construction and demolition equipment in terms of daily emission rates per 10 acres of affected area. The emission rates are provided for fifteen types of construction equipment which are categorized into the following five construction activities: grading; paving; demolition; building construction; and architectural coatings. Assumptions regarding the type and number of equipment were obtained from the SMAQMD Guide to Air Quality Assessment (SMAQMD 2004). Emissions were calculated using the known area affected (e.g. square feet or acreage) for each of the five construction activity categories and the estimated number of days per year of activity.

Under the building construction category, for most projects, it was conservatively assumed the annual construction activity is 5 days per week, 4 weeks per month, and 12 months per year, i.e. 240 days per year. The number of grading days per year was calculated using the number of acres affected and the Means Heavy Construction Cost Data reference which provides grading equipment types and output rates. The total days for paving and demolition were calculated using respective acres per day factors from Means Heavy Construction Cost Data.

Emission Factors and References. Emission factors were obtained from the Guide to Air Quality Assessment (SMAQMD 2004) and U.S. EPA NONROAD Emissions Model, Version 2005.0.0. Emission factors from the NONROAD model were provided by Larry Landman of the Air Quality and Modeling Center (USEPA 2005). Emissions factors provided are for the weighted average U.S. fleet for CY2007. Assumptions regarding the type and number of equipment are from the SMAQMD Guide to

Air Quality Assessment Table 3-1 unless otherwise noted. Other construction/demolition data was obtained from Means 2005. The daily emission rates for the five construction categories discussed above, and the summarized emission factors are provided in the **Tables E-1 to E-6**. Refer to the emission calculation spreadsheets for notes associated with these tables that include background information, assumptions, and intermediate calculations.

Table E-1. Summarized Emission Factors: Grading

Equipment	Number Required (per 10 acres)	NO_x (lb/day)	VOC (lb/day)	CO (lb/day)	SO_2 (lb/day)	PM_{10} (lb/day)	$PM_{2.5}$ (lb/day)	CO_2 (lb/day)
Bulldozer	1	13.60	0.96	5.50	1.02	0.89	0.87	1456.90
Motor Grader	1	9.69	0.73	3.20	0.80	0.66	0.64	1141.65
Water Truck	1	18.36	0.89	7.00	1.64	1.00	0.97	2342.98
Total per 10 acres of activity	**3**	**41.64**	**2.58**	**15.71**	**3.45**	**2.55**	**2.47**	**4941.53**

Table E-2. Summarized Emission Factors: Paving

Equipment	Number Required (per 10 acres)	NO_x (lb/day)	VOC (lb/day)	CO (lb/day)	SO_2 (lb/day)	PM_{10} (lb/day)	$PM_{2.5}$ (lb/day)	CO_2 (lb/day)
Paver	1	3.83	0.37	2.06	0.28	0.35	0.34	401.93
Roller	1	4.82	0.44	2.51	0.37	0.43	0.42	536.07
Truck	2	36.71	1.79	14.01	3.27	1.99	1.93	4685.95
Total per 10 acres of activity	**4**	**45.37**	**2.61**	**18.58**	**3.93**	**2.78**	**2.69**	**5623.96**

Table E-3. Summarized Emission Factors: Demolition

Equipment	Number Required (per 10 acres)	NO_x (lb/day)	VOC (lb/day)	CO (lb/day)	SO_2 (lb/day)	PM_{10} (lb/day)	$PM_{2.5}$ (lb/day)	CO_2 (lb/day)
Loader	1	13.45	0.99	5.58	0.95	0.93	0.90	1360.10
Haul Truck	1	18.36	0.89	7.00	1.64	1.00	0.97	2342.98
Total per 10 acres of activity	**2**	**31.81**	**1.89**	**12.58**	**2.58**	**1.92**	**1.87**	**3703.07**

Table E-4. Summarized Emission Factors: Building Construction

Equipment	Number Required (per 10 acres)	NO_x (lb/day)	VOC (lb/day)	CO (lb/day)	SO_2 (lb/day)	PM_{10} (lb/day)	$PM_{2.5}$ (lb/day)	CO_2 (lb/day)
Stationary								
Generator Set	1	2.38	0.32	1.18	0.15	0.23	0.22	213.06
Industrial Saw	1	2.62	0.32	1.97	0.20	0.32	0.31	291.92
Welder	1	1.12	0.38	1.50	0.08	0.23	0.22	112.39
Mobile (non-road)								
Truck	1	18.36	0.89	7.00	1.64	1.00	0.97	2342.98
Forklift	1	5.34	0.56	3.33	0.40	0.55	0.54	572.24
Crane	1	9.57	0.66	2.39	0.65	0.50	0.49	931.93
Total per 10 acres of activity	**6**	**39.40**	**3.13**	**17.38**	**3.12**	**2.83**	**2.74**	**4464.51**

Table E-5. Summarized Emission Factors: Architectural Coatings

Equipment	Number Required (per 10 acres)	NO_x (lb/day)	VOC (lb/day)	CO (lb/day)	SO_2 (lb/day)	PM_{10} (lb/day)	$PM_{2.5}$ (lb/day)	CO_2 (lb/day)
Air Compressor	1	3.57	0.37	1.57	0.25	0.31	0.30	359.77
Total per 10 acres of activity	**1**	**3.57**	**0.37**	**1.57**	**0.25**	**0.31**	**0.30**	**359.77**

Table E-6. Project-Specific Emission Factor Summary

Source	Equipment Multiplier*	Project-Specific Emission Factors						
		NO_x (lb/day)	VOC (lb/day)	CO (lb/day)	SO_2 (lb/day)	PM_{10} (lb/day)	$PM_{2.5}$ (lb/day)	CO_2 (lb/day)
Grading Equipment	1 per 10 acres	41.641	2.577	15.710	3.449	2.546	2.469	4941.526
Paving Equipment	1 per 10 acres	45.367	2.606	18.578	3.926	2.776	2.693	5623.957
Demolition Equipment	1 per 10 acres	31.808	1.886	12.584	2.585	1.923	1.865	3703.074
Building Construction	1 per 10 acres	39.396	3.130	17.382	3.116	2.829	2.744	4464.512

Air Compressor for Architectural Coating	1 per 10 acres	3.574	0.373	1.565	0.251	0.309	0.300	359.773
Architectural Coating **	None	None	15.05	None	None	None	None	None
Grading Equipment	1 per 10 acres	41.641	2.577	15.710	3.449	2.546	2.469	4941.526

Notes:

*The equipment multiplier is an integer that represents units of 10 acres for purposes of estimating the number of equipment required for the project. Less than 10 acres is rounded up to 10 acres or an equipment multiplier of 1.

**Emission factor is based on building square feet and from the evaporation of solvents during painting, per "Air Quality Thresholds of Significance" (SMAQMD 1994)

Sample Calculation -- Grading Equipment NO_x Combustion Emissions

Project C3 – Battlefield Airman Aquatic Training Complex

NO_x Combustion Emissions (lbs/yr) = (Total Grading NO_x Emission Factor per 10 acres [lbs/day]) * (Equipment Multiplier) * (Total Grading Days [days/yr])

Building Size	106,798 square feet (2.45 acres)
Pavement Area	27,361 square feet (0.63 acres)
Equipment Multiplier	1 (3.08 acres rounded up to 10 acres)
Grading Days (calculated from Means data)	1.72 days/year (2 days/year [rounded up]

NO_x Combustion Emissions (lbs/yr) = 41.641 lbs/day * 1 * 2 = 83.28 lbs/yr

3. Fugitive Dust Emissions from Construction Equipment

Emission Factors and Calculation Methodology. Emission factors for fugitive dust from construction equipment are separated into general construction and demolition activities and new road construction. These emissions factors are area-based factors whose basis is a study completed by the Midwest Research Institute (MRI) Improvement of Specific Emission Factors (BACM Project No. 1), March 29, 1996. The MRI study evaluated seven construction projects in Nevada and California (Las Vegas, Coachella Valley, South Coast Air Basin, and the San Joaquin Valley). The study determined an average emission factor of 0.11 ton PM_{10}/acre-month for sites without large-scale cut/fill operations. A worst-case emission factor of 0.42 ton PM10/acre-month was calculated for sites with active large-scale earth moving operations. The monthly emission factors are based on 168 work-hours per month (MRI 1996). A subsequent MRI Report in 1999, Estimating Particulate Matter Emissions From Construction Operations, calculated the 0.19 ton PM_{10}/acre-month emission factor by applying 25% of the large-scale earth-moving emission factor (0.42 ton PM10/acre-month) and 75% of the average emission factor (0.11 ton PM_{10}/acre-month). The 0.19 ton PM_{10}/acre-month emission factor is referenced by the EPA for non-residential construction activities in more recent procedures documents for the National Emission Inventory (EPA 2001; EPA 2006). The 0.19 ton PM_{10}/acre-month emission factor represents a refinement of EPA's original AP-42 area-based total suspended particulate (TSP) emission factor in Section 13.2.3 Heavy Construction Operations. In addition to the EPA, this methodology is also supported by the South Coast Air Quality Management District as well as the Western Regional Air Partnership (WRAP) which is funded by the EPA and is administered jointly by the Western Governor's Association and the National Tribal Environmental Council. The emission factor is assumed to encompass a variety of non-residential construction activities including building construction (commercial, industrial, institutional, governmental), public works, and travel on unpaved roads. The emission factor for new road construction is based on the worst-case conditions emission factor from the MRI 1996 study described above (0.42 tons PM_{10}/acre-month). It is assumed that road construction involves extensive earthmoving and heavy construction vehicle travel resulting in emissions that are higher than other general construction projects. The 0.42 ton PM_{10}/acre-month emission factor for road construction is referenced in recent procedures documents for the EPA National Emission Inventory (EPA 2001; EPA 2006). The EPA National Emission Inventory documentation assumes that the emission factors are uncontrolled and recommends a control efficiency of 50% for PM_{10} and $PM_{2.5}$ in PM nonattainment areas using wet methods. Prior to applying this control efficiency, PM2.5 emissions are estimated by applying a particle size multiplier of 0.10 to PM_{10} emissions. This methodology is consistent with the procedures documents for the National Emission Inventory (EPA 2006).

Sample Calculation – Fugitive Dust Emissions

The construction equipment fugitive dust emission calculations are conducted by multiplying the area affected for either new roadway/pavement construction or the area affected by general construction and demolition activities by the appropriate emission factor discussed above and by the duration, in months, of the construction activity.

Project C3 – Battlefield Airman Aquatic Training Complex

PM_{10} emissions (tons/yr) Controlled =	PM_{10} Emission Factor (ton PM_{10}/acre-month) * Duration of Construction Project (months/yr) *Area (acres) * Control Efficiency

Building Size	106,798 square feet (2.45 acres)
Pavement Area	27,361 square feet (0.63 acres)

General Construction PM_{10} emissions (tons/yr) Controlled =	0.19 tons PM_{10}/acre-month * 2.45 acres * 12 months * 0.50 = 2.795 tons/yr
New Roadway/Pavement PM_{10} emissions (lbs/yr) Controlled =	0.42 tons PM10/acre-month * 0.63 acres * 12 months * 0.50 = 1.583 tons/yr

4. Haul Truck On-Road Vehicle Emissions

Calculation Methodology. Emissions from hauling fill materials to the site, hauling excavated materials off-site, hauling demolition waste off-site for disposal, hauling building materials to the site, and hauling paving materials to the site are calculated using the United States Air Force (USAF) Institute for Environment, Safety and Occupational Health Risk Analysis (IERA) Air Emissions Inventory Guidance Document for Mobile Sources at Air Force Installations, Section 4 (USAF 2003). See the emissions calculation spreadsheets for assumptions to quantify the amount of fill, demolition debris, excavation materials, building materials, and paving materials for construction and demolition activities. The average distance from the site to the materials source or disposal site was estimated based on the proximity of the project to an urban or dense commercial area. Haul trucks were assumed to carry 20 cubic yards of materials per trip.

Emission Factors. The heavy duty diesel vehicle emission factors in the IERA document were used as heavy duty diesel vehicles would be needed to haul large loads of materials for construction/demolition.

Table E-7. Heavy Duty Diesel Vehicle (HDDV) Average Emission Factors (grams/mile)

	NO_x	VOC	CO	SO_2	PM_{10}	$PM_{2.5}$	CO_2
HDDV	6.5	4.7	19.1	0.512	7.73	2.01	1,645.605

Notes:

1. Emission factors for all pollutants except CO_2 are from USAF 2003.
2. Emission factors for PM, PM_{10}, SO_x are from HDDV in Table 4-50 (USAF 2003).
3. Emission factors for VOC, CO, and NO_x are from Tables 4-41 through 4-43 for the 2010 calendar year, 2000 model year (USAF 2003).
4. Diesel fuel produces 22.384 pounds of CO_2 per gallon.
5. It is assumed that the average HDDV has a fuel economy of 6.17 miles per gallon, Table 4-51 (USAF 2003)
6. CO_2 emission factor = 22.384 lbs CO_2/gallon diesel * gallon diesel/6.17 miles * 453.6 g/lb

Sample Calculation – Haul Truck NO_x Emissions

Project C2 – Permanent Party Dormitory

NO_x emissions (lbs/yr) = number of trucks required * miles per round trip * NOx emission factor (g/mile)* lb/453.6 g

Number of Trucks Required	1,335
Estimated Round Trip Distance	40 miles
NOx Emission Factor	6.5 g/mile

NO_x emissions (lbs/yr) = 1335 (trucks)* 40 (miles) * 6.5 (g/mile)* lb/453.6 g = 764.99 lbs/yr

5. Construction Commuting Vehicle Emissions

Calculation Methodology, Emission Factors, Reference, and Sample Calculations. Emissions from construction workers commuting to and from the proposed project were calculated using emission factors from the South Coast Air Quality Management District (SCAQMD) EMFAC 2007 (v 2.3) Model (on-road) (SCAQMD 2003). The passenger vehicle emission factors were used for the appropriate year or a conservative year which would be the first year of construction. The average roundtrip commute distance was estimated based on the proximity of the project location to developed urban areas. The number of construction workers commuting each day was estimated based on the size of the specific project. The number of construction work days was typically conservatively assumed to be 240 days per year.

Sample Calculation – Construction Commuters NO_x Emissions

Project C2 – Permanent Party Dormitory

NO_x emissions (lbs/yr) = average roundtrip commute miles/day * NOx emission factor (lbs/mile) * number of construction days * number of workers

Average Roundtrip Commute	30 miles/day
NOx Emission Factor	0.000918 lbs/mile
Number of Construction Days	240 days

Number of Workers 25

NO_x emissions (lbs/yr) = 30 (miles/day) * 0.000918 (lbs/mile) * 240 (days) * 25 (workers) = 165.27 lbs/yr

6. Stationary External Combustion (Operational Emissions)

Calculation Methodology. Operational emissions from heating newly constructed building space and the decrease in space heating emissions from demolition of buildings were calculated using the USEPA's AP-42 emission factor reference document for stationary external combustion, i.e. boilers/heaters. It was assumed that all boilers/heaters are natural gas fired units.

Because the heat input rating for boilers/heaters is not typically known at this stage in the construction planning, ratings were estimated using a heating degree day method for calculating the heating demand and thus an estimated design size for a boiler/heater. For projects that included both building construction and demolition, the difference between new construction and demolition square footage was used to get a net total square footage requiring heating.

The heating degree days for the local area were obtained for a three year period using a simple and quick model developed for public use (degreedays.net 2012). Based on the heating degree days, fuel use for heating the square feet of building space was estimated using a linear relationship and the following assumptions:

- 1 therm per 10 degree days per 1000 square feet of heated floor space.
- 1 Therm = 100,000 BTU Natural Gas
- 1,050 BTU per cubic foot of Natural Gas

The yearly worst case estimated fuel use for the three years of data was assumed to be one-third of the necessary design heating demand which was converted to an hourly heat input rating for the net square feet of building construction. This calculated boiler heat input rating, in units of MMBtu/hr, was used to calculate emissions based on assuming 5,178 hours per year of operation and a heating value of 1,050 Btu/scf for natural gas.

Emission Factors

Table E-8. Natural Gas Boiler Emission Factors (lb/MMscf)

	NO_x	VOC	CO	SO_2	PM_{10}	$PM_{2.5}$	CO_2
Boilers < 0.3 MM BTU/hr	94	5.5	40	0.6	7.6	7.6	120,000
Boilers >= 0.3 MM BTU/hr	100	5.5	84	0.6	7.6	7.6	120,000

Note: Emission factors for all pollutants are from AP-42, Section 1.4, Tables 1.4-1 through 1.4-4, using the data set for Small Boilers with capacity <100 MM Btu/hr.

MM = million; Btu = British thermal unit; scf = standard cubic feet

Sample Calculation – Operational NO_x Emissions

Project C2 – Permanent Party Dormitory

NO_x emissions (lbs/yr) =	Boiler Heat For Facility * Hours Operational * NOx emission factor (lb/MMscf) * (Heating Value of Natural Gas)

Boiler Heat Needed to Run Facility	0.248 MMBtu/hr
Annual Operational Hours	5,178 hour/year
NOx Emissions Factor	94 lb/MMscf
Heatinv Value of Natural Gas	1 scf/1,050 Btu

NO_x emissions (lbs/yr) =	248 MMBtu/hr * 5,178 hours/yr * 94 (lb/MMscf) * 1 scf/1050 Btu = 114.78 lbs/yr

7. Stationary Internal Combustion (Operational Emissions)

Calculation Methodology. The Alternative Method for Emergency Generators from AFCEE Stationary Source Guide, Dec 2009 was used to calculate Stationary Internal Combustion emissions for diesel generators. It was assumed that generators would run for 500 hours per year to calculate potential emissions per year.

Emission Factors

Table E-9. Emergency Generator Emission Factors (lb/MMscf)

	NO_x	VOC	CO	SO_2	PM_{10}	$PM_{2.5}$	CO_2
Emission Factor (lb/10^3 gal)	604.0	49.3	130.0	39.7	42.5	42.5	N/A
Emission Factor (lb/10^3 hp-hr)	31.0	2.5	6.7	2.1	2.2	2.2	1,150

Sample Calculation – Operational NO_x Emissions

Air Emissions Factor Guide to Air Force Stationary Sources, AFCEE, Dec 2009, Equation 32-4

Epol (Emissions of a particular pollutant (lb/yr) =	(PD x 1.341 x OT/1000) x EF Equation 32-4
Peak demand of the generator (kW)1.341 = Factor for converting "kW" to - "hp" (PD) =	300 kw
Operating time of the generator (OT) =	1.341 hp/kw
EF =	Emission Factor (lb/10^3 hp-hr)

Epol= 300 (kW) x 1.341(hp/kW) x 500/1000) x 31 (lb/10^3 hp-hr) 1/ 2000 (ton/lb)= 3.12 tons

8. References

Degreedays.net 2012	Degreedays.net. 2012. Custom Degree Day Data. Available online: <www.degreedays.net>. Accessed 09 November 2012.
Means 2005	Means, R.S. 2005. Heavy Construction Cost Data, 19th Edition. 2005.
MRI 1996	Midwest Research Institute (MRI). 1996. *Improvement of Specific Emission Factors (BACM Project No. 1).* Prepared for the California South Coast Air Quality Management District. March 29, 1996.
SCAQMD 2012	South Coast Air Quality Management District (SCAQMD). 2012. On-Road Mobile Emissions Factors. Available online: <http://www.aqmd.gov/ceqa/handbook/onroad/onroad.html>. Accessed 09 November 2012.
SMAQMD 1994	Sacramento Metropolitan Air Quality Management District (SMAQMD). 1994. *Air Quality Thresholds of Significance.* 1994.
SMAQMD 2004	SMAQMD. 2004. *Sacramento Metropolitan Air Quality Management District (SMAQMD) Guide to Air Quality Assessment*. 2004.
USAF 2003	U.S. Air Force (USAF). 2003. *United States Air Force (USAF) Institute for Environment, Safety and Occupational Health Risk Analysis (IERA) Air Emissions Inventory Guidance Document for Mobile Sources at Air Force Installations.* December 2003.
USEPA 2001	U.S. Environmental Protection Agency (USEPA). 2001. *Procedures Document for National Emissions Inventory, Criteria Air Pollutants, 1985-1999.* EPA-454/R-01-006. Office of Air Quality Planning and Standards, United States Environmental Protection Agency. March 2001.
USEPA 2005	USEPA. 2005. U.S. EPA NONROAD Emissions Model, Version 2005.0.0, Provided by Air Quality and Modeling Center Staff Member, Larry Landman. 2005.
USEPA 2006	USEPA. 2006. *Documentation for the Final 2002 Nonpoint Sector (Feb 06 version) National Emission Inventory for Criteria and Hazardous Air Pollutants.* Prepared for: Emissions Inventory and Analysis Group (C339-02) Air Quality Assessment Division Office of Air Quality Planning and Standards, United States Environmental Protection Agency. July 2006.

Air Emissions for 2016 Demolition Project -- D1

Construction Emissions	**NO_x (ton)**	**VOC (ton)**	**CO (ton)**	**SO_2 (ton)**	**PM_{10} (ton)**	**$PM_{2.5}$ (ton)**	**CO_2 (metric tons)**
Combustion	3.529	0.209	1.395	0.287	0.213	0.207	372.896
Fugitive Dust	-	-	-	-	5.387	0.539	-
Haul Truck On-Road	1.615	1.168	4.745	0.127	1.920	0.499	370.895
Commuter	0.044	0.044	0.397	0.001	0.004	0.003	47.711
TOTAL	***5.19***	***1.42***	***6.54***	***0.41***	***7.53***	***1.25***	***791.50***

Annual Operational Emissions (2016 to 2018)	**NO_x (ton)**	**VOC (ton)**	**CO (ton)**	**SO_2 (ton)**	**PM_{10} (ton)**	**$PM_{2.5}$ (ton)**	**CO_2 (metric tons)**	**Total HAP (ton)**
Stationary External Combustion	(0.216)	(0.013)	(0.092)	(0.001)	(0.017)	(0.017)	(249.896)	(0.004)

Notes: 1) Total PM10/2.5 fugitive dust emissions are assuming USEPA 50% control efficiencies.
2) The change in annual operations emissions would be the same each year following demolition.

CO_2 emissions converted to metric tons =	***791.502***	***metric tons***	
State of Texas' CO2 emissions =	***596,370,927***	***metric tons***	*(U.S. DOE/EIA 2011)*
Percent of Texas' CO2 emissions =	***0.00013%***		
United States' CO_2 emissions =	***5,425,600,000***	***metric tons***	*(U.S. DOE/EIA 2011)*
Percent of USA's CO_2 emissions =	***0.000015%***		

Source: U.S. Department of Energy, Energy Information Administration (U.S. DOE/EIA). 2011. *Table 1. State Emissions by Year (Million Metric Tons of Carbon Dioxide).* Available online <http://www.eia.gov/environment/emissions/state/state_emissions.cfm>. 2009 data values are the most recent. Data accessed 28 June 2012.

Since future year budgets were not readily available, actual 2008 air emissions inventories for the counties were used as an approximation of the regional inventory. Because 2016 Demolition Project - D1 are several orders of magnitude below significance, the conclusion would be the same, regardless of whether future year budget data set were used.

Metropolitan San Antonio Intrastate Air Quality Control Region

	Point and Area Sources Combined					
Year	**NO_x (tpy)**	**VOC (tpy)**	**CO (tpy)**	**SO_2 (tpy)**	**PM_{10} (tpy)**	**$PM_{2.5}$ (tpy)**
2008	127,839	425,477	555,851	40,901	183,999	32,316

Source: USEPA National Emissions Inventory (NEI) (http://www.epa.gov/ttn/chief/net/2008inventory.html). Site visited on 27 June 2012.

Air Emissions from 2016 Demolition Project - D1

	Point and Area Sources Combined					
	NO_x (tpy)	**VOC (tpy)**	**CO (tpy)**	**SO_2 (tpy)**	**PM_{10} (tpy)**	**$PM_{2.5}$ (tpy)**
Regional Emissions	127,839	425,477	555,851	40,901	183,999	32,316
Emissions	5.19	1.42	6.54	0.41	7.53	1.25
% of Regional	**0.0041%**	**0.0003%**	**0.0012%**	**0.0010%**	**0.0041%**	**0.0039%**

Air Emissions for 2016 Demolition Project - D2

Construction Emissions	NO_x (ton)	VOC (ton)	CO (ton)	SO_2 (ton)	PM_{10} (ton)	$PM_{2.5}$ (ton)	CO_2 (metric tons)
Combustion	0.800	0.047	0.316	0.065	0.048	0.047	84.546
Fugitive Dust	-	-	-	-	1.260	0.126	-
Haul Truck On-Road	0.361	0.261	1.060	0.028	0.429	0.112	82.818
Commuter	0.044	0.044	0.397	0.001	0.004	0.003	47.711
TOTAL	***1.20***	***0.35***	***1.77***	***0.09***	***1.74***	***0.29***	***215.08***

Annual Operational Emissions (2016 to 2018)	NO_x (ton)	VOC (ton)	CO (ton)	SO_2 (ton)	PM_{10} (ton)	$PM_{2.5}$ (ton)	CO_2 (metric tons)	Total HAP (ton)
Stationary External Combustion	(0.048)	(0.003)	(0.020)	(0.0003)	(0.004)	(0.004)	(55.609)	(0.001)

Notes: 1) Total PM10/2.5 fugitive dust emissions are assuming USEPA 50% control efficiencies.
2) The change in annual operations emissions would be the same each year following demolition.

CO_2 emissions converted to metric tons =	***215.075***	***metric tons***	
State of Texas' CO2 emissions =	***596,370,927***	***metric tons***	*(U.S. DOE/EIA 2011)*
Percent of Texas' CO2 emissions =	***0.00004%***		
United States' CO_2 emissions =	***5,425,600,000***	***metric tons***	*(U.S. DOE/EIA 2011)*
Percent of USA's CO_2 emissions =	***0.000004%***		

Source: U.S. Department of Energy, Energy Information Administration (U.S. DOE/EIA). 2011. *Table 1. State Emissions by Year (Million Metric Tons of Carbon Dioxide).* Available online <http://www.eia.gov/environment/emissions/state/state_emissions.cfm>. 2009 data values are the most recent. Data accessed 28 June 2012.

Since future year budgets were not readily available, actual 2008 air emissions inventories for the counties were used as an approximation of the regional inventory. Because 2016 Demolition Project - D2 are several orders of magnitude below significance, the conclusion would be the same, regardless of whether future year budget data set were used.

Metropolitan San Antonio Intrastate Air Quality Control Region

	Point and Area Sources Combined					
Year	**NO_x (tpy)**	**VOC (tpy)**	**CO (tpy)**	**SO_2 (tpy)**	**PM_{10} (tpy)**	**$PM_{2.5}$ (tpy)**
2008	127,839	425,477	555,851	40,901	183,999	32,316

Source: USEPA National Emissions Inventory (NEI) (http://www.epa.gov/ttn/chief/net/2008inventory.html). Site visited on 27 June 2012.

Air Emissions from 2016 Demolition Project - D2

	Point and Area Sources Combined					
	NO_x (tpy)	**VOC (tpy)**	**CO (tpy)**	**SO_2 (tpy)**	**PM_{10} (tpy)**	**$PM_{2.5}$ (tpy)**
Regional Emissions	127,839	425,477	555,851	40,901	183,999	32,316
Emissions	1.205	0.352	1.772	0.094	1.741	0.287
% of Regional	**0.0009%**	**0.0001%**	**0.0003%**	**0.0002%**	**0.0009%**	**0.0009%**

Air Emissions for 2015 Demolition Project - D3

	NO_x (ton)	VOC (ton)	CO (ton)	SO_2 (ton)	PM_{10} (ton)	$PM_{2.5}$ (ton)	CO_2 (metric tons/year)
Combustion	0.562	0.033	0.222	0.046	0.034	0.033	59.351
Fugitive Dust	-	-	-	-	0.907	0.091	-
Haul Truck On-Road	0.248	0.179	0.729	0.020	0.295	0.077	57.009
Commuter	0.044	0.044	0.397	0.001	0.004	0.003	47.711
TOTAL	***0.85***	***0.26***	***1.35***	***0.07***	***1.24***	***0.20***	***164.07***

Note: Total $PM_{10}/_{2.5}$ fugitive dust emissions are assuming USEPA 50% control efficiencies.

CO_2 emissions converted to metric tons =	***164.071***	***metric tons***	
State of Texas' CO2 emissions =	***596,370,927***	***metric tons***	*(U.S. DOE/EIA 2011)*
Percent of Texas' CO2 emissions =	***0.00003%***		
United States' CO_2 emissions =	***5,425,600,000***	***metric tons***	*(U.S. DOE/EIA 2011)*
Percent of USA's CO_2 emissions =	***0.000003%***		

Source: U.S. Department of Energy, Energy Information Administration (U.S. DOE/EIA). 2011. *Table 1. State Emissions by Year (Million Metric Tons of Carbon Dioxide).* Available online <http://www.eia.gov/environment/emissions/state/state_emissions.cfm>. 2009 data values are the most recent. Data accessed 28 June 2012.

Since future year budgets were not readily available, actual 2008 air emissions inventories for the counties were used as an approximation of the regional inventory. Because 2015 Demolition Project - D3 are several orders of magnitude below significance, the conclusion would be the same, regardless of whether future year budget data set were used.

Metropolitan San Antonio Intrastate Air Quality Control Region

Year	Point and Area Sources Combined NO_x (tpy)	VOC (tpy)	CO (tpy)	SO_2 (tpy)	PM_{10} (tpy)	$PM_{2.5}$ (tpy)
2008	127,839	425,477	555,851	40,901	183,999	32,316

Source: USEPA National Emissions Inventory (NEI) (http://www.epa.gov/ttn/chief/net/2008inventory.html). Site visited on 27 June 2012.

Air Emissions from 2015 Demolition Project - D3

	Point and Area Sources Combined NO_x (tpy)	VOC (tpy)	CO (tpy)	SO_2 (tpy)	PM_{10} (tpy)	$PM_{2.5}$ (tpy)
Regional Emissions	127,839	425,477	555,851	40,901	183,999	32,316
Emissions	0.854	0.257	1.348	0.066	1.240	0.203
% of Regional	**0.0007%**	**0.0001%**	**0.0002%**	**0.0002%**	**0.0007%**	**0.0006%**

Air Emissions for 2014 Construction Project - C1 - Classroom and Dining Facility #1

Construction Emissions	NO_x (ton)	VOC (ton)	CO (ton)	SO_2 (ton)	PM_{10} (ton)	$PM_{2.5}$ (ton)	CO_2 (metric tons/year)
Combustion	4.805	0.647	2.117	0.380	0.345	0.335	493.763
Fugitive Dust	-	-	-	-	2.766	0.277	-
Haul Truck On-Road	1.178	0.852	3.461	0.093	1.401	0.364	270.518
Commuter	0.083	0.082	0.744	0.001	0.008	0.005	89.459
TOTAL	***6.07***	***1.58***	***6.32***	***0.47***	***4.52***	***0.98***	***853.74***

Annual Operational Emissions (2014 to 2018)	NO_x (ton)	VOC (ton)	CO (ton)	SO_2 (ton)	PM_{10} (ton)	$PM_{2.5}$ (ton)	CO_2 (metric tons/year)	Total HAP (ton)
Stationary External Combustion	0.189	0.010	0.159	0.001	0.014	0.014	205.971	0.004

Notes: 1) Total PM10/2.5 fugitive dust emissions are assuming USEPA 50% control efficiencies.
2) The annual operational emissions would the same for every year the facility operates.

CO_2 emissions converted to metric tons =	***853.740***	***metric tons***	
State of Texas' CO2 emissions =	***596,370,927***	***metric tons***	*(U.S. DOE/EIA 2011)*
Percent of Texas' CO2 emissions =	***0.00014%***		
United States' CO_2 emissions =	***5,425,600,000***	***metric tons***	*(U.S. DOE/EIA 2011)*
Percent of USA's CO_2 emissions =	***0.000016%***		

Source: U.S. Department of Energy, Energy Information Administration (U.S. DOE/EIA). 2011. *Table 1. State Emissions by Year (Million Metric Tons of Carbon Dioxide).* Available online <http://www.eia.gov/environment/emissions/state/state_emissions.cfm>. 2009 data values are the most recent. Data accessed 28 June 2012.

Since future year budgets were not readily available, actual 2008 air emissions inventories for the counties were used as an approximation of the regional inventory. Because 2014 Construction Project - C1a are several orders of magnitude below significance, the conclusion would be the same, regardless of whether future year budget data set were used.

Metropolitan San Antonio Intrastate Air Quality Control Region

	Point and Area Sources Combined					
Year	NO_x (tpy)	VOC (tpy)	CO (tpy)	SO_2 (tpy)	PM_{10} (tpy)	$PM_{2.5}$ (tpy)
2008	127,839	425,477	555,851	40,901	183,999	32,316

Source: USEPA National Emissions Inventory (NEI) (http://www.epa.gov/ttn/chief/net/2008inventory.html). Site visited on 27 June 2012.

Air Emissions from 2014 Construction Project - C1a

	Point and Area Sources Combined					
	NO_x (tpy)	VOC (tpy)	CO (tpy)	SO_2 (tpy)	PM_{10} (tpy)	$PM_{2.5}$ (tpy)
Regional Emissions	127,839	425,477	555,851	40,901	183,999	32,316
Emissions	6.065	1.581	6.322	0.474	4.519	0.980
% of Regional	**0.0047%**	**0.0004%**	**0.0011%**	**0.0012%**	**0.0025%**	**0.0030%**

Air Emissions for 2014 Construction Project - C1 - Demolition of Buildings 9121, 9140, 9142, 9144, and 9255

Construction Emissions	**NO_x (ton)**	**VOC (ton)**	**CO (ton)**	**SO_2 (ton)**	**PM_{10} (ton)**	**$PM_{2.5}$ (ton)**	**CO_2 (metric tons/year)**
Combustion	0.180	0.011	0.071	0.015	0.011	0.011	19.038
Fugitive Dust	-	-	-	-	0.208	0.021	-
Haul Truck On-Road	0.067	0.049	0.198	0.005	0.080	0.021	15.474
Commuter	0.083	0.082	0.744	0.001	0.008	0.005	89.459
TOTAL	***0.33***	***0.14***	***1.01***	***0.02***	***0.31***	***0.06***	***123.97***

Annual Operational Emissions (2014 to 2018)	**NO_x (ton)**	**VOC (ton)**	**CO (ton)**	**SO_2 (ton)**	**PM_{10} (ton)**	**$PM_{2.5}$ (ton)**	**CO_2 (metric tons/year)**	**Total HAP (ton)**
Stationary External Combustion	(0.009)	(0.0005)	(0.004)	(0.0001)	(0.001)	(0.001)	(10.483)	(0.0002)

Notes: 1) Total PM10/2.5 fugitive dust emissions are assuming USEPA 50% control efficiencies.
2) The annual operational emissions would the same for every year the facility operates.

CO_2 emissions converted to metric tons =	***123.971***	***metric tons***	
State of Texas' CO2 emissions =	***596,370,927***	***metric tons***	*(U.S. DOE/EIA 2011)*
Percent of Texas' CO2 emissions =	***0.00002%***		
United States' CO_2 emissions =	***5,425,600,000***	***metric tons***	*(U.S. DOE/EIA 2011)*
Percent of USA's CO_2 emissions =	***0.000002%***		

Source: U.S. Department of Energy, Energy Information Administration (U.S. DOE/EIA). 2011. *Table 1. State Emissions by Year (Million Metric Tons of Carbon Dioxide).* Available online <http://www.eia.gov/environment/emissions/state/state_emissions.cfm>. 2009 data values are the most recent. Data accessed 28 June 2012.

Since future year budgets were not readily available, actual 2008 air emissions inventories for the counties were used as an approximation of the regional inventory. Because 2014 Construction Project - C1b are several orders of magnitude below significance, the conclusion would be the same, regardless of whether future year budget data set were used.

Metropolitan San Antonio Intrastate Air Quality Control Region

	Point and Area Sources Combined					
Year	**NO_x (tpy)**	**VOC (tpy)**	**CO (tpy)**	**SO_2 (tpy)**	**PM_{10} (tpy)**	**$PM_{2.5}$ (tpy)**
2008	127,839	425,477	555,851	40,901	183,999	32,316

Source: USEPA National Emissions Inventory (NEI) (http://www.epa.gov/ttn/chief/net/2008inventory.html). Site visited on 27 June 2012.

Air Emissions from 2014 Construction Project - C1b

	Point and Area Sources Combined					
	NO_x (tpy)	**VOC (tpy)**	**CO (tpy)**	**SO_2 (tpy)**	**PM_{10} (tpy)**	**$PM_{2.5}$ (tpy)**
Regional Emissions	127,839	425,477	555,851	40,901	183,999	32,316
Emissions	0.330	0.142	1.012	0.021	0.306	0.057
% of Regional	**0.0003%**	**0.00003%**	**0.0002%**	**0.0001%**	**0.0002%**	**0.0002%**

Air Emissions for 2014 Construction Project - C1 - Central Utility Plant

Construction Emissions	**NO_x (ton)**	**VOC (ton)**	**CO (ton)**	**SO_2 (ton)**	**PM_{10} (ton)**	**$PM_{2.5}$ (ton)**	**CO_2 (metric tons/year)**
Combustion	4.784	0.542	2.109	0.378	0.344	0.334	491.519
Fugitive Dust	-	-	-	-	1.030	0.103	-
Haul Truck On-Road	0.439	0.317	1.289	0.035	0.522	0.136	100.760
Commuter	0.083	0.082	0.744	0.001	0.008	0.005	89.458
TOTAL	***5.31***	***0.94***	***4.14***	***0.41***	***1.90***	***0.58***	***681.74***

Notes: 1) Total PM10/2.5 fugitive dust emissions are assuming USEPA 50% control efficiencies.

CO_2 emissions converted to metric tons =	***681.738***	***metric tons***	
State of Texas' CO2 emissions =	***596,370,927***	***metric tons***	*(U.S. DOE/EIA 2011)*
Percent of Texas' CO2 emissions =	***0.00011%***		
United States' CO_2 emissions =	***5,425,600,000***	***metric tons***	*(U.S. DOE/EIA 2011)*
Percent of USA's CO_2 emissions =	***0.000013%***		

Source: U.S. Department of Energy, Energy Information Administration (U.S. DOE/EIA). 2011. *Table 1. State Emissions by Year (Million Metric Tons of Carbon Dioxide).* Available online <http://www.eia.gov/environment/emissions/state/state_emissions.cfm>. 2009 data values are the most recent. Data accessed 28 June 2012.

Since future year budgets were not readily available, actual 2008 air emissions inventories for the counties were used as an approximation of the regional inventory. Because 2014 Construction Project - C1c are several orders of magnitude below significance, the conclusion would be the same, regardless of whether future year budget data set were used.

Metropolitan San Antonio Intrastate Air Quality Control Region

	Point and Area Sources Combined					
Year	**NO_x (tpy)**	**VOC (tpy)**	**CO (tpy)**	**SO_2 (tpy)**	**PM_{10} (tpy)**	**$PM_{2.5}$ (tpy)**
2008	127,839	425,477	555,851	40,901	183,999	32,316

Source: USEPA National Emissions Inventory (NEI) (http://www.epa.gov/ttn/chief/net/2008inventory.html). Site visited on 27 June 2012.

Air Emissions from 2014 Construction Project - C1c

	Point and Area Sources Combined					
	NO_x (tpy)	**VOC (tpy)**	**CO (tpy)**	**SO_2 (tpy)**	**PM_{10} (tpy)**	**$PM_{2.5}$ (tpy)**
Regional Emissions	127,839	425,477	555,851	40,901	183,999	32,316
Emissions	5.305	0.942	4.142	0.414	1.904	0.577
% of Regional	**0.0042%**	**0.0002%**	**0.0007%**	**0.0010%**	**0.0010%**	**0.0018%**

2014, 2015, 2016, 2017, and 2018 Operational Emissions -- Project C1 -- Central Utility Plant

Summary Summarizes operational emissions for Construction Project - C1 - Central Utility Plant, which will be effective for every year after year of construction.

Stationary Internal Combustion Estimates Emissions from Internal Combustion Engines (e.g Generators)

Stationary External Combustion Estimates emissions from stationary external combustion sources.

Annual Operational Emissions	NO_x (tons/year)	VOC (tons/year)	CO (tons/year)	SO_2 (tons/year)	PM_{10} (tons/year)	$PM_{2.5}$ (tons/year)	CO_2 (metric tons/year)	Total HAP (ton)
Stationary Internal Combustion	6.236	0.503	1.344	0.412	0.443	0.443	190.377	0.0056
Stationary External Combustion	0.066	0.004	0.028	0.000	0.005	10.712	69.599	0.0013
Total Criteria and VOC Pollutant Emissions (tons/year)	**6.30**	**0.51**	**1.37**	**0.41**	**0.45**	**11.15**	**259.98**	**0.0069**

*Highest emission value from either proposed aircraft mix extreme

Greenhouse Gas (GHG) Emissions Summary (tons/year)

Source Category	CO_2 (lb/year)	CO_2 (kg/year)	CO_2 (tons/year)
Stationary Internal Combustion	462,645	209,856	209.86
Stationary External Combustion	169,136	76,720	76.72
Total GHG Emissions	**631,781**	**286,576**	**286.58**

Air Emissions for 2014 Construction Project - C1 - Dormitory, Drill Pad, Training Area #1

Construction Emissions	NO_x (ton)	VOC (ton)	CO (ton)	SO_2 (ton)	PM_{10} (ton)	$PM_{2.5}$ (ton)	CO_2 (metric tons/year)
Combustion	5.614	0.864	2.446	0.450	0.395	0.383	584.360
Fugitive Dust	-	-	-	-	23.951	2.395	-
Haul Truck On-Road	3.486	2.521	10.243	0.275	4.146	1.078	800.609
Commuter	0.083	0.082	0.744	0.001	0.008	0.005	89.459
TOTAL	***9.18***	***3.47***	***13.43***	***0.73***	***28.50***	***3.86***	***1,474.43***

Notes: 1) Total PM10/2.5 fugitive dust emissions are assuming USEPA 50% control efficiencies.

CO_2 emissions converted to metric tons =	***1,474.428***	***metric tons***	
State of Texas' CO2 emissions =	***596,370,927***	***metric tons***	*(U.S. DOE/EIA 2011)*
Percent of Texas' CO2 emissions =	***0.00025%***		
United States' CO_2 emissions =	***5,425,600,000***	***metric tons***	*(U.S. DOE/EIA 2011)*
Percent of USA's CO_2 emissions =	***0.000027%***		

Source: U.S. Department of Energy, Energy Information Administration (U.S. DOE/EIA). 2011. *Table 1. State Emissions by Year (Million Metric Tons of Carbon Dioxide).* Available online <http://www.eia.gov/environment/emissions/state/state_emissions.cfm>. 2009 data values are the most recent. Data accessed 28 June 2012.

Since future year budgets were not readily available, actual 2008 air emissions inventories for the counties were used as an approximation of the regional inventory. Because 2014 Construction Project - C1d are several orders of magnitude below significance, the conclusion would be the same, regardless of whether future year budget data set were used.

Metropolitan San Antonio Intrastate Air Quality Control Region

	Point and Area Sources Combined					
Year	**NO_x (tpy)**	**VOC (tpy)**	**CO (tpy)**	**SO_2 (tpy)**	**PM_{10} (tpy)**	**$PM_{2.5}$ (tpy)**
2008	127,839	425,477	555,851	40,901	183,999	32,316

Source: USEPA National Emissions Inventory (NEI) (http://www.epa.gov/ttn/chief/net/2008inventory.html). Site visited on 27 June 2012.

Air Emissions from 2014 Construction Project - C1d

	Point and Area Sources Combined					
	NO_x (tpy)	**VOC (tpy)**	**CO (tpy)**	**SO_2 (tpy)**	**PM_{10} (tpy)**	**$PM_{2.5}$ (tpy)**
Regional Emissions	127,839	425,477	555,851	40,901	183,999	32,316
Emissions	9.183	3.467	13.433	0.725	28.499	3.861
% of Regional	**0.0072%**	**0.0008%**	**0.0024%**	**0.0018%**	**0.0155%**	**0.0119%**

2014, 2105, 2016, 2017, and 2018 Operational Emissions -- Project C1 -- Dormitory, Drill Pad, Training Area #1

Summary Summarizes operational emissions for Construction Project - C1e which will be effective for every year after year of construction.

Stationary Internal Combustion Estimates Emissions from Internal Combustion Engines (e.g Generators)

Stationary External Combustion Estimates emissions from stationary external combustion sources.

Annual Operational Emissions	NO_x (tons/year)	VOC (tons/year)	CO (tons/year)	SO_2 (tons/year)	PM_{10} (tons/year)	$PM_{2.5}$ (tons/year)	CO_2 metric tons/yea	Total HAP (ton)
Stationary Internal Combustion	3.118	0.251	0.672	0.206	0.221	0.221	104.928	0.0028
Stationary External Combustion	0.511	0.028	0.430	0.003	0.039	7.600	556.727	0.0097
Total Criteria and VOC Pollutant Emissions (tons/year)	**3.63**	**0.28**	**1.10**	**0.21**	**0.26**	**0.04**	**661.65**	**0.0124**

*Highest emission value from either proposed aircraft mix extreme

Greenhouse Gas (GHG) Emissions Summary (tons/year)

Source Category	CO_2 (lb/year)	CO_2 (kg/year)	CO_2 (metric tons/year)
Stationary Internal Combustion	231,323	104,928	104.93
Stationary External Combustion	1,227,351	556,727	556.73
Total GHG Emissions	**1,458,674**	**661,654**	**661.65**

Air Emissions for 2015 Construction Project - C1 - Dormitory, Drill Pad, Training Area #2

Construction Emissions	NO_x (ton)	VOC (ton)	CO (ton)	SO_2 (ton)	PM_{10} (ton)	$PM_{2.5}$ (ton)	CO_2 (metric tons/year)
Combustion	5.614	0.864	2.446	0.450	0.395	0.383	584.360
Fugitive Dust	-	-	-	-	23.951	2.395	-
Haul Truck On-Road	3.599	2.602	10.575	0.283	4.280	1.113	826.566
Commuter	0.083	0.082	0.744	0.001	0.008	0.005	89.459
TOTAL	***9.30***	***3.55***	***13.76***	***0.73***	***28.63***	***3.90***	***1,500.39***

Notes: 1) Total PM10/2.5 fugitive dust emissions are assuming USEPA 50% control efficiencies.

CO_2 emissions converted to metric tons =	***1,500.385***	***metric tons***	
State of Texas' CO2 emissions =	***596,370,927***	***metric tons***	*(U.S. DOE/EIA 2011)*
Percent of Texas' CO2 emissions =	***0.00025%***		
United States' CO_2 emissions =	***5,425,600,000***	***metric tons***	*(U.S. DOE/EIA 2011)*
Percent of USA's CO_2 emissions =	***0.000028%***		

Source: U.S. Department of Energy, Energy Information Administration (U.S. DOE/EIA). 2011. *Table 1. State Emissions by Year (Million Metric Tons of Carbon Dioxide).* Available online <http://www.eia.gov/environment/emissions/state/state_emissions.cfm>. 2009 data values are the most recent. Data accessed 28 June 2012.

Since future year budgets were not readily available, actual 2008 air emissions inventories for the counties were used as an approximation of the regional inventory.
Because 2015 Construction Project - C1e are several orders of magnitude below significance, the conclusion would be the same, regardless of whether future year budget data set were used.

Metropolitan San Antonio Intrastate Air Quality Control Region

	Point and Area Sources Combined					
Year	**NO_x (tpy)**	**VOC (tpy)**	**CO (tpy)**	**SO_2 (tpy)**	**PM_{10} (tpy)**	**$PM_{2.5}$ (tpy)**
2008	127,839	425,477	555,851	40,901	183,999	32,316

Source: USEPA National Emissions Inventory (NEI) (http://www.epa.gov/ttn/chief/net/2008inventory.html). Site visited on 27 June 2012.

Air Emissions from 2015 Construction Project - C1e

	Point and Area Sources Combined					
	NO_x (tpy)	**VOC (tpy)**	**CO (tpy)**	**SO_2 (tpy)**	**PM_{10} (tpy)**	**$PM_{2.5}$ (tpy)**
Regional Emissions	127,839	425,477	555,851	40,901	183,999	32,316
Emissions	9.296	3.549	13.765	0.734	28.633	3.896
% of Regional	**0.007%**	**0.001%**	**0.002%**	**0.002%**	**0.016%**	**0.012%**

2015, 2016, 2017, and 2018 Operational Emissions -- Project C1 -- Dormitory, Drill Pad, Training Area #2

Summary	Summarizes operational emissions for Construction Project - C1e which will be effective for every year after year of construction.
Stationary Internal Combustion	Estimates Emissions from Internal Combustion Engines (e.g Generators)
Stationary External Combustion	Estimates emissions from stationary external combustion sources.

Annual Operational Emissions	**NO_x (tons/year)**	**VOC (tons/year)**	**CO (tons/year)**	**SO_2 (tons/year)**	**PM_{10} (tons/year)**	**$PM_{2.5}$ (tons/year)**	**CO_2 (metric tons/year)**	**Total HAP (ton)**
Stationary Internal Combustion	3.118	0.251	0.672	0.206	0.221	0.221	104.928	0.0028
Stationary External Combustion	0.511	0.028	0.430	0.003	0.039	7.600	556.727	0.0097
Total Criteria and VOC Pollutant Emissions (tons/year)	**3.63**	**0.28**	**1.10**	**0.21**	**0.26**	**0.04**	**661.65**	**0.0124**

*Highest emission value from either proposed aircraft mix extreme

Greenhouse Gas (GHG) Emissions Summary (metric tonnes/year)

Source Category	**CO_2 (lb/year)**	**CO_2 (kg/year)**	**CO_2 (metric tons/year)**
Stationary Internal Combustion	231,323	104,928	104.93
Stationary External Combustion	1,227,351	556,727	556.73
Total GHG Emissions	**1,458,674**	**661,654**	**661.65**

Air Emissions for 2016 Construction Project - C1 - Dormitory, Drill Pad, Training Area #3

Construction Emissions	**NO_x (ton)**	**VOC (ton)**	**CO (ton)**	**SO_2 (ton)**	**PM_{10} (ton)**	**$PM_{2.5}$ (ton)**	**CO_2 (metric tons/year)**
Combustion	5.614	0.864	2.446	0.450	0.395	0.383	584.360
Fugitive Dust	-	-	-	-	23.951	2.395	-
Haul Truck On-Road	3.599	2.602	10.575	0.283	4.280	1.113	826.566
Commuter	0.083	0.082	0.744	0.001	0.008	0.005	89.459
TOTAL	***9.30***	***3.55***	***13.76***	***0.73***	***28.63***	***3.90***	***1,500.39***

Notes: 1) Total PM10/2.5 fugitive dust emissions are assuming USEPA 50% control efficiencies.

CO_2 emissions converted to metric tons =	***1,500.385***	***metric tons***	
State of Texas' CO2 emissions =	***596,370,927***	***metric tons***	*(U.S. DOE/EIA 2011)*
Percent of Texas' CO2 emissions =	***0.00025%***		
United States' CO_2 emissions =	***5,425,600,000***	***metric tons***	*(U.S. DOE/EIA 2011)*
Percent of USA's CO_2 emissions =	***0.000028%***		

Source: U.S. Department of Energy, Energy Information Administration (U.S. DOE/EIA). 2011. *Table 1. State Emissions by Year (Million Metric Tons of Carbon Dioxide).* Available online <http://www.eia.gov/environment/emissions/state/state_emissions.cfm>. 2009 data values are the most recent. Data accessed 28 June 2012.

Since future year budgets were not readily available, actual 2008 air emissions inventories for the counties were used as an approximation of the regional inventory. Because 2016 Construction Project - C1f are several orders of magnitude below significance, the conclusion would be the same, regardless of whether future year budget data set were used.

Metropolitan San Antonio Intrastate Air Quality Control Region

	Point and Area Sources Combined					
Year	**NO_x (tpy)**	**VOC (tpy)**	**CO (tpy)**	**SO_2 (tpy)**	**PM_{10} (tpy)**	**$PM_{2.5}$ (tpy)**
2008	127,839	425,477	555,851	40,901	183,999	32,316

Source: USEPA National Emissions Inventory (NEI) (http://www.epa.gov/ttn/chief/net/2008inventory.html). Site visited on 27 June 2012.

Air Emissions from 2016 Construction Project - C1f

	Point and Area Sources Combined					
	NO_x (tpy)	**VOC (tpy)**	**CO (tpy)**	**SO_2 (tpy)**	**PM_{10} (tpy)**	**$PM_{2.5}$ (tpy)**
Regional Emissions	127,839	425,477	555,851	40,901	183,999	32,316
Emissions	9.296	3.549	13.765	0.734	28.633	3.896
% of Regional	**0.007%**	**0.001%**	**0.002%**	**0.002%**	**0.016%**	**0.012%**

2016, 2017 and 2018 Operational Emissions -- Project C1 -- Dormitory, Drill Pad, Training Area #3

Summary Summarizes operational emissions for Construction Project - C1e which will be effective for every year after year of construction.

Stationary Internal Combustion Estimates Emissions from Internal Combustion Engines (e.g Generators)

Stationary External Combustion Estimates emissions from stationary external combustion sources.

Annual Operational Emissions	NO_x (tons/year)	VOC (tons/year)	CO (tons/year)	SO_2 (tons/year)	PM_{10} (tons/year)	$PM_{2.5}$ (tons/year)	CO_2 (metric tons/year)	Total HAP (ton)
Stationary Internal Combustion	3.118	0.251	0.672	0.206	0.221	0.221	104.928	0.0028
Stationary External Combustion	0.511	0.028	0.430	0.003	0.039	7.600	556.727	0.0097
Total Criteria and VOC Pollutant Emissions (tons/year)	**3.63**	**0.28**	**1.10**	**0.21**	**0.26**	**0.04**	**661.65**	**0.0124**

*Highest emission value from either proposed aircraft mix extreme

Greenhouse Gas (GHG) Emissions Summary (metric tonnes/year)

Source Category	CO_2 (lb/year)	CO_2 (kg/year)	CO_2 (metric tons/year)
Stationary Internal Combustion	231,323	104,928	104.93
Stationary External Combustion	1,227,351	556,727	556.73
Total GHG Emissions	**1,458,674**	**661,654**	**661.65**

Air Emissions for 2016 Construction Project - C1 - Classroom/Dining Facility #2

Construction Emissions	NO_x (ton)	VOC (ton)	CO (ton)	SO_2 (ton)	PM_{10} (ton)	$PM_{2.5}$ (ton)	CO_2 (metric tons/year)
Combustion	4.805	0.647	2.117	0.380	0.345	0.335	493.763
Fugitive Dust	-	-	-	-	2.766	0.277	-
Haul Truck On-Road	1.291	0.933	3.793	0.102	1.535	0.399	296.476
Commuter	0.083	0.082	0.744	0.001	0.008	0.005	89.459
TOTAL	***6.18***	***1.66***	***6.65***	***0.48***	***4.65***	***1.02***	***879.70***

Annual Operational Emissions (2016 to 2018)	NO_x (ton)	VOC (ton)	CO (ton)	SO_2 (ton)	PM_{10} (ton)	$PM_{2.5}$ (ton)	CO_2 (metric tons/year)	Total HAP (ton)
Stationary External Combustion	0.189	0.010	0.159	0.001	0.014	0.014	205.971	0.004

Notes: 1) Total PM10/2.5 fugitive dust emissions are assuming USEPA 50% control efficiencies.
2) The annual operational emissions would the same for every year the facility operates.

CO_2 emissions converted to metric tons =	***879.697***	***metric tons***	
State of Texas' CO2 emissions =	***596,370,927***	***metric tons***	*(U.S. DOE/EIA 2011)*
Percent of Texas' CO2 emissions =	***0.00015%***		
United States' CO_2 emissions =	***5,425,600,000***	***metric tons***	*(U.S. DOE/EIA 2011)*
Percent of USA's CO_2 emissions =	***0.000016%***		

Source: U.S. Department of Energy, Energy Information Administration (U.S. DOE/EIA). 2011. *Table 1. State Emissions by Year (Million Metric Tons of Carbon Dioxide).* Available online <http://www.eia.gov/environment/emissions/state/state_emissions.cfm>. 2009 data values are the most recent. Data accessed 28 June 2012.

Since future year budgets were not readily available, actual 2008 air emissions inventories for the counties were used as an approximation of the regional inventory. Because 2016 Construction Project - C1g are several orders of magnitude below significance, the conclusion would be the same, regardless of whether future year budget data set were used.

Metropolitan San Antonio Intrastate Air Quality Control Region

	Point and Area Sources Combined					
Year	**NO_x (tpy)**	**VOC (tpy)**	**CO (tpy)**	**SO_2 (tpy)**	**PM_{10} (tpy)**	**$PM_{2.5}$ (tpy)**
2008	127,839	425,477	555,851	40,901	183,999	32,316

Source: USEPA National Emissions Inventory (NEI) (http://www.epa.gov/ttn/chief/net/2008inventory.html). Site visited on 27 June 2012.

Air Emissions from 2016 Construction Project - C1g

	Point and Area Sources Combined					
	NO_x (tpy)	**VOC (tpy)**	**CO (tpy)**	**SO_2 (tpy)**	**PM_{10} (tpy)**	**$PM_{2.5}$ (tpy)**
Regional Emissions	127,839	425,477	555,851	40,901	183,999	32,316
Emissions	6.178	1.662	6.654	0.483	4.654	1.015
% of Regional	**0.005%**	**0.000%**	**0.001%**	**0.001%**	**0.003%**	**0.003%**

Air Emissions for 2017 Construction Project - C1 - Dormitory, Drill Pad, Training Area #4

Construction Emissions	NO_x (ton)	VOC (ton)	CO (ton)	SO_2 (ton)	PM_{10} (ton)	$PM_{2.5}$ (ton)	CO_2 (metric tons/year)
Combustion	5.614	0.864	2.446	0.450	0.395	0.383	584.360
Fugitive Dust	-	-	-	-	23.951	2.395	-
Haul Truck On-Road	3.599	2.602	10.575	0.283	4.280	1.113	826.566
Commuter	0.083	0.082	0.744	0.001	0.008	0.005	89.459
TOTAL	***9.30***	***3.55***	***13.76***	***0.73***	***28.63***	***3.90***	***1,500.39***

Notes: 1) Total PM10/2.5 fugitive dust emissions are assuming USEPA 50% control efficiencies.

CO_2 emissions converted to metric tons =	***1,500.385***	***metric tons***	
State of Texas' CO2 emissions =	***596,370,927***	***metric tons***	*(U.S. DOE/EIA 2011)*
Percent of Texas' CO2 emissions =	***0.00025%***		
United States' CO_2 emissions =	***5,425,600,000***	***metric tons***	*(U.S. DOE/EIA 2011)*
Percent of USA's CO_2 emissions =	***0.000028%***		

Source: U.S. Department of Energy, Energy Information Administration (U.S. DOE/EIA). 2011. *Table 1. State Emissions by Year (Million Metric Tons of Carbon Dioxide).* Available online <http://www.eia.gov/environment/emissions/state/state_emissions.cfm>. 2009 data values are the most recent. Data accessed 28 June 2012.

Since future year budgets were not readily available, actual 2008 air emissions inventories for the counties were used as an approximation of the regional inventory. Because 2017 Construction Project - C1h are several orders of magnitude below significance, the conclusion would be the same, regardless of whether future year budget data set were used.

Metropolitan San Antonio Intrastate Air Quality Control Region

	Point and Area Sources Combined					
Year	**NO_x (tpy)**	**VOC (tpy)**	**CO (tpy)**	**SO_2 (tpy)**	**PM_{10} (tpy)**	**$PM_{2.5}$ (tpy)**
2008	127,839	425,477	555,851	40,901	183,999	32,316

Source: USEPA National Emissions Inventory (NEI) (http://www.epa.gov/ttn/chief/net/2008inventory.html). Site visited on 27 June 2012.

Air Emissions from 2017 Construction Project - C1h

	Point and Area Sources Combined					
	NO_x (tpy)	**VOC (tpy)**	**CO (tpy)**	**SO_2 (tpy)**	**PM_{10} (tpy)**	**$PM_{2.5}$ (tpy)**
Regional Emissions	127,839	425,477	555,851	40,901	183,999	32,316
Emissions	9.296	3.549	13.765	0.734	28.633	3.896
% of Regional	**0.007%**	**0.001%**	**0.002%**	**0.002%**	**0.016%**	**0.012%**

2017 and 2018 Operational Emissions -- Project C1 -- Dormitory, Drill Pad, Training Area #4

Summary	Summarizes operational emissions for Construction Project - C1e which will be effective for every year after year of construction.
Stationary Internal Combustion	Estimates Emissions from Internal Combustion Engines (e.g Generators)
Stationary External Combustion	Estimates emissions from stationary external combustion sources.

Annual Operational Emissions	**NO_x (tons/year)**	**VOC (tons/year)**	**CO (tons/year)**	**SO_2 (tons/year)**	**PM_{10} (tons/year)**	**$PM_{2.5}$ (tons/year)**	**CO_2 (metric tons/year)**	**Total HAP (ton)**
Stationary Internal Combustion	3.118	0.251	0.672	0.206	0.221	0.221	104.928	0.0028
Stationary External Combustion	0.511	0.028	0.430	0.003	0.039	7.600	556.727	0.0097
Total Criteria and VOC Pollutant Emissions (tons/year)	**3.63**	**0.28**	**1.10**	**0.21**	**0.26**	**0.04**	**661.65**	**0.0124**

*Highest emission value from either proposed aircraft mix extreme

Greenhouse Gas (GHG) Emissions Summary (metric tonnes/year)

Source Category	**CO_2 (lb/year)**	**CO_2 (kg/year)**	**CO_2 (metric tons/year)**
Stationary Internal Combustion	231,323	104,928	104.93
Stationary External Combustion	1,227,351	556,727	556.73
Total GHG Emissions	**1,458,674**	**661,654**	**661.65**

Air Emissions for 2017 Construction Project - C1 - Demolition of B. 9020 and 9028

Construction Emissions	**NO_x (ton)**	**VOC (ton)**	**CO (ton)**	**SO_2 (ton)**	**PM_{10} (ton)**	**$PM_{2.5}$ (ton)**	**CO_2 (metric tons/year)**
Combustion	1.357	0.080	0.536	0.110	0.082	0.080	143.335
Fugitive Dust	-	-	-	-	1.915	0.191	-
Haul Truck On-Road	0.734	0.531	2.158	0.058	0.873	0.227	168.658
Commuter	0.083	0.082	0.744	0.001	0.008	0.005	89.459
TOTAL	***2.17***	***0.69***	***3.44***	***0.17***	***2.88***	***0.50***	***401.45***

Annual Operational Emissions (2017 to 2018)	**NO_x (ton)**	**VOC (ton)**	**CO (ton)**	**SO_2 (ton)**	**PM_{10} (ton)**	**$PM_{2.5}$ (ton)**	**CO_2 (metric tons/year)**	**Total HAP (ton)**
Stationary External Combustion	(0.083)	(0.005)	(0.036)	(0.0005)	(0.007)	(0.007)	(96.678)	(0.002)

Notes: 1) Total PM10/2.5 fugitive dust emissions are assuming USEPA 50% control efficiencies.
2) The change in annual operations emissions would be the same each year following demolition.

CO_2 emissions converted to metric tons =	***401.452***	***metric tons***	
State of Texas' CO2 emissions =	***596,370,927***	***metric tons***	*(U.S. DOE/EIA 2011)*
Percent of Texas' CO2 emissions =	***0.00007%***		
United States' CO_2 emissions =	***5,425,600,000***	***metric tons***	*(U.S. DOE/EIA 2011)*
Percent of USA's CO_2 emissions =	***0.000007%***		

Source: U.S. Department of Energy, Energy Information Administration (U.S. DOE/EIA). 2011. *Table 1. State Emissions by Year (Million Metric Tons of Carbon Dioxide).* Available online <http://www.eia.gov/environment/emissions/state/state_emissions.cfm>. 2009 data values are the most recent. Data accessed 28 June 2012.

Since future year budgets were not readily available, actual 2008 air emissions inventories for the counties were used as an approximation of the regional inventory.
Because 2017 Construction Project - C1i are several orders of magnitude below significance, the conclusion would be the same, regardless of whether future year budget data set were used.

Metropolitan San Antonio Intrastate Air Quality Control Region

	Point and Area Sources Combined					
Year	**NO_x (tpy)**	**VOC (tpy)**	**CO (tpy)**	**SO_2 (tpy)**	**PM_{10} (tpy)**	**$PM_{2.5}$ (tpy)**
2008	127,839	425,477	555,851	40,901	183,999	32,316

Source: USEPA National Emissions Inventory (NEI) (http://www.epa.gov/ttn/chief/net/2008inventory.html). Site visited on 27 June 2012.

Air Emissions from 2017 Construction Project - C1i

	Point and Area Sources Combined					
	NO_x (tpy)	**VOC (tpy)**	**CO (tpy)**	**SO_2 (tpy)**	**PM_{10} (tpy)**	**$PM_{2.5}$ (tpy)**
Regional Emissions	127,839	425,477	555,851	40,901	183,999	32,316
Emissions	2.174	0.694	3.438	0.169	2.878	0.503
% of Regional	**0.002%**	**0.000%**	**0.001%**	**0.000%**	**0.002%**	**0.002%**

Air Emissions for 2017 Construction Project - C1 - Interfaith Religious Center

Construction Emissions	NO_x (ton)	VOC (ton)	CO (ton)	SO_2 (ton)	PM_{10} (ton)	$PM_{2.5}$ (ton)	CO_2 (metric tons/year)
Combustion	4.805	0.632	2.117	0.380	0.345	0.335	493.763
Fugitive Dust	-	-	-	-	2.469	0.247	-
Haul Truck On-Road	1.165	0.842	3.422	0.092	1.385	0.360	267.458
Commuter	0.083	0.082	0.744	0.001	0.008	0.005	89.459
TOTAL	***6.05***	***1.56***	***6.28***	***0.47***	***4.21***	***0.95***	***850.68***

Annual Operational Emissions (2017 to 2018)	NO_x (ton)	VOC (ton)	CO (ton)	SO_2 (ton)	PM_{10} (ton)	$PM_{2.5}$ (ton)	CO_2 (metric tons/year)	Total HAP (ton)
Stationary External Combustion	0.169	0.009	0.142	0.001	0.013	0.013	183.877	0.003

Notes: 1) Total PM10/2.5 fugitive dust emissions are assuming USEPA 50% control efficiencies.
2) The annual operational emissions would the same for every year the facility operates.

CO_2 emissions converted to metric tons =	***850.680***	***metric tons***	
State of Texas' CO2 emissions =	***596,370,927***	***metric tons***	*(U.S. DOE/EIA 2011)*
Percent of Texas' CO2 emissions =	***0.00014%***		
United States' CO_2 emissions =	***5,425,600,000***	***metric tons***	*(U.S. DOE/EIA 2011)*
Percent of USA's CO_2 emissions =	***0.000016%***		

Source: U.S. Department of Energy, Energy Information Administration (U.S. DOE/EIA). 2011. *Table 1. State Emissions by Year (Million Metric Tons of Carbon Dioxide).* Available online <http://www.eia.gov/environment/emissions/state/state_emissions.cfm>. 2009 data values are the most recent. Data accessed 28 June 2012.

Since future year budgets were not readily available, actual 2008 air emissions inventories for the counties were used as an approximation of the regional inventory. Because 2017 Construction Project - C1j are several orders of magnitude below significance, the conclusion would be the same, regardless of whether future year budget data set were used.

Metropolitan San Antonio Intrastate Air Quality Control Region

	Point and Area Sources Combined					
Year	**NO_x (tpy)**	**VOC (tpy)**	**CO (tpy)**	**SO_2 (tpy)**	**PM_{10} (tpy)**	**$PM_{2.5}$ (tpy)**
2008	127,839	425,477	555,851	40,901	183,999	32,316

Source: USEPA National Emissions Inventory (NEI) (http://www.epa.gov/ttn/chief/net/2008inventory.html). Site visited on 27 June 2012.

Air Emissions from 2017 Construction Project - C1j

	Point and Area Sources Combined					
	NO_x (tpy)	**VOC (tpy)**	**CO (tpy)**	**SO_2 (tpy)**	**PM_{10} (tpy)**	**$PM_{2.5}$ (tpy)**
Regional Emissions	127,839	425,477	555,851	40,901	183,999	32,316
Emissions	6.052	1.557	6.283	0.473	4.207	0.947
% of Regional	**0.005%**	**0.000%**	**0.001%**	**0.001%**	**0.002%**	**0.003%**

Air Emissions for 2013 Construction Project C2

Construction Emissions	**NO_x (ton)**	**VOC (ton)**	**CO (ton)**	**SO_2 (ton)**	**PM_{10} (ton)**	**$PM_{2.5}$ (ton)**	**CO_2 (metric tons/year)**
Combustion	4.807	0.532	2.119	0.380	0.345	0.335	494.073
Fugitive Dust	-	-	-	-	1.024	0.102	-
Haul Truck On-Road	0.382	0.277	1.124	0.030	0.455	0.118	87.848
Commuter	0.083	0.082	0.744	0.001	0.008	0.005	89.459
TOTAL	***5.27***	***0.89***	***3.99***	***0.41***	***1.83***	***0.56***	***671.38***

Annual Operational Emissions (2013 to 2018)	**NO_x (ton)**	**VOC (ton)**	**CO (ton)**	**SO_2 (ton)**	**PM_{10} (ton)**	**$PM_{2.5}$ (ton)**	**CO_2 (metric tons/year)**	**Total HAP (ton)**
Stationary External Combustion	0.057	0.003	0.024	0.0004	0.005	0.005	66.465	0.001

Notes: 1) Total PM10/2.5 fugitive dust emissions are assuming USEPA 50% control efficiencies.
2) The annual operational emissions would the same for every year the facility operates.

CO_2 emissions converted to metric tons =	***671.379***	***metric tons***	
State of Texas' CO2 emissions =	***596,370,927***	***metric tons***	*(U.S. DOE/EIA 2011)*
Percent of Texas' CO2 emissions =	***0.00011%***		
United States' CO_2 emissions =	***5,425,600,000***	***metric tons***	*(U.S. DOE/EIA 2011)*
Percent of USA's CO_2 emissions =	***0.000012%***		

Source: U.S. Department of Energy, Energy Information Administration (U.S. DOE/EIA). 2011. *Table 1. State Emissions by Year (Million Metric Tons of Carbon Dioxide).* Available online <http://www.eia.gov/environment/emissions/state/state_emissions.cfm>. 2009 data values are the most recent. Data accessed 28 June 2012.

Since future year budgets were not readily available, actual 2008 air emissions inventories for the counties were used as an approximation of the regional inventory. Because 2013 Construction Project - C2 are several orders of magnitude below significance, the conclusion would be the same, regardless of whether future year budget data set were used.

Metropolitan San Antonio Intrastate Air Quality Control Region

	Point and Area Sources Combined					
Year	**NO_x (tpy)**	**VOC (tpy)**	**CO (tpy)**	**SO_2 (tpy)**	**PM_{10} (tpy)**	**$PM_{2.5}$ (tpy)**
2008	127,839	425,477	555,851	40,901	183,999	32,316

Source: USEPA National Emissions Inventory (NEI) (http://www.epa.gov/ttn/chief/net/2008inventory.html). Site visited on 27 June 2012.

Air Emissions from 2013 Construction Project - C2

	Point and Area Sources Combined					
	NO_x (tpy)	**VOC (tpy)**	**CO (tpy)**	**SO_2 (tpy)**	**PM_{10} (tpy)**	**$PM_{2.5}$ (tpy)**
Regional Emissions	127,839	425,477	555,851	40,901	183,999	32,316
Emissions	5.272	0.891	3.986	0.411	1.832	0.560
% of Regional	**0.0041%**	**0.0002%**	**0.0007%**	**0.0010%**	**0.0010%**	**0.0017%**

Air Emissions for 2013 Construction Project - C3

Construction Emissions	NO_x (ton)	VOC (ton)	CO (ton)	SO_2 (ton)	PM_{10} (ton)	$PM_{2.5}$ (ton)	CO_2 (metric tons/year)
Combustion	5.450	0.686	2.373	0.433	0.384	0.373	562.447
Fugitive Dust	-	-	-	-	5.155	0.515	-
Haul Truck On-Road	1.472	1.064	4.324	0.116	1.750	0.455	337.965
Commuter	0.083	0.082	0.744	0.001	0.008	0.005	89.459
TOTAL	***7.00***	***1.83***	***7.44***	***0.55***	***7.30***	***1.35***	***989.87***

Notes: 1) Total PM10/2.5 fugitive dust emissions are assuming USEPA 50% control efficiencies.

CO_2 emissions converted to metric tons =	***989.870***	***metric tons***	
State of Texas' CO2 emissions =	***596,370,927***	***metric tons***	*(U.S. DOE/EIA 2011)*
Percent of Texas' CO2 emissions =	***0.00017%***		
United States' CO_2 emissions =	***5,425,600,000***	***metric tons***	*(U.S. DOE/EIA 2011)*
Percent of USA's CO_2 emissions =	***0.000018%***		

Source: U.S. Department of Energy, Energy Information Administration (U.S. DOE/EIA). 2011. *Table 1. State Emissions by Year (Million Metric Tons of Carbon Dioxide).* Available online <http://www.eia.gov/environment/emissions/state/state_emissions.cfm>. 2009 data values are the most recent. Data accessed 28 June 2012.

Since future year budgets were not readily available, actual 2008 air emissions inventories for the counties were used as an approximation of the regional inventory. Because 2013 Construction Project - C3 are several orders of magnitude below significance, the conclusion would be the same, regardless of whether future year budget data set were used.

Metropolitan San Antonio Intrastate Air Quality Control Region

	Point and Area Sources Combined					
Year	**NO_x (tpy)**	**VOC (tpy)**	**CO (tpy)**	**SO_2 (tpy)**	**PM_{10} (tpy)**	**$PM_{2.5}$ (tpy)**
2008	127,839	425,477	555,851	40,901	183,999	32,316

Source: USEPA National Emissions Inventory (NEI) (http://www.epa.gov/ttn/chief/net/2008inventory.html). Site visited on 27 June 2012.

Air Emissions from 2013 Construction Project - C3

	Point and Area Sources Combined					
	NO_x (tpy)	**VOC (tpy)**	**CO (tpy)**	**SO_2 (tpy)**	**PM_{10} (tpy)**	**$PM_{2.5}$ (tpy)**
Regional Emissions	127,839	425,477	555,851	40,901	183,999	32,316
Emissions	7.005	1.833	7.441	0.550	7.297	1.348
% of Regional	**0.0055%**	**0.0004%**	**0.0013%**	**0.0013%**	**0.0040%**	**0.0042%**

2013 to 2018 Operational Emissions -- Project C3 -- Battlefield Aquatic Training Complex

Summary Summarizes operational emissions for Construction Project - C3 which will be effective for every year after year of construction.

Stationary Internal Combusion Estimates Emissions from Internal Combustion Engines (e.g Generators)

Stationary External Combusion Estimates emissions from stationary external combustion sources.

Annual Operational Emissions	**NO_x (tons/year)**	**VOC (tons/year)**	**CO (tons/year)**	**SO_2 (tons/year)**	**PM_{10} (tons/year)**	**$PM_{2.5}$ (tons/year)**	**CO_2 (metric tons/year)**	**Total HAP (ton)**
Stationary Internal Combusion	3.118	0.251	0.672	0.206	0.221	0.221	104.928	0.0028
Stationary External Combustion	0.138	0.008	0.116	0.001	0.010	0.010	150.277	0.0026
Total Criteria and VOC Pollutant Emissions (tons/year)	**3.26**	**0.26**	**0.79**	**0.21**	**0.23**	**0.23**	**255.20**	**0.0054**

*Highest emission value from either proposed aircraft mix extreme

Greenhouse Gas (GHG) Emissions Summary (tons/year)

Source Category	**CO_2 (lb/year)**	**CO_2 (kg/year)**	**CO_2 (metric tons/year)**
Stationary Internal Combusion	231,323	104,928	104.93
Stationary External Combustion	331,299	150,277	150.28
Total GHG Emissions	**562,621**	**255,205**	**255.20**

Air Emissions for 2015 Construction Project - C4

Construction Emissions	**NO_x (ton)**	**VOC (ton)**	**CO (ton)**	**SO_2 (ton)**	**PM_{10} (ton)**	**$PM_{2.5}$ (ton)**	**CO_2 (metric tons/year)**
Combustion	5.323	0.638	2.328	0.425	0.377	0.366	551.814
Fugitive Dust	-	-	-	-	13.003	1.300	-
Haul Truck On-Road	1.060	0.766	3.114	0.083	1.260	0.328	243.391
Commuter	0.083	0.082	0.744	0.001	0.008	0.005	89.458
TOTAL	***6.47***	***1.49***	***6.19***	***0.51***	***14.65***	***2.00***	***884.66***

Notes: 1) Total PM10/2.5 fugitive dust emissions are assuming USEPA 50% control efficiencies.

CO_2 emissions converted to metric tons =	***884.663***	***metric tons***	
State of Texas' CO2 emissions =	***596,370,927***	***metric tons***	*(U.S. DOE/EIA 2011)*
Percent of Texas' CO2 emissions =	***0.00015%***		
United States' CO_2 emissions =	***5,425,600,000***	***metric tons***	*(U.S. DOE/EIA 2011)*
Percent of USA's CO_2 emissions =	***0.000016%***		

Source: U.S. Department of Energy, Energy Information Administration (U.S. DOE/EIA). 2011. *Table 1. State Emissions by Year (Million Metric Tons of Carbon Dioxide).* Available online <http://www.eia.gov/environment/emissions/state/state_emissions.cfm>. 2009 data values are the most recent. Data accessed 28 June 2012.

Since future year budgets were not readily available, actual 2008 air emissions inventories for the counties were used as an approximation of the regional inventory. Because 2015 Construction Project - C4 are several orders of magnitude below significance, the conclusion would be the same, regardless of whether future year budget data set were used.

Metropolitan San Antonio Intrastate Air Quality Control Region

	Point and Area Sources Combined					
Year	**NO_x (tpy)**	**VOC (tpy)**	**CO (tpy)**	**SO_2 (tpy)**	**PM_{10} (tpy)**	**$PM_{2.5}$ (tpy)**
2008	127,839	425,477	555,851	40,901	183,999	32,316

Source: USEPA National Emissions Inventory (NEI) (http://www.epa.gov/ttn/chief/net/2008inventory.html). Site visited on 27 June 2012.

Air Emissions from 2015 Construction Project - C4

	Point and Area Sources Combined					
	NO_x (tpy)	**VOC (tpy)**	**CO (tpy)**	**SO_2 (tpy)**	**PM_{10} (tpy)**	**$PM_{2.5}$ (tpy)**
Regional Emissions	127,839	425,477	555,851	40,901	183,999	32,316
Emissions	6.465	1.487	6.186	0.509	14.648	1.998
% of Regional	**0.0051%**	**0.0003%**	**0.0011%**	**0.0012%**	**0.0080%**	**0.0062%**

2015 to 2018 Operational Emissions -- Project C4 -- Reid Medical Clinic

Summary Summarizes operational emissions for Construction Project - C4 which will be effective for every year after year of construction.

Stationary Internal Combustion Estimates Emissions from Internal Combustion Engines (e.g Generators)

Stationary External Combustion Estimates emissions from stationary external combustion sources.

Annual Operational Emissions	NO_x (tons/year)	VOC (tons/year)	CO (tons/year)	SO_2 (tons/year)	PM_{10} (tons/year)	$PM_{2.5}$ (tons/year)	CO_2 (metric tons/year)	Total HAP (ton)
Stationary Internal Combustion	16.628	1.341	3.583	1.100	1.180	1.180	559.615	0.0037
Stationary External Combustion	0.138	0.008	0.116	0.001	0.010	0.010	150.065	0.0026
Total Criteria and VOC Pollutant Emissions (tons/year)	**16.77**	**1.35**	**3.70**	**1.10**	**1.19**	**1.19**	**709.68**	**0.0063**

*Highest emission value from either proposed aircraft mix extreme

Greenhouse Gas (GHG) Emissions Summary (tons/year)

Source Category	**CO_2 (lb/year)**	**CO_2 (kg/year)**	**CO_2 (metric tons/year)**
Stationary Internal Combustion	1,233,720	559,615	559.62
Stationary External Combustion	330,830	150,065	150.06
Total GHG Emissions	**1,564,550**	**709,680**	**709.68**

Air Emissions for 2016 Construction Project - C5

Construction Emissions	NO_x (ton)	VOC (ton)	CO (ton)	SO_2 (ton)	PM_{10} (ton)	$PM_{2.5}$ (ton)	CO_2 (metric tons/year)
Combustion	4.784	0.483	2.109	0.378	0.344	0.334	491.521
Fugitive Dust	-	-	-	-	0.413	0.041	-
Haul Truck On-Road	0.176	0.127	0.516	0.014	0.209	0.054	40.363
Commuter	0.083	0.082	0.744	0.001	0.008	0.005	89.459
TOTAL	***5.04***	***0.69***	***3.37***	***0.39***	***0.97***	***0.43***	***621.34***

Annual Operational Emissions (2016 to 2018)	NO_x (ton)	VOC (ton)	CO (ton)	SO_2 (ton)	PM_{10} (ton)	$PM_{2.5}$ (ton)	CO_2 (metric tons/year)	Total HAP (ton)
Stationary External Combustion	0.027	0.002	0.011	0.0002	0.002	0.002	30.732	0.0005

Notes: 1) Total PM10/2.5 fugitive dust emissions are assuming USEPA 50% control efficiencies.
2) The annual operational emissions would the same for every year the facility operates.

CO_2 emissions converted to metric tons =	***621.343***	***metric tons***	
State of Texas' CO2 emissions =	***596,370,927***	***metric tons***	*(U.S. DOE/EIA 2011)*
Percent of Texas' CO2 emissions =	***0.00010%***		
United States' CO_2 emissions =	***5,425,600,000***	***metric tons***	*(U.S. DOE/EIA 2011)*
Percent of USA's CO_2 emissions =	***0.000011%***		

Source: U.S. Department of Energy, Energy Information Administration (U.S. DOE/EIA). 2011. *Table 1. State Emissions by Year (Million Metric Tons of Carbon Dioxide).* Available online <http://www.eia.gov/environment/emissions/state/state_emissions.cfm>. 2009 data values are the most recent. Data accessed 28 June 2012.

Since future year budgets were not readily available, actual 2008 air emissions inventories for the counties were used as an approximation of the regional inventory. Because 2016 Construction Project - C5 are several orders of magnitude below significance, the conclusion would be the same, regardless of whether future year budget data set were used.

Metropolitan San Antonio Intrastate Air Quality Control Region

	Point and Area Sources Combined					
Year	**NO_x (tpy)**	**VOC (tpy)**	**CO (tpy)**	**SO_2 (tpy)**	**PM_{10} (tpy)**	**$PM_{2.5}$ (tpy)**
2008	127,839	425,477	555,851	40,901	183,999	32,316

Source: USEPA National Emissions Inventory (NEI) (http://www.epa.gov/ttn/chief/net/2008inventory.html). Site visited on 27 June 2012.

Air Emissions from 2016 Construction Project - C5

	Point and Area Sources Combined					
	NO_x (tpy)	**VOC (tpy)**	**CO (tpy)**	**SO_2 (tpy)**	**PM_{10} (tpy)**	**$PM_{2.5}$ (tpy)**
Regional Emissions	127,839	425,477	555,851	40,901	183,999	32,316
Emissions	5.042	0.692	3.369	0.393	0.973	0.434
% of Regional	**0.0039%**	**0.0002%**	**0.0006%**	**0.0010%**	**0.0005%**	**0.0013%**

Air Emissions for 2014 Construction Project - C6 - AFOSI Headquarters Facility

Construction Emissions	NO_x (ton)	VOC (ton)	CO (ton)	SO_2 (ton)	PM_{10} (ton)	$PM_{2.5}$ (ton)	CO_2 (metric tons/year)
Combustion	4.986	0.555	2.192	0.396	0.356	0.346	514.171
Fugitive Dust	-	-	-	-	4.889	0.489	-
Haul Truck On-Road	0.516	0.373	1.517	0.041	0.614	0.160	118.583
Commuter	0.083	0.082	0.744	0.001	0.008	0.005	89.459
TOTAL	***5.59***	***1.01***	***4.45***	***0.44***	***5.87***	***1.00***	***722.21***

Notes: 1) Total PM10/2.5 fugitive dust emissions are assuming USEPA 50% control efficiencies.

CO_2 emissions converted to metric tons =	***722.213***	***metric tons***	
State of Texas' CO2 emissions =	***596,370,927***	***metric tons***	*(U.S. DOE/EIA 2011)*
Percent of Texas' CO2 emissions =	***0.00012%***		
United States' CO_2 emissions =	***5,425,600,000***	***metric tons***	*(U.S. DOE/EIA 2011)*
Percent of USA's CO_2 emissions =	***0.000013%***		

Source: U.S. Department of Energy, Energy Information Administration (U.S. DOE/EIA). 2011. *Table 1. State Emissions by Year (Million Metric Tons of Carbon Dioxide).* Available online <http://www.eia.gov/environment/emissions/state/state_emissions.cfm>. 2009 data values are the most recent. Data accessed 28 June 2012.

Since future year budgets were not readily available, actual 2008 air emissions inventories for the counties were used as an approximation of the regional inventory. Because 2014 Construction Project - C6a are several orders of magnitude below significance, the conclusion would be the same, regardless of whether future year budget data set were used.

Metropolitan San Antonio Intrastate Air Quality Control Region

Year	Point and Area Sources Combined					
	NO_x (tpy)	VOC (tpy)	CO (tpy)	SO_2 (tpy)	PM_{10} (tpy)	$PM_{2.5}$ (tpy)
2008	127,839	425,477	555,851	40,901	183,999	32,316

Source: USEPA National Emissions Inventory (NEI) (http://www.epa.gov/ttn/chief/net/2008inventory.html). Site visited on 27 June 2012.

Air Emissions from 2014 Construction Project - C6a

	Point and Area Sources Combined					
	NO_x (tpy)	VOC (tpy)	CO (tpy)	SO_2 (tpy)	PM_{10} (tpy)	$PM_{2.5}$ (tpy)
Regional Emissions	127,839	425,477	555,851	40,901	183,999	32,316
Emissions	5.585	1.011	4.452	0.437	5.867	0.999
% of Regional	**0.0044%**	**0.0002%**	**0.0008%**	**0.0011%**	**0.0032%**	**0.0031%**

2014 to 2018 Operational Emissions -- Project C6 - AFOSI Headquarters Building

Summary	Summarizes operational emissions for Construction Project - C6a which will be effective for every year after year of construction.
Stationary Internal Combustion	Estimates Emissions from Internal Combustion Engines (e.g Generators)
Stationary External Combustion	Estimates emissions from stationary external combustion sources.

Operational Emissions	**NO_x (tons/year)**	**VOC (tons/year)**	**CO (tons/year)**	**SO_2 (tons/year)**	**PM_{10} (tons/year)**	**$PM_{2.5}$ (tons/year)**	**CO_2 (metric tons/year)**	**Total HAP (ton)**
Stationary Internal Combustion	3.118	0.251	0.672	0.206	0.221	0.221	104.928	0.0028
Stationary External Combustion	0.067	0.004	0.029	0.00043	0.005	0.005	77.962	0.0014
Total Criteria and VOC Pollutant Emissions (tons/year)	**3.19**	**0.26**	**0.70**	**0.21**	**0.23**	**0.23**	**182.89**	**0.0041**

*Highest emission value from either proposed aircraft mix extreme

Greenhouse Gas (GHG) Emissions Summary (tons/year)

Source Category	**CO_2 (lb/year)**	**CO_2 (kg/year)**	**CO_2 (metric tons/year)**
Stationary Internal Combustion	231,323	104,928	104.93
Stationary External Combustion	171,873	77,962	77.96
Total GHG Emissions	**403,196**	**182,890**	**182.89**

Air Emissions for 2015 Construction Project - C6 - AFOSI Administrative Support Facility

Construction Emissions	NO_x (ton)	VOC (ton)	CO (ton)	SO_2 (ton)	PM_{10} (ton)	$PM_{2.5}$ (ton)	CO_2 (metric tons/year)
Combustion	4.920	0.530	2.165	0.390	0.352	0.342	506.828
Fugitive Dust	-	-	-	-	3.435	0.344	-
Haul Truck On-Road	0.383	0.277	1.125	0.030	0.455	0.118	87.962
Commuter	0.083	0.082	0.744	0.001	0.008	0.005	89.459
TOTAL	***5.39***	***0.89***	***4.03***	***0.42***	***4.25***	***0.81***	***684.25***

Notes: 1) Total PM10/2.5 fugitive dust emissions are assuming USEPA 50% control efficiencies.

CO_2 emissions converted to metric tons =	***684.249***	***metric tons***	
State of Texas' CO2 emissions =	***596,370,927***	***metric tons***	*(U.S. DOE/EIA 2011)*
Percent of Texas' CO2 emissions =	***0.00011%***		
United States' CO_2 emissions =	***5,425,600,000***	***metric tons***	*(U.S. DOE/EIA 2011)*
Percent of USA's CO_2 emissions =	***0.000013%***		

Source: U.S. Department of Energy, Energy Information Administration (U.S. DOE/EIA). 2011. *Table 1. State Emissions by Year (Million Metric Tons of Carbon Dioxide).* Available online <http://www.eia.gov/environment/emissions/state/state_emissions.cfm>. 2009 data values are the most recent. Data accessed 28 June 2012.

Since future year budgets were not readily available, actual 2008 air emissions inventories for the counties were used as an approximation of the regional inventory.
Because 2015 Construction Project - C6b are several orders of magnitude below significance, the conclusion would be the same, regardless of whether future year budget data set were used.

Metropolitan San Antonio Intrastate Air Quality Control Region

	Point and Area Sources Combined					
Year	**NO_x (tpy)**	**VOC (tpy)**	**CO (tpy)**	**SO_2 (tpy)**	**PM_{10} (tpy)**	**$PM_{2.5}$ (tpy)**
2008	127,839	425,477	555,851	40,901	183,999	32,316

Source: USEPA National Emissions Inventory (NEI) (http://www.epa.gov/ttn/chief/net/2008inventory.html). Site visited on 27 June 2012.

Air Emissions from 2015 Construction Project - C6b

	Point and Area Sources Combined					
	NO_x (tpy)	**VOC (tpy)**	**CO (tpy)**	**SO_2 (tpy)**	**PM_{10} (tpy)**	**$PM_{2.5}$ (tpy)**
Regional Emissions	127,839	425,477	555,851	40,901	183,999	32,316
Emissions	5.386	0.889	4.034	0.421	4.251	0.809
% of Regional	**0.0042%**	**0.0002%**	**0.0007%**	**0.0010%**	**0.0023%**	**0.0025%**

2015 to 2018 Operational Emissions -- Project C6 -- AFOSI Administrative Support Facility

Summary	Summarizes operational emissions for Construction Project - C6b which will be effective for every year after year of construction.
Stationary Internal Combustion	Estimates Emissions from Internal Combustion Engines (e.g Generators)
Stationary External Combustion	Estimates emissions from stationary external combustion sources.

Annual Operational Emissions	**NO_x (tons/year)**	**VOC (tons/year)**	**CO (tons/year)**	**SO_2 (tons/year)**	**PM_{10} (tons/year)**	**$PM_{2.5}$ (tons/year)**	**CO_2 (metric tons/year)**	**Total HAP (ton)**
Stationary Internal Combustion	3.118	0.251	0.672	0.206	0.221	0.221	104.928	0.0028
Stationary External Combustion	0.050	0.003	0.021	0.00032	0.004	0.004	58.471	0.0010
Total Criteria and VOC Pollutant Emissions (tons/year)	**3.17**	**0.25**	**0.69**	**0.21**	**0.23**	**0.23**	**163.40**	0.0038

*Highest emission value from either proposed aircraft mix extreme

Greenhouse Gas (GHG) Emissions Summary (tons/year)

Source Category	**CO_2 (lb/year)**	**CO_2 (kg/year)**	**CO_2 (metric tons/year)**
Stationary Internal Combustion	231,323	104,928	104.93
Stationary External Combustion	128,905	58,471	58.47
Total GHG Emissions	**360,227**	**163,399**	**163.40**

Air Emissions for 2017 Construction Project - C7

Construction Emissions	NO_x (ton)	VOC (ton)	CO (ton)	SO_2 (ton)	PM_{10} (ton)	$PM_{2.5}$ (ton)	CO_2 (metric tons/year)
Combustion	5.004	0.812	2.197	0.397	0.357	0.347	515.793
Fugitive Dust	-	-	-	-	9.926	0.993	-
Haul Truck On-Road	2.987	2.160	8.777	0.235	3.552	0.924	686.047
Commuter	0.083	0.082	0.744	0.001	0.008	0.005	89.459
TOTAL	***8.07***	***3.05***	***11.72***	***0.63***	***13.84***	***2.27***	***1,291.30***

Notes: 1) Total PM10/2.5 fugitive dust emissions are assuming USEPA 50% control efficiencies.

CO_2 emissions converted to metric tons =	***1,291.299***	***metric tons***	
State of Texas' CO2 emissions =	***596,370,927***	***metric tons***	*(U.S. DOE/EIA 2011)*
Percent of Texas' CO2 emissions =	***0.00022%***		
United States' CO_2 emissions =	***5,425,600,000***	***metric tons***	*(U.S. DOE/EIA 2011)*
Percent of USA's CO_2 emissions =	***0.000024%***		

Source: U.S. Department of Energy, Energy Information Administration (U.S. DOE/EIA). 2011. *Table 1. State Emissions by Year (Million Metric Tons of Carbon Dioxide).* Available online <http://www.eia.gov/environment/emissions/state/state_emissions.cfm>. 2009 data values are the most recent. Data accessed 28 June 2012.

Since future year budgets were not readily available, actual 2008 air emissions inventories for the counties were used as an approximation of the regional inventory. Because 2017 Construction Project - C7 are several orders of magnitude below significance, the conclusion would be the same, regardless of whether future year budget data set were used.

Metropolitan San Antonio Intrastate Air Quality Control Region

	Point and Area Sources Combined					
Year	**NO_x (tpy)**	**VOC (tpy)**	**CO (tpy)**	**SO_2 (tpy)**	**PM_{10} (tpy)**	**$PM_{2.5}$ (tpy)**
2008	127,839	425,477	555,851	40,901	183,999	32,316

Source: USEPA National Emissions Inventory (NEI) (http://www.epa.gov/ttn/chief/net/2008inventory.html). Site visited on 27 June 2012.

Air Emissions from 2017 Construction Project - C7

	Point and Area Sources Combined					
	NO_x (tpy)	**VOC (tpy)**	**CO (tpy)**	**SO_2 (tpy)**	**PM_{10} (tpy)**	**$PM_{2.5}$ (tpy)**
Regional Emissions	127,839	425,477	555,851	40,901	183,999	32,316
Emissions	8.073	3.054	11.718	0.633	13.843	2.268
% of Regional	**0.0063%**	**0.0007%**	**0.0021%**	**0.0015%**	**0.0075%**	**0.0070%**

2017 and 2018 Operational Air Emissions -- Project C7

Summary Summarizes operational emissions for Construction Project - C7 which will be effective for every year after year of construction.

Stationary Internal Combustion Estimates Emissions from Internal Combustion Engines (e.g Generators)

Stationary External Combustion Estimates emissions from stationary external combustion sources.

Annual Operational Emissions	NO_x (tons/year)	VOC (tons/year)	CO (tons/year)	SO_2 (tons/year)	PM_{10} (tons/year)	$PM_{2.5}$ (tons/year)	CO_2 (metric tons/year)	Total HAP (ton)
Stationary Internal Combustion	3.118	0.251	0.672	0.206	0.221	0.221	104.928	0.0028
Stationary External Combustion	0.471	0.026	0.396	0.003	0.036	0.036	512.598	0.0089
Total Criteria and VOC Pollutant Emissions (tons/year)	**3.59**	**0.28**	**1.07**	**0.21**	**0.26**	**0.26**	**617.53**	**0.0117**

*Highest emission value from either proposed aircraft mix extreme

Greenhouse Gas (GHG) Emissions Summary (tons/year)

Source Category	CO_2 (lb/year)	CO_2 (kg/year)	CO_2 (metric tons/year)
Stationary Internal Combustion	231,323	104,928	104.93
Stationary External Combustion	1,130,067	512,598	512.60
Total GHG Emissions	**1,361,389**	**617,526**	**617.53**

Air Emissions for 2013 Infastructure Project - I1 - Roadway Expansion

	NO_x (ton)	VOC (ton)	CO (ton)	SO_2 (ton)	PM_{10} (ton)	$PM_{2.5}$ (ton)	CO_2 (metric tons/year)
Combustion	7.419	0.429	3.014	0.639	0.454	0.440	830.681
Fugitive Dust	-	-	-	-	155.125	15.512	-
Haul Truck On-Road	2.846	2.058	8.364	0.224	3.385	0.880	653.707
Commuter	0.331	0.329	2.975	0.004	0.031	0.020	357.835
TOTAL	***10.60***	***2.82***	***14.35***	***0.87***	***158.99***	***16.85***	***1,842.22***

Note: Total $PM_{10}/_{2.5}$ fugitive dust emissions are assuming USEPA 50% control efficiencies.

CO_2 emissions converted to metric tons =	***1,842.223***	***metric tons***	
State of Texas' CO2 emissions =	***596,370,927***	***metric tons***	*(U.S. DOE/EIA 2011)*
Percent of Texas' CO2 emissions =	***0.00031%***		
United States' CO_2 emissions =	***5,425,600,000***	***metric tons***	*(U.S. DOE/EIA 2011)*
Percent of USA's CO_2 emissions =	***0.000034%***		

Source: U.S. Department of Energy, Energy Information Administration (U.S. DOE/EIA). 2011. *Table 1. State Emissions by Year (Million Metric Tons of Carbon Dioxide).* Available online <http://www.eia.gov/environment/emissions/state/state_emissions.cfm>. 2009 data values are the most recent. Data accessed 28 June 2012.

Since future year budgets were not readily available, actual 2008 air emissions inventories for the counties were used as an approximation of the regional inventory. Because 2013 Infastructure Project - I1a are several orders of magnitude below significance, the conclusion would be the same, regardless of whether future year budget data set were used.

Metropolitan San Antonio Intrastate Air Quality Control Region

	Point and Area Sources Combined					
Year	**NO_x (tpy)**	**VOC (tpy)**	**CO (tpy)**	**SO_2 (tpy)**	**PM_{10} (tpy)**	**$PM_{2.5}$ (tpy)**
2008	127,839	425,477	555,851	40,901	183,999	32,316

Source: USEPA National Emissions Inventory (NEI) (http://www.epa.gov/ttn/chief/net/2008inventory.html). Site visited on 27 June 2012.

Air Emissions from 2013 Infastructure Project - I1a

	Point and Area Sources Combined					
	NO_x (tpy)	**VOC (tpy)**	**CO (tpy)**	**SO_2 (tpy)**	**PM_{10} (tpy)**	**$PM_{2.5}$ (tpy)**
Regional Emissions	127,839	425,477	555,851	40,901	183,999	32,316
Emissions	10.595	2.817	14.352	0.867	158.995	16.853
% of Regional	**0.0083%**	**0.0007%**	**0.0026%**	**0.0021%**	**0.0864%**	**0.0522%**

Air Emissions for 2013 Infastructure Project - I1 - Sidewalk Construction

	NO_x (ton)	VOC (ton)	CO (ton)	SO_2 (ton)	PM_{10} (ton)	$PM_{2.5}$ (ton)	CO_2 (metric tons/year)
Combustion	1.034	0.060	0.420	0.089	0.063	0.061	115.798
Fugitive Dust	-	-	-	-	21.687	2.169	-
Haul Truck On-Road	0.398	0.288	1.169	0.031	0.473	0.123	91.392
Commuter	0.331	0.329	2.975	0.004	0.031	0.020	357.835
TOTAL	***1.76***	***0.68***	***4.56***	***0.12***	***22.26***	***2.37***	***565.02***

Note: Total $PM_{10}/_{2.5}$ fugitive dust emissions are assuming USEPA 50% control efficiencies.

CO_2 emissions converted to metric tons =	***565.024***	***metric tons***	
State of Texas' CO2 emissions =	***596,370,927***	***metric tons***	*(U.S. DOE/EIA 2011)*
Percent of Texas' CO2 emissions =	***0.00009%***		
United States' CO_2 emissions =	***5,425,600,000***	***metric tons***	*(U.S. DOE/EIA 2011)*
Percent of USA's CO_2 emissions =	***0.000010%***		

Source: U.S. Department of Energy, Energy Information Administration (U.S. DOE/EIA). 2011. *Table 1. State Emissions by Year (Million Metric Tons of Carbon Dioxide).* Available online <http://www.eia.gov/environment/emissions/state/state_emissions.cfm>. 2009 data values are the most recent. Data accessed 28 June 2012.

Since future year budgets were not readily available, actual 2008 air emissions inventories for the counties were used as an approximation of the regional inventory. Because 2013 Infastructure Project - I1g are several orders of magnitude below significance, the conclusion would be the same, regardless of whether future year budget data set were used.

Metropolitan San Antonio Intrastate Air Quality Control Region

	Point and Area Sources Combined					
Year	**NO_x (tpy)**	**VOC (tpy)**	**CO (tpy)**	**SO_2 (tpy)**	**PM_{10} (tpy)**	**$PM_{2.5}$ (tpy)**
2008	127,839	425,477	555,851	40,901	183,999	32,316

Source: USEPA National Emissions Inventory (NEI) (http://www.epa.gov/ttn/chief/net/2008inventory.html). Site visited on 27 June 2012.

Air Emissions from 2013 Infastructure Project - I1g

	Point and Area Sources Combined					
	NO_x (tpy)	**VOC (tpy)**	**CO (tpy)**	**SO_2 (tpy)**	**PM_{10} (tpy)**	**$PM_{2.5}$ (tpy)**
Regional Emissions	127,839	425,477	555,851	40,901	183,999	32,316
Emissions	1.763	0.677	4.564	0.124	22.255	2.373
% of Regional	**0.0014%**	**0.0002%**	**0.0008%**	**0.0003%**	**0.0121%**	**0.0073%**

Air Emissions for 2013 Infastructure Project - I1 - Troopwalk Construction

	NO_x (ton)	VOC (ton)	CO (ton)	SO_2 (ton)	PM_{10} (ton)	$PM_{2.5}$ (ton)	CO_2 (metric tons/year)
Combustion	0.314	0.018	0.127	0.027	0.019	0.019	35.095
Fugitive Dust	-	-	-	-	5.870	0.587	-
Haul Truck On-Road	0.108	0.078	0.316	0.008	0.128	0.033	24.736
Commuter	0.331	0.329	2.975	0.004	0.031	0.020	357.835
TOTAL	***0.75***	***0.43***	***3.42***	***0.04***	***6.05***	***0.66***	***417.67***

Note: Total $PM_{10}/_{2.5}$ fugitive dust emissions are assuming USEPA 50% control efficiencies.

CO_2 emissions converted to metric tons =	***417.665***	***metric tons***	
State of Texas' CO2 emissions =	***596,370,927***	***metric tons***	*(U.S. DOE/EIA 2011)*
Percent of Texas' CO2 emissions =	***0.00007%***		
United States' CO_2 emissions =	***5,425,600,000***	***metric tons***	*(U.S. DOE/EIA 2011)*
Percent of USA's CO_2 emissions =	***0.000008%***		

Source: U.S. Department of Energy, Energy Information Administration (U.S. DOE/EIA). 2011. *Table 1. State Emissions by Year (Million Metric Tons of Carbon Dioxide).* Available online <http://www.eia.gov/environment/emissions/state/state_emissions.cfm>. 2009 data values are the most recent. Data accessed 28 June 2012.

Since future year budgets were not readily available, actual 2008 air emissions inventories for the counties were used as an approximation of the regional inventory. Because 2013 Infastructure Project - I1m are several orders of magnitude below significance, the conclusion would be the same, regardless of whether future year budget data set were used.

Metropolitan San Antonio Intrastate Air Quality Control Region

	Point and Area Sources Combined					
Year	NO_x (tpy)	VOC (tpy)	CO (tpy)	SO_2 (tpy)	PM_{10} (tpy)	$PM_{2.5}$ (tpy)
2008	127,839	425,477	555,851	40,901	183,999	32,316

Source: USEPA National Emissions Inventory (NEI) (http://www.epa.gov/ttn/chief/net/2008inventory.html). Site visited on 27 June 2012.

Air Emissions from 2013 Infastructure Project - I1m

	Point and Area Sources Combined					
	NO_x (tpy)	VOC (tpy)	CO (tpy)	SO_2 (tpy)	PM_{10} (tpy)	$PM_{2.5}$ (tpy)
Regional Emissions	127,839	425,477	555,851	40,901	183,999	32,316
Emissions	0.752	0.425	3.418	0.039	6.048	0.659
% of Regional	**0.0006%**	**0.0001%**	**0.0006%**	**0.0001%**	**0.0033%**	**0.0020%**

Air Emissions for 2013 Infastructure Project - I1 - Plazas, Memorials, Displays

	NO_x (ton)	VOC (ton)	CO (ton)	SO_2 (ton)	PM_{10} (ton)	$PM_{2.5}$ (ton)	CO_2 (metric tons/year)
Combustion	4.784	0.447	2.109	0.378	0.344	0.334	491.522
Fugitive Dust	-	-	-	-	0.174	0.017	-
Haul Truck On-Road	0.074	0.054	0.218	0.006	0.088	0.023	17.064
Commuter	0.331	0.329	2.975	0.004	0.031	0.020	357.835
TOTAL	***5.19***	***0.83***	***5.30***	***0.39***	***0.64***	***0.39***	***866.42***

Note: Total $PM_{10}/_{2.5}$ fugitive dust emissions are assuming USEPA 50% control efficiencies.

CO_2 emissions converted to metric tons =	***866.420***	***metric tons***	
State of Texas' CO2 emissions =	***596,370,927***	***metric tons***	*(U.S. DOE/EIA 2011)*
Percent of Texas' CO2 emissions =	***0.00015%***		
United States' CO_2 emissions =	***5,425,600,000***	***metric tons***	*(U.S. DOE/EIA 2011)*
Percent of USA's CO_2 emissions =	***0.000016%***		

Source: U.S. Department of Energy, Energy Information Administration (U.S. DOE/EIA). 2011. *Table 1. State Emissions by Year (Million Metric Tons of Carbon Dioxide).* Available online <http://www.eia.gov/environment/emissions/state/state_emissions.cfm>. 2009 data values are the most recent. Data accessed 28 June 2012.

Since future year budgets were not readily available, actual 2008 air emissions inventories for the counties were used as an approximation of the regional inventory. Because 2013 Infastructure Project - I1s are several orders of magnitude below significance, the conclusion would be the same, regardless of whether future year budget data set were used.

Metropolitan San Antonio Intrastate Air Quality Control Region

	Point and Area Sources Combined					
Year	NO_x (tpy)	VOC (tpy)	CO (tpy)	SO_2 (tpy)	PM_{10} (tpy)	$PM_{2.5}$ (tpy)
2008	127,839	425,477	555,851	40,901	183,999	32,316

Source: USEPA National Emissions Inventory (NEI) (http://www.epa.gov/ttn/chief/net/2008inventory.html). Site visited on 27 June 2012.

Air Emissions from 2013 Infastructure Project - I1s

	Point and Area Sources Combined					
	NO_x (tpy)	VOC (tpy)	CO (tpy)	SO_2 (tpy)	PM_{10} (tpy)	$PM_{2.5}$ (tpy)
Regional Emissions	127,839	425,477	555,851	40,901	183,999	32,316
Emissions	5.189	0.830	5.302	0.388	0.638	0.394
% of Regional	**0.0041%**	**0.0002%**	**0.0010%**	**0.0009%**	**0.0003%**	**0.0012%**

Air Emissions for 2014 Infastructure Project - I1 - Roadway Expansion

	NO_x (ton)	VOC (ton)	CO (ton)	SO_2 (ton)	PM_{10} (ton)	$PM_{2.5}$ (ton)	CO_2 (metric tons/year)
Combustion	7.419	0.429	3.014	0.639	0.454	0.440	830.681
Fugitive Dust	-	-	-	-	155.125	15.512	-
Haul Truck On-Road	2.846	2.058	8.364	0.224	3.385	0.880	653.707
Commuter	0.331	0.329	2.975	0.004	0.031	0.020	357.835
TOTAL	***10.60***	***2.82***	***14.35***	***0.87***	***158.99***	***16.85***	***1,842.22***

Note: Total $PM_{10}/_{2.5}$ fugitive dust emissions are assuming USEPA 50% control efficiencies.

CO_2 emissions converted to metric tons =	***1,842.223***	***metric tons***	
State of Texas' CO2 emissions =	***596,370,927***	***metric tons***	*(U.S. DOE/EIA 2011)*
Percent of Texas' CO2 emissions =	***0.00031%***		
United States' CO_2 emissions =	***5,425,600,000***	***metric tons***	*(U.S. DOE/EIA 2011)*
Percent of USA's CO_2 emissions =	***0.000034%***		

Source: U.S. Department of Energy, Energy Information Administration (U.S. DOE/EIA). 2011. *Table 1. State Emissions by Year (Million Metric Tons of Carbon Dioxide).* Available online <http://www.eia.gov/environment/emissions/state/state_emissions.cfm>. 2009 data values are the most recent. Data accessed 28 June 2012.

Since future year budgets were not readily available, actual 2008 air emissions inventories for the counties were used as an approximation of the regional inventory. Because 2014 Infastructure Project - I1b are several orders of magnitude below significance, the conclusion would be the same, regardless of whether future year budget data set were used.

Metropolitan San Antonio Intrastate Air Quality Control Region

	Point and Area Sources Combined					
Year	NO_x (tpy)	VOC (tpy)	CO (tpy)	SO_2 (tpy)	PM_{10} (tpy)	$PM_{2.5}$ (tpy)
2008	127,839	425,477	555,851	40,901	183,999	32,316

Source: USEPA National Emissions Inventory (NEI) (http://www.epa.gov/ttn/chief/net/2008inventory.html). Site visited on 27 June 2012.

Air Emissions from 2014 Infastructure Project - I1b

	Point and Area Sources Combined					
	NO_x (tpy)	VOC (tpy)	CO (tpy)	SO_2 (tpy)	PM_{10} (tpy)	$PM_{2.5}$ (tpy)
Regional Emissions	127,839	425,477	555,851	40,901	183,999	32,316
Emissions	10.595	2.817	14.352	0.867	158.995	16.853
% of Regional	**0.0083%**	**0.0007%**	**0.0026%**	**0.0021%**	**0.0864%**	**0.0522%**

Air Emissions for 2014 Infastructure Project - I1 - Sidewalk Construction

	NO_x (ton)	VOC (ton)	CO (ton)	SO_2 (ton)	PM_{10} (ton)	$PM_{2.5}$ (ton)	CO_2 (metric tons/year)
Combustion	1.034	0.060	0.420	0.089	0.063	0.061	115.798
Fugitive Dust	-	-	-	-	21.687	2.169	-
Haul Truck On-Road	0.398	0.288	1.169	0.031	0.473	0.123	91.392
Commuter	0.331	0.329	2.975	0.004	0.031	0.020	357.835
TOTAL	***1.76***	***0.68***	***4.56***	***0.12***	***22.26***	***2.37***	***565.02***

Note: Total $PM_{10}/_{2.5}$ fugitive dust emissions are assuming USEPA 50% control efficiencies.

CO_2 emissions converted to metric tons =	***565.024***	***metric tons***	
State of Texas' CO2 emissions =	***596,370,927***	***metric tons***	*(U.S. DOE/EIA 2011)*
Percent of Texas' CO2 emissions =	***0.00009%***		
United States' CO_2 emissions =	***5,425,600,000***	***metric tons***	*(U.S. DOE/EIA 2011)*
Percent of USA's CO_2 emissions =	***0.000010%***		

Source: U.S. Department of Energy, Energy Information Administration (U.S. DOE/EIA). 2011. *Table 1. State Emissions by Year (Million Metric Tons of Carbon Dioxide).* Available online <http://www.eia.gov/environment/emissions/state/state_emissions.cfm>. 2009 data values are the most recent. Data accessed 28 June 2012.

Since future year budgets were not readily available, actual 2008 air emissions inventories for the counties were used as an approximation of the regional inventory. Because 2014 Infastructure Project - I1h are several orders of magnitude below significance, the conclusion would be the same, regardless of whether future year budget data set were used.

Metropolitan San Antonio Intrastate Air Quality Control Region

	Point and Area Sources Combined					
Year	**NO_x (tpy)**	**VOC (tpy)**	**CO (tpy)**	**SO_2 (tpy)**	**PM_{10} (tpy)**	**$PM_{2.5}$ (tpy)**
2008	127,839	425,477	555,851	40,901	183,999	32,316

Source: USEPA National Emissions Inventory (NEI) (http://www.epa.gov/ttn/chief/net/2008inventory.html). Site visited on 27 June 2012.

Air Emissions from 2014 Infastructure Project - I1h

	Point and Area Sources Combined					
	NO_x (tpy)	**VOC (tpy)**	**CO (tpy)**	**SO_2 (tpy)**	**PM_{10} (tpy)**	**$PM_{2.5}$ (tpy)**
Regional Emissions	127,839	425,477	555,851	40,901	183,999	32,316
Emissions	1.763	0.677	4.564	0.124	22.255	2.373
% of Regional	**0.0014%**	**0.0002%**	**0.0008%**	**0.0003%**	**0.0121%**	**0.0073%**

Air Emissions for 2014 Infastructure Project - I1 - Troopwalk Construction

	NO_x (ton)	VOC (ton)	CO (ton)	SO_2 (ton)	PM_{10} (ton)	$PM_{2.5}$ (ton)	CO_2 (metric tons/year)
Combustion	0.314	0.018	0.127	0.027	0.019	0.019	35.095
Fugitive Dust	-	-	-	-	5.870	0.587	-
Haul Truck On-Road	0.108	0.078	0.316	0.008	0.128	0.033	24.736
Commuter	0.331	0.329	2.975	0.004	0.031	0.020	357.835
TOTAL	***0.75***	***0.43***	***3.42***	***0.04***	***6.05***	***0.66***	***417.67***

Note: Total $PM_{10}/_{2.5}$ fugitive dust emissions are assuming USEPA 50% control efficiencies.

CO_2 emissions converted to metric tons =	***417.665***	***metric tons***	
State of Texas' CO2 emissions =	***596,370,927***	***metric tons***	*(U.S. DOE/EIA 2011)*
Percent of Texas' CO2 emissions =	***0.00007%***		
United States' CO_2 emissions =	***5,425,600,000***	***metric tons***	*(U.S. DOE/EIA 2011)*
Percent of USA's CO_2 emissions =	***0.000008%***		

Source: U.S. Department of Energy, Energy Information Administration (U.S. DOE/EIA). 2011. *Table 1. State Emissions by Year (Million Metric Tons of Carbon Dioxide).* Available online <http://www.eia.gov/environment/emissions/state/state_emissions.cfm>. 2009 data values are the most recent. Data accessed 28 June 2012.

Since future year budgets were not readily available, actual 2008 air emissions inventories for the counties were used as an approximation of the regional inventory. Because 2014 Infastructure Project - I1n are several orders of magnitude below significance, the conclusion would be the same, regardless of whether future year budget data set were used.

Metropolitan San Antonio Intrastate Air Quality Control Region

	Point and Area Sources Combined					
Year	**NO_x (tpy)**	**VOC (tpy)**	**CO (tpy)**	**SO_2 (tpy)**	**PM_{10} (tpy)**	**$PM_{2.5}$ (tpy)**
2008	127,839	425,477	555,851	40,901	183,999	32,316

Source: USEPA National Emissions Inventory (NEI) (http://www.epa.gov/ttn/chief/net/2008inventory.html). Site visited on 27 June 2012.

Air Emissions from 2014 Infastructure Project - I1n

	Point and Area Sources Combined					
	NO_x (tpy)	**VOC (tpy)**	**CO (tpy)**	**SO_2 (tpy)**	**PM_{10} (tpy)**	**$PM_{2.5}$ (tpy)**
Regional Emissions	127,839	425,477	555,851	40,901	183,999	32,316
Emissions	0.752	0.425	3.418	0.039	6.048	0.659
% of Regional	**0.0006%**	**0.0001%**	**0.0006%**	**0.0001%**	**0.0033%**	**0.0020%**

Air Emissions for 2014 Infastructure Project - I1 - Plazas, Memorials, Displays

	NO_x (ton)	VOC (ton)	CO (ton)	SO_2 (ton)	PM_{10} (ton)	$PM_{2.5}$ (ton)	CO_2 (metric tons/year)
Combustion	4.784	0.447	2.109	0.378	0.344	0.334	491.522
Fugitive Dust	-	-	-	-	0.174	0.017	-
Haul Truck On-Road	0.074	0.054	0.218	0.006	0.088	0.023	17.064
Commuter	0.331	0.329	2.975	0.004	0.031	0.020	357.835
TOTAL	***5.19***	***0.83***	***5.30***	***0.39***	***0.64***	***0.39***	***866.42***

Note: Total $PM_{10}/_{2.5}$ fugitive dust emissions are assuming USEPA 50% control efficiencies.

CO_2 emissions converted to metric tons =	***866.420***	***metric tons***	
State of Texas' CO2 emissions =	***596,370,927***	***metric tons***	*(U.S. DOE/EIA 2011)*
Percent of Texas' CO2 emissions =	***0.00015%***		
United States' CO_2 emissions =	***5,425,600,000***	***metric tons***	*(U.S. DOE/EIA 2011)*
Percent of USA's CO_2 emissions =	***0.000016%***		

Source: U.S. Department of Energy, Energy Information Administration (U.S. DOE/EIA). 2011. *Table 1. State Emissions by Year (Million Metric Tons of Carbon Dioxide).* Available online <http://www.eia.gov/environment/emissions/state/state_emissions.cfm>. 2009 data values are the most recent. Data accessed 28 June 2012.

Since future year budgets were not readily available, actual 2008 air emissions inventories for the counties were used as an approximation of the regional inventory. Because 2014 Infastructure Project - I1t are several orders of magnitude below significance, the conclusion would be the same, regardless of whether future year budget data set were used.

Metropolitan San Antonio Intrastate Air Quality Control Region

	Point and Area Sources Combined					
Year	NO_x (tpy)	VOC (tpy)	CO (tpy)	SO_2 (tpy)	PM_{10} (tpy)	$PM_{2.5}$ (tpy)
2008	127,839	425,477	555,851	40,901	183,999	32,316

Source: USEPA National Emissions Inventory (NEI) (http://www.epa.gov/ttn/chief/net/2008inventory.html). Site visited on 27 June 2012.

Air Emissions from 2014 Infastructure Project - I1t

	Point and Area Sources Combined					
	NO_x (tpy)	VOC (tpy)	CO (tpy)	SO_2 (tpy)	PM_{10} (tpy)	$PM_{2.5}$ (tpy)
Regional Emissions	127,839	425,477	555,851	40,901	183,999	32,316
Emissions	5.189	0.830	5.302	0.388	0.638	0.394
% of Regional	**0.0041%**	**0.0002%**	**0.0010%**	**0.0009%**	**0.0003%**	**0.0012%**

Air Emissions for 2015 Infastructure Project - I1 - Roadway Expansion

	NO_x (ton)	VOC (ton)	CO (ton)	SO_2 (ton)	PM_{10} (ton)	$PM_{2.5}$ (ton)	CO_2 (metric tons/year)
Combustion	7.419	0.429	3.014	0.639	0.454	0.440	830.681
Fugitive Dust	-	-	-	-	155.125	15.512	-
Haul Truck On-Road	2.846	2.058	8.364	0.224	3.385	0.880	653.707
Commuter	0.331	0.329	2.975	0.004	0.031	0.020	357.835
TOTAL	***10.60***	***2.82***	***14.35***	***0.87***	***158.99***	***16.85***	***1,842.22***

Note: Total $PM_{10}/_{2.5}$ fugitive dust emissions are assuming USEPA 50% control efficiencies.

CO_2 emissions converted to metric tons =	***1,842.223***	***metric tons***	
State of Texas' CO2 emissions =	***596,370,927***	***metric tons***	*(U.S. DOE/EIA 2011)*
Percent of Texas' CO2 emissions =	***0.00031%***		
United States' CO_2 emissions =	***5,425,600,000***	***metric tons***	*(U.S. DOE/EIA 2011)*
Percent of USA's CO_2 emissions =	***0.000034%***		

Source: U.S. Department of Energy, Energy Information Administration (U.S. DOE/EIA). 2011. *Table 1. State Emissions by Year (Million Metric Tons of Carbon Dioxide).* Available online <http://www.eia.gov/environment/emissions/state/state_emissions.cfm>. 2009 data values are the most recent. Data accessed 28 June 2012.

Since future year budgets were not readily available, actual 2008 air emissions inventories for the counties were used as an approximation of the regional inventory. Because 2015 Infastructure Project - I1c are several orders of magnitude below significance, the conclusion would be the same, regardless of whether future year budget data set were used.

Metropolitan San Antonio Intrastate Air Quality Control Region

	Point and Area Sources Combined					
Year	**NO_x (tpy)**	**VOC (tpy)**	**CO (tpy)**	**SO_2 (tpy)**	**PM_{10} (tpy)**	**$PM_{2.5}$ (tpy)**
2008	127,839	425,477	555,851	40,901	183,999	32,316

Source: USEPA National Emissions Inventory (NEI) (http://www.epa.gov/ttn/chief/net/2008inventory.html). Site visited on 27 June 2012.

Air Emissions from 2015 Infastructure Project - I1c

	Point and Area Sources Combined					
	NO_x (tpy)	**VOC (tpy)**	**CO (tpy)**	**SO_2 (tpy)**	**PM_{10} (tpy)**	**$PM_{2.5}$ (tpy)**
Regional Emissions	127,839	425,477	555,851	40,901	183,999	32,316
Emissions	10.595	2.817	14.352	0.867	158.995	16.853
% of Regional	**0.0083%**	**0.0007%**	**0.0026%**	**0.0021%**	**0.0864%**	**0.0522%**

Air Emissions for 2015 Infastructure Project - I1 - Sidewalk Construction

	NO_x (ton)	VOC (ton)	CO (ton)	SO_2 (ton)	PM_{10} (ton)	$PM_{2.5}$ (ton)	CO_2 (metric tons/year)
Combustion	1.034	0.060	0.420	0.089	0.063	0.061	115.798
Fugitive Dust	-	-	-	-	21.687	2.169	-
Haul Truck On-Road	0.398	0.288	1.169	0.031	0.473	0.123	91.392
Commuter	0.331	0.329	2.975	0.004	0.031	0.020	357.835
TOTAL	***1.76***	***0.68***	***4.56***	***0.12***	***22.26***	***2.37***	***565.02***

Note: Total $PM_{10}/_{2.5}$ fugitive dust emissions are assuming USEPA 50% control efficiencies.

CO_2 emissions converted to metric tons =	***565.024***	***metric tons***	
State of Texas' CO2 emissions =	***596,370,927***	***metric tons***	*(U.S. DOE/EIA 2011)*
Percent of Texas' CO2 emissions =	***0.00009%***		
United States' CO_2 emissions =	***5,425,600,000***	***metric tons***	*(U.S. DOE/EIA 2011)*
Percent of USA's CO_2 emissions =	***0.000010%***		

Source: U.S. Department of Energy, Energy Information Administration (U.S. DOE/EIA). 2011. *Table 1. State Emissions by Year (Million Metric Tons of Carbon Dioxide).* Available online <http://www.eia.gov/environment/emissions/state/state_emissions.cfm>. 2009 data values are the most recent. Data accessed 28 June 2012.

Since future year budgets were not readily available, actual 2008 air emissions inventories for the counties were used as an approximation of the regional inventory. Because 2015 Infastructure Project - I1i are several orders of magnitude below significance, the conclusion would be the same, regardless of whether future year budget data set were used.

Metropolitan San Antonio Intrastate Air Quality Control Region

	Point and Area Sources Combined					
Year	**NO_x (tpy)**	**VOC (tpy)**	**CO (tpy)**	**SO_2 (tpy)**	**PM_{10} (tpy)**	**$PM_{2.5}$ (tpy)**
2008	127,839	425,477	555,851	40,901	183,999	32,316

Source: USEPA National Emissions Inventory (NEI) (http://www.epa.gov/ttn/chief/net/2008inventory.html). Site visited on 27 June 2012.

Air Emissions from 2015 Infastructure Project - I1i

	Point and Area Sources Combined					
	NO_x (tpy)	**VOC (tpy)**	**CO (tpy)**	**SO_2 (tpy)**	**PM_{10} (tpy)**	**$PM_{2.5}$ (tpy)**
Regional Emissions	127,839	425,477	555,851	40,901	183,999	32,316
Emissions	1.763	0.677	4.564	0.124	22.255	2.373
% of Regional	**0.0014%**	**0.0002%**	**0.0008%**	**0.0003%**	**0.0121%**	**0.0073%**

Air Emissions for 2015 Infastructure Project - I1 - Troop Walk Construction

	NO_x (ton)	VOC (ton)	CO (ton)	SO_2 (ton)	PM_{10} (ton)	$PM_{2.5}$ (ton)	CO_2 (metric tons/year)
Combustion	0.314	0.018	0.127	0.027	0.019	0.019	35.095
Fugitive Dust	-	-	-	-	5.870	0.587	-
Haul Truck On-Road	0.108	0.078	0.316	0.008	0.128	0.033	24.736
Commuter	0.331	0.329	2.975	0.004	0.031	0.020	357.835
TOTAL	***0.75***	***0.43***	***3.42***	***0.04***	***6.05***	***0.66***	***417.67***

Note: Total $PM_{10}/_{2.5}$ fugitive dust emissions are assuming USEPA 50% control efficiencies.

CO_2 emissions converted to metric tons =	***417.665***	***metric tons***	
State of Texas' CO2 emissions =	***596,370,927***	***metric tons***	*(U.S. DOE/EIA 2011)*
Percent of Texas' CO2 emissions =	***0.00007%***		
United States' CO_2 emissions =	***5,425,600,000***	***metric tons***	*(U.S. DOE/EIA 2011)*
Percent of USA's CO_2 emissions =	***0.000008%***		

Source: U.S. Department of Energy, Energy Information Administration (U.S. DOE/EIA). 2011. *Table 1. State Emissions by Year (Million Metric Tons of Carbon Dioxide).* Available online <http://www.eia.gov/environment/emissions/state/state_emissions.cfm>. 2009 data values are the most recent. Data accessed 28 June 2012.

Since future year budgets were not readily available, actual 2008 air emissions inventories for the counties were used as an approximation of the regional inventory. Because 2015 Infastructure Project - I1o are several orders of magnitude below significance, the conclusion would be the same, regardless of whether future year budget data set were used.

Metropolitan San Antonio Intrastate Air Quality Control Region

	Point and Area Sources Combined					
Year	NO_x (tpy)	VOC (tpy)	CO (tpy)	SO_2 (tpy)	PM_{10} (tpy)	$PM_{2.5}$ (tpy)
2008	127,839	425,477	555,851	40,901	183,999	32,316

Source: USEPA National Emissions Inventory (NEI) (http://www.epa.gov/ttn/chief/net/2008inventory.html). Site visited on 27 June 2012.

Air Emissions from 2015 Infastructure Project - I1o

	Point and Area Sources Combined					
	NO_x (tpy)	VOC (tpy)	CO (tpy)	SO_2 (tpy)	PM_{10} (tpy)	$PM_{2.5}$ (tpy)
Regional Emissions	127,839	425,477	555,851	40,901	183,999	32,316
Emissions	0.752	0.425	3.418	0.039	6.048	0.659
% of Regional	**0.0006%**	**0.0001%**	**0.0006%**	**0.0001%**	**0.0033%**	**0.0020%**

Air Emissions for 2015 Infastructure Project - I1 - Plazas, Memorials, Displays

	NO_x (ton)	VOC (ton)	CO (ton)	SO_2 (ton)	PM_{10} (ton)	$PM_{2.5}$ (ton)	CO_2 (metric tons/year)
Combustion	4.784	0.447	2.109	0.378	0.344	0.334	491.522
Fugitive Dust	-	-	-	-	0.174	0.017	-
Haul Truck On-Road	0.074	0.054	0.218	0.006	0.088	0.023	17.064
Commuter	0.331	0.329	2.975	0.004	0.031	0.020	357.835
TOTAL	***5.19***	***0.83***	***5.30***	***0.39***	***0.64***	***0.39***	***866.42***

Note: Total $PM_{10}/_{2.5}$ fugitive dust emissions are assuming USEPA 50% control efficiencies.

CO_2 emissions converted to metric tons =	***866.420***	***metric tons***	
State of Texas' CO2 emissions =	***596,370,927***	***metric tons***	*(U.S. DOE/EIA 2011)*
Percent of Texas' CO2 emissions =	***0.00015%***		
United States' CO_2 emissions =	***5,425,600,000***	***metric tons***	*(U.S. DOE/EIA 2011)*
Percent of USA's CO_2 emissions =	***0.000016%***		

Source: U.S. Department of Energy, Energy Information Administration (U.S. DOE/EIA). 2011. *Table 1. State Emissions by Year (Million Metric Tons of Carbon Dioxide).* Available online <http://www.eia.gov/environment/emissions/state/state_emissions.cfm>. 2009 data values are the most recent. Data accessed 28 June 2012.

Since future year budgets were not readily available, actual 2008 air emissions inventories for the counties were used as an approximation of the regional inventory. Because 2015 Infastructure Project - I1u are several orders of magnitude below significance, the conclusion would be the same, regardless of whether future year budget data set were used.

Metropolitan San Antonio Intrastate Air Quality Control Region

	Point and Area Sources Combined					
Year	**NO_x (tpy)**	**VOC (tpy)**	**CO (tpy)**	**SO_2 (tpy)**	**PM_{10} (tpy)**	**$PM_{2.5}$ (tpy)**
2008	127,839	425,477	555,851	40,901	183,999	32,316

Source: USEPA National Emissions Inventory (NEI) (http://www.epa.gov/ttn/chief/net/2008inventory.html). Site visited on 27 June 2012.

Air Emissions from 2015 Infastructure Project - I1u

	Point and Area Sources Combined					
	NO_x (tpy)	**VOC (tpy)**	**CO (tpy)**	**SO_2 (tpy)**	**PM_{10} (tpy)**	**$PM_{2.5}$ (tpy)**
Regional Emissions	127,839	425,477	555,851	40,901	183,999	32,316
Emissions	5.189	0.830	5.302	0.388	0.638	0.394
% of Regional	**0.0041%**	**0.0002%**	**0.0010%**	**0.0009%**	**0.0003%**	**0.0012%**

Air Emissions for 2016 Infastructure Project - I1 - Roadway Construction

	NO_x (ton)	VOC (ton)	CO (ton)	SO_2 (ton)	PM_{10} (ton)	$PM_{2.5}$ (ton)	CO_2 (metric tons/year)
Combustion	7.419	0.429	3.014	0.639	0.454	0.440	830.681
Fugitive Dust	-	-	-	-	155.125	15.512	-
Haul Truck On-Road	2.846	2.058	8.364	0.224	3.385	0.880	653.707
Commuter	0.331	0.329	2.975	0.004	0.031	0.020	357.835
TOTAL	***10.60***	***2.82***	***14.35***	***0.87***	***158.99***	***16.85***	***1,842.22***

Note: Total $PM_{10}/_{2.5}$ fugitive dust emissions are assuming USEPA 50% control efficiencies.

CO_2 emissions converted to metric tons =	***1,842.223***	***metric tons***	
State of Texas' CO2 emissions =	***596,370,927***	***metric tons***	*(U.S. DOE/EIA 2011)*
Percent of Texas' CO2 emissions =	***0.00031%***		
United States' CO_2 emissions =	***5,425,600,000***	***metric tons***	*(U.S. DOE/EIA 2011)*
Percent of USA's CO_2 emissions =	***0.000034%***		

Source: U.S. Department of Energy, Energy Information Administration (U.S. DOE/EIA). 2011. *Table 1. State Emissions by Year (Million Metric Tons of Carbon Dioxide).* Available online <http://www.eia.gov/environment/emissions/state/state_emissions.cfm>. 2009 data values are the most recent. Data accessed 28 June 2012.

Since future year budgets were not readily available, actual 2008 air emissions inventories for the counties were used as an approximation of the regional inventory. Because 2016 Infastructure Project - I1d are several orders of magnitude below significance, the conclusion would be the same, regardless of whether future year budget data set were used.

Metropolitan San Antonio Intrastate Air Quality Control Region

	Point and Area Sources Combined					
Year	NO_x (tpy)	VOC (tpy)	CO (tpy)	SO_2 (tpy)	PM_{10} (tpy)	$PM_{2.5}$ (tpy)
2008	127,839	425,477	555,851	40,901	183,999	32,316

Source: USEPA National Emissions Inventory (NEI) (http://www.epa.gov/ttn/chief/net/2008inventory.html). Site visited on 27 June 2012.

Air Emissions from 2016 Infastructure Project - I1d

	Point and Area Sources Combined					
	NO_x (tpy)	VOC (tpy)	CO (tpy)	SO_2 (tpy)	PM_{10} (tpy)	$PM_{2.5}$ (tpy)
Regional Emissions	127,839	425,477	555,851	40,901	183,999	32,316
Emissions	10.595	2.817	14.352	0.867	158.995	16.853
% of Regional	**0.0083%**	**0.0007%**	**0.0026%**	**0.0021%**	**0.0864%**	**0.0522%**

Air Emissions for 2016 Infastructure Project - I1 - Sidewalk Construction

	NO_x (ton)	VOC (ton)	CO (ton)	SO_2 (ton)	PM_{10} (ton)	$PM_{2.5}$ (ton)	CO_2 (metric tons/year)
Combustion	1.034	0.060	0.420	0.089	0.063	0.061	115.798
Fugitive Dust	-	-	-	-	21.687	2.169	-
Haul Truck On-Road	0.398	0.288	1.169	0.031	0.473	0.123	91.392
Commuter	0.331	0.329	2.975	0.004	0.031	0.020	357.835
TOTAL	***1.76***	***0.68***	***4.56***	***0.12***	***22.26***	***2.37***	***565.02***

Note: Total $PM_{10}/_{2.5}$ fugitive dust emissions are assuming USEPA 50% control efficiencies.

CO_2 emissions converted to metric tons =	***565.024***	***metric tons***	
State of Texas' CO2 emissions =	***596,370,927***	***metric tons***	*(U.S. DOE/EIA 2011)*
Percent of Texas' CO2 emissions =	***0.00009%***		
United States' CO_2 emissions =	***5,425,600,000***	***metric tons***	*(U.S. DOE/EIA 2011)*
Percent of USA's CO_2 emissions =	***0.000010%***		

Source: U.S. Department of Energy, Energy Information Administration (U.S. DOE/EIA). 2011. *Table 1. State Emissions by Year (Million Metric Tons of Carbon Dioxide).* Available online <http://www.eia.gov/environment/emissions/state/state_emissions.cfm>. 2009 data values are the most recent. Data accessed 28 June 2012.

Since future year budgets were not readily available, actual 2008 air emissions inventories for the counties were used as an approximation of the regional inventory. Because 2016 Infastructure Project - I1j are several orders of magnitude below significance, the conclusion would be the same, regardless of whether future year budget data set were used.

Metropolitan San Antonio Intrastate Air Quality Control Region

	Point and Area Sources Combined					
Year	**NO_x (tpy)**	**VOC (tpy)**	**CO (tpy)**	**SO_2 (tpy)**	**PM_{10} (tpy)**	**$PM_{2.5}$ (tpy)**
2008	127,839	425,477	555,851	40,901	183,999	32,316

Source: USEPA National Emissions Inventory (NEI) (http://www.epa.gov/ttn/chief/net/2008inventory.html). Site visited on 27 June 2012.

Air Emissions from 2016 Infastructure Project - I1j

	Point and Area Sources Combined					
	NO_x (tpy)	**VOC (tpy)**	**CO (tpy)**	**SO_2 (tpy)**	**PM_{10} (tpy)**	**$PM_{2.5}$ (tpy)**
Regional Emissions	127,839	425,477	555,851	40,901	183,999	32,316
Emissions	1.763	0.677	4.564	0.124	22.255	2.373
% of Regional	**0.0014%**	**0.0002%**	**0.0008%**	**0.0003%**	**0.0121%**	**0.0073%**

Air Emissions for 2016 Infastructure Project - I1 - Troop Walk Construction

	NO_x (ton)	VOC (ton)	CO (ton)	SO_2 (ton)	PM_{10} (ton)	$PM_{2.5}$ (ton)	CO_2 (metric tons/year)
Combustion	0.314	0.018	0.127	0.027	0.019	0.019	35.095
Fugitive Dust	-	-	-	-	5.870	0.587	-
Haul Truck On-Road	0.108	0.078	0.316	0.008	0.128	0.033	24.736
Commuter	0.331	0.329	2.975	0.004	0.031	0.020	357.835
TOTAL	***0.75***	***0.43***	***3.42***	***0.04***	***6.05***	***0.66***	***417.67***

Note: Total $PM_{10}/_{2.5}$ fugitive dust emissions are assuming USEPA 50% control efficiencies.

CO_2 emissions converted to metric tons =	***417.665***	***metric tons***	
State of Texas' CO2 emissions =	***596,370,927***	***metric tons***	*(U.S. DOE/EIA 2011)*
Percent of Texas' CO2 emissions =	***0.00007%***		
United States' CO_2 emissions =	***5,425,600,000***	***metric tons***	*(U.S. DOE/EIA 2011)*
Percent of USA's CO_2 emissions =	***0.000008%***		

Source: U.S. Department of Energy, Energy Information Administration (U.S. DOE/EIA). 2011. *Table 1. State Emissions by Year (Million Metric Tons of Carbon Dioxide).* Available online <http://www.eia.gov/environment/emissions/state/state_emissions.cfm>. 2009 data values are the most recent. Data accessed 28 June 2012.

Since future year budgets were not readily available, actual 2008 air emissions inventories for the counties were used as an approximation of the regional inventory. Because 2016 Infastructure Project - I1p are several orders of magnitude below significance, the conclusion would be the same, regardless of whether future year budget data set were used.

Metropolitan San Antonio Intrastate Air Quality Control Region

	Point and Area Sources Combined					
Year	NO_x (tpy)	VOC (tpy)	CO (tpy)	SO_2 (tpy)	PM_{10} (tpy)	$PM_{2.5}$ (tpy)
2008	127,839	425,477	555,851	40,901	183,999	32,316

Source: USEPA National Emissions Inventory (NEI) (http://www.epa.gov/ttn/chief/net/2008inventory.html). Site visited on 27 June 2012.

Air Emissions from 2016 Infastructure Project - I1p

	Point and Area Sources Combined					
	NO_x (tpy)	VOC (tpy)	CO (tpy)	SO_2 (tpy)	PM_{10} (tpy)	$PM_{2.5}$ (tpy)
Regional Emissions	127,839	425,477	555,851	40,901	183,999	32,316
Emissions	0.752	0.425	3.418	0.039	6.048	0.659
% of Regional	**0.0006%**	**0.0001%**	**0.0006%**	**0.0001%**	**0.0033%**	**0.0020%**

Air Emissions for 2016 Infastructure Project - I1 - Plazas, Memorials, Displays

	NO_x (ton)	VOC (ton)	CO (ton)	SO_2 (ton)	PM_{10} (ton)	$PM_{2.5}$ (ton)	CO_2 (metric tons/year)
Combustion	4.784	0.447	2.109	0.378	0.344	0.334	491.522
Fugitive Dust	-	-	-	-	0.174	0.017	-
Haul Truck On-Road	0.074	0.054	0.218	0.006	0.088	0.023	17.064
Commuter	0.331	0.329	2.975	0.004	0.031	0.020	357.835
TOTAL	***5.19***	***0.83***	***5.30***	***0.39***	***0.64***	***0.39***	***866.42***

Note: Total $PM_{10}/_{2.5}$ fugitive dust emissions are assuming USEPA 50% control efficiencies.

CO_2 emissions converted to metric tons =	***866.420***	***metric tons***	
State of Texas' CO2 emissions =	***596,370,927***	***metric tons***	*(U.S. DOE/EIA 2011)*
Percent of Texas' CO2 emissions =	***0.00015%***		
United States' CO_2 emissions =	***5,425,600,000***	***metric tons***	*(U.S. DOE/EIA 2011)*
Percent of USA's CO_2 emissions =	***0.000016%***		

Source: U.S. Department of Energy, Energy Information Administration (U.S. DOE/EIA). 2011. *Table 1. State Emissions by Year (Million Metric Tons of Carbon Dioxide).* Available online <http://www.eia.gov/environment/emissions/state/state_emissions.cfm>. 2009 data values are the most recent. Data accessed 28 June 2012.

Since future year budgets were not readily available, actual 2008 air emissions inventories for the counties were used as an approximation of the regional inventory. Because 2016 Infastructure Project - I1v are several orders of magnitude below significance, the conclusion would be the same, regardless of whether future year budget data set were used.

Metropolitan San Antonio Intrastate Air Quality Control Region

	Point and Area Sources Combined					
Year	**NO_x (tpy)**	**VOC (tpy)**	**CO (tpy)**	**SO_2 (tpy)**	**PM_{10} (tpy)**	**$PM_{2.5}$ (tpy)**
2008	127,839	425,477	555,851	40,901	183,999	32,316

Source: USEPA National Emissions Inventory (NEI) (http://www.epa.gov/ttn/chief/net/2008inventory.html). Site visited on 27 June 2012.

Air Emissions from 2016 Infastructure Project - I1v

	Point and Area Sources Combined					
	NO_x (tpy)	**VOC (tpy)**	**CO (tpy)**	**SO_2 (tpy)**	**PM_{10} (tpy)**	**$PM_{2.5}$ (tpy)**
Regional Emissions	127,839	425,477	555,851	40,901	183,999	32,316
Emissions	5.189	0.830	5.302	0.388	0.638	0.394
% of Regional	**0.0041%**	**0.0002%**	**0.0010%**	**0.0009%**	**0.0003%**	**0.0012%**

Air Emissions for 2017 Infastructure Project - I1 - Roadway Construction

	NO_x (ton)	VOC (ton)	CO (ton)	SO_2 (ton)	PM_{10} (ton)	$PM_{2.5}$ (ton)	CO_2 (metric tons/year)
Combustion	7.419	0.429	3.014	0.639	0.454	0.440	830.681
Fugitive Dust	-	-	-	-	155.125	15.512	-
Haul Truck On-Road	2.846	2.058	8.364	0.224	3.385	0.880	653.707
Commuter	0.331	0.329	2.975	0.004	0.031	0.020	357.835
TOTAL	***10.60***	***2.82***	***14.35***	***0.87***	***158.99***	***16.85***	***1,842.22***

Note: Total $PM_{10}/_{2.5}$ fugitive dust emissions are assuming USEPA 50% control efficiencies.

CO_2 emissions converted to metric tons =	***1,842.223***	***metric tons***	
State of Texas' CO2 emissions =	***596,370,927***	***metric tons***	*(U.S. DOE/EIA 2011)*
Percent of Texas' CO2 emissions =	***0.00031%***		
United States' CO_2 emissions =	***5,425,600,000***	***metric tons***	*(U.S. DOE/EIA 2011)*
Percent of USA's CO_2 emissions =	***0.000034%***		

Source: U.S. Department of Energy, Energy Information Administration (U.S. DOE/EIA). 2011. *Table 1. State Emissions by Year (Million Metric Tons of Carbon Dioxide).* Available online <http://www.eia.gov/environment/emissions/state/state_emissions.cfm>. 2009 data values are the most recent. Data accessed 28 June 2012.

Since future year budgets were not readily available, actual 2008 air emissions inventories for the counties were used as an approximation of the regional inventory. Because 2017 Infastructure Project - I1e are several orders of magnitude below significance, the conclusion would be the same, regardless of whether future year budget data set were used.

Metropolitan San Antonio Intrastate Air Quality Control Region

	Point and Area Sources Combined					
Year	**NO_x (tpy)**	**VOC (tpy)**	**CO (tpy)**	**SO_2 (tpy)**	**PM_{10} (tpy)**	**$PM_{2.5}$ (tpy)**
2008	127,839	425,477	555,851	40,901	183,999	32,316

Source: USEPA National Emissions Inventory (NEI) (http://www.epa.gov/ttn/chief/net/2008inventory.html). Site visited on 27 June 2012.

Air Emissions from 2017 Infastructure Project - I1e

	Point and Area Sources Combined					
	NO_x (tpy)	**VOC (tpy)**	**CO (tpy)**	**SO_2 (tpy)**	**PM_{10} (tpy)**	**$PM_{2.5}$ (tpy)**
Regional Emissions	127,839	425,477	555,851	40,901	183,999	32,316
Emissions	10.595	2.817	14.352	0.867	158.995	16.853
% of Regional	**0.0083%**	**0.0007%**	**0.0026%**	**0.0021%**	**0.0864%**	**0.0522%**

Air Emissions for 2017 Infastructure Project - I1 - Sidewalk Construction

	NO_x (ton)	VOC (ton)	CO (ton)	SO_2 (ton)	PM_{10} (ton)	$PM_{2.5}$ (ton)	CO_2 (metric tons/year)
Combustion	1.034	0.060	0.420	0.089	0.063	0.061	115.798
Fugitive Dust	-	-	-	-	21.687	2.169	-
Haul Truck On-Road	0.398	0.288	1.169	0.031	0.473	0.123	91.392
Commuter	0.331	0.329	2.975	0.004	0.031	0.020	357.835
TOTAL	***1.76***	***0.68***	***4.56***	***0.12***	***22.26***	***2.37***	***565.02***

Note: Total $PM_{10}/_{2.5}$ fugitive dust emissions are assuming USEPA 50% control efficiencies.

CO_2 emissions converted to metric tons =	***565.024***	***metric tons***	
State of Texas' CO2 emissions =	***596,370,927***	***metric tons***	*(U.S. DOE/EIA 2011)*
Percent of Texas' CO2 emissions =	***0.00009%***		
United States' CO_2 emissions =	***5,425,600,000***	***metric tons***	*(U.S. DOE/EIA 2011)*
Percent of USA's CO_2 emissions =	***0.000010%***		

Source: U.S. Department of Energy, Energy Information Administration (U.S. DOE/EIA). 2011. *Table 1. State Emissions by Year (Million Metric Tons of Carbon Dioxide).* Available online <http://www.eia.gov/environment/emissions/state/state_emissions.cfm>. 2009 data values are the most recent. Data accessed 28 June 2012.

Since future year budgets were not readily available, actual 2008 air emissions inventories for the counties were used as an approximation of the regional inventory. Because 2017 Infastructure Project - I1k are several orders of magnitude below significance, the conclusion would be the same, regardless of whether future year budget data set were used.

Metropolitan San Antonio Intrastate Air Quality Control Region

	Point and Area Sources Combined					
Year	NO_x (tpy)	VOC (tpy)	CO (tpy)	SO_2 (tpy)	PM_{10} (tpy)	$PM_{2.5}$ (tpy)
2008	127,839	425,477	555,851	40,901	183,999	32,316

Source: USEPA National Emissions Inventory (NEI) (http://www.epa.gov/ttn/chief/net/2008inventory.html). Site visited on 27 June 2012.

Air Emissions from 2017 Infastructure Project - I1k

	Point and Area Sources Combined					
	NO_x (tpy)	VOC (tpy)	CO (tpy)	SO_2 (tpy)	PM_{10} (tpy)	$PM_{2.5}$ (tpy)
Regional Emissions	127,839	425,477	555,851	40,901	183,999	32,316
Emissions	1.763	0.677	4.564	0.124	22.255	2.373
% of Regional	**0.0014%**	**0.0002%**	**0.0008%**	**0.0003%**	**0.0121%**	**0.0073%**

Air Emissions for 2017 Infastructure Project - I1 - Troop Walk Construction

	NO_x (ton)	VOC (ton)	CO (ton)	SO_2 (ton)	PM_{10} (ton)	$PM_{2.5}$ (ton)	CO_2 (metric tons/year)
Combustion	0.314	0.018	0.127	0.027	0.019	0.019	35.095
Fugitive Dust	-	-	-	-	5.870	0.587	-
Haul Truck On-Road	0.108	0.078	0.316	0.008	0.128	0.033	24.736
Commuter	0.331	0.329	2.975	0.004	0.031	0.020	357.835
TOTAL	***0.75***	***0.43***	***3.42***	***0.04***	***6.05***	***0.66***	***417.67***

Note: Total $PM_{10}/_{2.5}$ fugitive dust emissions are assuming USEPA 50% control efficiencies.

CO_2 emissions converted to metric tons =	***417.665***	***metric tons***	
State of Texas' CO2 emissions =	***596,370,927***	***metric tons***	*(U.S. DOE/EIA 2011)*
Percent of Texas' CO2 emissions =	***0.00007%***		
United States' CO_2 emissions =	***5,425,600,000***	***metric tons***	*(U.S. DOE/EIA 2011)*
Percent of USA's CO_2 emissions =	***0.000008%***		

Source: U.S. Department of Energy, Energy Information Administration (U.S. DOE/EIA). 2011. *Table 1. State Emissions by Year (Million Metric Tons of Carbon Dioxide).* Available online <http://www.eia.gov/environment/emissions/state/state_emissions.cfm>. 2009 data values are the most recent. Data accessed 28 June 2012.

Since future year budgets were not readily available, actual 2008 air emissions inventories for the counties were used as an approximation of the regional inventory. Because 2017 Infastructure Project - I1q are several orders of magnitude below significance, the conclusion would be the same, regardless of whether future year budget data set were used.

Metropolitan San Antonio Intrastate Air Quality Control Region

	Point and Area Sources Combined					
Year	**NO_x (tpy)**	**VOC (tpy)**	**CO (tpy)**	**SO_2 (tpy)**	**PM_{10} (tpy)**	**$PM_{2.5}$ (tpy)**
2008	127,839	425,477	555,851	40,901	183,999	32,316

Source: USEPA National Emissions Inventory (NEI) (http://www.epa.gov/ttn/chief/net/2008inventory.html). Site visited on 27 June 2012.

Air Emissions from 2017 Infastructure Project - I1q

	Point and Area Sources Combined					
	NO_x (tpy)	**VOC (tpy)**	**CO (tpy)**	**SO_2 (tpy)**	**PM_{10} (tpy)**	**$PM_{2.5}$ (tpy)**
Regional Emissions	127,839	425,477	555,851	40,901	183,999	32,316
Emissions	0.752	0.425	3.418	0.039	6.048	0.659
% of Regional	**0.0006%**	**0.0001%**	**0.0006%**	**0.0001%**	**0.0033%**	**0.0020%**

Air Emissions for 2017 Infastructure Project - I1 - Plazas, Memorials, Displays

	NO_x (ton)	VOC (ton)	CO (ton)	SO_2 (ton)	PM_{10} (ton)	$PM_{2.5}$ (ton)	CO_2 (metric tons/year)
Combustion	4.784	0.447	2.109	0.378	0.344	0.334	491.522
Fugitive Dust	-	-	-	-	0.174	0.017	-
Haul Truck On-Road	0.074	0.054	0.218	0.006	0.088	0.023	17.064
Commuter	0.331	0.329	2.975	0.004	0.031	0.020	357.835
TOTAL	***5.19***	***0.83***	***5.30***	***0.39***	***0.64***	***0.39***	***866.42***

Note: Total $PM_{10}/_{2.5}$ fugitive dust emissions are assuming USEPA 50% control efficiencies.

CO_2 emissions converted to metric tons =	***866.420***	***metric tons***	
State of Texas' CO2 emissions =	***596,370,927***	***metric tons***	*(U.S. DOE/EIA 2011)*
Percent of Texas' CO2 emissions =	***0.00015%***		
United States' CO_2 emissions =	***5,425,600,000***	***metric tons***	*(U.S. DOE/EIA 2011)*
Percent of USA's CO_2 emissions =	***0.000016%***		

Source: U.S. Department of Energy, Energy Information Administration (U.S. DOE/EIA). 2011. *Table 1. State Emissions by Year (Million Metric Tons of Carbon Dioxide).* Available online <http://www.eia.gov/environment/emissions/state/state_emissions.cfm>. 2009 data values are the most recent. Data accessed 28 June 2012.

Since future year budgets were not readily available, actual 2008 air emissions inventories for the counties were used as an approximation of the regional inventory. Because 2017 Infastructure Project - I1w are several orders of magnitude below significance, the conclusion would be the same, regardless of whether future year budget data set were used.

Metropolitan San Antonio Intrastate Air Quality Control Region

	Point and Area Sources Combined					
Year	NO_x (tpy)	VOC (tpy)	CO (tpy)	SO_2 (tpy)	PM_{10} (tpy)	$PM_{2.5}$ (tpy)
2008	127,839	425,477	555,851	40,901	183,999	32,316

Source: USEPA National Emissions Inventory (NEI) (http://www.epa.gov/ttn/chief/net/2008inventory.html). Site visited on 27 June 2012.

Air Emissions from 2017 Infastructure Project - I1w

	Point and Area Sources Combined					
	NO_x (tpy)	VOC (tpy)	CO (tpy)	SO_2 (tpy)	PM_{10} (tpy)	$PM_{2.5}$ (tpy)
Regional Emissions	127,839	425,477	555,851	40,901	183,999	32,316
Emissions	5.189	0.830	5.302	0.388	0.638	0.394
% of Regional	**0.0041%**	**0.0002%**	**0.0010%**	**0.0009%**	**0.0003%**	**0.0012%**

Air Emissions for 2018 Infastructure Project - I1 - Roadway Construction

	NO_x (ton)	VOC (ton)	CO (ton)	SO_2 (ton)	PM_{10} (ton)	$PM_{2.5}$ (ton)	CO_2 (metric tons/year)
Combustion	7.419	0.429	3.014	0.639	0.454	0.440	830.681
Fugitive Dust	-	-	-	-	155.125	15.512	-
Haul Truck On-Road	2.846	2.058	8.364	0.224	3.385	0.880	653.707
Commuter	0.331	0.329	2.975	0.004	0.031	0.020	357.835
TOTAL	***10.60***	***2.82***	***14.35***	***0.87***	***158.99***	***16.85***	***1,842.22***

Note: Total $PM_{10}/_{2.5}$ fugitive dust emissions are assuming USEPA 50% control efficiencies.

CO_2 emissions converted to metric tons =	***1,842.223***	***metric tons***	
State of Texas' CO2 emissions =	***596,370,927***	***metric tons***	*(U.S. DOE/EIA 2011)*
Percent of Texas' CO2 emissions =	***0.00031%***		
United States' CO_2 emissions =	***5,425,600,000***	***metric tons***	*(U.S. DOE/EIA 2011)*
Percent of USA's CO_2 emissions =	***0.000034%***		

Source: U.S. Department of Energy, Energy Information Administration (U.S. DOE/EIA). 2011. *Table 1. State Emissions by Year (Million Metric Tons of Carbon Dioxide).* Available online <http://www.eia.gov/environment/emissions/state/state_emissions.cfm>. 2009 data values are the most recent. Data accessed 28 June 2012.

Since future year budgets were not readily available, actual 2008 air emissions inventories for the counties were used as an approximation of the regional inventory. Because 2018 Infastructure Project - I1f are several orders of magnitude below significance, the conclusion would be the same, regardless of whether future year budget data set were used.

Metropolitan San Antonio Intrastate Air Quality Control Region

	Point and Area Sources Combined					
Year	**NO_x (tpy)**	**VOC (tpy)**	**CO (tpy)**	**SO_2 (tpy)**	**PM_{10} (tpy)**	**$PM_{2.5}$ (tpy)**
2008	127,839	425,477	555,851	40,901	183,999	32,316

Source: USEPA National Emissions Inventory (NEI) (http://www.epa.gov/ttn/chief/net/2008inventory.html). Site visited on 27 June 2012.

Air Emissions from 2018 Infastructure Project - I1f

	Point and Area Sources Combined					
	NO_x (tpy)	**VOC (tpy)**	**CO (tpy)**	**SO_2 (tpy)**	**PM_{10} (tpy)**	**$PM_{2.5}$ (tpy)**
Regional Emissions	127,839	425,477	555,851	40,901	183,999	32,316
Emissions	10.595	2.817	14.352	0.867	158.995	16.853
% of Regional	**0.0083%**	**0.0007%**	**0.0026%**	**0.0021%**	**0.0864%**	**0.0522%**

Air Emissions for 2018 Infastructure Project - I1 - Sidewalk Construction

	NO_x (ton)	VOC (ton)	CO (ton)	SO_2 (ton)	PM_{10} (ton)	$PM_{2.5}$ (ton)	CO_2 (metric tons/year)
Combustion	1.034	0.060	0.420	0.089	0.063	0.061	115.798
Fugitive Dust	-	-	-	-	21.687	2.169	-
Haul Truck On-Road	0.398	0.288	1.169	0.031	0.473	0.123	91.392
Commuter	0.331	0.329	2.975	0.004	0.031	0.020	357.835
TOTAL	***1.76***	***0.68***	***4.56***	***0.12***	***22.26***	***2.37***	***565.02***

Note: Total $PM_{10}/_{2.5}$ fugitive dust emissions are assuming USEPA 50% control efficiencies.

CO_2 emissions converted to metric tons =	***565.024***	***metric tons***	
State of Texas' CO2 emissions =	***596,370,927***	***metric tons***	*(U.S. DOE/EIA 2011)*
Percent of Texas' CO2 emissions =	***0.00009%***		
United States' CO_2 emissions =	***5,425,600,000***	***metric tons***	*(U.S. DOE/EIA 2011)*
Percent of USA's CO_2 emissions =	***0.000010%***		

Source: U.S. Department of Energy, Energy Information Administration (U.S. DOE/EIA). 2011. *Table 1. State Emissions by Year (Million Metric Tons of Carbon Dioxide).* Available online <http://www.eia.gov/environment/emissions/state/state_emissions.cfm>. 2009 data values are the most recent. Data accessed 28 June 2012.

Since future year budgets were not readily available, actual 2008 air emissions inventories for the counties were used as an approximation of the regional inventory. Because 2018 Infastructure Project - I1l are several orders of magnitude below significance, the conclusion would be the same, regardless of whether future year budget data set were used.

Metropolitan San Antonio Intrastate Air Quality Control Region

	Point and Area Sources Combined					
Year	NO_x (tpy)	VOC (tpy)	CO (tpy)	SO_2 (tpy)	PM_{10} (tpy)	$PM_{2.5}$ (tpy)
2008	127,839	425,477	555,851	40,901	183,999	32,316

Source: USEPA National Emissions Inventory (NEI) (http://www.epa.gov/ttn/chief/net/2008inventory.html). Site visited on 27 June 2012.

Air Emissions from 2018 Infastructure Project - I1l

	Point and Area Sources Combined					
	NO_x (tpy)	VOC (tpy)	CO (tpy)	SO_2 (tpy)	PM_{10} (tpy)	$PM_{2.5}$ (tpy)
Regional Emissions	127,839	425,477	555,851	40,901	183,999	32,316
Emissions	1.763	0.677	4.564	0.124	22.255	2.373
% of Regional	**0.0014%**	**0.0002%**	**0.0008%**	**0.0003%**	**0.0121%**	**0.0073%**

Air Emissions for 2018 Infastructure Project - I1 - Troop Walk Construction

	NO_x (ton)	VOC (ton)	CO (ton)	SO_2 (ton)	PM_{10} (ton)	$PM_{2.5}$ (ton)	CO_2 (metric tons/year)
Combustion	0.314	0.018	0.127	0.027	0.019	0.019	35.095
Fugitive Dust	-	-	-	-	5.870	0.587	-
Haul Truck On-Road	0.108	0.078	0.316	0.008	0.128	0.033	24.736
Commuter	0.331	0.329	2.975	0.004	0.031	0.020	357.835
TOTAL	***0.75***	***0.43***	***3.42***	***0.04***	***6.05***	***0.66***	***417.67***

Note: Total $PM_{10}/_{2.5}$ fugitive dust emissions are assuming USEPA 50% control efficiencies.

CO_2 emissions converted to metric tons =	***417.665***	***metric tons***	
State of Texas' CO2 emissions =	***596,370,927***	***metric tons***	*(U.S. DOE/EIA 2011)*
Percent of Texas' CO2 emissions =	***0.00007%***		
United States' CO_2 emissions =	***5,425,600,000***	***metric tons***	*(U.S. DOE/EIA 2011)*
Percent of USA's CO_2 emissions =	***0.000008%***		

Source: U.S. Department of Energy, Energy Information Administration (U.S. DOE/EIA). 2011. *Table 1. State Emissions by Year (Million Metric Tons of Carbon Dioxide).* Available online <http://www.eia.gov/environment/emissions/state/state_emissions.cfm>. 2009 data values are the most recent. Data accessed 28 June 2012.

Since future year budgets were not readily available, actual 2008 air emissions inventories for the counties were used as an approximation of the regional inventory. Because 2018 Infastructure Project - I1r are several orders of magnitude below significance, the conclusion would be the same, regardless of whether future year budget data set were used.

Metropolitan San Antonio Intrastate Air Quality Control Region

	Point and Area Sources Combined					
Year	NO_x (tpy)	VOC (tpy)	CO (tpy)	SO_2 (tpy)	PM_{10} (tpy)	$PM_{2.5}$ (tpy)
2008	127,839	425,477	555,851	40,901	183,999	32,316

Source: USEPA National Emissions Inventory (NEI) (http://www.epa.gov/ttn/chief/net/2008inventory.html). Site visited on 27 June 2012.

Air Emissions from 2018 Infastructure Project - I1r

	Point and Area Sources Combined					
	NO_x (tpy)	VOC (tpy)	CO (tpy)	SO_2 (tpy)	PM_{10} (tpy)	$PM_{2.5}$ (tpy)
Regional Emissions	127,839	425,477	555,851	40,901	183,999	32,316
Emissions	0.752	0.425	3.418	0.039	6.048	0.659
% of Regional	**0.0006%**	**0.0001%**	**0.0006%**	**0.0001%**	**0.0033%**	**0.0020%**

Air Emissions for 2018 Infastructure Project - I1 - Plazas, Memorials, Displays

	NO_x (ton)	VOC (ton)	CO (ton)	SO_2 (ton)	PM_{10} (ton)	$PM_{2.5}$ (ton)	CO_2 (metric tons/year)
Combustion	4.784	0.447	2.109	0.378	0.344	0.334	491.522
Fugitive Dust	-	-	-	-	0.174	0.017	-
Haul Truck On-Road	0.074	0.054	0.218	0.006	0.088	0.023	17.064
Commuter	0.331	0.329	2.975	0.004	0.031	0.020	357.835
TOTAL	***5.19***	***0.83***	***5.30***	***0.39***	***0.64***	***0.39***	***866.42***

Note: Total $PM_{10}/_{2.5}$ fugitive dust emissions are assuming USEPA 50% control efficiencies.

CO_2 emissions converted to metric tons =	***866.420***	***metric tons***	
State of Texas' CO2 emissions =	***596,370,927***	***metric tons***	*(U.S. DOE/EIA 2011)*
Percent of Texas' CO2 emissions =	***0.00015%***		
United States' CO_2 emissions =	***5,425,600,000***	***metric tons***	*(U.S. DOE/EIA 2011)*
Percent of USA's CO_2 emissions =	***0.000016%***		

Source: U.S. Department of Energy, Energy Information Administration (U.S. DOE/EIA). 2011. *Table 1. State Emissions by Year (Million Metric Tons of Carbon Dioxide).* Available online <http://www.eia.gov/environment/emissions/state/state_emissions.cfm>. 2009 data values are the most recent. Data accessed 28 June 2012.

Since future year budgets were not readily available, actual 2008 air emissions inventories for the counties were used as an approximation of the regional inventory. Because 2018 Infastructure Project - I1x are several orders of magnitude below significance, the conclusion would be the same, regardless of whether future year budget data set were used.

Metropolitan San Antonio Intrastate Air Quality Control Region

	Point and Area Sources Combined					
Year	**NO_x (tpy)**	**VOC (tpy)**	**CO (tpy)**	**SO_2 (tpy)**	**PM_{10} (tpy)**	**$PM_{2.5}$ (tpy)**
2008	127,839	425,477	555,851	40,901	183,999	32,316

Source: USEPA National Emissions Inventory (NEI) (http://www.epa.gov/ttn/chief/net/2008inventory.html). Site visited on 27 June 2012.

Air Emissions from 2018 Infastructure Project - I1x

	Point and Area Sources Combined					
	NO_x (tpy)	**VOC (tpy)**	**CO (tpy)**	**SO_2 (tpy)**	**PM_{10} (tpy)**	**$PM_{2.5}$ (tpy)**
Regional Emissions	127,839	425,477	555,851	40,901	183,999	32,316
Emissions	5.189	0.830	5.302	0.388	0.638	0.394
% of Regional	**0.0041%**	**0.0002%**	**0.0010%**	**0.0009%**	**0.0003%**	**0.0012%**

Air Emissions for 2014 Infastructure Project - I2

	NO_x (ton)	VOC (ton)	CO (ton)	SO_2 (ton)	PM_{10} (ton)	$PM_{2.5}$ (ton)	CO_2 (metric tons/year)
Combustion	1.123	0.065	0.456	0.097	0.069	0.067	125.692
Fugitive Dust	-	-	-	-	23.151	2.315	-
Haul Truck On-Road	0.425	0.307	1.248	0.033	0.505	0.131	97.562
Commuter	0.083	0.082	0.744	0.001	0.008	0.005	89.459
TOTAL	***1.63***	***0.45***	***2.45***	***0.13***	***23.73***	***2.52***	***312.71***

Note: Total $PM_{10}/_{2.5}$ fugitive dust emissions are assuming USEPA 50% control efficiencies.

CO_2 emissions converted to metric tons =	***312.713***	***metric tons***	
State of Texas' CO2 emissions =	***596,370,927***	***metric tons***	*(U.S. DOE/EIA 2011)*
Percent of Texas' CO2 emissions =	***0.00005%***		
United States' CO_2 emissions =	***5,425,600,000***	***metric tons***	*(U.S. DOE/EIA 2011)*
Percent of USA's CO_2 emissions =	***0.000006%***		

Source: U.S. Department of Energy, Energy Information Administration (U.S. DOE/EIA). 2011. *Table 1. State Emissions by Year (Million Metric Tons of Carbon Dioxide).* Available online <http://www.eia.gov/environment/emissions/state/state_emissions.cfm>. 2009 data values are the most recent. Data accessed 28 June 2012.

Since future year budgets were not readily available, actual 2008 air emissions inventories for the counties were used as an approximation of the regional inventory. Because 2014 Infastructure Project - I2 are several orders of magnitude below significance, the conclusion would be the same, regardless of whether future year budget data set were used.

Metropolitan San Antonio Intrastate Air Quality Control Region

	Point and Area Sources Combined					
Year	**NO_x (tpy)**	**VOC (tpy)**	**CO (tpy)**	**SO_2 (tpy)**	**PM_{10} (tpy)**	**$PM_{2.5}$ (tpy)**
2008	127,839	425,477	555,851	40,901	183,999	32,316

Source: USEPA National Emissions Inventory (NEI) (http://www.epa.gov/ttn/chief/net/2008inventory.html). Site visited on 27 June 2012.

Air Emissions from 2014 Infastructure Project - I2

	Point and Area Sources Combined					
	NO_x (tpy)	**VOC (tpy)**	**CO (tpy)**	**SO_2 (tpy)**	**PM_{10} (tpy)**	**$PM_{2.5}$ (tpy)**
Regional Emissions	127,839	425,477	555,851	40,901	183,999	32,316
Emissions	1.630	0.454	2.448	0.131	23.733	2.518
% of Regional	**0.0013%**	**0.0001%**	**0.0004%**	**0.0003%**	**0.0129%**	**0.0078%**

Air Emissions for 2015 Infastructure Project - I3

	NO_x (ton)	VOC (ton)	CO (ton)	SO_2 (ton)	PM_{10} (ton)	$PM_{2.5}$ (ton)	CO_2 (metric tons/year)
Combustion	4.719	0.273	1.916	0.406	0.289	0.280	528.278
Fugitive Dust	-	-	-	-	98.076	9.808	-
Haul Truck On-Road	1.800	1.301	5.288	0.142	2.140	0.556	413.299
Commuter	0.165	0.165	1.487	0.002	0.016	0.010	178.918
TOTAL	***6.68***	***1.74***	***8.69***	***0.55***	***100.52***	***10.65***	***1,120.49***

Note: Total $PM_{10}/_{2.5}$ fugitive dust emissions are assuming USEPA 50% control efficiencies.

CO_2 emissions converted to metric tons =	***1,120.494***	***metric tons***	
State of Texas' CO2 emissions =	***596,370,927***	***metric tons***	*(U.S. DOE/EIA 2011)*
Percent of Texas' CO2 emissions =	***0.00019%***		
United States' CO_2 emissions =	***5,425,600,000***	***metric tons***	*(U.S. DOE/EIA 2011)*
Percent of USA's CO_2 emissions =	***0.000021%***		

Source: U.S. Department of Energy, Energy Information Administration (U.S. DOE/EIA). 2011. *Table 1. State Emissions by Year (Million Metric Tons of Carbon Dioxide).* Available online <http://www.eia.gov/environment/emissions/state/state_emissions.cfm>. 2009 data values are the most recent. Data accessed 28 June 2012.

Since future year budgets were not readily available, actual 2008 air emissions inventories for the counties were used as an approximation of the regional inventory. Because 2015 Infastructure Project - I3 are several orders of magnitude below significance, the conclusion would be the same, regardless of whether future year budget data set were used.

Metropolitan San Antonio Intrastate Air Quality Control Region

	Point and Area Sources Combined					
Year	**NO_x (tpy)**	**VOC (tpy)**	**CO (tpy)**	**SO_2 (tpy)**	**PM_{10} (tpy)**	**$PM_{2.5}$ (tpy)**
2008	127,839	425,477	555,851	40,901	183,999	32,316

Source: USEPA National Emissions Inventory (NEI) (http://www.epa.gov/ttn/chief/net/2008inventory.html). Site visited on 27 June 2012.

Air Emissions from 2015 Infastructure Project - I3

	Point and Area Sources Combined					
	NO_x (tpy)	**VOC (tpy)**	**CO (tpy)**	**SO_2 (tpy)**	**PM_{10} (tpy)**	**$PM_{2.5}$ (tpy)**
Regional Emissions	127,839	425,477	555,851	40,901	183,999	32,316
Emissions	6.684	1.739	8.691	0.550	100.520	10.654
% of Regional	**0.0052%**	**0.0004%**	**0.0016%**	**0.0013%**	**0.0546%**	**0.0330%**

Air Emissions for 2014 Infastructure Project - I4

	NO_x (ton)	VOC (ton)	CO (ton)	SO_2 (ton)	PM_{10} (ton)	$PM_{2.5}$ (ton)	CO_2 (metric tons/year)
Combustion	1.146	0.066	0.465	0.099	0.070	0.068	128.243
Fugitive Dust	-	-	-	-	23.638	2.364	-
Haul Truck On-Road	0.434	0.314	1.274	0.034	0.516	0.134	99.610
Commuter	0.083	0.082	0.744	0.001	0.008	0.005	89.459
TOTAL	***1.66***	***0.46***	***2.48***	***0.13***	***24.23***	***2.57***	***317.31***

Note: Total $PM_{10}/_{2.5}$ fugitive dust emissions are assuming USEPA 50% control efficiencies.

CO_2 emissions converted to metric tons =	***317.312***	***metric tons***	
State of Texas' CO2 emissions =	***596,370,927***	***metric tons***	*(U.S. DOE/EIA 2011)*
Percent of Texas' CO2 emissions =	***0.00005%***		
United States' CO_2 emissions =	***5,425,600,000***	***metric tons***	*(U.S. DOE/EIA 2011)*
Percent of USA's CO_2 emissions =	***0.000006%***		

Source: U.S. Department of Energy, Energy Information Administration (U.S. DOE/EIA). 2011. *Table 1. State Emissions by Year (Million Metric Tons of Carbon Dioxide).* Available online <http://www.eia.gov/environment/emissions/state/state_emissions.cfm>. 2009 data values are the most recent. Data accessed 28 June 2012.

Since future year budgets were not readily available, actual 2008 air emissions inventories for the counties were used as an approximation of the regional inventory. Because 2014 Infastructure Project - I4 are several orders of magnitude below significance, the conclusion would be the same, regardless of whether future year budget data set were used.

Metropolitan San Antonio Intrastate Air Quality Control Region

	Point and Area Sources Combined					
Year	**NO_x (tpy)**	**VOC (tpy)**	**CO (tpy)**	**SO_2 (tpy)**	**PM_{10} (tpy)**	**$PM_{2.5}$ (tpy)**
2008	127,839	425,477	555,851	40,901	183,999	32,316

Source: USEPA National Emissions Inventory (NEI) (http://www.epa.gov/ttn/chief/net/2008inventory.html). Site visited on 27 June 2012.

Air Emissions from 2014 Infastructure Project - I4

	Point and Area Sources Combined					
	NO_x (tpy)	**VOC (tpy)**	**CO (tpy)**	**SO_2 (tpy)**	**PM_{10} (tpy)**	**$PM_{2.5}$ (tpy)**
Regional Emissions	127,839	425,477	555,851	40,901	183,999	32,316
Emissions	1.662	0.462	2.483	0.134	24.231	2.571
% of Regional	**0.0013%**	**0.0001%**	**0.0004%**	**0.0003%**	**0.0132%**	**0.0080%**

Air Emissions for 2013 Infastructure Project - I5 - 1.8 acre Parking Lot

	NO_x (ton)	VOC (ton)	CO (ton)	SO_2 (ton)	PM_{10} (ton)	$PM_{2.5}$ (ton)	CO_2 (metric tons/year)
Combustion	0.246	0.014	0.099	0.021	0.015	0.015	27.442
Fugitive Dust	-	-	-	-	4.536	0.454	-
Haul Truck On-Road	0.083	0.060	0.245	0.007	0.099	0.026	19.115
Commuter	0.083	0.082	0.744	0.001	0.008	0.005	89.459
TOTAL	***0.41***	***0.16***	***1.09***	***0.03***	***4.66***	***0.50***	***136.02***

Note: Total $PM_{10}/_{2.5}$ fugitive dust emissions are assuming USEPA 50% control efficiencies.

CO_2 emissions converted to metric tons =	***136.016***	***metric tons***	
State of Texas' CO2 emissions =	***596,370,927***	***metric tons***	*(U.S. DOE/EIA 2011)*
Percent of Texas' CO2 emissions =	***0.00002%***		
United States' CO_2 emissions =	***5,425,600,000***	***metric tons***	*(U.S. DOE/EIA 2011)*
Percent of USA's CO_2 emissions =	***0.000003%***		

Source: U.S. Department of Energy, Energy Information Administration (U.S. DOE/EIA). 2011. *Table 1. State Emissions by Year (Million Metric Tons of Carbon Dioxide).* Available online <http://www.eia.gov/environment/emissions/state/state_emissions.cfm>. 2009 data values are the most recent. Data accessed 28 June 2012.

Since future year budgets were not readily available, actual 2008 air emissions inventories for the counties were used as an approximation of the regional inventory. Because 2013 Infastructure Project - I5e are several orders of magnitude below significance, the conclusion would be the same, regardless of whether future year budget data set were used.

Metropolitan San Antonio Intrastate Air Quality Control Region

	Point and Area Sources Combined					
Year	**NO_x (tpy)**	**VOC (tpy)**	**CO (tpy)**	**SO_2 (tpy)**	**PM_{10} (tpy)**	**$PM_{2.5}$ (tpy)**
2008	127,839	425,477	555,851	40,901	183,999	32,316

Source: USEPA National Emissions Inventory (NEI) (http://www.epa.gov/ttn/chief/net/2008inventory.html). Site visited on 27 June 2012.

Air Emissions from 2013 Infastructure Project - I5e

	Point and Area Sources Combined					
	NO_x (tpy)	**VOC (tpy)**	**CO (tpy)**	**SO_2 (tpy)**	**PM_{10} (tpy)**	**$PM_{2.5}$ (tpy)**
Regional Emissions	127,839	425,477	555,851	40,901	183,999	32,316
Emissions	0.412	0.157	1.088	0.029	4.658	0.499
% of Regional	**0.0003%**	**0.0000%**	**0.0002%**	**0.0001%**	**0.0025%**	**0.0015%**

Air Emissions for 2014 Infastructure Project - I5 - 1.8 Acre Parking Lot

	NO_x (ton)	VOC (ton)	CO (ton)	SO_2 (ton)	PM_{10} (ton)	$PM_{2.5}$ (ton)	CO_2 (metric tons/year)
Combustion	0.246	0.014	0.099	0.021	0.015	0.015	27.442
Fugitive Dust	-	-	-	-	4.536	0.454	-
Haul Truck On-Road	0.083	0.060	0.245	0.007	0.099	0.026	19.115
Commuter	0.083	0.082	0.744	0.001	0.008	0.005	89.459
TOTAL	***0.41***	***0.16***	***1.09***	***0.03***	***4.66***	***0.50***	***136.02***

Note: Total $PM_{10}/_{2.5}$ fugitive dust emissions are assuming USEPA 50% control efficiencies.

CO_2 emissions converted to metric tons =	***136.016***	***metric tons***	
State of Texas' CO2 emissions =	***596,370,927***	***metric tons***	*(U.S. DOE/EIA 2011)*
Percent of Texas' CO2 emissions =	***0.00002%***		
United States' CO_2 emissions =	***5,425,600,000***	***metric tons***	*(U.S. DOE/EIA 2011)*
Percent of USA's CO_2 emissions =	***0.000003%***		

Source: U.S. Department of Energy, Energy Information Administration (U.S. DOE/EIA). 2011. *Table 1. State Emissions by Year (Million Metric Tons of Carbon Dioxide).* Available online <http://www.eia.gov/environment/emissions/state/state_emissions.cfm>. 2009 data values are the most recent. Data accessed 28 June 2012.

Since future year budgets were not readily available, actual 2008 air emissions inventories for the counties were used as an approximation of the regional inventory. Because 2014 Infastructure Project - I5f are several orders of magnitude below significance, the conclusion would be the same, regardless of whether future year budget data set were used.

Metropolitan San Antonio Intrastate Air Quality Control Region

Year	Point and Area Sources Combined					
	NO_x (tpy)	VOC (tpy)	CO (tpy)	SO_2 (tpy)	PM_{10} (tpy)	$PM_{2.5}$ (tpy)
2008	127,839	425,477	555,851	40,901	183,999	32,316

Source: USEPA National Emissions Inventory (NEI) (http://www.epa.gov/ttn/chief/net/2008inventory.html). Site visited on 27 June 2012.

Air Emissions from 2014 Infastructure Project - I5f

	Point and Area Sources Combined					
	NO_x (tpy)	VOC (tpy)	CO (tpy)	SO_2 (tpy)	PM_{10} (tpy)	$PM_{2.5}$ (tpy)
Regional Emissions	127,839	425,477	555,851	40,901	183,999	32,316
Emissions	0.412	0.157	1.088	0.029	4.658	0.499
% of Regional	**0.0003%**	**0.0000%**	**0.0002%**	**0.0001%**	**0.0025%**	**0.0015%**

Air Emissions for 2015 Infastructure Project - I5 - 1.5 Acre Parking Lot

	NO_x (ton)	VOC (ton)	CO (ton)	SO_2 (ton)	PM_{10} (ton)	$PM_{2.5}$ (ton)	CO_2 (metric tons/year)
Combustion	0.202	0.012	0.082	0.017	0.012	0.012	22.649
Fugitive Dust	-	-	-	-	3.780	0.378	-
Haul Truck On-Road	0.069	0.050	0.204	0.005	0.082	0.021	15.929
Commuter	0.083	0.082	0.744	0.001	0.008	0.005	89.459
TOTAL	***0.35***	***0.14***	***1.03***	***0.02***	***3.88***	***0.42***	***128.04***

Note: Total $PM_{10}/_{2.5}$ fugitive dust emissions are assuming USEPA 50% control efficiencies.

CO_2 emissions converted to metric tons =	***128.037***	***metric tons***	
State of Texas' CO2 emissions =	***596,370,927***	***metric tons***	*(U.S. DOE/EIA 2011)*
Percent of Texas' CO2 emissions =	***0.00002%***		
United States' CO_2 emissions =	***5,425,600,000***	***metric tons***	*(U.S. DOE/EIA 2011)*
Percent of USA's CO_2 emissions =	***0.000002%***		

Source: U.S. Department of Energy, Energy Information Administration (U.S. DOE/EIA). 2011. *Table 1. State Emissions by Year (Million Metric Tons of Carbon Dioxide).* Available online <http://www.eia.gov/environment/emissions/state/state_emissions.cfm>. 2009 data values are the most recent. Data accessed 28 June 2012.

Since future year budgets were not readily available, actual 2008 air emissions inventories for the counties were used as an approximation of the regional inventory. Because 2015 Infastructure Project - I5c are several orders of magnitude below significance, the conclusion would be the same, regardless of whether future year budget data set were used.

Metropolitan San Antonio Intrastate Air Quality Control Region

	Point and Area Sources Combined					
Year	NO_x (tpy)	VOC (tpy)	CO (tpy)	SO_2 (tpy)	PM_{10} (tpy)	$PM_{2.5}$ (tpy)
2008	127,839	425,477	555,851	40,901	183,999	32,316

Source: USEPA National Emissions Inventory (NEI) (http://www.epa.gov/ttn/chief/net/2008inventory.html). Site visited on 27 June 2012.

Air Emissions from 2015 Infastructure Project - I5c

	Point and Area Sources Combined					
	NO_x (tpy)	VOC (tpy)	CO (tpy)	SO_2 (tpy)	PM_{10} (tpy)	$PM_{2.5}$ (tpy)
Regional Emissions	127,839	425,477	555,851	40,901	183,999	32,316
Emissions	0.354	0.144	1.030	0.024	3.883	0.416
% of Regional	**0.0003%**	**0.0000%**	**0.0002%**	**0.0001%**	**0.0021%**	**0.0013%**

Air Emissions for 2016 Infastructure Project - I5 - 3.1 Acre Parking Lot

	NO_x (ton)	VOC (ton)	CO (ton)	SO_2 (ton)	PM_{10} (ton)	$PM_{2.5}$ (ton)	CO_2 (metric tons/year)
Combustion	0.382	0.022	0.155	0.033	0.023	0.023	42.748
Fugitive Dust	-	-	-	-	7.812	0.781	-
Haul Truck On-Road	0.143	0.104	0.421	0.011	0.170	0.044	32.920
Commuter	0.083	0.082	0.744	0.001	0.008	0.005	89.459
TOTAL	***0.61***	***0.21***	***1.32***	***0.05***	***8.01***	***0.85***	***165.13***

Note: Total $PM_{10}/_{2.5}$ fugitive dust emissions are assuming USEPA 50% control efficiencies.

CO_2 emissions converted to metric tons =	***165.127***	***metric tons***	
State of Texas' CO2 emissions =	***596,370,927***	***metric tons***	*(U.S. DOE/EIA 2011)*
Percent of Texas' CO2 emissions =	***0.00003%***		
United States' CO_2 emissions =	***5,425,600,000***	***metric tons***	*(U.S. DOE/EIA 2011)*
Percent of USA's CO_2 emissions =	***0.000003%***		

Source: U.S. Department of Energy, Energy Information Administration (U.S. DOE/EIA). 2011. *Table 1. State Emissions by Year (Million Metric Tons of Carbon Dioxide).* Available online <http://www.eia.gov/environment/emissions/state/state_emissions.cfm>. 2009 data values are the most recent. Data accessed 28 June 2012.

Since future year budgets were not readily available, actual 2008 air emissions inventories for the counties were used as an approximation of the regional inventory. Because 2016 Infastructure Project - I5d are several orders of magnitude below significance, the conclusion would be the same, regardless of whether future year budget data set were used.

Metropolitan San Antonio Intrastate Air Quality Control Region

	Point and Area Sources Combined					
Year	**NO_x (tpy)**	**VOC (tpy)**	**CO (tpy)**	**SO_2 (tpy)**	**PM_{10} (tpy)**	**$PM_{2.5}$ (tpy)**
2008	127,839	425,477	555,851	40,901	183,999	32,316

Source: USEPA National Emissions Inventory (NEI) (http://www.epa.gov/ttn/chief/net/2008inventory.html). Site visited on 27 June 2012.

Air Emissions from 2016 Infastructure Project - I5d

	Point and Area Sources Combined					
	NO_x (tpy)	**VOC (tpy)**	**CO (tpy)**	**SO_2 (tpy)**	**PM_{10} (tpy)**	**$PM_{2.5}$ (tpy)**
Regional Emissions	127,839	425,477	555,851	40,901	183,999	32,316
Emissions	0.608	0.208	1.320	0.045	8.014	0.853
% of Regional	**0.0005%**	**0.0000%**	**0.0002%**	**0.0001%**	**0.0044%**	**0.0026%**

Air Emissions for 2017 Infastructure Project - I5 - 14.3 Acre Parking Lot

	NO_x (ton)	VOC (ton)	CO (ton)	SO_2 (ton)	PM_{10} (ton)	$PM_{2.5}$ (ton)	CO_2 (metric tons/year)
Combustion	1.669	0.096	0.680	0.144	0.102	0.099	187.225
Fugitive Dust	-	-	-	-	36.036	3.604	-
Haul Truck On-Road	0.661	0.478	1.943	0.052	0.786	0.204	151.858
Commuter	0.083	0.082	0.744	0.001	0.008	0.005	89.459
TOTAL	***2.41***	***0.66***	***3.37***	***0.20***	***36.93***	***3.91***	***428.54***

Note: Total $PM_{10}/_{2.5}$ fugitive dust emissions are assuming USEPA 50% control efficiencies.

CO_2 emissions converted to metric tons =	***428.542***	***metric tons***	
State of Texas' CO2 emissions =	***596,370,927***	***metric tons***	*(U.S. DOE/EIA 2011)*
Percent of Texas' CO2 emissions =	***0.00007%***		
United States' CO_2 emissions =	***5,425,600,000***	***metric tons***	*(U.S. DOE/EIA 2011)*
Percent of USA's CO_2 emissions =	***0.000008%***		

Source: U.S. Department of Energy, Energy Information Administration (U.S. DOE/EIA). 2011. *Table 1. State Emissions by Year (Million Metric Tons of Carbon Dioxide).* Available online <http://www.eia.gov/environment/emissions/state/state_emissions.cfm>. 2009 data values are the most recent. Data accessed 28 June 2012.

Since future year budgets were not readily available, actual 2008 air emissions inventories for the counties were used as an approximation of the regional inventory. Because 2017 Infastructure Project - I5a are several orders of magnitude below significance, the conclusion would be the same, regardless of whether future year budget data set were used.

Metropolitan San Antonio Intrastate Air Quality Control Region

	Point and Area Sources Combined					
Year	**NO_x (tpy)**	**VOC (tpy)**	**CO (tpy)**	**SO_2 (tpy)**	**PM_{10} (tpy)**	**$PM_{2.5}$ (tpy)**
2008	127,839	425,477	555,851	40,901	183,999	32,316

Source: USEPA National Emissions Inventory (NEI) (http://www.epa.gov/ttn/chief/net/2008inventory.html). Site visited on 27 June 2012.

Air Emissions from 2017 Infastructure Project - I5a

	Point and Area Sources Combined					
	NO_x (tpy)	**VOC (tpy)**	**CO (tpy)**	**SO_2 (tpy)**	**PM_{10} (tpy)**	**$PM_{2.5}$ (tpy)**
Regional Emissions	127,839	425,477	555,851	40,901	183,999	32,316
Emissions	2.413	0.657	3.367	0.197	36.932	3.912
% of Regional	**0.0019%**	**0.0002%**	**0.0006%**	**0.0005%**	**0.0201%**	**0.0121%**

Air Emissions for 2018 Infastructure Project - I5 - 12.9 Acre Parking Lot

	NO_x (ton)	VOC (ton)	CO (ton)	SO_2 (ton)	PM_{10} (ton)	$PM_{2.5}$ (ton)	CO_2 (metric tons/year)
Combustion	1.531	0.089	0.623	0.132	0.094	0.091	171.610
Fugitive Dust	-	-	-	-	32.508	3.251	-
Haul Truck On-Road	0.596	0.431	1.753	0.047	0.709	0.184	136.991
Commuter	0.083	0.082	0.744	0.001	0.008	0.005	89.459
TOTAL	***2.21***	***0.60***	***3.12***	***0.18***	***33.32***	***3.53***	***398.06***

Note: Total $PM_{10}/_{2.5}$ fugitive dust emissions are assuming USEPA 50% control efficiencies.

CO_2 emissions converted to metric tons =	***398.059***	***metric tons***	
State of Texas' CO2 emissions =	***596,370,927***	***metric tons***	*(U.S. DOE/EIA 2011)*
Percent of Texas' CO2 emissions =	***0.00007%***		
United States' CO_2 emissions =	***5,425,600,000***	***metric tons***	*(U.S. DOE/EIA 2011)*
Percent of USA's CO_2 emissions =	***0.000007%***		

Source: U.S. Department of Energy, Energy Information Administration (U.S. DOE/EIA). 2011. *Table 1. State Emissions by Year (Million Metric Tons of Carbon Dioxide).* Available online <http://www.eia.gov/environment/emissions/state/state_emissions.cfm>. 2009 data values are the most recent. Data accessed 28 June 2012.

Since future year budgets were not readily available, actual 2008 air emissions inventories for the counties were used as an approximation of the regional inventory. Because 2018 Infastructure Project - I5b are several orders of magnitude below significance, the conclusion would be the same, regardless of whether future year budget data set were used.

Metropolitan San Antonio Intrastate Air Quality Control Region

	Point and Area Sources Combined					
Year	NO_x (tpy)	VOC (tpy)	CO (tpy)	SO_2 (tpy)	PM_{10} (tpy)	$PM_{2.5}$ (tpy)
2008	127,839	425,477	555,851	40,901	183,999	32,316

Source: USEPA National Emissions Inventory (NEI) (http://www.epa.gov/ttn/chief/net/2008inventory.html). Site visited on 27 June 2012.

Air Emissions from 2018 Infastructure Project - I5b

	Point and Area Sources Combined					
	NO_x (tpy)	VOC (tpy)	CO (tpy)	SO_2 (tpy)	PM_{10} (tpy)	$PM_{2.5}$ (tpy)
Regional Emissions	127,839	425,477	555,851	40,901	183,999	32,316
Emissions	2.210	0.602	3.119	0.180	33.319	3.531
% of Regional	**0.0017%**	**0.0001%**	**0.0006%**	**0.0004%**	**0.0181%**	**0.0109%**

Air Emissions for 2013 Infastructure Project - I6

	NO_x (ton)	VOC (ton)	CO (ton)	SO_2 (ton)	PM_{10} (ton)	$PM_{2.5}$ (ton)	CO_2 (metric tons/year)
Combustion	0.021	0.001	0.008	0.002	0.001	0.001	2.241
Fugitive Dust	-	-	-	-	1.486	0.149	-
Haul Truck On-Road	-	-	-	-	-	-	-
Commuter	0.083	0.082	0.744	0.001	0.008	0.005	89.459
TOTAL	***0.10***	***0.08***	***0.75***	***0.00***	***1.49***	***0.15***	***91.70***

Note: Total $PM_{10}/_{2.5}$ fugitive dust emissions are assuming USEPA 50% control efficiencies.

CO_2 emissions converted to metric tons =	***91.700***	***metric tons***	
State of Texas' CO2 emissions =	***596,370,927***	***metric tons***	*(U.S. DOE/EIA 2011)*
Percent of Texas' CO2 emissions =	***0.00002%***		
United States' CO_2 emissions =	***5,425,600,000***	***metric tons***	*(U.S. DOE/EIA 2011)*
Percent of USA's CO_2 emissions =	***0.000002%***		

Source: U.S. Department of Energy, Energy Information Administration (U.S. DOE/EIA). 2011. *Table 1. State Emissions by Year (Million Metric Tons of Carbon Dioxide).* Available online <http://www.eia.gov/environment/emissions/state/state_emissions.cfm>. 2009 data values are the most recent. Data accessed 28 June 2012.

Since future year budgets were not readily available, actual 2008 air emissions inventories for the counties were used as an approximation of the regional inventory. Because 2013 Infastructure Project - I6 are several orders of magnitude below significance, the conclusion would be the same, regardless of whether future year budget data set were used.

Metropolitan San Antonio Intrastate Air Quality Control Region

	Point and Area Sources Combined					
Year	NO_x (tpy)	VOC (tpy)	CO (tpy)	SO_2 (tpy)	PM_{10} (tpy)	$PM_{2.5}$ (tpy)
2008	127,839	425,477	555,851	40,901	183,999	32,316

Source: USEPA National Emissions Inventory (NEI) (http://www.epa.gov/ttn/chief/net/2008inventory.html). Site visited on 27 June 2012.

Air Emissions from 2013 Infastructure Project - I6

	Point and Area Sources Combined					
	NO_x (tpy)	VOC (tpy)	CO (tpy)	SO_2 (tpy)	PM_{10} (tpy)	$PM_{2.5}$ (tpy)
Regional Emissions	127,839	425,477	555,851	40,901	183,999	32,316
Emissions	0.103	0.084	0.752	0.003	1.495	0.155
% of Regional	**0.0001%**	**0.0000%**	**0.0001%**	**0.0000%**	**0.0008%**	**0.0005%**

Air Emissions for 2014 Infastructure Project - I6

	NO_x (ton)	VOC (ton)	CO (ton)	SO_2 (ton)	PM_{10} (ton)	$PM_{2.5}$ (ton)	CO_2 (metric tons/year)
Combustion	0.021	0.001	0.008	0.002	0.001	0.001	2.241
Fugitive Dust	-	-	-	-	1.486	0.149	-
Haul Truck On-Road	-	-	-	-	-	-	-
Commuter	0.083	0.082	0.744	0.001	0.008	0.005	89.459
TOTAL	***0.10***	***0.08***	***0.75***	***0.00***	***1.49***	***0.15***	***91.70***

Note: Total $PM_{10}/_{2.5}$ fugitive dust emissions are assuming USEPA 50% control efficiencies.

CO_2 emissions converted to metric tons =	***91.700***	***metric tons***	
State of Texas' CO2 emissions =	***596,370,927***	***metric tons***	*(U.S. DOE/EIA 2011)*
Percent of Texas' CO2 emissions =	***0.00002%***		
United States' CO_2 emissions =	***5,425,600,000***	***metric tons***	*(U.S. DOE/EIA 2011)*
Percent of USA's CO_2 emissions =	***0.000002%***		

Source: U.S. Department of Energy, Energy Information Administration (U.S. DOE/EIA). 2011. *Table 1. State Emissions by Year (Million Metric Tons of Carbon Dioxide).* Available online <http://www.eia.gov/environment/emissions/state/state_emissions.cfm>. 2009 data values are the most recent. Data accessed 28 June 2012.

Since future year budgets were not readily available, actual 2008 air emissions inventories for the counties were used as an approximation of the regional inventory. Because 2014 Infastructure Project - I6 are several orders of magnitude below significance, the conclusion would be the same, regardless of whether future year budget data set were used.

Metropolitan San Antonio Intrastate Air Quality Control Region

	Point and Area Sources Combined					
Year	**NO_x (tpy)**	**VOC (tpy)**	**CO (tpy)**	**SO_2 (tpy)**	**PM_{10} (tpy)**	**$PM_{2.5}$ (tpy)**
2008	127,839	425,477	555,851	40,901	183,999	32,316

Source: USEPA National Emissions Inventory (NEI) (http://www.epa.gov/ttn/chief/net/2008inventory.html). Site visited on 27 June 2012.

Air Emissions from 2014 Infastructure Project - I6

	Point and Area Sources Combined					
	NO_x (tpy)	**VOC (tpy)**	**CO (tpy)**	**SO_2 (tpy)**	**PM_{10} (tpy)**	**$PM_{2.5}$ (tpy)**
Regional Emissions	127,839	425,477	555,851	40,901	183,999	32,316
Emissions	0.103	0.084	0.752	0.003	1.495	0.155
% of Regional	**0.0001%**	**0.0000%**	**0.0001%**	**0.0000%**	**0.0008%**	**0.0005%**

Air Emissions for 2015 Infastructure Project - I6

	NO_x (ton)	VOC (ton)	CO (ton)	SO_2 (ton)	PM_{10} (ton)	$PM_{2.5}$ (ton)	CO_2 (metric tons/year)
Combustion	0.021	0.001	0.008	0.002	0.001	0.001	2.241
Fugitive Dust	-	-	-	-	1.486	0.149	-
Haul Truck On-Road	-	-	-	-	-	-	-
Commuter	0.083	0.082	0.744	0.001	0.008	0.005	89.459
TOTAL	***0.10***	***0.08***	***0.75***	***0.00***	***1.49***	***0.15***	***91.70***

Note: Total $PM_{10}/_{2.5}$ fugitive dust emissions are assuming USEPA 50% control efficiencies.

CO_2 emissions converted to metric tons =	***91.700***	***metric tons***	
State of Texas' CO2 emissions =	***596,370,927***	***metric tons***	*(U.S. DOE/EIA 2011)*
Percent of Texas' CO2 emissions =	***0.00002%***		
United States' CO_2 emissions =	***5,425,600,000***	***metric tons***	*(U.S. DOE/EIA 2011)*
Percent of USA's CO_2 emissions =	***0.000002%***		

Source: U.S. Department of Energy, Energy Information Administration (U.S. DOE/EIA). 2011. *Table 1. State Emissions by Year (Million Metric Tons of Carbon Dioxide).* Available online <http://www.eia.gov/environment/emissions/state/state_emissions.cfm>. 2009 data values are the most recent. Data accessed 28 June 2012.

Since future year budgets were not readily available, actual 2008 air emissions inventories for the counties were used as an approximation of the regional inventory. Because 2015 Infastructure Project - I6 are several orders of magnitude below significance, the conclusion would be the same, regardless of whether future year budget data set were used.

Metropolitan San Antonio Intrastate Air Quality Control Region

	Point and Area Sources Combined					
Year	NO_x (tpy)	VOC (tpy)	CO (tpy)	SO_2 (tpy)	PM_{10} (tpy)	$PM_{2.5}$ (tpy)
2008	127,839	425,477	555,851	40,901	183,999	32,316

Source: USEPA National Emissions Inventory (NEI) (http://www.epa.gov/ttn/chief/net/2008inventory.html). Site visited on 27 June 2012.

Air Emissions from 2015 Infastructure Project - I6

	Point and Area Sources Combined					
	NO_x (tpy)	VOC (tpy)	CO (tpy)	SO_2 (tpy)	PM_{10} (tpy)	$PM_{2.5}$ (tpy)
Regional Emissions	127,839	425,477	555,851	40,901	183,999	32,316
Emissions	0.103	0.084	0.752	0.003	1.495	0.155
% of Regional	**0.0001%**	**0.0000%**	**0.0001%**	**0.0000%**	**0.0008%**	**0.0005%**

Air Emissions for 2016 Infastructure Project - I6

	NO_x (ton)	VOC (ton)	CO (ton)	SO_2 (ton)	PM_{10} (ton)	$PM_{2.5}$ (ton)	CO_2 (metric tons/year)
Combustion	0.021	0.001	0.008	0.002	0.001	0.001	2.241
Fugitive Dust	-	-	-	-	1.486	0.149	-
Haul Truck On-Road	-	-	-	-	-	-	-
Commuter	0.083	0.082	0.744	0.001	0.008	0.005	89.459
TOTAL	***0.10***	***0.08***	***0.75***	***0.00***	***1.49***	***0.15***	***91.70***

Note: Total $PM_{10}/_{2.5}$ fugitive dust emissions are assuming USEPA 50% control efficiencies.

CO_2 emissions converted to metric tons =	***91.700***	***metric tons***	
State of Texas' CO2 emissions =	***596,370,927***	***metric tons***	*(U.S. DOE/EIA 2011)*
Percent of Texas' CO2 emissions =	***0.00002%***		
United States' CO_2 emissions =	***5,425,600,000***	***metric tons***	*(U.S. DOE/EIA 2011)*
Percent of USA's CO_2 emissions =	***0.000002%***		

Source: U.S. Department of Energy, Energy Information Administration (U.S. DOE/EIA). 2011. *Table 1. State Emissions by Year (Million Metric Tons of Carbon Dioxide).* Available online <http://www.eia.gov/environment/emissions/state/state_emissions.cfm>. 2009 data values are the most recent. Data accessed 28 June 2012.

Since future year budgets were not readily available, actual 2008 air emissions inventories for the counties were used as an approximation of the regional inventory. Because 2016 Infastructure Project - I6 are several orders of magnitude below significance, the conclusion would be the same, regardless of whether future year budget data set were used.

Metropolitan San Antonio Intrastate Air Quality Control Region

	Point and Area Sources Combined					
Year	**NO_x (tpy)**	**VOC (tpy)**	**CO (tpy)**	**SO_2 (tpy)**	**PM_{10} (tpy)**	**$PM_{2.5}$ (tpy)**
2008	127,839	425,477	555,851	40,901	183,999	32,316

Source: USEPA National Emissions Inventory (NEI) (http://www.epa.gov/ttn/chief/net/2008inventory.html). Site visited on 27 June 2012.

Air Emissions from 2016 Infastructure Project - I6

	Point and Area Sources Combined					
	NO_x (tpy)	**VOC (tpy)**	**CO (tpy)**	**SO_2 (tpy)**	**PM_{10} (tpy)**	**$PM_{2.5}$ (tpy)**
Regional Emissions	127,839	425,477	555,851	40,901	183,999	32,316
Emissions	0.103	0.084	0.752	0.003	1.495	0.155
% of Regional	**0.0001%**	**0.0000%**	**0.0001%**	**0.0000%**	**0.0008%**	**0.0005%**

Air Emissions for 2017 Infastructure Project - I6

	NO_x (ton)	VOC (ton)	CO (ton)	SO_2 (ton)	PM_{10} (ton)	$PM_{2.5}$ (ton)	CO_2 (metric tons/year)
Combustion	0.021	0.001	0.008	0.002	0.001	0.001	2.241
Fugitive Dust	-	-	-	-	1.486	0.149	-
Haul Truck On-Road	-	-	-	-	-	-	-
Commuter	0.083	0.082	0.744	0.001	0.008	0.005	89.459
TOTAL	***0.10***	***0.08***	***0.75***	***0.00***	***1.49***	***0.15***	***91.70***

Note: Total $PM_{10}/_{2.5}$ fugitive dust emissions are assuming USEPA 50% control efficiencies.

CO_2 emissions converted to metric tons =	***91.700***	***metric tons***	
State of Texas' CO2 emissions =	***596,370,927***	***metric tons***	*(U.S. DOE/EIA 2011)*
Percent of Texas' CO2 emissions =	***0.00002%***		
United States' CO_2 emissions =	***5,425,600,000***	***metric tons***	*(U.S. DOE/EIA 2011)*
Percent of USA's CO_2 emissions =	***0.000002%***		

Source: U.S. Department of Energy, Energy Information Administration (U.S. DOE/EIA). 2011. *Table 1. State Emissions by Year (Million Metric Tons of Carbon Dioxide).* Available online <http://www.eia.gov/environment/emissions/state/state_emissions.cfm>. 2009 data values are the most recent. Data accessed 28 June 2012.

Since future year budgets were not readily available, actual 2008 air emissions inventories for the counties were used as an approximation of the regional inventory. Because 2017 Infastructure Project - I6 are several orders of magnitude below significance, the conclusion would be the same, regardless of whether future year budget data set were used.

Metropolitan San Antonio Intrastate Air Quality Control Region

	Point and Area Sources Combined					
Year	**NO_x (tpy)**	**VOC (tpy)**	**CO (tpy)**	**SO_2 (tpy)**	**PM_{10} (tpy)**	**$PM_{2.5}$ (tpy)**
2008	127,839	425,477	555,851	40,901	183,999	32,316

Source: USEPA National Emissions Inventory (NEI) (http://www.epa.gov/ttn/chief/net/2008inventory.html). Site visited on 27 June 2012.

Air Emissions from 2017 Infastructure Project - I6

	Point and Area Sources Combined					
	NO_x (tpy)	**VOC (tpy)**	**CO (tpy)**	**SO_2 (tpy)**	**PM_{10} (tpy)**	**$PM_{2.5}$ (tpy)**
Regional Emissions	127,839	425,477	555,851	40,901	183,999	32,316
Emissions	0.103	0.084	0.752	0.003	1.495	0.155
% of Regional	**0.0001%**	**0.0000%**	**0.0001%**	**0.0000%**	**0.0008%**	**0.0005%**

Air Emissions for 2018 Infastructure Project - I6

	NO_x (ton)	VOC (ton)	CO (ton)	SO_2 (ton)	PM_{10} (ton)	$PM_{2.5}$ (ton)	CO_2 (metric tons/year)
Combustion	0.021	0.001	0.008	0.002	0.001	0.001	2.241
Fugitive Dust	-	-	-	-	1.486	0.149	-
Haul Truck On-Road	-	-	-	-	-	-	-
Commuter	0.083	0.082	0.744	0.001	0.008	0.005	89.459
TOTAL	***0.10***	***0.08***	***0.75***	***0.00***	***1.49***	***0.15***	***91.70***

Note: Total $PM_{10}/_{2.5}$ fugitive dust emissions are assuming USEPA 50% control efficiencies.

CO_2 emissions converted to metric tons =	***91.700***	***metric tons***	
State of Texas' CO2 emissions =	***596,370,927***	***metric tons***	*(U.S. DOE/EIA 2011)*
Percent of Texas' CO2 emissions =	***0.00002%***		
United States' CO_2 emissions =	***5,425,600,000***	***metric tons***	*(U.S. DOE/EIA 2011)*
Percent of USA's CO_2 emissions =	***0.000002%***		

Source: U.S. Department of Energy, Energy Information Administration (U.S. DOE/EIA). 2011. *Table 1. State Emissions by Year (Million Metric Tons of Carbon Dioxide).* Available online <http://www.eia.gov/environment/emissions/state/state_emissions.cfm>. 2009 data values are the most recent. Data accessed 28 June 2012.

Since future year budgets were not readily available, actual 2008 air emissions inventories for the counties were used as an approximation of the regional inventory. Because 2018 Infastructure Project - I6 are several orders of magnitude below significance, the conclusion would be the same, regardless of whether future year budget data set were used.

Metropolitan San Antonio Intrastate Air Quality Control Region

	Point and Area Sources Combined					
Year	NO_x (tpy)	VOC (tpy)	CO (tpy)	SO_2 (tpy)	PM_{10} (tpy)	$PM_{2.5}$ (tpy)
2008	127,839	425,477	555,851	40,901	183,999	32,316

Source: USEPA National Emissions Inventory (NEI) (http://www.epa.gov/ttn/chief/net/2008inventory.html). Site visited on 27 June 2012.

Air Emissions from 2018 Infastructure Project - I6

	Point and Area Sources Combined					
	NO_x (tpy)	VOC (tpy)	CO (tpy)	SO_2 (tpy)	PM_{10} (tpy)	$PM_{2.5}$ (tpy)
Regional Emissions	127,839	425,477	555,851	40,901	183,999	32,316
Emissions	0.103	0.084	0.752	0.003	1.495	0.155
% of Regional	**0.0001%**	**0.0000%**	**0.0001%**	**0.0000%**	**0.0008%**	**0.0005%**

Air Emissions for 2015 Infastructure Project - I7

	NO_x (ton)	VOC (ton)	CO (ton)	SO_2 (ton)	PM_{10} (ton)	$PM_{2.5}$ (ton)	CO_2 (metric tons/year)
Combustion	0.062	0.004	0.024	0.005	0.004	0.004	6.724
Fugitive Dust	-	-	-	-	5.207	0.521	-
Haul Truck On-Road	-	-	-	-	-	-	-
Commuter	0.083	0.082	0.744	0.001	0.008	0.005	89.459
TOTAL	***0.15***	***0.09***	***0.77***	***0.01***	***5.22***	***0.53***	***96.18***

Note: Total $PM_{10}/_{2.5}$ fugitive dust emissions are assuming USEPA 50% control efficiencies.

CO_2 emissions converted to metric tons =	***96.183***	***metric tons***	
State of Texas' CO2 emissions =	***596,370,927***	***metric tons***	*(U.S. DOE/EIA 2011)*
Percent of Texas' CO2 emissions =	***0.00002%***		
United States' CO_2 emissions =	***5,425,600,000***	***metric tons***	*(U.S. DOE/EIA 2011)*
Percent of USA's CO_2 emissions =	***0.000002%***		

Source: U.S. Department of Energy, Energy Information Administration (U.S. DOE/EIA). 2011. *Table 1. State Emissions by Year (Million Metric Tons of Carbon Dioxide).* Available online <http://www.eia.gov/environment/emissions/state/state_emissions.cfm>. 2009 data values are the most recent. Data accessed 28 June 2012.

Since future year budgets were not readily available, actual 2008 air emissions inventories for the counties were used as an approximation of the regional inventory. Because 2015 Infastructure Project - I7 are several orders of magnitude below significance, the conclusion would be the same, regardless of whether future year budget data set were used.

Metropolitan San Antonio Intrastate Air Quality Control Region

	Point and Area Sources Combined					
Year	NO_x (tpy)	VOC (tpy)	CO (tpy)	SO_2 (tpy)	PM_{10} (tpy)	$PM_{2.5}$ (tpy)
2008	127,839	425,477	555,851	40,901	183,999	32,316

Source: USEPA National Emissions Inventory (NEI) (http://www.epa.gov/ttn/chief/net/2008inventory.html). Site visited on 27 June 2012.

Air Emissions from 2015 Infastructure Project - I7

	Point and Area Sources Combined					
	NO_x (tpy)	VOC (tpy)	CO (tpy)	SO_2 (tpy)	PM_{10} (tpy)	$PM_{2.5}$ (tpy)
Regional Emissions	127,839	425,477	555,851	40,901	183,999	32,316
Emissions	0.145	0.086	0.767	0.006	5.219	0.529
% of Regional	**0.0001%**	**0.0000%**	**0.0001%**	**0.0000%**	**0.0028%**	**0.0016%**

Air Emissions for 2013 Infastructure Project - I8

	NO_x (ton)	VOC (ton)	CO (ton)	SO_2 (ton)	PM_{10} (ton)	$PM_{2.5}$ (ton)	CO_2 (metric tons/year)
Combustion	0.021	0.001	0.008	0.002	0.001	0.001	2.241
Fugitive Dust	-	-	-	-	0.993	0.099	-
Haul Truck On-Road	-	-	-	-	-	-	-
Commuter	0.083	0.082	0.744	0.001	0.008	0.005	89.459
TOTAL	***0.10***	***0.08***	***0.75***	***0.00***	***1.00***	***0.11***	***91.70***

Note: Total $PM_{10}/_{2.5}$ fugitive dust emissions are assuming USEPA 50% control efficiencies.

CO_2 emissions converted to metric tons =	***91.700***	***metric tons***	
State of Texas' CO2 emissions =	***596,370,927***	***metric tons***	*(U.S. DOE/EIA 2011)*
Percent of Texas' CO2 emissions =	***0.00002%***		
United States' CO_2 emissions =	***5,425,600,000***	***metric tons***	*(U.S. DOE/EIA 2011)*
Percent of USA's CO_2 emissions =	***0.000002%***		

Source: U.S. Department of Energy, Energy Information Administration (U.S. DOE/EIA). 2011. *Table 1. State Emissions by Year (Million Metric Tons of Carbon Dioxide).* Available online <http://www.eia.gov/environment/emissions/state/state_emissions.cfm>. 2009 data values are the most recent. Data accessed 28 June 2012.

Since future year budgets were not readily available, actual 2008 air emissions inventories for the counties were used as an approximation of the regional inventory. Because 2013 Infastructure Project - I8 are several orders of magnitude below significance, the conclusion would be the same, regardless of whether future year budget data set were used.

Metropolitan San Antonio Intrastate Air Quality Control Region

	Point and Area Sources Combined					
Year	**NO_x (tpy)**	**VOC (tpy)**	**CO (tpy)**	**SO_2 (tpy)**	**PM_{10} (tpy)**	**$PM_{2.5}$ (tpy)**
2008	127,839	425,477	555,851	40,901	183,999	32,316

Source: USEPA National Emissions Inventory (NEI) (http://www.epa.gov/ttn/chief/net/2008inventory.html). Site visited on 27 June 2012.

Air Emissions from 2013 Infastructure Project - I8

	Point and Area Sources Combined					
	NO_x (tpy)	**VOC (tpy)**	**CO (tpy)**	**SO_2 (tpy)**	**PM_{10} (tpy)**	**$PM_{2.5}$ (tpy)**
Regional Emissions	127,839	425,477	555,851	40,901	183,999	32,316
Emissions	0.103	0.084	0.752	0.003	1.002	0.105
% of Regional	**0.0001%**	**0.0000%**	**0.0001%**	**0.0000%**	**0.0005%**	**0.0003%**

Air Emissions for 2014 Infastructure Project - I8

	NO_x (ton)	VOC (ton)	CO (ton)	SO_2 (ton)	PM_{10} (ton)	$PM_{2.5}$ (ton)	CO_2 (metric tons/year)
Combustion	0.021	0.001	0.008	0.002	0.001	0.001	2.241
Fugitive Dust	-	-	-	-	0.993	0.099	-
Haul Truck On-Road	-	-	-	-	-	-	-
Commuter	0.083	0.082	0.744	0.001	0.008	0.005	89.459
TOTAL	***0.10***	***0.08***	***0.75***	***0.00***	***1.00***	***0.11***	***91.70***

Note: Total $PM_{10}/_{2.5}$ fugitive dust emissions are assuming USEPA 50% control efficiencies.

CO_2 emissions converted to metric tons =	***91.700***	***metric tons***	
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Percent of Texas' CO2 emissions =	***0.00002%***		
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Percent of USA's CO_2 emissions =	***0.000002%***		

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Metropolitan San Antonio Intrastate Air Quality Control Region

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Year	**NO_x (tpy)**	**VOC (tpy)**	**CO (tpy)**	**SO_2 (tpy)**	**PM_{10} (tpy)**	**$PM_{2.5}$ (tpy)**
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Source: USEPA National Emissions Inventory (NEI) (http://www.epa.gov/ttn/chief/net/2008inventory.html). Site visited on 27 June 2012.

Air Emissions from 2014 Infastructure Project - I8

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Emissions	0.103	0.084	0.752	0.003	1.002	0.105
% of Regional	**0.0001%**	**0.0000%**	**0.0001%**	**0.0000%**	**0.0005%**	**0.0003%**

Air Emissions for 2015 Infastructure Project - I8

	NO_x (ton)	VOC (ton)	CO (ton)	SO_2 (ton)	PM_{10} (ton)	$PM_{2.5}$ (ton)	CO_2 (metric tons/year)
Combustion	0.021	0.001	0.008	0.002	0.001	0.001	2.241
Fugitive Dust	-	-	-	-	0.993	0.099	-
Haul Truck On-Road	-	-	-	-	-	-	-
Commuter	0.083	0.082	0.744	0.001	0.008	0.005	89.459
TOTAL	***0.10***	***0.08***	***0.75***	***0.00***	***1.00***	***0.11***	***91.70***

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Percent of USA's CO_2 emissions =	***0.000002%***		

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Metropolitan San Antonio Intrastate Air Quality Control Region

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Air Emissions from 2015 Infastructure Project - I8

	Point and Area Sources Combined					
	NO_x (tpy)	**VOC (tpy)**	**CO (tpy)**	**SO_2 (tpy)**	**PM_{10} (tpy)**	**$PM_{2.5}$ (tpy)**
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Emissions	0.103	0.084	0.752	0.003	1.002	0.105
% of Regional	**0.0001%**	**0.0000%**	**0.0001%**	**0.0000%**	**0.0005%**	**0.0003%**

Air Emissions for 2016 Infastructure Projects

	NO_x (ton)	VOC (ton)	CO (ton)	SO_2 (ton)	PM_{10} (ton)	$PM_{2.5}$ (ton)	CO_2 (metric tons/year)
Combustion	0.021	0.001	0.008	0.002	0.001	0.001	2.241
Fugitive Dust	-	-	-	-	0.993	0.099	-
Haul Truck On-Road	-	-	-	-	-	-	-
Commuter	0.083	0.082	0.744	0.001	0.008	0.005	89.459
TOTAL	***0.10***	***0.08***	***0.75***	***0.00***	***1.00***	***0.11***	***91.70***

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Percent of USA's CO_2 emissions =	***0.000002%***		

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Since future year budgets were not readily available, actual 2008 air emissions inventories for the counties were used as an approximation of the regional inventory. Because 2016 Infastructure Project - I8 are several orders of magnitude below significance, the conclusion would be the same, regardless of whether future year budget data set were used.

Metropolitan San Antonio Intrastate Air Quality Control Region

	Point and Area Sources Combined					
Year	**NO_x (tpy)**	**VOC (tpy)**	**CO (tpy)**	**SO_2 (tpy)**	**PM_{10} (tpy)**	**$PM_{2.5}$ (tpy)**
2008	127,839	425,477	555,851	40,901	183,999	32,316

Source: USEPA National Emissions Inventory (NEI) (http://www.epa.gov/ttn/chief/net/2008inventory.html). Site visited on 27 June 2012.

Air Emissions from 2016 Infastructure Projects

	Point and Area Sources Combined					
	NO_x (tpy)	**VOC (tpy)**	**CO (tpy)**	**SO_2 (tpy)**	**PM_{10} (tpy)**	**$PM_{2.5}$ (tpy)**
Regional Emissions	127,839	425,477	555,851	40,901	183,999	32,316
Emissions	0.103	0.084	0.752	0.003	1.002	0.105
% of Regional	**0.0001%**	**0.0000%**	**0.0001%**	**0.0000%**	**0.0005%**	**0.0003%**

Air Emissions for 2017 Infastructure Project - I8

	NO_x (ton)	VOC (ton)	CO (ton)	SO_2 (ton)	PM_{10} (ton)	$PM_{2.5}$ (ton)	CO_2 (metric tons/year)
Combustion	0.021	0.001	0.008	0.002	0.001	0.001	2.241
Fugitive Dust	-	-	-	-	0.993	0.099	-
Haul Truck On-Road	-	-	-	-	-	-	-
Commuter	0.083	0.082	0.744	0.001	0.008	0.005	89.459
TOTAL	***0.10***	***0.08***	***0.75***	***0.00***	***1.00***	***0.11***	***91.70***

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United States' CO_2 emissions =	***5,425,600,000***	***metric tons***	*(U.S. DOE/EIA 2011)*
Percent of USA's CO_2 emissions =	***0.000002%***		

<u>Source</u>: U.S. Department of Energy, Energy Information Administration (U.S. DOE/EIA). 2011. *Table 1. State Emissions by Year (Million Metric Tons of Carbon Dioxide).* Available online <http://www.eia.gov/environment/emissions/state/state_emissions.cfm>. 2009 data values are the most recent. Data accessed 28 June 2012.

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Metropolitan San Antonio Intrastate Air Quality Control Region

	Point and Area Sources Combined					
Year	**NO_x (tpy)**	**VOC (tpy)**	**CO (tpy)**	**SO_2 (tpy)**	**PM_{10} (tpy)**	**$PM_{2.5}$ (tpy)**
2008	127,839	425,477	555,851	40,901	183,999	32,316

Source: USEPA National Emissions Inventory (NEI) (http://www.epa.gov/ttn/chief/net/2008inventory.html). Site visited on 27 June 2012.

Air Emissions from 2017 Infastructure Project - I8

	Point and Area Sources Combined					
	NO_x (tpy)	**VOC (tpy)**	**CO (tpy)**	**SO_2 (tpy)**	**PM_{10} (tpy)**	**$PM_{2.5}$ (tpy)**
Regional Emissions	127,839	425,477	555,851	40,901	183,999	32,316
Emissions	0.103	0.084	0.752	0.003	1.002	0.105
% of Regional	**0.0001%**	**0.0000%**	**0.0001%**	**0.0000%**	**0.0005%**	**0.0003%**

Air Emissions for 2018 Infastructure Project - I8

	NO_x (ton)	VOC (ton)	CO (ton)	SO_2 (ton)	PM_{10} (ton)	$PM_{2.5}$ (ton)	CO_2 (metric tons/year)
Combustion	0.021	0.001	0.008	0.002	0.001	0.001	2.241
Fugitive Dust	-	-	-	-	0.993	0.099	-
Haul Truck On-Road	-	-	-	-	-	-	-
Commuter	0.083	0.082	0.744	0.001	0.008	0.005	89.459
TOTAL	***0.10***	***0.08***	***0.75***	***0.00***	***1.00***	***0.11***	***91.70***

Note: Total $PM_{10}/_{2.5}$ fugitive dust emissions are assuming USEPA 50% control efficiencies.

CO_2 emissions converted to metric tons =	***91.700***	***metric tons***	
State of Texas' CO2 emissions =	***596,370,927***	***metric tons***	*(U.S. DOE/EIA 2011)*
Percent of Texas' CO2 emissions =	***0.00002%***		
United States' CO_2 emissions =	***5,425,600,000***	***metric tons***	*(U.S. DOE/EIA 2011)*
Percent of USA's CO_2 emissions =	***0.000002%***		

Source: U.S. Department of Energy, Energy Information Administration (U.S. DOE/EIA). 2011. *Table 1. State Emissions by Year (Million Metric Tons of Carbon Dioxide).* Available online <http://www.eia.gov/environment/emissions/state/state_emissions.cfm>. 2009 data values are the most recent. Data accessed 28 June 2012.

Since future year budgets were not readily available, actual 2008 air emissions inventories for the counties were used as an approximation of the regional inventory. Because 2018 Infastructure Project - I8 are several orders of magnitude below significance, the conclusion would be the same, regardless of whether future year budget data set were used.

Metropolitan San Antonio Intrastate Air Quality Control Region

	Point and Area Sources Combined					
Year	NO_x (tpy)	VOC (tpy)	CO (tpy)	SO_2 (tpy)	PM_{10} (tpy)	$PM_{2.5}$ (tpy)
2008	127,839	425,477	555,851	40,901	183,999	32,316

Source: USEPA National Emissions Inventory (NEI) (http://www.epa.gov/ttn/chief/net/2008inventory.html). Site visited on 27 June 2012.

Air Emissions from 2018 Infastructure Project - I8

	Point and Area Sources Combined					
	NO_x (tpy)	VOC (tpy)	CO (tpy)	SO_2 (tpy)	PM_{10} (tpy)	$PM_{2.5}$ (tpy)
Regional Emissions	127,839	425,477	555,851	40,901	183,999	32,316
Emissions	0.103	0.084	0.752	0.003	1.002	0.105
% of Regional	**0.0001%**	**0.0000%**	**0.0001%**	**0.0000%**	**0.0005%**	**0.0003%**

Air Emissions for 2013 Infastructure Project - I9

	NO_x (ton)	VOC (ton)	CO (ton)	SO_2 (ton)	PM_{10} (ton)	$PM_{2.5}$ (ton)	CO_2 (metric tons/year)
Combustion	0.021	0.001	0.008	0.002	0.001	0.001	2.241
Fugitive Dust	-	-	-	-	0.892	0.089	-
Haul Truck On-Road	-	-	-	-	-	-	-
Commuter	0.083	0.082	0.744	0.001	0.008	0.005	89.459
TOTAL	***0.10***	***0.08***	***0.75***	***0.00***	***0.90***	***0.10***	***91.70***

Note: Total $PM_{10}/_{2.5}$ fugitive dust emissions are assuming USEPA 50% control efficiencies.

CO_2 emissions converted to metric tons =	***91.700***	***metric tons***	
State of Texas' CO2 emissions =	***596,370,927***	***metric tons***	*(U.S. DOE/EIA 2011)*
Percent of Texas' CO2 emissions =	***0.00002%***		
United States' CO_2 emissions =	***5,425,600,000***	***metric tons***	*(U.S. DOE/EIA 2011)*
Percent of USA's CO_2 emissions =	***0.000002%***		

Source: U.S. Department of Energy, Energy Information Administration (U.S. DOE/EIA). 2011. *Table 1. State Emissions by Year (Million Metric Tons of Carbon Dioxide).* Available online <http://www.eia.gov/environment/emissions/state/state_emissions.cfm>. 2009 data values are the most recent. Data accessed 28 June 2012.

Since future year budgets were not readily available, actual 2008 air emissions inventories for the counties were used as an approximation of the regional inventory. Because 2013 Infastructure Project - I9 are several orders of magnitude below significance, the conclusion would be the same, regardless of whether future year budget data set were used.

Metropolitan San Antonio Intrastate Air Quality Control Region

	Point and Area Sources Combined					
Year	**NO_x (tpy)**	**VOC (tpy)**	**CO (tpy)**	**SO_2 (tpy)**	**PM_{10} (tpy)**	**$PM_{2.5}$ (tpy)**
2008	127,839	425,477	555,851	40,901	183,999	32,316

Source: USEPA National Emissions Inventory (NEI) (http://www.epa.gov/ttn/chief/net/2008inventory.html). Site visited on 27 June 2012.

Air Emissions from 2013 Infastructure Project - I9

	Point and Area Sources Combined					
	NO_x (tpy)	**VOC (tpy)**	**CO (tpy)**	**SO_2 (tpy)**	**PM_{10} (tpy)**	**$PM_{2.5}$ (tpy)**
Regional Emissions	127,839	425,477	555,851	40,901	183,999	32,316
Emissions	0.103	0.084	0.752	0.003	0.901	0.095
% of Regional	**0.0001%**	**0.0000%**	**0.0001%**	**0.0000%**	**0.0005%**	**0.0003%**

Air Emissions for 2014 Infastructure Project - I9

	NO_x (ton)	VOC (ton)	CO (ton)	SO_2 (ton)	PM_{10} (ton)	$PM_{2.5}$ (ton)	CO_2 (metric tons/year)
Combustion	0.021	0.001	0.008	0.002	0.001	0.001	2.241
Fugitive Dust	-	-	-	-	0.892	0.089	-
Haul Truck On-Road	-	-	-	-	-	-	-
Commuter	0.083	0.082	0.744	0.001	0.008	0.005	89.459
TOTAL	***0.10***	***0.08***	***0.75***	***0.00***	***0.90***	***0.10***	***91.70***

Note: Total $PM_{10}/_{2.5}$ fugitive dust emissions are assuming USEPA 50% control efficiencies.

CO_2 emissions converted to metric tons =	***91.700***	***metric tons***	
State of Texas' CO2 emissions =	***596,370,927***	***metric tons***	*(U.S. DOE/EIA 2011)*
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Metropolitan San Antonio Intrastate Air Quality Control Region

	Point and Area Sources Combined					
Year	**NO_x (tpy)**	**VOC (tpy)**	**CO (tpy)**	**SO_2 (tpy)**	**PM_{10} (tpy)**	**$PM_{2.5}$ (tpy)**
2008	127,839	425,477	555,851	40,901	183,999	32,316

Source: USEPA National Emissions Inventory (NEI) (http://www.epa.gov/ttn/chief/net/2008inventory.html). Site visited on 27 June 2012.

Air Emissions from 2014 Infastructure Project - I9

	Point and Area Sources Combined					
	NO_x (tpy)	**VOC (tpy)**	**CO (tpy)**	**SO_2 (tpy)**	**PM_{10} (tpy)**	**$PM_{2.5}$ (tpy)**
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Emissions	0.103	0.084	0.752	0.003	0.901	0.095
% of Regional	**0.0001%**	**0.0000%**	**0.0001%**	**0.0000%**	**0.0005%**	**0.0003%**

Air Emissions for 2015 Infastructure Project - I9

	NO_x (ton)	VOC (ton)	CO (ton)	SO_2 (ton)	PM_{10} (ton)	$PM_{2.5}$ (ton)	CO_2 (metric tons/year)
Combustion	0.021	0.001	0.008	0.002	0.001	0.001	2.241
Fugitive Dust	-	-	-	-	0.892	0.089	-
Haul Truck On-Road	-	-	-	-	-	-	-
Commuter	0.083	0.082	0.744	0.001	0.008	0.005	89.459
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Since future year budgets were not readily available, actual 2008 air emissions inventories for the counties were used as an approximation of the regional inventory. Because 2015 Infastructure Project - I9 are several orders of magnitude below significance, the conclusion would be the same, regardless of whether future year budget data set were used.

Metropolitan San Antonio Intrastate Air Quality Control Region

	Point and Area Sources Combined					
Year	**NO_x (tpy)**	**VOC (tpy)**	**CO (tpy)**	**SO_2 (tpy)**	**PM_{10} (tpy)**	**$PM_{2.5}$ (tpy)**
2008	127,839	425,477	555,851	40,901	183,999	32,316

Source: USEPA National Emissions Inventory (NEI) (http://www.epa.gov/ttn/chief/net/2008inventory.html). Site visited on 27 June 2012.

Air Emissions from 2015 Infastructure Project - I9

	Point and Area Sources Combined					
	NO_x (tpy)	**VOC (tpy)**	**CO (tpy)**	**SO_2 (tpy)**	**PM_{10} (tpy)**	**$PM_{2.5}$ (tpy)**
Regional Emissions	127,839	425,477	555,851	40,901	183,999	32,316
Emissions	0.103	0.084	0.752	0.003	0.901	0.095
% of Regional	**0.0001%**	**0.0000%**	**0.0001%**	**0.0000%**	**0.0005%**	**0.0003%**

Air Emissions for 2016 Infastructure Project - I9

	NO_x (ton)	VOC (ton)	CO (ton)	SO_2 (ton)	PM_{10} (ton)	$PM_{2.5}$ (ton)	CO_2 (metric tons/year)
Combustion	0.021	0.001	0.008	0.002	0.001	0.001	2.241
Fugitive Dust	-	-	-	-	0.892	0.089	-
Haul Truck On-Road	-	-	-	-	-	-	-
Commuter	0.083	0.082	0.744	0.001	0.008	0.005	89.459
TOTAL	***0.10***	***0.08***	***0.75***	***0.00***	***0.90***	***0.10***	***91.70***

Note: Total $PM_{10}/_{2.5}$ fugitive dust emissions are assuming USEPA 50% control efficiencies.

CO_2 emissions converted to metric tons =	***91.700***	***metric tons***	
State of Texas' CO2 emissions =	***596,370,927***	***metric tons***	*(U.S. DOE/EIA 2011)*
Percent of Texas' CO2 emissions =	***0.00002%***		
United States' CO_2 emissions =	***5,425,600,000***	***metric tons***	*(U.S. DOE/EIA 2011)*
Percent of USA's CO_2 emissions =	***0.000002%***		

Source: U.S. Department of Energy, Energy Information Administration (U.S. DOE/EIA). 2011. *Table 1. State Emissions by Year (Million Metric Tons of Carbon Dioxide).* Available online <http://www.eia.gov/environment/emissions/state/state_emissions.cfm>. 2009 data values are the most recent. Data accessed 28 June 2012.

Since future year budgets were not readily available, actual 2008 air emissions inventories for the counties were used as an approximation of the regional inventory. Because 2016 Infastructure Project - I9 are several orders of magnitude below significance, the conclusion would be the same, regardless of whether future year budget data set were used.

Metropolitan San Antonio Intrastate Air Quality Control Region

	Point and Area Sources Combined					
Year	**NO_x (tpy)**	**VOC (tpy)**	**CO (tpy)**	**SO_2 (tpy)**	**PM_{10} (tpy)**	**$PM_{2.5}$ (tpy)**
2008	127,839	425,477	555,851	40,901	183,999	32,316

Source: USEPA National Emissions Inventory (NEI) (http://www.epa.gov/ttn/chief/net/2008inventory.html). Site visited on 27 June 2012.

Air Emissions from 2016 Infastructure Project - I9

	Point and Area Sources Combined					
	NO_x (tpy)	**VOC (tpy)**	**CO (tpy)**	**SO_2 (tpy)**	**PM_{10} (tpy)**	**$PM_{2.5}$ (tpy)**
Regional Emissions	127,839	425,477	555,851	40,901	183,999	32,316
Emissions	0.103	0.084	0.752	0.003	0.901	0.095
% of Regional	**0.0001%**	**0.0000%**	**0.0001%**	**0.0000%**	**0.0005%**	**0.0003%**

Air Emissions for 2017 Infastructure Project - I9

	NO_x (ton)	VOC (ton)	CO (ton)	SO_2 (ton)	PM_{10} (ton)	$PM_{2.5}$ (ton)	CO_2 (metric tons/year)
Combustion	0.021	0.001	0.008	0.002	0.001	0.001	2.241
Fugitive Dust	-	-	-	-	0.892	0.089	-
Haul Truck On-Road	-	-	-	-	-	-	-
Commuter	0.083	0.082	0.744	0.001	0.008	0.005	89.459
TOTAL	***0.10***	***0.08***	***0.75***	***0.00***	***0.90***	***0.10***	***91.70***

Note: Total $PM_{10}/_{2.5}$ fugitive dust emissions are assuming USEPA 50% control efficiencies.

CO_2 emissions converted to metric tons =	***91.700***	***metric tons***	
State of Texas' CO2 emissions =	***596,370,927***	***metric tons***	*(U.S. DOE/EIA 2011)*
Percent of Texas' CO2 emissions =	***0.00002%***		
United States' CO_2 emissions =	***5,425,600,000***	***metric tons***	*(U.S. DOE/EIA 2011)*
Percent of USA's CO_2 emissions =	***0.000002%***		

Source: U.S. Department of Energy, Energy Information Administration (U.S. DOE/EIA). 2011. *Table 1. State Emissions by Year (Million Metric Tons of Carbon Dioxide).* Available online <http://www.eia.gov/environment/emissions/state/state_emissions.cfm>. 2009 data values are the most recent. Data accessed 28 June 2012.

Since future year budgets were not readily available, actual 2008 air emissions inventories for the counties were used as an approximation of the regional inventory. Because 2017 Infastructure Project - I9 are several orders of magnitude below significance, the conclusion would be the same, regardless of whether future year budget data set were used.

Metropolitan San Antonio Intrastate Air Quality Control Region

	Point and Area Sources Combined					
Year	**NO_x (tpy)**	**VOC (tpy)**	**CO (tpy)**	**SO_2 (tpy)**	**PM_{10} (tpy)**	**$PM_{2.5}$ (tpy)**
2008	127,839	425,477	555,851	40,901	183,999	32,316

Source: USEPA National Emissions Inventory (NEI) (http://www.epa.gov/ttn/chief/net/2008inventory.html). Site visited on 27 June 2012.

Air Emissions from 2017 Infastructure Project - I9

	Point and Area Sources Combined					
	NO_x (tpy)	**VOC (tpy)**	**CO (tpy)**	**SO_2 (tpy)**	**PM_{10} (tpy)**	**$PM_{2.5}$ (tpy)**
Regional Emissions	127,839	425,477	555,851	40,901	183,999	32,316
Emissions	0.103	0.084	0.752	0.003	0.901	0.095
% of Regional	**0.0001%**	**0.0000%**	**0.0001%**	**0.0000%**	**0.0005%**	**0.0003%**

Air Emissions for 2018 Infastructure Project - I9

	NO_x (ton)	VOC (ton)	CO (ton)	SO_2 (ton)	PM_{10} (ton)	$PM_{2.5}$ (ton)	CO_2 (metric tons/year)
Combustion	0.021	0.001	0.008	0.002	0.001	0.001	2.241
Fugitive Dust	-	-	-	-	0.892	0.089	-
Haul Truck On-Road	-	-	-	-	-	-	-
Commuter	0.083	0.082	0.744	0.001	0.008	0.005	89.459
TOTAL	***0.10***	***0.08***	***0.75***	***0.00***	***0.90***	***0.10***	***91.70***

Note: Total $PM_{10}/_{2.5}$ fugitive dust emissions are assuming USEPA 50% control efficiencies.

CO_2 emissions converted to metric tons =	***91.700***	***metric tons***	
State of Texas' CO2 emissions =	***596,370,927***	***metric tons***	*(U.S. DOE/EIA 2011)*
Percent of Texas' CO2 emissions =	***0.00002%***		
United States' CO_2 emissions =	***5,425,600,000***	***metric tons***	*(U.S. DOE/EIA 2011)*
Percent of USA's CO_2 emissions =	***0.000002%***		

Source: U.S. Department of Energy, Energy Information Administration (U.S. DOE/EIA). 2011. *Table 1. State Emissions by Year (Million Metric Tons of Carbon Dioxide).* Available online <http://www.eia.gov/environment/emissions/state/state_emissions.cfm>. 2009 data values are the most recent. Data accessed 28 June 2012.

Since future year budgets were not readily available, actual 2008 air emissions inventories for the counties were used as an approximation of the regional inventory. Because 2018 Infastructure Project - I9 are several orders of magnitude below significance, the conclusion would be the same, regardless of whether future year budget data set were used.

Metropolitan San Antonio Intrastate Air Quality Control Region

	Point and Area Sources Combined					
Year	**NO_x (tpy)**	**VOC (tpy)**	**CO (tpy)**	**SO_2 (tpy)**	**PM_{10} (tpy)**	**$PM_{2.5}$ (tpy)**
2008	127,839	425,477	555,851	40,901	183,999	32,316

Source: USEPA National Emissions Inventory (NEI) (http://www.epa.gov/ttn/chief/net/2008inventory.html). Site visited on 27 June 2012.

Air Emissions from 2018 Infastructure Project - I9

	Point and Area Sources Combined					
	NO_x (tpy)	**VOC (tpy)**	**CO (tpy)**	**SO_2 (tpy)**	**PM_{10} (tpy)**	**$PM_{2.5}$ (tpy)**
Regional Emissions	127,839	425,477	555,851	40,901	183,999	32,316
Emissions	0.103	0.084	0.752	0.003	0.901	0.095
% of Regional	**0.0001%**	**0.0000%**	**0.0001%**	**0.0000%**	**0.0005%**	**0.0003%**

Air Emissions for 2013 Natural Infrastructure Project - NI1

	NO_x (ton)	VOC (ton)	CO (ton)	SO_2 (ton)	PM_{10} (ton)	$PM_{2.5}$ (ton)	CO_2 (metric tons/year)
Combustion	4.764	0.378	2.100	0.377	0.342	0.331	489.938
Fugitive Dust	-	-	-	-	0.132	0.013	-
Haul Truck On-Road	0.022	0.016	0.064	0.002	0.026	0.007	5.035
Commuter	0.083	0.082	0.744	0.001	0.008	0.005	89.459
TOTAL	***4.87***	***0.48***	***2.91***	***0.38***	***0.51***	***0.36***	***584.43***

Note: Total $PM_{10}/_{2.5}$ fugitive dust emissions are assuming USEPA 50% control efficiencies.

CO_2 emissions converted to metric tons =	***584.432***	***metric tons***	
State of Texas' CO2 emissions =	***596,370,927***	***metric tons***	*(U.S. DOE/EIA 2011)*
Percent of Texas' CO2 emissions =	***0.00010%***		
United States' CO_2 emissions =	***5,425,600,000***	***metric tons***	*(U.S. DOE/EIA 2011)*
Percent of USA's CO_2 emissions =	***0.000011%***		

Source: U.S. Department of Energy, Energy Information Administration (U.S. DOE/EIA). 2011. *Table 1. State Emissions by Year (Million Metric Tons of Carbon Dioxide).* Available online <http://www.eia.gov/environment/emissions/state/state_emissions.cfm>. 2009 data values are the most recent. Data accessed 28 June 2012.

Since future year budgets were not readily available, actual 2008 air emissions inventories for the counties were used as an approximation of the regional inventory.
Because 2013 Natural Infrastructure Project - NI1 are several orders of magnitude below significance, the conclusion would be the same, regardless of whether future year budget data set were used.

Metropolitan San Antonio Intrastate Air Quality Control Region

	Point and Area Sources Combined					
Year	**NO_x (tpy)**	**VOC (tpy)**	**CO (tpy)**	**SO_2 (tpy)**	**PM_{10} (tpy)**	**$PM_{2.5}$ (tpy)**
2008	127,839	425,477	555,851	40,901	183,999	32,316

Source: USEPA National Emissions Inventory (NEI) (http://www.epa.gov/ttn/chief/net/2008inventory.html). Site visited on 27 June 2012.

Air Emissions from 2013 Natural Infrastructure Project - NI1

	Point and Area Sources Combined					
	NO_x (tpy)	**VOC (tpy)**	**CO (tpy)**	**SO_2 (tpy)**	**PM_{10} (tpy)**	**$PM_{2.5}$ (tpy)**
Regional Emissions	127,839	425,477	555,851	40,901	183,999	32,316
Emissions	4.869	0.476	2.908	0.380	0.508	0.356
% of Regional	**0.0038%**	**0.0001%**	**0.0005%**	**0.0009%**	**0.0003%**	**0.0011%**

Air Emissions for 2013 Natural Infrastructure Project - NI2

	NO_x (ton)	VOC (ton)	CO (ton)	SO_2 (ton)	PM_{10} (ton)	$PM_{2.5}$ (ton)	CO_2 (metric tons/year)
Combustion	4.780	0.379	2.106	0.378	0.343	0.332	491.617
Fugitive Dust	-	-	-	-	0.426	0.043	-
Haul Truck On-Road	0.078	0.056	0.229	0.006	0.093	0.024	17.924
Commuter	0.083	0.082	0.744	0.001	0.008	0.005	89.459
TOTAL	***4.94***	***0.52***	***3.08***	***0.39***	***0.87***	***0.40***	***599.00***

Note: Total $PM_{10}/_{2.5}$ fugitive dust emissions are assuming USEPA 50% control efficiencies.

CO_2 emissions converted to metric tons =	***599.000***	***metric tons***	
State of Texas' CO2 emissions =	***596,370,927***	***metric tons***	*(U.S. DOE/EIA 2011)*
Percent of Texas' CO2 emissions =	***0.00010%***		
United States' CO_2 emissions =	***5,425,600,000***	***metric tons***	*(U.S. DOE/EIA 2011)*
Percent of USA's CO_2 emissions =	***0.000011%***		

Source: U.S. Department of Energy, Energy Information Administration (U.S. DOE/EIA). 2011. *Table 1. State Emissions by Year (Million Metric Tons of Carbon Dioxide).* Available online <http://www.eia.gov/environment/emissions/state/state_emissions.cfm>. 2009 data values are the most recent. Data accessed 28 June 2012.

Since future year budgets were not readily available, actual 2008 air emissions inventories for the counties were used as an approximation of the regional inventory.
Because 2013 Natural Infrastructure Project - NI2 are several orders of magnitude below significance, the conclusion would be the same, regardless of whether future year budget data set were used.

Metropolitan San Antonio Intrastate Air Quality Control Region

	Point and Area Sources Combined					
Year	NO_x (tpy)	VOC (tpy)	CO (tpy)	SO_2 (tpy)	PM_{10} (tpy)	$PM_{2.5}$ (tpy)
2008	127,839	425,477	555,851	40,901	183,999	32,316

Source: USEPA National Emissions Inventory (NEI) (http://www.epa.gov/ttn/chief/net/2008inventory.html). Site visited on 27 June 2012.

Air Emissions from 2013 Natural Infrastructure Project - NI2

	Point and Area Sources Combined					
	NO_x (tpy)	VOC (tpy)	CO (tpy)	SO_2 (tpy)	PM_{10} (tpy)	$PM_{2.5}$ (tpy)
Regional Emissions	127,839	425,477	555,851	40,901	183,999	32,316
Emissions	4.941	0.517	3.079	0.385	0.870	0.404
% of Regional	**0.0039%**	**0.0001%**	**0.0006%**	**0.0009%**	**0.0005%**	**0.0013%**

Air Emissions for 2013 Other Demolition Projects

Construction Emissions	NO_x (ton)	VOC (ton)	CO (ton)	SO_2 (ton)	PM_{10} (ton)	$PM_{2.5}$ (ton)	CO_2 (metric tons/year)
Combustion	2.761	0.164	1.092	0.224	0.167	0.162	291.709
Fugitive Dust	-	-	-	-	3.893	0.389	-
Haul Truck On-Road	1.263	0.913	3.712	0.100	1.502	0.391	290.142
Commuter	0.083	0.082	0.744	0.001	0.008	0.005	89.459
TOTAL	***4.11***	***1.16***	***5.55***	***0.32***	***5.57***	***0.95***	***671.31***

Annual Operational Emissions	NO_x (ton)	VOC (ton)	CO (ton)	SO_2 (ton)	PM_{10} (ton)	$PM_{2.5}$ (ton)	CO_2 (metric tons/year)	Total HAP (ton)
Stationary External Combustion	(0.170)	(0.010)	(0.072)	(0.001)	(0.014)	(0.014)	(196.568)	(0.003)

Notes: 1) Total PM10/2.5 fugitive dust emissions are assuming USEPA 50% control efficiencies.

CO_2 emissions converted to metric tons =	***671.310***	***metric tons***	
State of Texas' CO2 emissions =	***596,370,927***	***metric tons***	*(U.S. DOE/EIA 2011)*
Percent of Texas' CO2 emissions =	***0.00011%***		
United States' CO_2 emissions =	***5,425,600,000***	***metric tons***	*(U.S. DOE/EIA 2011)*
Percent of USA's CO_2 emissions =	***0.000012%***		

Source: U.S. Department of Energy, Energy Information Administration (U.S. DOE/EIA). 2011. *Table 1. State Emissions by Year (Million Metric Tons of Carbon Dioxide).* Available online <http://www.eia.gov/environment/emissions/state/state_emissions.cfm>. 2009 data values are the most recent. Data accessed 28 June 2012.

Since future year budgets were not readily available, actual 2008 air emissions inventories for the counties were used as an approximation of the regional inventory. Because 2013 Other Demolition Projects are several orders of magnitude below significance, the conclusion would be the same, regardless of whether future year budget data set were used.

Metropolitan San Antonio Intrastate Air Quality Control Region

Year	**Point and Area Sources Combined**					
	NO_x (tpy)	**VOC (tpy)**	**CO (tpy)**	**SO_2 (tpy)**	**PM_{10} (tpy)**	**$PM_{2.5}$ (tpy)**
2008	127,839	425,477	555,851	40,901	183,999	32,316

Source: USEPA National Emissions Inventory (NEI) (http://www.epa.gov/ttn/chief/net/2008inventory.html). Site visited on 27 June 2012.

Air Emissions from 2013 Other Demolition Projects

	Point and Area Sources Combined					
	NO_x (tpy)	**VOC (tpy)**	**CO (tpy)**	**SO_2 (tpy)**	**PM_{10} (tpy)**	**$PM_{2.5}$ (tpy)**
Regional Emissions	127,839	425,477	555,851	40,901	183,999	32,316
Emissions	4.107	1.160	5.547	0.325	5.571	0.947
% of Regional	**0.0032%**	**0.0003%**	**0.0010%**	**0.0008%**	**0.0030%**	**0.0029%**

Air Emissions for 2014 Other Demolition Projects

Construction Emissions	NO_x (ton)	VOC (ton)	CO (ton)	SO_2 (ton)	PM_{10} (ton)	$PM_{2.5}$ (ton)	CO_2 (metric tons/year)
Combustion	0.243	0.014	0.096	0.020	0.015	0.014	25.757
Fugitive Dust	-	-	-	-	0.299	0.030	-
Haul Truck On-Road	0.097	0.070	0.285	0.008	0.115	0.030	22.259
Commuter	0.083	0.082	0.744	0.001	0.008	0.005	89.459
TOTAL	***0.42***	***0.17***	***1.12***	***0.03***	***0.44***	***0.08***	***137.47***

Annual Operational Emissions	NO_x (ton)	VOC (ton)	CO (ton)	SO_2 (ton)	PM_{10} (ton)	$PM_{2.5}$ (ton)	CO_2 (metric tons/year)	Total HAP (ton)
Stationary External Combustion	(0.013)	(0.001)	(0.006)	(0.0001)	(0.001)	(0.001)	(15.080)	(0.0003)

Notes: 1) Total PM10/2.5 fugitive dust emissions are assuming USEPA 50% control efficiencies.

CO_2 emissions converted to metric tons =	***137.475***	***metric tons***	
State of Texas' CO2 emissions =	***596,370,927***	***metric tons***	*(U.S. DOE/EIA 2011)*
Percent of Texas' CO2 emissions =	***0.00002%***		
United States' CO_2 emissions =	***5,425,600,000***	***metric tons***	*(U.S. DOE/EIA 2011)*
Percent of USA's CO_2 emissions =	***0.000003%***		

Source: U.S. Department of Energy, Energy Information Administration (U.S. DOE/EIA). 2011. *Table 1. State Emissions by Year (Million Metric Tons of Carbon Dioxide).* Available online <http://www.eia.gov/environment/emissions/state/state_emissions.cfm>. 2009 data values are the most recent. Data accessed 28 June 2012.

Since future year budgets were not readily available, actual 2008 air emissions inventories for the counties were used as an approximation of the regional inventory. Because 2014 Other Demolition Projects are several orders of magnitude below significance, the conclusion would be the same, regardless of whether future year budget data set were used.

Metropolitan San Antonio Intrastate Air Quality Control Region

Year	Point and Area Sources Combined NO_x (tpy)	VOC (tpy)	CO (tpy)	SO_2 (tpy)	PM_{10} (tpy)	$PM_{2.5}$ (tpy)
2008	127,839	425,477	555,851	40,901	183,999	32,316

Source: USEPA National Emissions Inventory (NEI) (http://www.epa.gov/ttn/chief/net/2008inventory.html). Site visited on 27 June 2012.

Air Emissions from 2014 Other Demolition Projects

	Point and Area Sources Combined NO_x (tpy)	VOC (tpy)	CO (tpy)	SO_2 (tpy)	PM_{10} (tpy)	$PM_{2.5}$ (tpy)
Regional Emissions	127,839	425,477	555,851	40,901	183,999	32,316
Emissions	0.423	0.167	1.124	0.028	0.437	0.079
% of Regional	**0.0003%**	**0.0000%**	**0.0002%**	**0.0001%**	**0.0002%**	**0.0002%**

Air Emissions for 2015 Other Demolition Projects

Construction Emissions	NO_x (ton)	VOC (ton)	CO (ton)	SO_2 (ton)	PM_{10} (ton)	$PM_{2.5}$ (ton)	CO_2 (metric tons/year)
Combustion	0.180	0.011	0.071	0.015	0.011	0.011	19.038
Fugitive Dust	-	-	-	-	0.215	0.021	-
Haul Truck On-Road	0.070	0.050	0.205	0.005	0.083	0.022	16.012
Commuter	0.083	0.082	0.744	0.001	0.008	0.005	89.459
TOTAL	***0.33***	***0.14***	***1.02***	***0.02***	***0.32***	***0.06***	***124.51***

Annual Operational Emissions	NO_x (ton)	VOC (ton)	CO (ton)	SO_2 (ton)	PM_{10} (ton)	$PM_{2.5}$ (ton)	CO_2 (metric tons/year)	Total HAP (ton)
Stationary External Combustion	(0.009)	(0.0005)	(0.004)	(0.0001)	(0.001)	(0.001)	(10.848)	(0.0002)

Notes: 1) Total PM10/2.5 fugitive dust emissions are assuming USEPA 50% control efficiencies.

CO_2 emissions converted to metric tons =	***124.509***	***metric tons***	
State of Texas' CO2 emissions =	***596,370,927***	***metric tons***	*(U.S. DOE/EIA 2011)*
Percent of Texas' CO2 emissions =	***0.00002%***		
United States' CO_2 emissions =	***5,425,600,000***	***metric tons***	*(U.S. DOE/EIA 2011)*
Percent of USA's CO_2 emissions =	***0.000002%***		

Source: U.S. Department of Energy, Energy Information Administration (U.S. DOE/EIA). 2011. *Table 1. State Emissions by Year (Million Metric Tons of Carbon Dioxide).* Available online <http://www.eia.gov/environment/emissions/state/state_emissions.cfm>. 2009 data values are the most recent. Data accessed 28 June 2012.

Since future year budgets were not readily available, actual 2008 air emissions inventories for the counties were used as an approximation of the regional inventory. Because 2015 Other Demolition Projects are several orders of magnitude below significance, the conclusion would be the same, regardless of whether future year budget data set were used.

Metropolitan San Antonio Intrastate Air Quality Control Region

	Point and Area Sources Combined					
Year	NO_x (tpy)	VOC (tpy)	CO (tpy)	SO_2 (tpy)	PM_{10} (tpy)	$PM_{2.5}$ (tpy)
2008	127,839	425,477	555,851	40,901	183,999	32,316

Source: USEPA National Emissions Inventory (NEI) (http://www.epa.gov/ttn/chief/net/2008inventory.html). Site visited on 27 June 2012.

Air Emissions from 2015 Other Demolition Projects

	Point and Area Sources Combined					
	NO_x (tpy)	VOC (tpy)	CO (tpy)	SO_2 (tpy)	PM_{10} (tpy)	$PM_{2.5}$ (tpy)
Regional Emissions	127,839	425,477	555,851	40,901	183,999	32,316
Emissions	0.332	0.143	1.019	0.021	0.316	0.059
% of Regional	**0.0003%**	**0.0000%**	**0.0002%**	**0.0001%**	**0.0002%**	**0.0002%**

Air Emissions for 2016 Other Demolition Projects

Construction Emissions	NO_x (ton)	VOC (ton)	CO (ton)	SO_2 (ton)	PM_{10} (ton)	$PM_{2.5}$ (ton)	CO_2 (metric tons/year)
Combustion	4.632	0.275	1.831	0.377	0.280	0.272	489.356
Fugitive Dust	-	-	-	-	6.512	0.651	-
Haul Truck On-Road	2.113	1.528	6.209	0.166	2.513	0.653	485.320
Commuter	0.083	0.082	0.744	0.001	0.008	0.005	89.459
TOTAL	***6.83***	***1.88***	***8.78***	***0.54***	***9.31***	***1.58***	***1,064.13***

Operational Emissions	NO_x (ton)	VOC (ton)	CO (ton)	SO_2 (ton)	PM_{10} (ton)	$PM_{2.5}$ (ton)	CO_2 (metric tons/year)	Total HAP (ton)
Stationary External Combustion	(0.284)	(0.017)	(0.121)	(0.002)	(0.023)	(0.023)	(328.799)	(0.006)

Notes: 1) Total PM10/2.5 fugitive dust emissions are assuming USEPA 50% control efficiencies.

CO_2 emissions converted to metric tons =	***1,064.135***	***metric tons***	
State of Texas' CO2 emissions =	***596,370,927***	***metric tons***	*(U.S. DOE/EIA 2011)*
Percent of Texas' CO2 emissions =	***0.00018%***		
United States' CO_2 emissions =	***5,425,600,000***	***metric tons***	*(U.S. DOE/EIA 2011)*
Percent of USA's CO_2 emissions =	***0.000020%***		

Source: U.S. Department of Energy, Energy Information Administration (U.S. DOE/EIA). 2011. *Table 1. State Emissions by Year (Million Metric Tons of Carbon Dioxide).* Available online <http://www.eia.gov/environment/emissions/state/state_emissions.cfm>. 2009 data values are the most recent. Data accessed 28 June 2012.

Since future year budgets were not readily available, actual 2008 air emissions inventories for the counties were used as an approximation of the regional inventory. Because 2016 Other Demolition Projects are several orders of magnitude below significance, the conclusion would be the same, regardless of whether future year budget data set were used.

Metropolitan San Antonio Intrastate Air Quality Control Region

	Point and Area Sources Combined					
Year	**NO_x (tpy)**	**VOC (tpy)**	**CO (tpy)**	**SO_2 (tpy)**	**PM_{10} (tpy)**	**$PM_{2.5}$ (tpy)**
2008	127,839	425,477	555,851	40,901	183,999	32,316

Source: USEPA National Emissions Inventory (NEI) (http://www.epa.gov/ttn/chief/net/2008inventory.html). Site visited on 27 June 2012.

Air Emissions from 2016 Other Demolition Projects

	Point and Area Sources Combined					
	NO_x (tpy)	**VOC (tpy)**	**CO (tpy)**	**SO_2 (tpy)**	**PM_{10} (tpy)**	**$PM_{2.5}$ (tpy)**
Regional Emissions	127,839	425,477	555,851	40,901	183,999	32,316
Emissions	6.827	1.885	8.784	0.544	9.313	1.581
% of Regional	**0.0053%**	**0.0004%**	**0.0016%**	**0.0013%**	**0.0051%**	**0.0049%**

Air Emissions for 2017 Other Demolition Projects

Construction Emissions	NO_x (ton)	VOC (ton)	CO (ton)	SO_2 (ton)	PM_{10} (ton)	$PM_{2.5}$ (ton)	CO_2 (metric tons/year)
Combustion	0.323	0.019	0.127	0.026	0.020	0.019	34.155
Fugitive Dust	-	-	-	-	0.432	0.043	-
Haul Truck On-Road	0.140	0.101	0.412	0.011	0.167	0.043	32.207
Commuter	0.083	0.082	0.744	0.001	0.008	0.005	89.459
TOTAL	***0.55***	***0.20***	***1.28***	***0.04***	***0.63***	***0.11***	***155.82***

Operational Emissions	NO_x (ton)	VOC (ton)	CO (ton)	SO_2 (ton)	PM_{10} (ton)	$PM_{2.5}$ (ton)	CO_2 (metric tons/year)	Total HAP (ton)
Stationary External Combustion	(0.019)	(0.001)	(0.008)	(0.0001)	(0.002)	(0.002)	(21.820)	(0.0004)

Note: Total PM10/2.5 fugitive dust emissions are assuming USEPA 50% control efficiencies.

CO_2 emissions converted to metric tons =	***155.822***	***metric tons***	
State of Texas' CO2 emissions =	***596,370,927***	***metric tons***	*(U.S. DOE/EIA 2011)*
Percent of Texas' CO2 emissions =	***0.00003%***		
United States' CO_2 emissions =	***5,425,600,000***	***metric tons***	*(U.S. DOE/EIA 2011)*
Percent of USA's CO_2 emissions =	***0.000003%***		

Source: U.S. Department of Energy, Energy Information Administration (U.S. DOE/EIA). 2011. *Table 1. State Emissions by Year (Million Metric Tons of Carbon Dioxide).* Available online <http://www.eia.gov/environment/emissions/state/state_emissions.cfm>. 2009 data values are the most recent. Data accessed 28 June 2012.

Since future year budgets were not readily available, actual 2008 air emissions inventories for the counties were used as an approximation of the regional inventory. Because 2017 Other Demolition Projects are several orders of magnitude below significance, the conclusion would be the same, regardless of whether future year budget data set were used.

Metropolitan San Antonio Intrastate Air Quality Control Region

	Point and Area Sources Combined					
Year	**NO_x (tpy)**	**VOC (tpy)**	**CO (tpy)**	**SO_2 (tpy)**	**PM_{10} (tpy)**	**$PM_{2.5}$ (tpy)**
2008	127,839	425,477	555,851	40,901	183,999	32,316

Source: USEPA National Emissions Inventory (NEI) (http://www.epa.gov/ttn/chief/net/2008inventory.html). Site visited on 27 June 2012.

Air Emissions from 2017 Other Demolition Projects

	Point and Area Sources Combined					
	NO_x (tpy)	**VOC (tpy)**	**CO (tpy)**	**SO_2 (tpy)**	**PM_{10} (tpy)**	**$PM_{2.5}$ (tpy)**
Regional Emissions	127,839	425,477	555,851	40,901	183,999	32,316
Emissions	0.546	0.203	1.283	0.038	0.626	0.110
% of Regional	**0.0004%**	**0.0000%**	**0.0002%**	**0.0001%**	**0.0003%**	**0.0003%**

Air Emissions for 2018 Other Demolition Projects

Construction Emissions	NO_x (ton)	VOC (ton)	CO (ton)	SO_2 (ton)	PM_{10} (ton)	$PM_{2.5}$ (ton)	CO_2 (metric tons/year)
Combustion	3.418	0.203	1.351	0.278	0.207	0.201	361.138
Fugitive Dust	-	-	-	-	4.789	0.479	-
Haul Truck On-Road	1.554	1.124	4.566	0.122	1.848	0.481	356.880
Commuter	0.083	0.082	0.744	0.001	0.008	0.005	89.459
TOTAL	***5.05***	***1.41***	***6.66***	***0.40***	***6.85***	***1.16***	***807.48***

Operational Emissions	NO_x (ton)	VOC (ton)	CO (ton)	SO_2 (ton)	PM_{10} (ton)	$PM_{2.5}$ (ton)	CO_2 (metric tons/year)	Total HAP (ton)
Stationary External Combustion	(0.209)	(0.012)	(0.089)	(0.001)	(0.017)	(0.017)	(241.782)	(0.004)

Note: Total PM10/2.5 fugitive dust emissions are assuming USEPA 50% control efficiencies.

CO_2 emissions converted to metric tons =	***807.477***	***metric tons***	
State of Texas' CO2 emissions =	***596,370,927***	***metric tons***	*(U.S. DOE/EIA 2011)*
Percent of Texas' CO2 emissions =	***0.00014%***		
United States' CO_2 emissions =	***5,425,600,000***	***metric tons***	*(U.S. DOE/EIA 2011)*
Percent of USA's CO_2 emissions =	***0.000015%***		

Source: U.S. Department of Energy, Energy Information Administration (U.S. DOE/EIA). 2011. *Table 1. State Emissions by Year (Million Metric Tons of Carbon Dioxide).* Available online <http://www.eia.gov/environment/emissions/state/state_emissions.cfm>. 2009 data values are the most recent. Data accessed 28 June 2012.

Since future year budgets were not readily available, actual 2008 air emissions inventories for the counties were used as an approximation of the regional inventory. Because 2018 Other Demolition Projects are several orders of magnitude below significance, the conclusion would be the same, regardless of whether future year budget data set were used.

Metropolitan San Antonio Intrastate Air Quality Control Region

	Point and Area Sources Combined					
Year	**NO_x (tpy)**	**VOC (tpy)**	**CO (tpy)**	**SO_2 (tpy)**	**PM_{10} (tpy)**	**$PM_{2.5}$ (tpy)**
2008	127,839	425,477	555,851	40,901	183,999	32,316

Source: USEPA National Emissions Inventory (NEI) (http://www.epa.gov/ttn/chief/net/2008inventory.html). Site visited on 27 June 2012.

Air Emissions from 2018 Other Demolition Projects

	Point and Area Sources Combined					
	NO_x (tpy)	**VOC (tpy)**	**CO (tpy)**	**SO_2 (tpy)**	**PM_{10} (tpy)**	**$PM_{2.5}$ (tpy)**
Regional Emissions	127,839	425,477	555,851	40,901	183,999	32,316
Emissions	5.055	1.409	6.661	0.401	6.851	1.165
% of Regional	**0.0040%**	**0.0003%**	**0.0012%**	**0.0010%**	**0.0037%**	**0.0036%**

Air Emissions for 2013 Other Construction Projects

Construction Emissions	NO_x (ton)	VOC (ton)	CO (ton)	SO_2 (ton)	PM_{10} (ton)	$PM_{2.5}$ (ton)	CO_2 (metric tons/year)
Combustion	6.002	0.772	2.605	0.483	0.418	0.406	628.037
Fugitive Dust	-	-	-	-	30.267	3.027	-
Haul Truck On-Road	2.211	1.598	6.496	0.174	2.629	0.684	507.711
Commuter	0.083	0.082	0.744	0.001	0.008	0.005	89.459
TOTAL	***8.29***	***2.45***	***9.84***	***0.66***	***33.32***	***4.12***	***1,225.21***

Annual Operational Emissions	NO_x (ton)	VOC (ton)	CO (ton)	SO_2 (ton)	PM_{10} (ton)	$PM_{2.5}$ (ton)	CO_2 (metric tons/year)	Total HAP (ton)
Stationary External Combustion	0.278	0.015	0.233	0.002	0.021	0.021	302.486	0.005

Notes: 1) Total PM10/2.5 fugitive dust emissions are assuming USEPA 50% control efficiencies.

CO_2 emissions converted to metric tons =	***1,225.206***	***metric tons***	
State of Texas' CO2 emissions =	***596,370,927***	***metric tons***	*(U.S. DOE/EIA 2011)*
Percent of Texas' CO2 emissions =	***0.00021%***		
United States' CO_2 emissions =	***5,425,600,000***	***metric tons***	*(U.S. DOE/EIA 2011)*
Percent of USA's CO_2 emissions =	***0.000023%***		

Source: U.S. Department of Energy, Energy Information Administration (U.S. DOE/EIA). 2011. *Table 1. State Emissions by Year (Million Metric Tons of Carbon Dioxide).* Available online <http://www.eia.gov/environment/emissions/state/state_emissions.cfm>. 2009 data values are the most recent. Data accessed 28 June 2012.

Since future year budgets were not readily available, actual 2008 air emissions inventories for the counties were used as an approximation of the regional inventory. Because 2013 Other Construction Projects are several orders of magnitude below significance, the conclusion would be the same, regardless of whether future year budget data set were used.

Metropolitan San Antonio Intrastate Air Quality Control Region

	Point and Area Sources Combined					
Year	**NO_x (tpy)**	**VOC (tpy)**	**CO (tpy)**	**SO_2 (tpy)**	**PM_{10} (tpy)**	**$PM_{2.5}$ (tpy)**
2008	127,839	425,477	555,851	40,901	183,999	32,316

Source: USEPA National Emissions Inventory (NEI) (http://www.epa.gov/ttn/chief/net/2008inventory.html). Site visited on 27 June 2012.

s from 2013 Other Construction Projects

	Point and Area Sources Combined					
Regional Emissions	**NO_x (tpy)**	**VOC (tpy)**	**CO (tpy)**	**SO_2 (tpy)**	**PM_{10} (tpy)**	**$PM_{2.5}$ (tpy)**
Emissions	127,839	425,477	555,851	40,901	183,999	32,316
% of Regional	8.295	2.453	9.845	0.658	33.322	4.121
	0.0065%	**0.0006%**	**0.0018%**	**0.0016%**	**0.0181%**	**0.0128%**

Air Emissions for 2014 Other Construction Projects

Construction Emissions	NO_x (ton)	VOC (ton)	CO (ton)	SO_2 (ton)	PM_{10} (ton)	$PM_{2.5}$ (ton)	CO_2 (metric tons/year)
Combustion	4.805	0.634	2.117	0.380	0.345	0.335	493.763
Fugitive Dust	-	-	-	-	2.499	0.250	-
Haul Truck On-Road	1.064	0.769	3.127	0.084	1.265	0.329	244.398
Commuter	0.083	0.082	0.744	0.001	0.008	0.005	89.459
TOTAL	***5.95***	***1.49***	***5.99***	***0.46***	***4.12***	***0.92***	***827.62***

Annual Operational Emissions	NO_x (ton)	VOC (ton)	CO (ton)	SO_2 (ton)	PM_{10} (ton)	$PM_{2.5}$ (ton)	CO_2 (metric tons/year)	Total HAP (ton)
Stationary External Combustion	0.171	0.009	0.144	0.001	0.013	0.013	186.084	0.003

Notes: 1) Total PM10/2.5 fugitive dust emissions are assuming USEPA 50% control efficiencies.

CO_2 emissions converted to metric tons =	***827.620***	***metric tons***	
State of Texas' CO2 emissions =	***596,370,927***	***metric tons***	*(U.S. DOE/EIA 2011)*
Percent of Texas' CO2 emissions =	***0.00014%***		
United States' CO_2 emissions =	***5,425,600,000***	***metric tons***	*(U.S. DOE/EIA 2011)*
Percent of USA's CO_2 emissions =	***0.000015%***		

Source: U.S. Department of Energy, Energy Information Administration (U.S. DOE/EIA). 2011. *Table 1. State Emissions by Year (Million Metric Tons of Carbon Dioxide).* Available online <http://www.eia.gov/environment/emissions/state/state_emissions.cfm>. 2009 data values are the most recent. Data accessed 28 June 2012.

Since future year budgets were not readily available, actual 2008 air emissions inventories for the counties were used as an approximation of the regional inventory.
Because 2014 Other Construction Projects are several orders of magnitude below significance, the conclusion would be the same, regardless of whether future year budget data set were used.

Metropolitan San Antonio Intrastate Air Quality Control Region

	Point and Area Sources Combined					
Year	**NO_x (tpy)**	**VOC (tpy)**	**CO (tpy)**	**SO_2 (tpy)**	**PM_{10} (tpy)**	**$PM_{2.5}$ (tpy)**
2008	127,839	425,477	555,851	40,901	183,999	32,316

Source: USEPA National Emissions Inventory (NEI) (http://www.epa.gov/ttn/chief/net/2008inventory.html). Site visited on 27 June 2012.

Air Emissions from 2014 Other Construction Projects

	Point and Area Sources Combined					
	NO_x (tpy)	**VOC (tpy)**	**CO (tpy)**	**SO_2 (tpy)**	**PM_{10} (tpy)**	**$PM_{2.5}$ (tpy)**
Regional Emissions	127,839	425,477	555,851	40,901	183,999	32,316
Emissions	5.952	1.485	5.988	0.465	4.117	0.919
% of Regional	**0.0047%**	**0.0003%**	**0.0011%**	**0.0011%**	**0.0022%**	**0.0028%**

Air Emissions for 2015 Other Construction Projects

Construction Emissions	NO_x (ton)	VOC (ton)	CO (ton)	SO_2 (ton)	PM_{10} (ton)	$PM_{2.5}$ (ton)	CO_2 (metric tons/year)
Combustion	4.826	0.728	2.125	0.382	0.346	0.336	496.005
Fugitive Dust	-	-	-	-	4.675	0.468	-
Haul Truck On-Road	1.991	1.440	5.850	0.157	2.368	0.616	457.268
Commuter	0.083	0.082	0.744	0.001	0.008	0.005	89.459
TOTAL	***6.90***	***2.25***	***8.72***	***0.54***	***7.40***	***1.42***	***1,042.73***

Annual Operational Emissions	NO_x (ton)	VOC (ton)	CO (ton)	SO_2 (ton)	PM_{10} (ton)	$PM_{2.5}$ (ton)	CO_2 (metric tons/year)	Total HAP (ton)
Stationary External Combustion	0.320	0.018	0.269	0.002	0.024	0.024	383.782	0.006

Notes: 1) Total PM10/2.5 fugitive dust emissions are assuming USEPA 50% control efficiencies.

CO_2 emissions converted to metric tons =	***1,042.731***	***metric tons***	
State of Texas' CO2 emissions =	***596,370,927***	***metric tons***	*(U.S. DOE/EIA 2011)*
Percent of Texas' CO2 emissions =	***0.00017%***		
United States' CO_2 emissions =	***5,425,600,000***	***metric tons***	*(U.S. DOE/EIA 2011)*
Percent of USA's CO_2 emissions =	***0.000019%***		

Source: U.S. Department of Energy, Energy Information Administration (U.S. DOE/EIA). 2011. *Table 1. State Emissions by Year (Million Metric Tons of Carbon Dioxide).* Available online <http://www.eia.gov/environment/emissions/state/state_emissions.cfm>. 2009 data values are the most recent. Data accessed 28 June 2012.

Since future year budgets were not readily available, actual 2008 air emissions inventories for the counties were used as an approximation of the regional inventory. Because 2015 Other Construction Projects are several orders of magnitude below significance, the conclusion would be the same, regardless of whether future year budget data set were used.

Metropolitan San Antonio Intrastate Air Quality Control Region

	Point and Area Sources Combined					
Year	NO_x (tpy)	VOC (tpy)	CO (tpy)	SO_2 (tpy)	PM_{10} (tpy)	$PM_{2.5}$ (tpy)
2008	127,839	425,477	555,851	40,901	183,999	32,316

Source: USEPA National Emissions Inventory (NEI) (http://www.epa.gov/ttn/chief/net/2008inventory.html). Site visited on 27 June 2012.

Air Emissions from 2015 Other Construction Projects

	Point and Area Sources Combined					
	NO_x (tpy)	VOC (tpy)	CO (tpy)	SO_2 (tpy)	PM_{10} (tpy)	$PM_{2.5}$ (tpy)
Regional Emissions	127,839	425,477	555,851	40,901	183,999	32,316
Emissions	6.899	2.250	8.719	0.539	7.397	1.424
% of Regional	**0.0054%**	**0.0005%**	**0.0016%**	**0.0013%**	**0.0040%**	**0.0044%**

Air Emissions for 2016 Other Construction Projects

Construction Emissions	**NO_x (ton)**	**VOC (ton)**	**CO (ton)**	**SO_2 (ton)**	**PM_{10} (ton)**	**$PM_{2.5}$ (ton)**	**CO_2 (metric tons/year)**
Combustion	4.826	0.747	2.125	0.382	0.346	0.336	496.005
Fugitive Dust	-	-	-	-	5.210	0.521	-
Haul Truck On-Road	2.219	1.604	6.520	0.175	2.639	0.686	509.625
Commuter	0.083	0.082	0.744	0.001	0.008	0.005	89.459
TOTAL	***7.13***	***2.43***	***9.39***	***0.56***	***8.20***	***1.55***	***1,095.09***

Operational Emissions	**NO_x (ton)**	**VOC (ton)**	**CO (ton)**	**SO_2 (ton)**	**PM_{10} (ton)**	**$PM_{2.5}$ (ton)**	**CO_2 (metric tons/year)**	**Total HAP (ton)**
Stationary External Combustion	0.356	0.020	0.299	0.002	0.027	0.027	388.027	0.007

Note: Total PM10/2.5 fugitive dust emissions are assuming USEPA 50% control efficiencies.

CO_2 emissions converted to metric tons =	***1,095.089***	***metric tons***	
State of Texas' CO2 emissions =	***596,370,927***	***metric tons***	*(U.S. DOE/EIA 2011)*
Percent of Texas' CO2 emissions =	***0.00018%***		
United States' CO_2 emissions =	***5,425,600,000***	***metric tons***	*(U.S. DOE/EIA 2011)*
Percent of USA's CO_2 emissions =	***0.000020%***		

Source: U.S. Department of Energy, Energy Information Administration (U.S. DOE/EIA). 2011. *Table 1. State Emissions by Year (Million Metric Tons of Carbon Dioxide).* Available online <http://www.eia.gov/environment/emissions/state/state_emissions.cfm>. 2009 data values are the most recent. Data accessed 28 June 2012.

Since future year budgets were not readily available, actual 2008 air emissions inventories for the counties were used as an approximation of the regional inventory. Because 2016 Other Construction Projects are several orders of magnitude below significance, the conclusion would be the same, regardless of whether future year budget data set were used.

Metropolitan San Antonio Intrastate Air Quality Control Region

	Point and Area Sources Combined					
Year	**NO_x (tpy)**	**VOC (tpy)**	**CO (tpy)**	**SO_2 (tpy)**	**PM_{10} (tpy)**	**$PM_{2.5}$ (tpy)**
2008	127,839	425,477	555,851	40,901	183,999	32,316

Source: USEPA National Emissions Inventory (NEI) (http://www.epa.gov/ttn/chief/net/2008inventory.html). Site visited on 27 June 2012.

Air Emissions from 2016 Other Construction Projects

	Point and Area Sources Combined					
	NO_x (tpy)	**VOC (tpy)**	**CO (tpy)**	**SO_2 (tpy)**	**PM_{10} (tpy)**	**$PM_{2.5}$ (tpy)**
Regional Emissions	127,839	425,477	555,851	40,901	183,999	32,316
Emissions	7.127	2.434	9.389	0.557	8.203	1.548
% of Regional	**0.0056%**	**0.0006%**	**0.0017%**	**0.0014%**	**0.0045%**	**0.0048%**

Air Emissions for 2017 Other Construction Projects

Construction Emissions	NO_x (ton)	VOC (ton)	CO (ton)	SO_2 (ton)	PM_{10} (ton)	$PM_{2.5}$ (ton)	CO_2 (metric tons/year)
Combustion	4.807	0.518	2.119	0.380	0.345	0.335	494.073
Fugitive Dust	-	-	-	-	1.017	0.102	-
Haul Truck On-Road	0.315	0.228	0.926	0.025	0.375	0.097	72.355
Commuter	0.083	0.082	0.744	0.001	0.008	0.005	89.459
TOTAL	***5.20***	***0.83***	***3.79***	***0.41***	***1.74***	***0.54***	***655.89***

Operational Emissions	NO_x (ton)	VOC (ton)	CO (ton)	SO_2 (ton)	PM_{10} (ton)	$PM_{2.5}$ (ton)	CO_2 (metric tons/year)	Total HAP (ton)
Stationary External Combustion	0.047	0.003	0.020	0.0003	0.004	0.004	54.163	0.001

Note: Total PM10/2.5 fugitive dust emissions are assuming USEPA 50% control efficiencies.

CO_2 emissions converted to metric tons =	***655.887***	***metric tons***	
State of Texas' CO2 emissions =	***596,370,927***	***metric tons***	*(U.S. DOE/EIA 2011)*
Percent of Texas' CO2 emissions =	***0.00011%***		
United States' CO_2 emissions =	***5,425,600,000***	***metric tons***	*(U.S. DOE/EIA 2011)*
Percent of USA's CO_2 emissions =	***0.000012%***		

Source: U.S. Department of Energy, Energy Information Administration (U.S. DOE/EIA). 2011. *Table 1. State Emissions by Year (Million Metric Tons of Carbon Dioxide).* Available online <http://www.eia.gov/environment/emissions/state/state_emissions.cfm>. 2009 data values are the most recent. Data accessed 28 June 2012.

Since future year budgets were not readily available, actual 2008 air emissions inventories for the counties were used as an approximation of the regional inventory.
Because 2017 Other Construction Projects are several orders of magnitude below significance, the conclusion would be the same, regardless of whether future year budget data set were used.

Metropolitan San Antonio Intrastate Air Quality Control Region

	Point and Area Sources Combined					
Year	NO_x (tpy)	VOC (tpy)	CO (tpy)	SO_2 (tpy)	PM_{10} (tpy)	$PM_{2.5}$ (tpy)
2008	127,839	425,477	555,851	40,901	183,999	32,316

Source: USEPA National Emissions Inventory (NEI) (http://www.epa.gov/ttn/chief/net/2008inventory.html). Site visited on 27 June 2012.

Air Emissions from 2017 Other Construction Projects

	Point and Area Sources Combined					
	NO_x (tpy)	VOC (tpy)	CO (tpy)	SO_2 (tpy)	PM_{10} (tpy)	$PM_{2.5}$ (tpy)
Regional Emissions	127,839	425,477	555,851	40,901	183,999	32,316
Emissions	5.204	0.828	3.788	0.406	1.744	0.539
% of Regional	**0.0041%**	**0.0002%**	**0.0007%**	**0.0010%**	**0.0009%**	**0.0017%**

Air Emissions for 2018 Other Construction Projects

Construction Emissions	NO_x (ton)	VOC (ton)	CO (ton)	SO_2 (ton)	PM_{10} (ton)	$PM_{2.5}$ (ton)	CO_2 (metric tons/year)
Combustion	4.805	0.665	2.117	0.380	0.345	0.335	493.763
Fugitive Dust	-	-	-	-	3.153	0.315	-
Haul Truck On-Road	1.343	0.971	3.946	0.106	1.597	0.415	308.401
Commuter	0.083	0.082	0.744	0.001	0.008	0.005	89.459
TOTAL	***6.23***	***1.72***	***6.81***	***0.49***	***5.10***	***1.07***	***891.62***

Operational Emissions	NO_x (ton)	VOC (ton)	CO (ton)	SO_2 (ton)	PM_{10} (ton)	$PM_{2.5}$ (ton)	CO_2 (metric tons/year)	Total HAP (ton)
Stationary External Combustion	0.216	0.012	0.181	0.001	0.016	0.016	234.815	0.004

Note: Total PM10/2.5 fugitive dust emissions are assuming USEPA 50% control efficiencies.

CO_2 emissions converted to metric tons =	***891.622***	***metric tons***	
State of Texas' CO2 emissions =	***596,370,927***	***metric tons***	*(U.S. DOE/EIA 2011)*
Percent of Texas' CO2 emissions =	***0.00015%***		
United States' CO_2 emissions =	***5,425,600,000***	***metric tons***	*(U.S. DOE/EIA 2011)*
Percent of USA's CO_2 emissions =	***0.000016%***		

Source: U.S. Department of Energy, Energy Information Administration (U.S. DOE/EIA). 2011. *Table 1. State Emissions by Year (Million Metric Tons of Carbon Dioxide).* Available online <http://www.eia.gov/environment/emissions/state/state_emissions.cfm>. 2009 data values are the most recent. Data accessed 28 June 2012.

Since future year budgets were not readily available, actual 2008 air emissions inventories for the counties were used as an approximation of the regional inventory. Because 2018 Other Construction Projects are several orders of magnitude below significance, the conclusion would be the same, regardless of whether future year budget data set were used.

Metropolitan San Antonio Intrastate Air Quality Control Region

	Point and Area Sources Combined					
Year	NO_x (tpy)	VOC (tpy)	CO (tpy)	SO_2 (tpy)	PM_{10} (tpy)	$PM_{2.5}$ (tpy)
2008	127,839	425,477	555,851	40,901	183,999	32,316

Source: USEPA National Emissions Inventory (NEI) (http://www.epa.gov/ttn/chief/net/2008inventory.html). Site visited on 27 June 2012.

Air Emissions from 2018 Other Construction Projects

	Point and Area Sources Combined					
	NO_x (tpy)	VOC (tpy)	CO (tpy)	SO_2 (tpy)	PM_{10} (tpy)	$PM_{2.5}$ (tpy)
Regional Emissions	127,839	425,477	555,851	40,901	183,999	32,316
Emissions	6.230	1.718	6.807	0.487	5.103	1.070
% of Regional	**0.0049%**	**0.0004%**	**0.0012%**	**0.0012%**	**0.0028%**	**0.0033%**

Air Emissions for 2013 Other Infastructure Projects

	NO_x (ton)	VOC (ton)	CO (ton)	SO_2 (ton)	PM_{10} (ton)	$PM_{2.5}$ (ton)	CO_2 (metric tons/year)
Combustion	5.019	0.392	2.204	0.399	0.357	0.347	518.560
Fugitive Dust	-	-	-	-	6.079	0.608	-
Haul Truck On-Road	0.408	0.295	1.199	0.032	0.485	0.126	93.702
Commuter	0.083	0.082	0.744	0.001	0.008	0.005	89.459
TOTAL	***5.51***	***0.77***	***4.15***	***0.43***	***6.93***	***1.09***	***701.72***

Note: Total $PM_{10}/_{2.5}$ fugitive dust emissions are assuming USEPA 50% control efficiencies.

CO_2 emissions converted to metric tons =	***701.721***	***metric tons***	
State of Texas' CO2 emissions =	***596,370,927***	***metric tons***	*(U.S. DOE/EIA 2011)*
Percent of Texas' CO2 emissions =	***0.00012%***		
United States' CO_2 emissions =	***5,425,600,000***	***metric tons***	*(U.S. DOE/EIA 2011)*
Percent of USA's CO_2 emissions =	***0.000013%***		

Source: U.S. Department of Energy, Energy Information Administration (U.S. DOE/EIA). 2011. *Table 1. State Emissions by Year (Million Metric Tons of Carbon Dioxide).* Available online <http://www.eia.gov/environment/emissions/state/state_emissions.cfm>. 2009 data values are the most recent. Data accessed 28 June 2012.

Since future year budgets were not readily available, actual 2008 air emissions inventories for the counties were used as an approximation of the regional inventory. Because 2013 Other Infastructure Projects are several orders of magnitude below significance, the conclusion would be the same, regardless of whether future year budget data set were used.

Metropolitan San Antonio Intrastate Air Quality Control Region

	Point and Area Sources Combined					
Year	NO_x (tpy)	VOC (tpy)	CO (tpy)	SO_2 (tpy)	PM_{10} (tpy)	$PM_{2.5}$ (tpy)
2008	127,839	425,477	555,851	40,901	183,999	32,316

Source: USEPA National Emissions Inventory (NEI) (http://www.epa.gov/ttn/chief/net/2008inventory.html). Site visited on 27 June 2012.

Air Emissions from 2013 Other Infastructure Projects

	Point and Area Sources Combined					
	NO_x (tpy)	VOC (tpy)	CO (tpy)	SO_2 (tpy)	PM_{10} (tpy)	$PM_{2.5}$ (tpy)
Regional Emissions	127,839	425,477	555,851	40,901	183,999	32,316
Emissions	5.509	0.770	4.146	0.432	6.929	1.086
% of Regional	**0.0043%**	**0.0002%**	**0.0007%**	**0.0011%**	**0.0038%**	**0.0034%**

Air Emissions for 2014 Other Infastructure Projects

	NO_x (ton)	VOC (ton)	CO (ton)	SO_2 (ton)	PM_{10} (ton)	$PM_{2.5}$ (ton)	CO_2 (metric tons/year)
Combustion	0.044	0.003	0.017	0.004	0.003	0.003	4.792
Fugitive Dust	-	-	-	-	0.093	0.009	-
Haul Truck On-Road	0.002	0.001	0.005	0.000	0.002	0.001	0.390
Commuter	0.083	0.082	0.744	0.001	0.008	0.005	89.459
TOTAL	***0.13***	***0.09***	***0.77***	***0.00***	***0.11***	***0.02***	***94.64***

Note: Total $PM_{10}/_{2.5}$ fugitive dust emissions are assuming USEPA 50% control efficiencies.

CO_2 emissions converted to metric tons =	***94.641***	***metric tons***	
State of Texas' CO2 emissions =	***596,370,927***	***metric tons***	*(U.S. DOE/EIA 2011)*
Percent of Texas' CO2 emissions =	***0.00002%***		
United States' CO_2 emissions =	***5,425,600,000***	***metric tons***	*(U.S. DOE/EIA 2011)*
Percent of USA's CO_2 emissions =	***0.000002%***		

Source: U.S. Department of Energy, Energy Information Administration (U.S. DOE/EIA). 2011. *Table 1. State Emissions by Year (Million Metric Tons of Carbon Dioxide).* Available online <http://www.eia.gov/environment/emissions/state/state_emissions.cfm>. 2009 data values are the most recent. Data accessed 28 June 2012.

Since future year budgets were not readily available, actual 2008 air emissions inventories for the counties were used as an approximation of the regional inventory. Because 2014 Other Infastructure Projects are several orders of magnitude below significance, the conclusion would be the same, regardless of whether future year budget data set were used.

Metropolitan San Antonio Intrastate Air Quality Control Region

	Point and Area Sources Combined					
Year	**NO_x (tpy)**	**VOC (tpy)**	**CO (tpy)**	**SO_2 (tpy)**	**PM_{10} (tpy)**	**$PM_{2.5}$ (tpy)**
2008	127,839	425,477	555,851	40,901	183,999	32,316

Source: USEPA National Emissions Inventory (NEI) (http://www.epa.gov/ttn/chief/net/2008inventory.html). Site visited on 27 June 2012.

Air Emissions from 2014 Other Infastructure Projects

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	Point and Area Sources Combined					
	NO_x (tpy)	**VOC (tpy)**	**CO (tpy)**	**SO_2 (tpy)**	**PM_{10} (tpy)**	**$PM_{2.5}$ (tpy)**
Regional Emissions	127,839	425,477	555,851	40,901	183,999	32,316
Emissions	0.128	0.086	0.766	0.005	0.105	0.017
% of Regional	**0.0001%**	**0.0000%**	**0.0001%**	**0.0000%**	**0.0001%**	**0.0001%**

Air Emissions for 2015 Other Infastructure Projects

	NO_x (ton)	VOC (ton)	CO (ton)	SO_2 (ton)	PM_{10} (ton)	$PM_{2.5}$ (ton)	CO_2 (metric tons/year)
Combustion	5.469	0.419	2.387	0.438	0.385	0.373	568.961
Fugitive Dust	-	-	-	-	15.707	1.571	-
Haul Truck On-Road	0.495	0.358	1.455	0.039	0.589	0.153	113.704
Commuter	0.083	0.082	0.744	0.001	0.008	0.005	89.459
TOTAL	***6.05***	***0.86***	***4.59***	***0.48***	***16.69***	***2.10***	***772.12***

Note: Total $PM_{10}/_{2.5}$ fugitive dust emissions are assuming USEPA 50% control efficiencies.

CO_2 emissions converted to metric tons =	***772.124***	***metric tons***	
State of Texas' CO2 emissions =	***596,370,927***	***metric tons***	*(U.S. DOE/EIA 2011)*
Percent of Texas' CO2 emissions =	***0.00013%***		
United States' CO_2 emissions =	***5,425,600,000***	***metric tons***	*(U.S. DOE/EIA 2011)*
Percent of USA's CO_2 emissions =	***0.000014%***		

Source: U.S. Department of Energy, Energy Information Administration (U.S. DOE/EIA). 2011. *Table 1. State Emissions by Year (Million Metric Tons of Carbon Dioxide).* Available online <http://www.eia.gov/environment/emissions/state/state_emissions.cfm>. 2009 data values are the most recent. Data accessed 28 June 2012.

Since future year budgets were not readily available, actual 2008 air emissions inventories for the counties were used as an approximation of the regional inventory. Because 2015 Other Infastructure Projects are several orders of magnitude below significance, the conclusion would be the same, regardless of whether future year budget data set were used.

Metropolitan San Antonio Intrastate Air Quality Control Region

	Point and Area Sources Combined					
Year	NO_x (tpy)	VOC (tpy)	CO (tpy)	SO_2 (tpy)	PM_{10} (tpy)	$PM_{2.5}$ (tpy)
2008	127,839	425,477	555,851	40,901	183,999	32,316

Source: USEPA National Emissions Inventory (NEI) (http://www.epa.gov/ttn/chief/net/2008inventory.html). Site visited on 27 June 2012.

Air Emissions from 2015 Other Infastructure Projects

	Point and Area Sources Combined					
	NO_x (tpy)	VOC (tpy)	CO (tpy)	SO_2 (tpy)	PM_{10} (tpy)	$PM_{2.5}$ (tpy)
Regional Emissions	127,839	425,477	555,851	40,901	183,999	32,316
Emissions	6.046	0.859	4.585	0.478	16.688	2.102
% of Regional	**0.0047%**	**0.0002%**	**0.0008%**	**0.0012%**	**0.0091%**	**0.0065%**