Military Working Dog Campus Revitalization Environmental Assessment



United States Air Force
Air Education and Training Command
802nd Civil Engineering Squadron
Joint Base San Antonio - Lackland, Texas

December 2012

Report Documentation Page

Form Approved
OMB No. 0704-0188

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1. REPORT DATE	2. REPORT TYPE	3. DATES COVERED
02 APR 2013	**Enivronmental Assessment**	**00-00-2011 to 00-00-2013**

4. TITLE AND SUBTITLE	5a. CONTRACT NUMBER
Military Working Dog Campus Revitalization Environmental Assessment Joint Base San Antonio - Lackland, Texas	5b. GRANT NUMBER
	5c. PROGRAM ELEMENT NUMBER
6. AUTHOR(S)	5d. PROJECT NUMBER
	5e. TASK NUMBER
	5f. WORK UNIT NUMBER
7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) **United States Air Force - Air Education and Training Command,Joint Base San Antonio - Lackland,San Antonio,TX,78236**	8. PERFORMING ORGANIZATION REPORT NUMBER
9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES)	10. SPONSOR/MONITOR'S ACRONYM(S)
	11. SPONSOR/MONITOR'S REPORT NUMBER(S)

12. DISTRIBUTION/AVAILABILITY STATEMENT
Approved for public release; distribution unlimited

13. SUPPLEMENTARY NOTES

14. ABSTRACT
Military Working Dog Campus Revitalization Environmental Assessment Joint Base San Antonio - Lackland, Texas

15. SUBJECT TERMS

16. SECURITY CLASSIFICATION OF:			17. LIMITATION OF ABSTRACT	18. NUMBER OF PAGES	19a. NAME OF RESPONSIBLE PERSON
a. REPORT **unclassified**	b. ABSTRACT **unclassified**	c. THIS PAGE **unclassified**	**Same as Report (SAR)**	**663**	

FINDING OF NO SIGNIFICANT IMPACT

ENVIRONMENTAL ASSESSMENT
MILITARY WORKING DOG CAMPUS REVITALIZATION

JOINT BASE SAN ANTONIO-LACKLAND, TEXAS

AGENCY: 802nd Civil Engineering Squadron (CES), Joint Base San Antonio-Lackland (JBSA-Lackland), Texas

BACKGROUND: JBSA-Lackland has the mission of operating the Military Working Dog (MWD) Program for the United States Air Force. The mission of the 341st Training Squadron (TRS) is to provide trained MWD, handlers, trainers, and kennel masters for the Department of Defense (DoD), other government agencies and allies through training, logistical support, veterinary support, a breeding program, and research and development for security efforts worldwide. The 341 TRS is responsible for procuring all dogs for the MWD program and for shipping them to military installations worldwide following training. 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 Joint Base San Antonio–Lackland Main Base (JBSA-LMB) and Joint Base San Antonio–Lackland Training Annex (JBSA-LTA).

The existing campus does not allow for future expansion of the MWD mission primarily because there is a shortage of land available for new construction on JBSA-LMB. Additionally, facilities used for MWD training are not contiguous on either JBSA-LMB or JBSA-LTA and the campus currently has several logistical deficiencies. The purpose of this project is to increase the effectiveness of the MWD mission. Upgrades to the MWD facilities are needed to correct deficiencies in the existing campus and to allow for future expansion of the MWD mission as determined by increases in world-wide security threats against the US Armed Forces and its allies.

Pursuant to National Environmental Policy Act (NEPA), 32 Code of Federal Regulations (CFR) 989 (*Air Force Environmental Impact Analysis Process*) (EIAP), and other applicable regulations, JBSA-Lackland completed an environmental assessment (EA) of the potential environmental consequences of the Military Working Dog Campus Revitalization. The attached EA supports this Finding of No Significant Impact, evaluated the No-action Alternative and Proposed Action.

PROPOSED ACTION: The Proposed Action consists of 12 projects located both on JBSA-LMB and JBSA-LTA, including approximately 72,090 square feet (sf) of demolition and 275,500 sf of construction. Specific projects on JBSA-LMB include the following.

- **Project 1** is the construction of a grooming station on JBSA-LMB with an estimated footprint of 56’ x 32’ (1,792 sf) located near Building 7498. The building will be climate controlled to allow for canine bathing and grooming unaffected by weather conditions.

- **Project 2** is the construction of a vehicle washrack and three MWD training labs on JBSA-LMB. The new washrack will be approximately 3,000 sf and can accommodate two trailers simultaneously. The MWD training labs will be approximately 9,000 sf each and will be used for specialized dog training and evaluation. This project includes the demolition of Buildings 7561, 7562, and 7563, for a total of 3,731 sf.

- **Project 3** is the construction of new latrines on JBSA-LMB near Building 7650 with a minimum footprint of 500 sf. The latrines will be consolidated into a central latrine and partitioned for male and female MWD staff and students.

- **Project 4** is the construction of a MWD headquarters building on JBSA-LMB on the northwest corner of Knight and Craw Avenue. This project will result in a 26,201 sf facility that will include classroom training space, storage space, office space, and other administrative areas. Buildings 7481, 7485, and 7570, which are currently used as training labs, will be demolished as a component of this project and the headquarters building will be constructed in the area of the demolished buildings. The amount of demolition will total 16,762 sf.

- **Project 5** is the construction of one MWD training lab west of Craw Avenue, north of the proposed headquarters facility on JBSA-LMB. The lab will be approximately 9,000 sf and will be used for specialized dog training and evaluation. Building 7475 (6,913 sf) will be demolished to construct the MWD training lab.

- **Project 6** is the construction of a MWD Hospital Recovery Kennel on JBSA-LMB adjacent to the MWD Hospital, Building 7602, on the southwestern end. This location was chosen based on coordination with Veterinary Services to minimize transport of MWDs that are post-operation. This will allow for enhanced comfort, safety, and security of MWDs recovering from procedures. The center will be approximately 7,200 sf.

- **Project 7** is the construction of a Drug Vehicle Training Lot near the northwestern corner of the mock air strip on JBSA-LMB. This Drug Vehicle Training Lot will be approximately 43,600 sf, fenced in, and solely used for training.

- **Project 8** is the construction of a parking lot suitable for 180 vehicles located off of Knight to the east of Building 7700. This paved feature will be approximately 81,000 sf, which includes an estimate for driving lanes and green spaces, and will provide for orderly vehicular parking by MWD staff members by reducing the amount of parking on grassy areas.

The following specific proposed projects are all located on the JBSA-LTA and will require construction of necessary infrastructure including sidewalks and utilities to support the new facilities located on the JBSA-LTA. In particular, asphalt roadways will be constructed around the kennels for quick pickup/delivery of MWDs.

- **Project 9** is the relocation of the MWD operations outside the 100-year floodplain on the JBSA-LTA. This long-term project involves demolishing the entire MWD campus located in the 100-year floodplain (approximately 44,690 sf) and relocating it further west on the JBSA-LTA, in the proximity of Patrol Rd. The relocation includes eight kennels, a Block I Handlers Course, two Handlers Course Search Labs, a Vet Clinic, Kitchen, Indoor Kennel, DTS Lab, cement pad, three obstacle courses, four exercise pens, and four shade structures. All of the buildings and structures relocated (except the eight kennels) will be constructed to approximately the same size as their existing footprint. The eight kennels will be constructed to the same size requirements as Building 7600 on JBSA-LMB (40' X 150', or 6,000 sf). Total new construction for the relocation effort will be approximately 63,740 sf.

- **Project 10** is the demolition of the existing buildings located within the 100-year floodplain on the JBSA-LTA. Demolition includes Buildings 435, 436, 437, 450, 452, 454, 456, 458, 462, 464, 466, 468, 470, 471, and 472. Demolition of these buildings will total approximately 44,690 sf.

- **Project 11** includes the use of a mobile grooming station on JBSA-LTA that could be located near the existing kennels and moved near the new kennels once constructed. Additionally, the mobile grooming station will provide flexibility to MWD personnel such that the facility could be relocated to other areas of MWD campus as needed.

- **Project 12** includes the construction of a MWD lab on the far northwest corner of the JBSA-LTA. This lab will be approximately 9,000 sf and will provide dog trainers with classroom training prior to field exercises involving canine teams and detection of improvised explosive devices.

Additionally, all projects under the Proposed Action will comply with state and federal regulations, including the Migratory Bird Treaty Act, and the National Historic Preservation Act. Compliance with the Migratory Bird Treaty Act includes limiting demolition, construction, and clearing activities to the non-breeding season for migratory birds; minimizing tree removal; and revegetating areas with suitable native grasses and trees. Compliance with the National Historic Preservation Act includes completing Section 106 coordination with the Advisory Council on Historic Preservation, as well as documenting with an American Building Survey/Historic American Engineer Recordation any NRHP-eligible buildings proposed for demolition.

NO-ACTION ALTERNATIVE: The No-action Alternative would involve the continued use of the existing MWD Campus facilities without revitalization. The deficiencies in the existing MWD Campus would not be addressed, hindering the effectiveness of the MWD mission.

SUMMARY OF FINDINGS FOR THE PROPOSED ACTION:

Air Quality. There will be a short-term increase in emissions during construction and demolition activities, resulting in minimal ambient air impacts. The emissions will be temporary and will be eliminated after the activity is completed.

Noise. There will be short-term increases in noise levels from construction and demolition noise; however, those increased noise levels will be at or below baseline noise levels at potential noise-sensitive receptors. There will be no long-term increase in noise levels.

Land Use. There will be a change in land use classifications; however, the changes will be compatible with existing land uses. A long-term reduction in land classified as prime farmland will not be a significant impact since the land was removed from use by agricultural purposes approximately 60 years ago when it was acquired by the Department of Defense for military use.

Earth Resources. The excavation and construction operations and demolition of buildings will temporarily increase the potential for erosion and sedimentation runoff. Construction of the new roads and infrastructure will also generate dust and result in soil disturbance; however, this disturbance will be short-term, will fall off rapidly with distance from the construction site, and will last only as long as the duration of construction. The proposed projects under the Proposed Action are not expected to alter the lithology, stratigraphy, and geological structures or change the soil composition, structure, or function within the project sites.

Water Resources. A minor increase in the quantity of groundwater utilized at JBSA-Lackland is anticipated under the Proposed Action due to the construction of new latrines on JBSA-LMB; however, the amount is less than one percent of the current usage of water for JBSA-LMB and JBSA-LTA and sufficient capacity exists to support this increase. An increase in storm water outfall to Leon Creek and Medio Creek will result due to an increase in impervious cover; however, this increase will be accommodated by existing and newly constructed storm sewer infrastructure, as well as drainage ditches. Completion of the Proposed Action will have no long-term impacts on surface water quality at the project location or downstream surface water bodies and no violation of existing water quality standards and applicable regulations are expected. Additionally, no impacts to the floodplains are expected as a result of the Proposed Action.

Biological Resources. Construction and operation of the proposed MWD Campus on JBSA-LMB will primarily impact improved grounds; however, this area is already disturbed and does not support natural vegetation. The construction and operation of the four proposed projects on the JBSA-LTA could potentially impact several types of vegetation and wildlife habitat. Construction and operation of the four proposed projects on the JBSA-LTA, will adversely impact approximately 15 percent of the Semi-open brushland habitat and $\leq$ 1 percent of the Shrub/Scrub community. Wildlife habitat is minimal in the vicinity of the proposed JBSA-LMB projects; consequently, impacts to wildlife resulting from the demolition activities, and construction and operation of these projects will be minimal. Construction of the proposed four projects on the JBSA-LTA could adversely impact wildlife habitats and some species short-term during the construction period and long-term after construction and operation of the facilities. The groups of species most likely to be impacted includes mammals and birds that use the

semi-open brushland and scrub/scrub habitats. The potential for any impacts to occur to Protected Species are not expected with the Proposed Action.

Cultural and Traditional Resources. There will be a no impacts to archaeological or historic resources on JBSA-LMB. The Proposed Action, however, will have an adverse effect on three NRHP-eligible buildings (435, 436, and 437) on JBSA-LTA and will adversely affect the Q-Area Historic District of which these three buildings are contributing elements. Therefore, Section 106 coordination with the Texas SHPO is required prior to demolition, as well as an American Building Survey/Historic American Engineer Recordation documentation of the three buildings impacted.

Hazardous Materials and Wastes. Asbestos and lead-based paint surveys will be required prior to demolition of buildings. There will be no collection, storage, or improper disposal of hazardous substances, including asbestos and lead-based paint. There are no Environmental Restoration Program sites that will be affected by the Proposed Action. JBSA-Lackland will realize long-term beneficial impacts from the removal of pesticide contaminated soils, if any should be found during construction and demolition activities.

Utilities and Infrastructure. There will be no change in electrical, natural gas, or potable water demand, and no increase in wastewater generation. Minor increases in solid waste generated from the Proposed Action are not expected to exceed the capacity of the landfill.

Safety. The number and severity of incidents related to MWD training, traffic issues, and construction is not anticipated to increase as a result of the Proposed Action.

Socioeconomic Resources. There will be no change to population, housing, education, or employment. Purchase of construction materials and goods will result in an increase in regional economic activity.

Environmental Justice. There will be no disproportionate and adverse impacts to minority or low-income populations.

SUMMARY OF MITIGATION MEASURES: All projects under the Proposed Action would comply with state and federal regulations, including the Migratory Bird Treaty Act, and the National Historic Preservation Act. Compliance with the Migratory Bird Treaty Act would include limiting demolition, construction, and clearing activities to the non-breeding season for migratory birds; minimizing tree removal; and revegetating areas with suitable native grasses and trees. Compliance with the National Historic Preservation Act would include completing Section 106 coordination with the Advisory Council on Historic Preservation, as well as documenting with an American Building Survey/Historic American Engineer Recordation any NRHP-eligible buildings proposed for demolition.

SUMMARY OF FINDINGS FOR NO-ACTION ALTERNATIVE: The No-action Alternative would involve the continued use of the existing MWD Campus facilities without revitalization. The deficiencies in the existing MWD Campus would not be addressed, hindering the effectiveness of the MWD mission. Driving the MWDs between non-co-located MWD facilities on JBSA-LMB and JBSA-LTA would continue to waste valuable training time. Additionally, since the three rented portable toilets are not sufficient for the amount of people utilizing them, staff and handlers would continue to waste time walking long distances to and from the current latrines. Under the No-action Alternative, handlers, staff, and the MWD would continue to be affected by ambient

weather conditions when using the Dog Grooming Facilities and the staff would continue to have difficulties washing MWD trailers and vehicles. Also, the Transportation Security Administration is considering expanding their headquarters facility, which could result in the demolition of four former dormitories currently used as MWD training labs. Although this demolition is not programmed, if it were to occur, there would be a shortage of adequate MWD training locations. Dogs recovering in the Indoor Recovery Kennel would remain facing each other which is unfavorable to the MWD's health and recovery. Additionally, after surgery the dogs would have to be relocated to a completely separate building for recovery. The Drug Vehicle Lot would continue to occupy viable parking spots, escalating the existing parking issue. Furthermore, MWD facilities would remain in the 100-year floodplain resulting in potential unwanted impacts from flooding as well as limitations on expansion of those facilities. Finally, under the No-action Alternative, future expansion of the MWD mission, as determined by increases in world-wide security threats against US Armed Forces and its allies, would not be possible.

SUMMARY OF CUMULATIVE EFFECTS: The cumulative impact of implementing these actions along with other past, present, and reasonably foreseeable future projects at JSBA-Lackland were assessed in the attached EA and no significant cumulative impacts were identified.

SUMMARY OF PUBLIC REVIEW AND INTERAGENCY COORDINATION: Comment letters were received from Texas Commission on Environmental Quality (TCEQ), U.S. Fish and Wildlife Service, (USFWS), Texas Water Development Board (TWDB), Alamo Area Council of Governments (AACOG), and the Tonkawa Tribe of Oklahoma. The AACOG had no additional questions or comments on the EA and recommended a "Consensus to Proceed" for this project. The TCEQ recommended inclusion of several best management practices (BMPs) for minimization of impacts, which are included in the EA. The Tonkawa Tribe of Oklahoma had no questions or concerns and agreed that a FONSI is appropriate for the action. The USFWS also approved the action without comments. The TWDB responded that the City of San Antonio has approval authority for projects within their jurisdiction, and to coordinate with the community for any specific development in the Special Flood Hazard Area. Copies of the Public Draft EA were provided to the City of San Antonio Floodplain Administrator, as well as the Bexar County Floodplain Administrator, and neither provided a comment response.

FINDING OF NO SIGNIFICANT IMPACT: Based upon my review of the attached EA, I conclude that the Proposed Action, including the 12 individual project components, will not have a significant direct, indirect, or cumulative impact upon the environment. Accordingly, the requirements of the NEPA, regulations promulgated by the President's Council on Environmental Quality, and 32 CFR Part 989 are fulfilled and an Environmental Impact Statement is not required at this time.



2 Apr 13

THERESA C. CARTER
Brigadier General, USAF
Commander

Date

Cover Sheet

Responsible Agency: 802nd Civil Engineering Squadron, Joint Base San Antonio-Lackland (JBSA-Lackland), Texas

Proposed Action: Update and expand the existing Military Working Dog Campus at JBSA-Lackland to include 12 projects located on JBSA-Lackland Main Base and Training Annex.

Points of Contact: JBSA-Lackland Asset Optimization Planning: Mr. Nicholas Smith, 802 CES/CEAOP, 1555 Gott Street, Building 5595, Joint Base San Antonio-Lackland, TX 78236, (210) 671-0164; United States

Report Designation: Environmental Assessment

Abstract: The 341st Training Squadron at JBSA-Lackland has a mission to provide trained Military Working Dogs (MWDs), handlers, trainers, and kennel masters for the Department of Defense (DoD), other government agencies and allies through training, logistical support, veterinary support, a breeding program, and research and development for security efforts worldwide. 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 JBSA-Lackland Main Base (JBSA-LMB) and JBSA-Lackland Training Annex (JBSA-LTA). The existing campus does not allow for future expansion of the MWD mission primarily because there is a shortage of land available for new construction on JBSA-LMB. Additionally, facilities used for MWD training are not contiguous on either JBSA-LMB or JBSA-LTA and the campus currently has several logistical deficiencies. The purpose of this project is to increase the effectiveness of the MWD mission. Upgrades to the MWD facilities are needed to correct deficiencies in the existing campus and to allow for future expansion of the MWD mission as determined by increases in world-wide security threats against the US Armed Forces and its allies.

PRIVACY ADVISORY NOTICE

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

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ACRONYMS AND ABBREVIATIONS

ACC	Ambulatory Care Center
ACM	asbestos containing material
ADP	Area Development Plan
AFB	Air Force Base
AFOSH	Air Force Office of Safety and Health
AFSAS	Air Force Safety Automated System
AICUZ	Air Installation Compatible Use Zone
AIRFA	American Indian Religious Freedom Act
AFI	Air Force Instruction
a.m.	*ante meridiem* (morning)
APE	Area of Potential Effect
APF	Appropriated Funds
AQCR	Air Quality Control Region
ARPA	Archaeological Resources Protection Act
AT/FP	Anti-Terrorism/Force Protection
BASH	Bird Aircraft Strike Hazard
BMPs	Best Management Practices
BO	Biological Opinion
BRAC	Base Realignment and Closure
C	Candidate
CAA	Clean Air Act
CAAA	Clean Air Act Amendments
CAR-UTSA	Center for Archaeological Research – University of Texas San Antonio
CEQ	Council on Environmental Quality
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
CGP	construction general permit
CH_4	methane
CIP	Capital Improvements Program
CO	carbon monoxide
CO_2	carbon dioxide
CO_{2eq}	CO_2 equivalents
COC	Community of Comparison
COSA	City of San Antonio
CRMP	Cultural Resources Management Plan
CVIA/ECP	Commercial Vehicle Inspection Area and Entry Control Point
CWA	Clean Water Act
dB	decibel
dBA	"A-weighted" decibel
DL	Delisted
DLIELC	Defense Language Institute English Language Center
DNL	Day-Night Average Sound Level
DoD	Department of Defense

ACRONYMS AND ABBREVIATIONS (CONTINUED)

E	Endangered
EA	Environmental Assessment
EAC	Early Action Compact
EIAP	Environmental Impact Analysis Process
EO	Executive Order
ERP	Environmental Restoration Program
ESA	Endangered Species Act
F	Fahrenheit
FE	Federally Endangered
FEMA	Federal Emergency Management Association
FONPA	Finding of No Practical Alternative
FONSI	Finding of No Significant Impact
FT	Federally Threatened
FY	fiscal year
GWP	global warming potential
HAP	High Accident Potential
HFC	hydrofluorocarbon
IAAFA	Inter-American Air Forces Academy
IAS-NPS	Interagency Archaeological Services – National Park Service
IICEP	Intergovernmental and Interagency Coordination for Environmental Planning
INRMP	Integrated Natural Resources Management Plan
JBSA-Lackland	Joint Base San Antonio-Lackland
JBSA-LMB	Joint Base San Antonio – Lackland Main Base
JBSA-LTA	Joint Base San Antonio – Lackland Training Annex
KCF	thousand cubic feet
kgal	kilo-gallon
LA	Louisiana
LBP	lead-based paint
lb/sf	pounds per square foot
Lmax	Maximum Sound Level
MBTA	Migratory Bird Treaty Act
MCF/d	million cubic feet per day
$\mu g/m^3$	micrograms per cubic meter
MGD	million gallons per day
MILCON	Military Construction
MOU	Memorandum of Understanding
MS4	Municipal Separate Storm Sewer System
MSA	Metropolitan Statistical Area
MSDSs	material safety data sheets
MSL	mean sea level
MW	mega watts
MWD	Military Working Dog
MWH	mega watt hours

ACRONYMS AND ABBREVIATIONS (CONTINUED)

N_2O	nitrous oxide
N/A	Not Applicable
NAA	Nonattainment Area
NAAQS	National Ambient Air Quality Standards
NAGPRA	Native American Graves Protection and Repatriation Act
NEI	National Emissions Inventory
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
NL	Not Listed
NMFS	National Marine Fisheries Service
NO_2	nitrogen dioxide
NO_x	nitrogen oxides
NOI	Notice of Intent
NRHP	National Register of Historic Places
NWI	National Wetlands Inventory
O_3	ozone
OSHA	Occupational Safety and Health Administration
Pb	lead
PFC	perfluorocarbon
p.m.	*post meridiem* (evening)
$PM_{2.5}$	particulate matter ≤ 2.5 micrometers in aerodynamic diameter
PM_{10}	particulate matter ≤ 10 micrometers in aerodynamic diameter
PPE	personal protective equipment
ppm	parts per million
psi	pounds per square inch
PT	Proposed Threatened
RCRA	Resource Conservation and Recovery Act
RFR	Radio Frequency
ROI	region of influence
SA	Similarity of Appearance
SAACC	San Antonio Aviation Cadet Center
SAWS	San Antonio Water System
sf	square feet
SF_6	sulfur hexafluoride
SHPO	State Historic Preservation Office
SIP	State Implementation Plan
SO_2	sulfur dioxide
SO_x	sulfur oxides
SPCCP	Spill Prevention, Control and Countermeasures Plan
SPL	sound pressure level
SWPPP	storm water pollution prevention plan
T	Threatened
TCEQ	Texas Commission for Environmental Quality
TNWs	traditional navigable waters

ACRONYMS AND ABBREVIATIONS (CONTINUED)

TPDES	Texas Pollutant Discharge Elimination System
tpy	tons per year
TRS	Training Squadron
TRW	Training Wing
TSCA	Toxic Substance Control Act
TXDOT	Texas Department of Transportation
UFC	United Facilities Criteria
US	United States
USACE	United States Army Corps of Engineers
USACE-FW	United States Army Corps of Engineers – Fort Worth District
USAF	United States Air Force
USFWS	United States Fish and Wildlife Service
USC	United States Code
USEPA	United States Environmental Protection Agency
VOC	volatile organic compound
WACC-NPS	Western Archaeological Services – National Park Service
WHMC	Wilford Hall Medical Center
WWTP	Wastewater Treatment Plant

CHAPTER 1
PURPOSE OF AND NEED FOR ACTION

This chapter has six parts: a statement of the purpose of and need for action, a description of the location of the proposed action, identification of the decision to be made, a description of the scope of the environmental review, identification of applicable regulatory requirements, and an introduction to the organization of the document.

1.1 PURPOSE OF AND NEED FOR ACTION

Joint Base San Antonio–Lackland (JBSA-Lackland), located in southwestern San Antonio (see Figure 1-1), is home to 14 major mission partners and over 70 hosted units with a population of approximately 42,000 military, trainees, civilians, and on-base military dependents that work, receive training, or utilize JBSA-Lackland's services. JBSA-Lackland has the mission of operating the Military Working Dog (MWD) Program for the United States Air Force (USAF). The mission of the 341st Training Squadron (TRS) is to provide trained MWD, handlers, trainers, and kennel masters for the Department of Defense (DoD), other government agencies and allies through training, logistical support, veterinary support, a breeding program, and research and development for security efforts worldwide. The 341 TRS is responsible for procuring all dogs for the MWD program and for shipping them to military installations worldwide following training. 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 Joint Base San Antonio–Lackland Main Base (JBSA-LMB) and Joint Base San Antonio–Lackland Training Annex (JBSA-LTA).

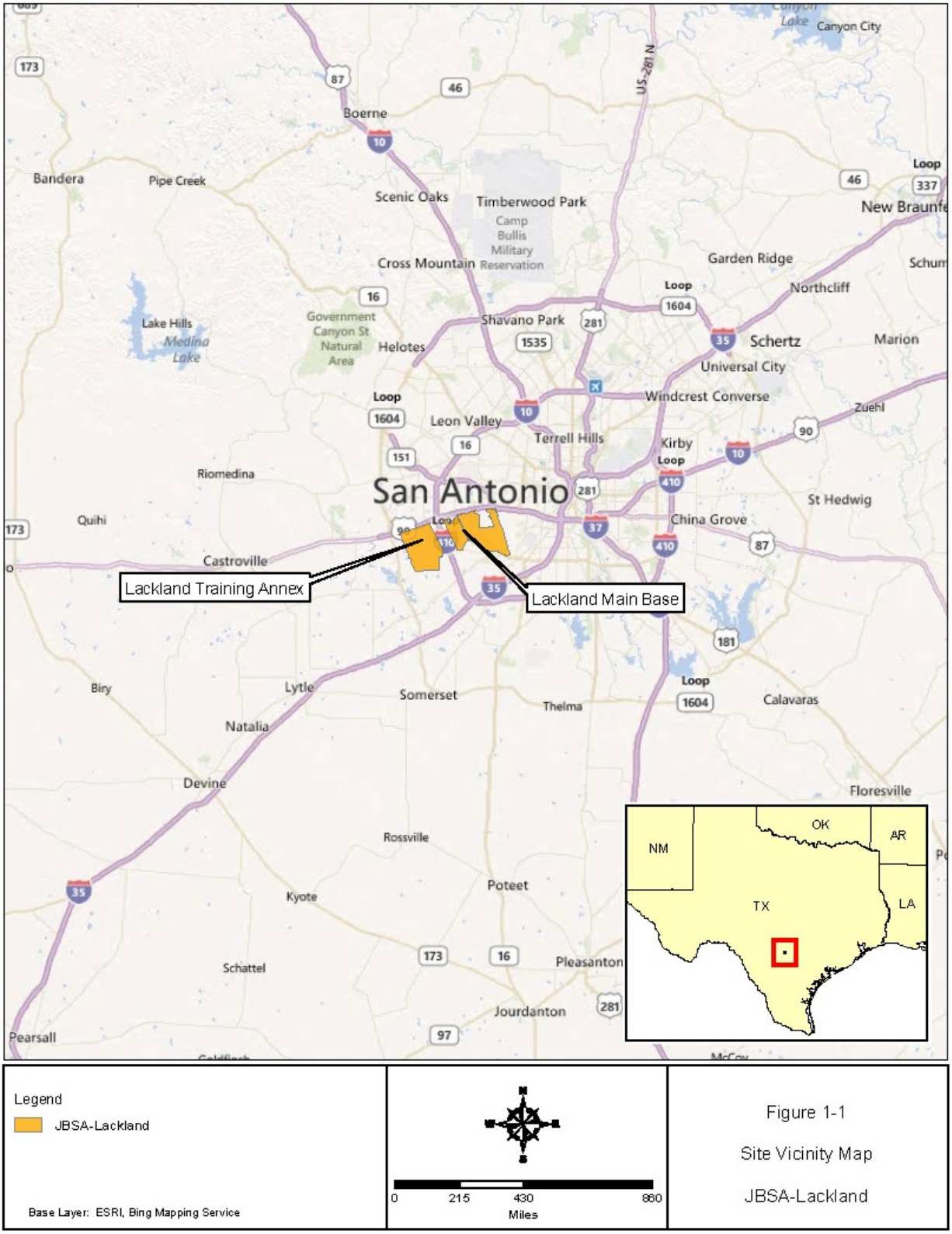
The existing campus does not allow for future expansion of the MWD mission primarily because there is a shortage of land available for new construction on JBSA-LMB. Facilities used for MWD training are not contiguous on either JBSA-LMB or JBSA-LTA (see Figures 1-2 and 1-3). Additionally, the campus currently has the following logistical deficiencies:

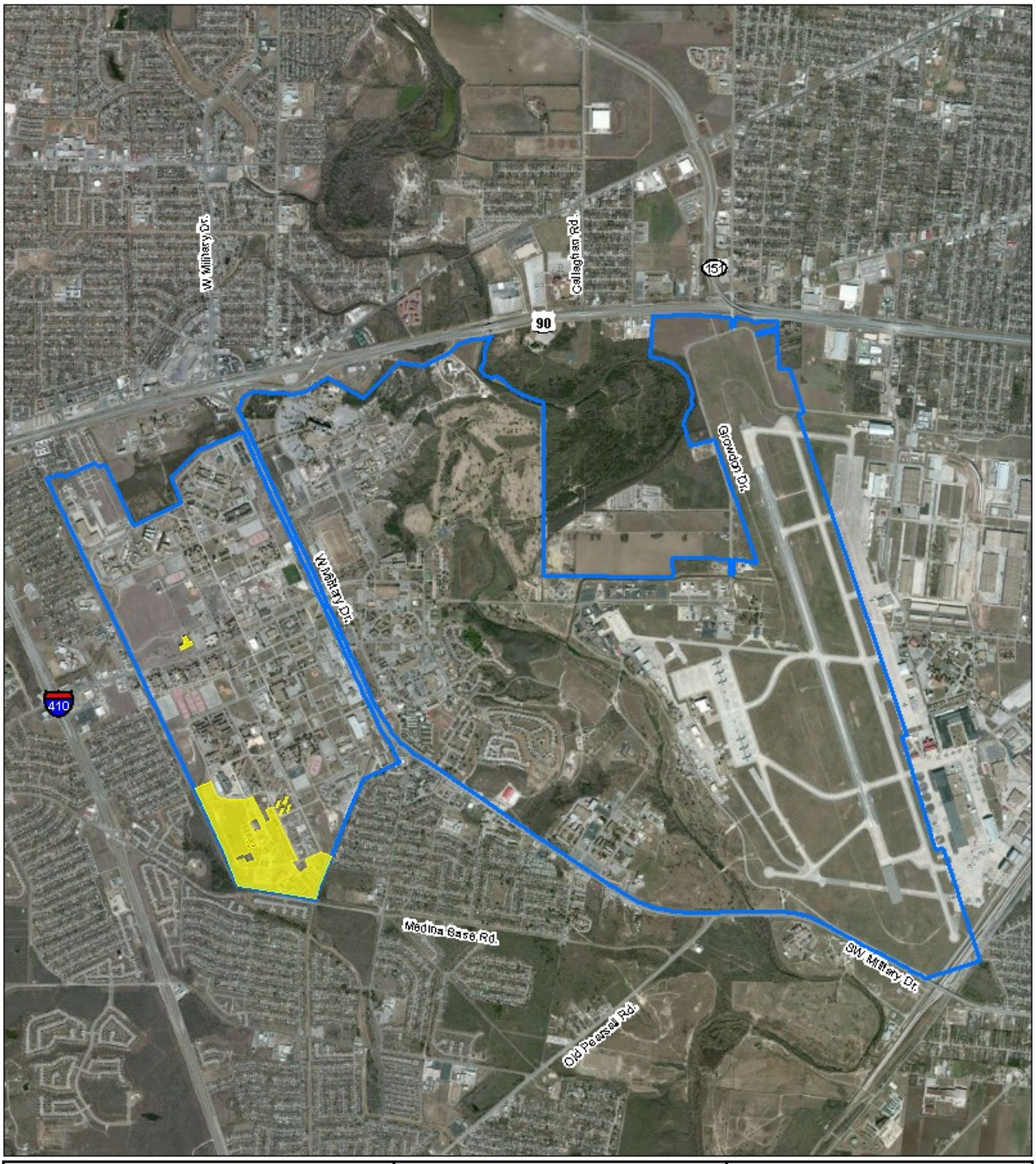
- MWD training activities on JBSA-LMB utilize all existing open space (approximately 34 acres) within the MWD campus, preventing future expansion of the campus, as well as relocation of JBSA-LTA MWD facilities to JBSA-LMB.
- Dog grooming at both JBSA-LMB and JBSA-LTA takes place in canopy shelters which are not climate controlled and are affected by ambient weather conditions.
- In order to wash dog trailers, MWD crews use the single Logistics Readiness Squadron washrack on JBSA-LMB which is approximately one mile away and is often unavailable or overbooked. This washrack does not provide adequate space to wash several vehicles at once. In addition, the vehicles and MWD trailers are commonly very muddy and often have dog waste (urine/fecal matter) and fur in the kennels which must be removed prior to using the existing washrack. This eliminates the need for the washrack service and creates the potential for environment, safety, and occupational health violations. There are also Morale, Welfare, and Recreation operated "personally-owned-vehicle"

washracks; however, MWD crews are not allowed to use these washracks to wash their trailers.

- The current latrine facilities are spread too far from the hub of the MWD training area on JBSA-LMB, resulting in MWD staff and students using three rented portable toilets within this hub. These three rented portable toilets are inadequate for the number of staff members and students who use them.
- The MWD headquarters building on JBSA-LMB is currently spatially separated from the MWD training environment which causes challenges in day-to-day activity and training oversight.
- On JBSA-LMB, Building 7475, a former dormitory located within the MWD campus, is being used as a training lab; however, the building is contaminated with mold and asbestos and has been deemed physically unsound such that demolition of this building is the only feasible option.
- The current Drug Vehicle Lot on JBSA-LMB occupies viable parking spots for personnel and is not fenced-in, making it easily accessible to persons not in the training program.
- The current Indoor Recovery Kennel on JBSA-LMB is set up with the dogs facing each other, which is not conducive to healing. Additionally, this kennel is separated from the veterinary hospital which increases transport time and distance of dogs that have recently had surgery.
- On JBSA-LMB, paved parking lots supporting the MWD staff are not of sufficient size to accommodate the staff's vehicles, resulting in personnel parking on unpaved surfaces.
- On the JBSA-LTA, current facilities are located within the 100-year floodplain, which hinders future expansion of facilities due to Executive Order 11988: Floodplain Management.
- Additionally, no training lab exists in the JBSA-LTA, which requires moving the dogs across the base to training areas, thereby wasting training time.

In order for MWDs to receive quality training, the animals and their trainers/handlers need quality facilities. The purpose of this project is to increase the effectiveness of the MWD mission. Upgrades to the MWD facilities are needed to correct deficiencies in the existing campus and to allow for future expansion of the MWD mission as determined by increases in world-wide security threats against the US Armed Forces and its allies.


Canyon City
Boerne
Bandera
Pipe Creek
Scenic Oaks
Timberwood Park
Camp Bullis Military Reservation
Cross Mountain
Garden Ridge
New Braunfels
Northcliff
Lake Hills
Medina Lake
Government Canyon St Natural Area
Helotes
Shavano Park
Schertz
Marion
Universal City
Windcrest Converse
Leon Valley
Terrell Hills
Kirby
Zuehl
Riomedina
San Antonio
St Hedwig
Quihi
China Grove
Castroville
Lackland Training Annex
Lackland Main Base
Biry
Lytle
Somerset
Thelma
Calavaras
Natalia
Devine
Floresville
Rossville
Poteet
Kyote
Schattel
Pleasanton
Jourdanton
Pearsall
NM
OK
AR
TX
LA
Legend
JBSA-Lackland
Base Layer: ESRI, Bing Mapping Service
0 215 430 860
Miles
Figure 1-1
Site Vicinity Map
JBSA-Lackland



Legend
JBSA-Lackland
Existing Military Working Dog Campus

Imagery: ESRI, Bing Mapping Service

0 1,625 3,250 6,500 Feet

Figure 1-2
Lackland Main Base
Existing Military Working Dog Campus

JBSA-Lackland



Legend
JBSA-Lackland
Existing Military Working Dog Campus
100-Year Floodplain

Imagery: ESRI, Bing Mapping Service

0 1,000 2,000 4,000 Feet

Figure 1-3
Lackland Training Annex
Existing Military Working Dog Campus

JBSA-Lackland

1.2 LOCATION OF THE PROPOSED ACTION

JBSA-Lackland encompasses approximately 8,800 acres and is located in Bexar County, Texas, 12.8 miles southwest of downtown San Antonio. JBSA-Lackland is divided into the three (3) distinct areas: 1) the Kelly Field Annex (consisting of approximately 3,600 acres), 2) the Main Base (consisting of approximately 1,200 acres), and 3) the Training Annex (consisting of approximately 4,000 acres). Lackland Air Force Base (AFB), now JBSA-Lackland, acquired portions of Kelly AFB in 2001 as part of Kelly AFB's Base Realignment and Closure requirements. The Proposed Action would consist of 12 projects located on both JBSA-LMB and on JBSA-LTA. Section 2.3 describes the Proposed Action in detail and Figures 2-1 through 2-4 show the proposed project locations on JBSA-LMB and JBSA-LTA.

1.3 DECISION TO BE MADE

This analysis evaluates the potential environmental consequences from the construction, demolition of facilities located in a floodplain (JBSA-LTA), and operation of the 12 projects proposed to revitalize the MWD campus. Based on this analysis, JBSA-Lackland will determine whether to allow implementation of the Proposed Action or take no action ("No-action Alternative"). As required by the National Environmental Policy Act (NEPA), Title 42, United States Code, Sections 4321-4370f, and its implementing regulations, preparation of an environmental document must precede final decisions regarding the proposed project, and must be available to inform decision-makers of the potential environmental impacts of selecting the Proposed Action or the No-action Alternative.

1.4 SCOPE OF THE ENVIRONMENTAL REVIEW

The NEPA requires Federal agencies to consider environmental consequences in their decision-making process. The President's Council on Environmental Quality (CEQ) has issued regulations to implement NEPA that include provisions for both the content and procedural aspects of the required environmental impact analysis. The Air Force *Environmental Impact Analysis Process* (EIAP) is accomplished through adherence to the procedures set forth in CEQ regulations (40 Code of Federal Regulations [CFR] Sections 1500-1508), DoD Instruction 4715.9 *Environmental Planning and Analysis,* and 32 CFR 989 (Environmental Impact Analysis Process), 15 July 1999, and amended 1 July 2005. These Federal regulations establish both the administrative process and substantive scope of the environmental impact evaluation designed to ensure that deciding authorities have a proper understanding of the potential environmental consequences of a contemplated course of action.

This Environmental Assessment (EA) identifies, describes and evaluates the potential environmental impacts that are associated with the revitalization of the MWD campus. Proposed campus revitalization efforts can be separated into four categories: correcting MWD deficiencies, allowing for future expansion of the MWD mission, promoting facility efficiencies, and removing facilities located in a floodplain. These categories and the corresponding projects are described in detail in Section 2.1, History of the Formulation of Alternatives, and Section 2.3, Detailed Description of the Proposed Action. The 12 projects analyzed in this EA should be considered independent of each other and the Air Force 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 upon the analysis in this EA. As appropriate, the affected environment and environmental consequences of the action may be described in terms of a regional overview or a site-specific description. Fiscal year (FY) 2011 or the most current information is used as the baseline condition.

Executive Order (EO) 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*, was issued by President William J. Clinton on 11 February 1994. In the EO, the President instructed each Federal agency to make "achieving environmental justice part of its mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low-income populations." "Adverse" is defined by the Federal Interagency Working Group on Environmental Justice as "having a deleterious effect on human health or the environment that is significant, unacceptable, or above generally accepted norms." This EA will determine if the proposed or alternative actions would result in adverse effects to low-income or minority populations.

Through Intergovernmental and Interagency Coordination for Environmental Planning (IICEP), requests have been made for information on planned actions in the surrounding community. If any concurrent actions are identified during the EA process, they will be examined only in the context of potential cumulative impacts. A cumulative impact, as defined by the CEQ (40 CFR 1508.7), is the "impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of which agency (Federal or non-Federal) or person undertakes such actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time."

1.4.1 Resource Areas Addressed in Detail

Resource areas that could be affected by the Proposed Action or No-action Alternative have been selected to allow for a comprehensive analysis of potential impacts. The intent of this EA is to meet the NEPA requirements established in 32 CFR Part 989. The following resource areas are discussed in detail in the EA:

- Air Quality
- Noise
- Land Use
- Earth Resources
- Water Resources
- Biological Resources
- Cultural Resources
- Hazardous Materials and Waste
- Utilities and Infrastructure
- Socioeconomic Resources
- Safety
- Environmental Justice

1.4.2 Resource Topics Eliminated from Detailed Analysis

As part of the analysis process, all resource areas that have the potential to impact or be impacted by the Proposed Action are considered during the preliminary assessment phase of the analysis. However, since the scope of the proposed action would not impact JBSA-Lackland's flying mission, airspace use and management has been eliminated from detailed analysis in the EA.

1.5 APPLICABLE REGULATORY REQUIREMENTS

This EA is part of the EIAP for the proposed project and was prepared in compliance with NEPA regulations. The following paragraphs describe the laws and regulations that apply or may apply to the Proposed Action.

1.5.1 Interagency and Intergovernmental Coordination

Federal, state, and local agencies with jurisdiction that could be affected by the Proposed Action have been notified and consulted. A complete listing of the agencies consulted may be found in Chapter 6 and IICEP correspondence and responses are included in Appendix A. This coordination fulfills the Interagency Coordination Act and EO 12372 *Intergovernmental Review of Federal Programs* (14 July 1982), which requires Federal agencies to cooperate with and consider state and local views in implementing a Federal proposal. EO 12372 is implemented by the Air Force in accordance with Air Force Instruction (AFI) 32-7060, *Interagency and Intergovernmental Coordination for Environmental Planning.*

1.5.2 Permits

All underground utility locations would need to be identified prior to any construction activities. The contractor would also ensure that a storm water pollution prevention plan (SWPPP) was completed and a Notice of Intent (NOI) submitted to TCEQ a minimum of 10 days before initiating construction activities. During the impacts analysis process, other permits determined to be necessary will be added upon identification.

1.5.3 Other Regulatory Requirements

The EA considers all applicable laws and regulations, including but not limited to the following:

- *Clean Air Act*, as amended (CAA) (42 United States Code [USC] § 7401 *et seq.*)
- EO 11990, *Protection of Wetlands (*24 May *1977*)
- *Clean Water Act* (CWA) (33 USC § 1251 *et seq.*), including Section 404 (33 USC § 1344)
- Section 10 of the *Rivers and Harbors Act of 1899* (33 USC § 403)
- EO 11988, *Floodplain Management* (24 May 1977)
- *Endangered Species Act* (ESA) (16 USC § 1531-1542)
- *Pollution Prevention Act* (42 USC §§ 13101-13102 *et seq.*)
- *Archaeological Resources Protection Act* (ARPA) (16 USC § 470aa-mm)
- *National Historic Preservation Act* (NHPA) (16 USC § 470 *et seq.*)
- *American Indian Religious Freedom Act* (AIRFA) (42 USC § 1996)
- *Protection of Historic Properties* (36 CFR Part 800)
- *Native American Graves Protection and Repatriation Act of 1991* (NAGRPA)(25 USC § 3001 *et seq.*)
- *Resource Conservation and Recovery Act* (RCRA) (42 USC § 6901 *et seq.*)
- *Toxic Substance Control Act* (TSCA) (15 USC § 2601 *et seq.*)

- *Comprehensive Environmental Response, Compensation, and Liability Act* (CERCLA) (42 USC § 9610)
- *Superfund Amendments and Reauthorization Act* (42 USC § 9601 *et seq.*)
- *Emergency Planning and Community Right-to-Know Act* (42 USC § 11000 *et seq.*)
- EO 12580, *Superfund Implementation* (23 January 1987)
- *Occupation Safety and Health Act* (29 USC 651 *et seq.*)
- *Energy Independence and Security Act* (Public Law 110-140)
- EO 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations* (11 February 1994)

1.6 INTRODUCTION TO THE ORGANIZATION OF THE DOCUMENT

This EA is organized into seven chapters.

Chapter 1 Contains a statement of the purpose of and need for action, the location of the proposed and alternative actions, identification of the decision to be made, a summary of the scope of the environmental review, identification of applicable regulatory requirements, and a description of the organization of the document.

Chapter 2 Describes the history of the formulation of alternatives, identifies alternatives eliminated from further consideration, provides a detailed description of the Proposed Action, describes the No-action Alternative, summarizes other actions announced for the project sites and the surrounding community, provides a comparison matrix of environmental effects for all alternatives, identifies the preferred alternative, and describes measures to minimize or reduce impacts.

Chapter 3 Contains a general description of the current conditions of the resources that could potentially be affected by the proposed or alternative actions.

Chapter 4 Provides an analysis of the environmental consequences of the Proposed Action and No-action Alternative.

Chapter 5 Lists preparers of this document.

Chapter 6 Lists persons and agencies consulted in the preparation of this EA.

Chapter 7 Lists source documents relevant to the preparation of this EA.

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CHAPTER 2
DESCRIPTION OF THE PROPOSED ACTION AND ALTERNATIVES

This chapter has eight parts: a brief history of the formulation of alternatives, identification of alternatives eliminated from further consideration, a description of the Proposed Action, a description of the No-action Alternative, identification of other proposed actions planned for the communities surrounding the proposed project areas, a summary of environmental impacts of all alternatives, identification of the preferred alternative, and a table of measures to minimize impacts.

2.1 HISTORY OF THE FORMULATION OF ALTERNATIVES

The formulation of alternatives was based on current mission related needs of the 341 TRS. The existing campus currently has logistical deficiencies and does not allow for future expansion of the MWD mission. These deficiencies are detailed in Section 1.1.

Twelve projects have been proposed to correct the MWD deficiencies and allow for future expansion of the MWD mission. Each individual project is proposed for a particular location to maximize efficiency of mission activities. The following describes the location requirements for the proposed facilities on JBSA-LMB.

- Grooming Station – locate within close proximity to the kennel footprint to improve efficiency of the grooming process
- Vehicle Washrack – locate so as to improve traffic flow, utilize existing wastewater infrastructure, and allow for simultaneous washing of up to four MWD trailers
- Latrines – locate central to the training area for convenience and to save training time
- Headquarters building – co-locate with Operations and locate closer to the training environment in order to oversee the day-to-day activities and training occurring in the MWD campus
- Training Labs – locate within the current MWD training campus
- Physical Therapy Center – locate near the veterinary hospital and kennel complex
- Drug Vehicle Lot – locate in a fenced-in area dedicated to drug vehicle training and be located near other MWD training operations on JBSA-LMB
- Hospital Recovery Kennel – locate near the veterinary hospital, and locate so that the facility can be situated with the dogs facing away from each other to allow for a more calming, healing atmosphere
- Parking Lot – provide sufficient paved parking to support MWD staff members

Three of the projects proposed on the JBSA-LTA are intended to provide more efficient facilities to support the MWD mission. Given the existing development constraints on JBSA-LMB, there is not sufficient room on JBSA-LMB for relocation of existing MWD facilities from JBSA-LTA. However, sufficient space for MWD facility relocation is available within the JBSA-LTA. Location requirements for the proposed facilities on JBSA-LTA are described below:

- Relocate existing JBSA-LTA MWD facilities – locate outside the 100-year floodplain
- Lab – locate in the far northwest corner of the JBSA-LTA
- Grooming station – a mobile grooming facility would be used such that the facility could be relocated to MWD areas as needed. MWD personnel would have the opportunity to utilize the facility either on JBSA-LTA or JBSA-LMB.

The fourth proposed project on the JBSA-LTA would serve to demolish the MWD facilities located within the 100- year floodplain. Additionally, the chosen alternative must:

- Comply with Anti-Terrorism Force Protection (AT/FP) requirements
- Meet Unified Facilities Criteria (UFC)
- Provide efficient application of force protection measures
- Not result in construction in a floodplain
- Be designed such that dog trailers can be easily accessed and maneuvered within the gate area to allow for efficient dog loading and training
- Not impact mission critical facilities or operations

A range of alternatives was considered; however, based upon project siting requirements, some alternatives were eliminated from further consideration. These alternatives are discussed in more detail in Section 2.2. The alternative identified as the Proposed Action is described in Section 2.3, and impacts anticipated from implementation of the Proposed Action are described in Chapter 4.

2.2 ALTERNATIVES ELIMINATED FROM FURTHER CONSIDERATION

JBSA-Lackland considered possible alternatives that were eliminated because they did not meet the requirements presented in Section 2.1.

- **Relocate JBSA-LTA MWD Campus Facilities and Training Areas to JBSA-LMB MWD Campus**
  Relocation of MWD facilities and training areas from JBSA-LTA to JBSA-LMB was considered in order to consolidate the MWD Campus into one co-located training area. MWD training activities on JBSA-LTA utilize approximately 63 acres of open space, in addition to the existing MWD facilities totaling approximately one acre. In order to accommodate the existing JBSA-LTA open space used for training, the existing footprint of JBSA-LTA MWD facilities, as well as the proposed expansion of those facilities, approximately 65 acres of open space would have to be available on JBSA-LMB to

relocate this campus. Currently, there are approximately 34 acres of available open space within the JBSA-LMB MWD campus; however, it is currently utilized for other MWD training and would be unavailable for relocation of MWD facilities from JBSA-LTA to JBSA-LMB. As a result, this alternative was eliminated from further consideration.

- **Alternative location for the vehicle washrack (JBSA-LMB)**
  A vehicle washrack was considered for construction on the east end of the existing kennel area. The alternative location for the vehicle washrack was eliminated due to wastewater and drainage concerns. A pump or drainage system would have to be constructed to counteract the flow of water due to gravity.

- **Alternative location of the MWD Headquarters Building (JBSA-LMB)**
  Originally two locations were proposed for the MWD headquarters building. The first location was at the southwest corner of Tinker Street and Craw Avenue. This location was ultimately eliminated due to the fact that the other location was closer to the training environment.

- **Renovate Buildings 7481, 7485, and 7570 (Training Labs) to accommodate MWD Headquarters Operations (JBSA-LMB)**
  Renovation of Buildings 7481, 7485, and 7570 to accommodate MWD headquarters operations was considered; however, locating headquarters operations in three separate buildings would not meet the need of co-locating headquarters activities.

- **Renovate Building 7475 in lieu of demolition**
  JBSA-Lackland considered renovation of the former dormitory, Building 7475, in lieu of demolition; however, AFI 32-1021, *Planning and Programming Military Construction (MILCON) Projects* states that "when the estimated cost to repair a building exceeds 75 percent of the replacement cost, a replacement building should normally be programmed through the MILCON process." In this case, the facility is contaminated with mold and asbestos, and is physically unsound to the point that the repair cost would be greater than 75 percent of the replacement cost.

- **Grooming Station constructed within the floodplain (JBSA-LTA)**
  A permanent grooming station constructed in the floodplain near the existing kennels on JBSA-LTA was eliminated from further consideration. Any construction within a floodplain requires the preparation of a Finding of No Practicable Alternative (FONPA) as a component of the environmental analysis. Since a practicable alternative does exist (use of a mobile grooming station), a FONPA could not be prepared.

- **Alternative location for grooming station near the proposed kennels (JBSA-LTA)**
  A grooming station located outside of the floodplain, near the proposed kennels was eliminated due to their distance from the existing kennels which will be in operation for an indefinite period of time before the new kennels are constructed.

2.3 DETAILED DESCRIPTION OF THE PROPOSED ACTION

2.3.1 Revitalization of the Military Working Dog Campus

The Proposed Action consists of 12 projects located both on JBSA-LMB and JBSA-LTA, including approximately 72,090 square feet (sf) of demolition and 275,500 sf of construction. The proposed consolidation of the MWD training facilities on JBSA-LMB is shown in Figure 2-1; specific proposed JBSA-LMB projects are shown on Figure 2-2 and include the following:

- **Project 1** is the construction of a grooming station on JBSA-LMB with an estimated footprint of 56' x 32' (1,792 sf) located near Building 7498. The building would be climate controlled to allow for canine bathing and grooming unaffected by weather conditions.

- **Project 2** is the construction of a vehicle washrack and three MWD training labs on JBSA-LMB. The new washrack would be approximately 3,000 sf and could accommodate two trailers simultaneously. The MWD training labs would be approximately 9,000 sf each and would be used for specialized dog training and evaluation. This project includes the demolition of Buildings 7561, 7562, and 7563, for a total of 3,731 sf.

- **Project 3** is the construction of new latrines on JBSA-LMB near Building 7650 with a minimum footprint of 500 sf. The latrines would be consolidated into a central latrine and partitioned for male and female MWD staff and students.

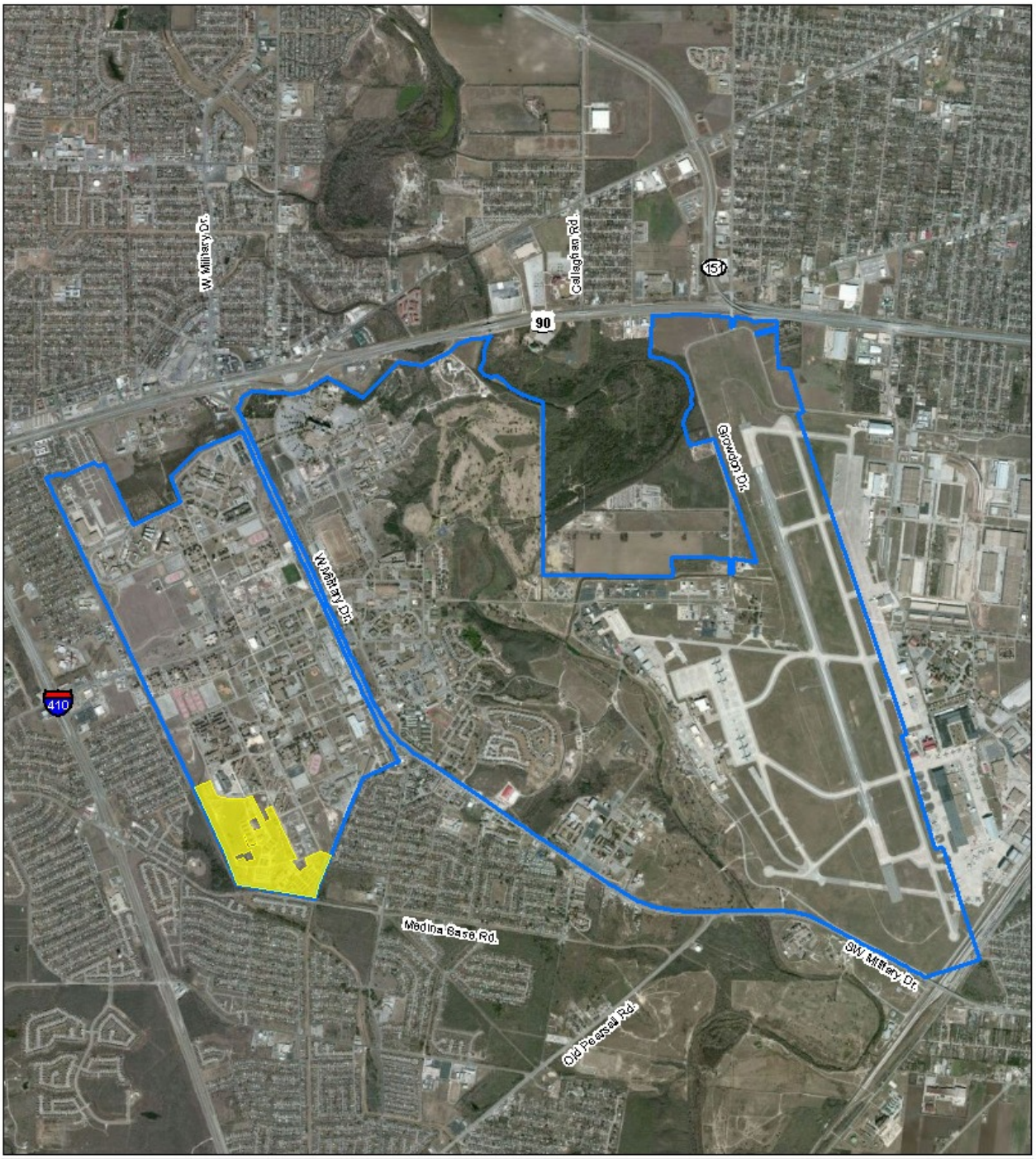
- **Project 4** is the construction of a MWD headquarters building on JBSA-LMB on the northwest corner of Knight and Craw Avenue. This project would result in a 26,201 sf facility that would include classroom training space, storage space, office space, and other administrative areas. Buildings 7481, 7485, and 7570, which are currently used as training labs, would be demolished as a component of this project and the headquarters building would be constructed in the area of the demolished buildings. The amount of demolition would total 16,762 sf.

- **Project 5** is the construction of one MWD training lab west of Craw Avenue, north of the proposed headquarters facility on JBSA-LMB. The lab would be approximately 9,000 sf and would be used for specialized dog training and evaluation. Building 7475 (6,913 sf) would be demolished to construct the MWD training lab.

- **Project 6** is the construction of a MWD Hospital Recovery Kennel on JBSA-LMB adjacent to the MWD Hospital, Building 7602, on the southwestern end. This location was chosen based on coordination with Veterinary Services to minimize transport of MWDs that are post-operation. This would allow for enhanced comfort, safety, and security of MWDs recovering from procedures. The center would be approximately 7,200 sf.

- **Project 7** is the construction of a Drug Vehicle Training Lot near the northwestern corner of the mock air strip on JBSA-LMB. This Drug Vehicle Training Lot would be approximately 43,600 sf, fenced in, and solely used for training.

- **Project 8** is the construction of a parking lot suitable for 180 vehicles located off of Knight to the east of Building 7700. This paved feature would be approximately 81,000 sf, which includes an estimate for driving lanes and green spaces, and would provide for orderly vehicular parking by MWD staff members by reducing the amount of parking on grassy areas.


W Military Dr.
Callaghan Rd.
151
90
Growden Dr.
W Military Dr.
410
Medina Base Rd.
SW Military Dr.
Old Pearsall Rd.
Legend
JBSA-Lackland
Proposed Military Working Dog Campus
Imagery: ESRI, Bing Mapping Service
0
1,625
3,250
6,500
Feet
Figure 2-1
Lackland Main Base
Proposed Military Working Dog Campus
JBSA-Lackland


ANDREWS AVE
TINKER ST
GOTT ST
HUGHES AVE
YANCE ST
CARSWELL AVE
CRAW AVE
KNIGHT ST
2
7
5
3
4 & 8
1
6
7562
7561
7563
7475
7481
7570
7485
7650
7602
7534
Lackland Main Base Project List
1. Construct Grooming Station
2. Demo Bldgs 7561, 7562, 7563; Construct 3 Labs and Wash Rack
3. Construct Latrines
4. Demo Bldgs 7481, 7485, and 7570; Construct MWD Headquarters
5. Demo Bldg 7475 and Construct Lab
6. Construct Hospital Recovery Kennel
7. Construct Drug Vehicle Training Lot
8. Construct Parking Lot
Legend
JBSA-Lackland
Proposed Project Areas
0
200
400
800
Feet
Figure 2-2
Lackland Main Base
Proposed Action Projects
JBSA-Lackland

The proposed relocation and consolidation of the MWD training facilities on JBSA-LTA is shown in Figure 2-3. The following specific proposed projects are all located on the JBSA-LTA (Figure 2-4) and would require construction of necessary infrastructure including sidewalks and utilities to support the new facilities located on the JBSA-LTA. In particular, asphalt roadways would be constructed around the kennels for quick pickup/delivery of MWDs.

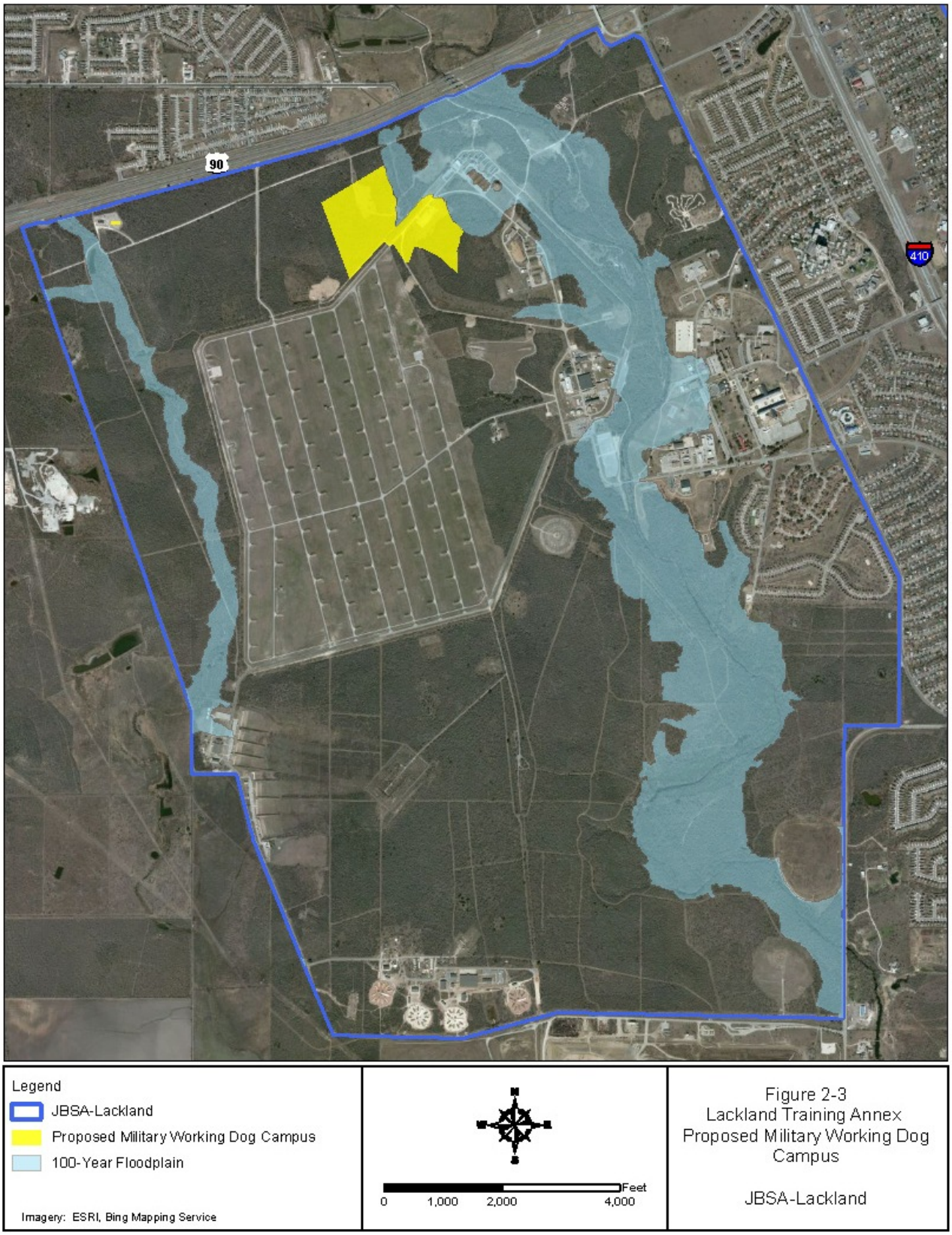
- **Project 9** is the relocation of the MWD operations outside the 100-year floodplain on the JBSA-LTA. This long-term project involves demolishing the entire MWD campus located in the 100-year floodplain (approximately 44,690 square feet) and relocating it further west on the JBSA-LTA, in the proximity of Patrol Rd. The relocation includes eight kennels, a Block I Handlers Course, two Handlers Course Search Labs, a Vet Clinic, Kitchen, Indoor Kennel, Dog Training School Lab, cement pad, three obstacle courses, four exercise pens, and four shade structures. All of the buildings and structures relocated (except the eight kennels) would be constructed to approximately the same size as their existing footprint. The eight kennels would be constructed to the same size requirements as Building 7600 on JBSA-LMB (40' X 150', or 6,000 sf). Total new construction for the relocation effort would be approximately 63,740 square feet.

- **Project 10** is the demolition of the existing buildings located within the 100-year floodplain on the JBSA-LTA. Demolition includes Buildings 435, 436, 437, 450, 452, 454, 456, 458, 462, 464, 466, 468, 470, 471, and 472. Demolition of these buildings would total approximately 44,690 sf.

- **Project 11** includes the use of a mobile grooming station on JBSA-LTA that could be located near the existing kennels and moved near the new kennels once constructed. Additionally, the mobile grooming station could be relocated to other areas of MWD campus providing increased flexibility for MWD operations when needed.

- **Project 12** includes the construction of a MWD lab on the far northwest corner of the JBSA-LTA. This lab would be approximately 9,000 sf and would provide dog trainers with classroom training prior to field exercises involving canine teams and detection of improvised explosive devices.

Construction of MWD facilities under the proposed action would follow guidelines presented in *Army Regulation 190-12; Field Manual 3-19.17;* AFI 32-1021, *Planning and Programming MILCON Projects;* and the *Design Guide for Military Working Dog Facilities.* Additionally, all projects under the Proposed Action would comply with state and federal regulations, including the Migratory Bird Treaty Act, and the National Historic Preservation Act. Compliance with the Migratory Bird Treaty Act would include limiting demolition, construction, and clearing activities to the non-breeding season for migratory birds; minimizing tree removal; and revegetating areas with suitable native grasses and trees. Compliance with the National Historic Preservation Act would include completing Section 106 coordination with the Advisory Council on Historic Preservation, as well as documenting with an American Building Survey/Historic American Engineer Recordation any NRHP-eligible buildings proposed for demolition.


90
410
Legend
JBSA-Lackland
Proposed Military Working Dog Campus
100-Year Floodplain
Imagery: ESRI, Bing Mapping Service
0
1,000
2,000
4,000
Feet
Figure 2-3
Lackland Training Annex
Proposed Military Working Dog Campus
JBSA-Lackland

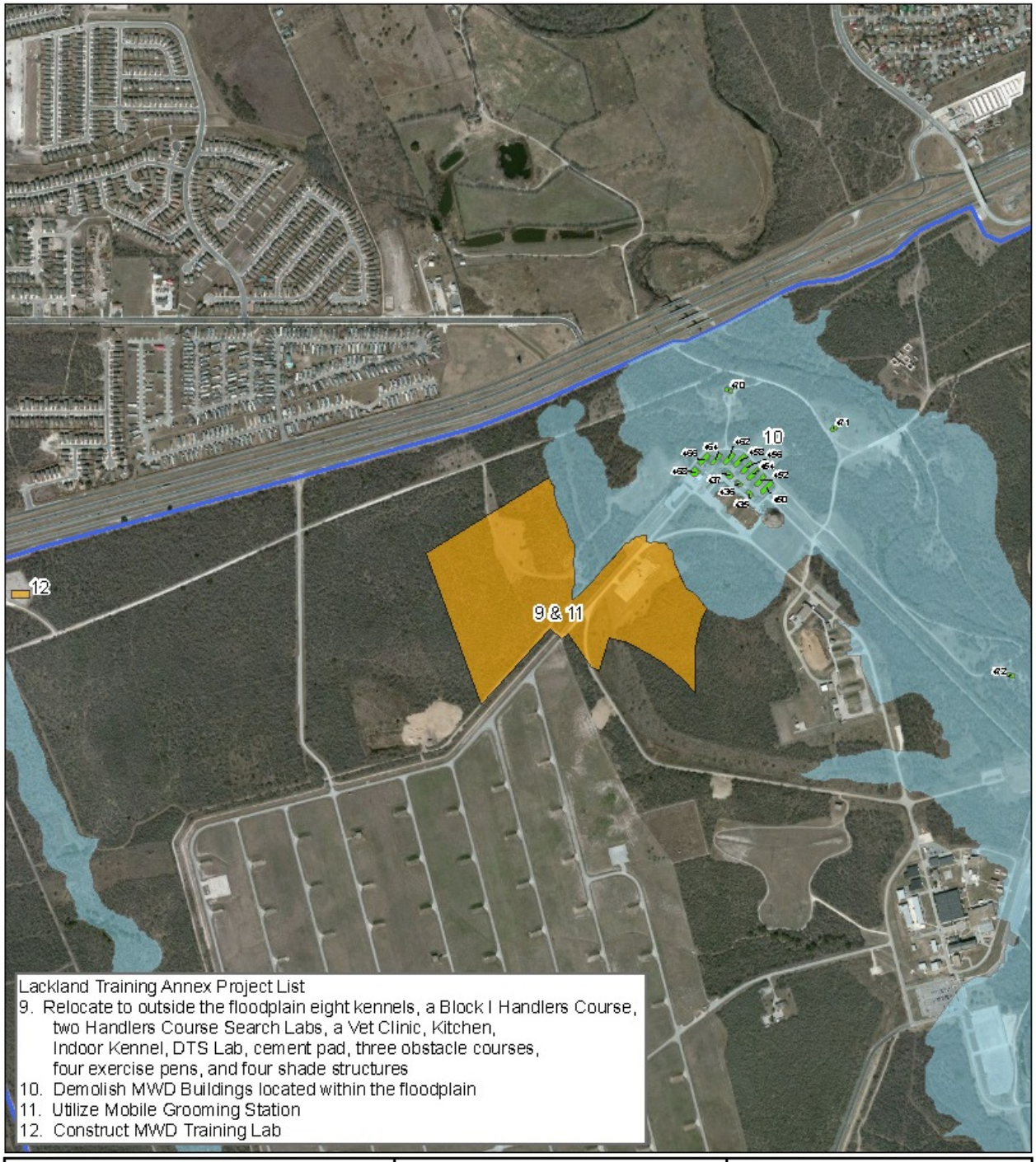


Figure 2-4
Lackland Training Annex
Proposed Action Projects

JBSA-Lackland

2.4 DESCRIPTION OF THE NO-ACTION ALTERNATIVE

The No-action Alternative would involve the continued use of the existing MWD Campus facilities without revitalization. The deficiencies in the existing MWD Campus would not be addressed, hindering the effectiveness of the MWD mission. Driving the MWDs between non-co-located MWD facilities on JBSA-LMB and JBSA-LTA would continue to waste valuable training time and fuel, and cause vehicle and trailer maintenance and cleaning issues to continue. Additionally, since the three rented portable toilets are not sufficient for the amount of people utilizing them, staff and handlers would continue to waste time walking long distances to and from the current latrines. Under the No-action Alternative, handlers, staff, and the MWD would continue to be affected by ambient weather conditions when using the Dog Grooming Facilities and the staff would continue to have difficulties washing MWD trailers and vehicles. Also, the Transportation Security Administration (TSA) is considering expanding their headquarters facility, which could result in the demolition of four former dormitories currently used as MWD training labs. Although this demolition is not programmed, if it were to occur, there would be a shortage of adequate MWD training locations. Dogs recovering in the Indoor Recovery Kennel would remain facing each other which is unfavorable to the MWD's health and recovery. Additionally, after surgery the dogs would have to be relocated to a completely separate building for recovery. The Drug Vehicle Lot would continue to occupy viable parking spots, exacerbating the existing parking issue. Furthermore, MWD facilities would remain in the 100-year floodplain resulting in potential impacts from flooding as well as limitations on expansion of those facilities. Finally, under the No-action Alternative, future expansion of the MWD mission, as determined by increases in world-wide security threats against US Armed Forces and its allies, would not be possible.

2.5 OTHER ACTIONS ANNOUNCED FOR THE PROJECT AREAS AND SURROUNDING COMMUNITY

This EA also considers the direct and indirect effects of cumulative impacts (40 CFR 1508.7) and concurrent actions (40 CFR 1508.25[1]). A cumulative impact, as defined by the CEQ (40 CFR 1508.7), is the "impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of which agency (Federal or non-Federal) or person undertakes such actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time."

Other actions announced for JBSA-Lackland and the surrounding area that could occur during the same time period as the proposed action are identified below.

- **Ambulatory Care Center**
  JBSA-Lackland is constructing an Ambulatory Care Center (ACC) complex and associated infrastructure at the San Antonio Military Medical Center – South Campus location and will demolish the existing Wilford Hall Medical Center (WHMC) complex and associated infrastructure. The ACC will have the capacity to provide care for more than 57,000 patients annually, and there will be no change in the number of civilian or

military personnel assigned to JBSA-Lackland. The construction of the ACC is being implemented in four phases over a period of approximately four years (2010 to 2014), and will ultimately replace the WHMC complex. An EA was prepared for this project and a FONSI has been signed.

- **Installation Development at JBSA-Lackland**
  JBSA-Lackland is implementing the requirements of the Base Realignment and Closure (BRAC) program and performing other installation development activities based on the current JBSA-Lackland Capital Improvements Program (CIP) to upgrade, replace, or supplement facilities. According to the EA prepared for this action, the implementation of the BRAC program consisted of the construction of 486,800 sf of new space and the construction of 100,000 sf of pavement. 30,700 sf of facilities were planned for demolition, and 323,350 sf of existing space was to be vacated. The components of the CIP assessed in the EA include the construction of 3,275,922 sf of new space and the construction or upgrade of 1,141,970 sf of pavement. Approximately 824,332 sf of facilities were planned for demolition and 174,100 sf of existing space would be vacated. Approximately 365,120 sf of pavement was also planned for demolition. An EA was prepared for this action in 2006 and a FONSI was signed. Since the EA was prepared, several of the BRAC/CIP projects in the vicinity of the MWD Proposed Action have been completed and many have been cancelled. Currently, administrative functions are housed in Building 171 at Port San Antonio and operate under a lease with the Port. It is unknown how long the Port will keep renewing the lease and whether future BRAC recommendations could accelerate or decelerate movement of these organizations off the Port. Therefore, this project is not considered reasonably foreseeable. One project, construction/replacement of two elevated bridges at Leon Creek, is located almost two miles from the MWD campus and is not yet programmed due to lack of funding. The Headquarters Administrative Center is proposed for construction approximately 0.6 miles from the JBSA-LMB proposed projects. The Headquarters Administrative Center is in the installation long-range base plan (beyond five years); however, construction activities could potentially overlap with portions of the Proposed Action assessed in this EA (specifically construction of MWD labs). Therefore, construction of the Headquarters Administrative Center is the only component of the Installation Development EA that is being carried forward for analysis for cumulative effects in this EA.

- **Defense Language Institute English Language Center (DLIELC) and Inter-American Air Forces Academy (IAAFA) Area Development Plan**
  JBSA-Lackland proposes to implement an Area Development Plan (ADP) for the DLIELC and IAAFA academic campus. Implementing the ADP would include the construction of new facilities and infrastructure, facility demolition, the installation of temporary modular trailers, and an increase in student and administrative population. The new facilities and academic campus footprint would accommodate approximately 4,600 students and 1,675 administrative staff, which is an increase of 3,705 students and 1,096 staff upon full implementation. The proposed construction and demolition would begin in 2011 and occur in phases over the next 20 years until 2031. Temporary facilities would be installed immediately and removed upon completion of the facilities that would

permanently accommodate the additional students and staff. Environmental impacts of these actions are currently being assessed in an EA.

- **San Antonio Water System (SAWS) Western Watershed Sewer Relief Line C**
  SAWS proposes to construct approximately 22,100 linear feet of a new 54-, 84-, and 90-inch diameter gravity sewer line extending through JBSA-Lackland between US Highway 90 and SW Military Drive, to include the abandonment of the existing 54-inch wastewater pipeline and its 50-foot wide easement. A portion of the line would transverse the Commercial Vehicle Inspection Area/Entry Control Point (CVIA/ECP) gate site identified in the Proposed Action. The new sewer relief line would be installed in a new easement with enough clearance for the existing line to minimize the possibility of collapse or further damage to the existing sewer during the construction phase. A new 75-foot wide permanent utility easement and a 25-foot wide temporary construction easement are recommended for the proposed Western Watershed Sewer Relief Line C. The temporary easement would remain in-place only during the construction phase of the installation to allow additional space for construction-related activities. The utility easement would continue to provide ingress and egress for conducting maintenance on the sanitary sewer relief line after the conclusion of construction. An EA is currently being prepared for this project.

- **Growdon Gate/Road Relocation and Land Acquisition**
  The Proposed Action would involve the acquisition of approximately 232 acres of land located northwest of the existing Growdon Road 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 sf. A new 9,000 foot long road would be constructed from US 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 sf of Growdon Road from the existing CVIA/ECP to the location of the new Growdon Road concurrence would be demolished. An EA is currently being prepared for this project.

- **Transportation Security Administration Canine Academy and Associated Training Facilities**
  USAF and 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 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.

For this analysis, the actions identified above are addressed from a cumulative perspective and are analyzed in Chapter 4. Given that the actions above would be funded separately from the Proposed Action and implementation would not be dependent upon another, the actions would not be incorporated into the baseline. All of the actions identified above have been, or are in the process of being evaluated under separate NEPA cover and were incorporated in this analysis for their potential cumulative effect.

2.6 COMPARISON OF ENVIRONMENTAL EFFECTS OF ALL ALTERNATIVES

Table 2-1 summarizes the impacts of the Proposed Action and the No-action Alternative. This table provides a comparison of the effects of the alternatives to assist in the decision-making process.

2.7 IDENTIFICATION OF THE PREFERRED ALTERNATIVE

The Air Force has evaluated each alternative to identify which one best complies with the mission, meets the operational goals of JBSA-Lackland, and accomplishes the purpose and need of the action. By consolidating the MWD campus on JBSA-LMB, and relocating and consolidating the MWD facilities on JBSA-LTA, MWD training activities would become more efficient and effective. Deficiencies in the existing campus would be corrected and relocation of MWD facilities at JBSA-LTA to outside of the floodplain would allow for future expansion of the MWD campus. The No-action Alternative does not meet the purpose and need of the action. The preferred alternative is the Proposed Action.

Section 2.2 describes other alternatives eliminated from further consideration. These alternatives were eliminated either because they did not meet the purpose, need, mission, or project siting requirements, or they would not meet established Air Force Instructions. The alternate location for the vehicle washrack would not have met the requirement to utilize existing wastewater infrastructure. The MWD headquarters building alternative would result in inefficiencies of the MWD mission. Renovation of the training labs for the MWD headquarters operations would not meet the requirement of co-locating headquarters activities. Renovation of Buildings 7475 and 7594 would not meet the requirements of AFI 32-1021, *Planning and Programming MILCON Projects*. Constructing a permanent grooming station within the floodplain would not meet the requirement of locating MWD facilities outside the 100-year floodplain. Finally, the alternative location for a grooming station near the proposed kennels would not have met the siting requirement of being located near the existing kennels. The Preferred Alternative avoids those direct impacts while meeting the mission, operational goals of JBSA-Lackland, and the purpose and need of the action.

2.8 MEASURES TO MINIMIZE IMPACTS

Analysis of environmental impacts has determined that some mitigation measures would be necessary to prevent significant adverse effects. Additionally, best management practices (BMPs) are proposed to help minimize impacts. Table 2-2 presents a summary of these mitigation measures and best management practices proposed under the Proposed Action and the No-action Alternative.

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Table 2-1 Summary of Environmental Impacts

Resource	Proposed Action Update and Expand MWD Campus	No-action Alternative
Air Quality	• No increase in long-term emissions from MWD campus operations. • Temporary increase in emissions of criteria pollutants. These minor emissions would be eliminated after the activity is completed. • Temporary increase in emissions would not contribute significantly to climate change, but any emission of GHGs represents an incremental increase in global GHG concentrations.	• No change from baseline conditions.
Noise	• Short-term increase in noise levels from construction and demolition noise. • Outdoor and indoor construction noise levels at the residences near the JBSA-LTA and JBSTA-LMB project sites below baseline levels • No construction noise impacts to MWDs while inside kennel facilities. • No long-term increase in noise levels.	• No change from baseline conditions.
Land Use	• Land use designation changes on JBSA-LTA compatible with existing land uses. • No change to land use designation on JBSA-LMB. • Long-term, minor reduction in land classified as prime farmland; however, due to historical use as military land, the land has been unavailable for agricultural use for over sixty years. • No conflict with existing land uses or master planning efforts undertaken by the installation or surrounding jurisdictions.	• No change from baseline conditions.
Earth Resources	• No change to lithology, stratigraphy, and geological structures, soil composition, structure, or function. • Areas disturbed would be susceptible to erosion on a short term basis but minimized through use of best management practices. • Long-term, minor reduction in land classified as prime farmland; however, due to historical use as military land, the land has been unavailable for agricultural use for over sixty years. • Short-term increase in dust and soil disturbance from construction of new roads and infrastructure, limited to those areas on or near construction sites, and lasting only as long as the duration of construction.	• No change from baseline conditions
Water Resources	• Minor increase in quantity of groundwater used due to the construction and use of new latrines on JBSA-LMB. • No direct impact on Leon Creek or Medio Creek from construction activities. Potential for indirect construction impacts to Medio Creek or Leon Creek from exposed soils resulting in increased sediment runoff. • Increase in storm water outfall to Leon Creek and Medio Creek due to increase in impervious cover. • No long-term impacts to surface water quality and no violation of existing water quality standards and applicable regulations. • No major alterations to drainage patterns or flood carrying capacities of water courses. • No impacts to floodplains.	• No change from baseline conditions • Structures within the floodplain on JBSA-LTA would continue to be susceptible to flooding.
Biological Resources	• Long-term impacts to improved grounds on JBSA-LMB; however, the area is already disturbed and does not support natural vegetation. • Long-term adverse effects to wildlife from conversion of 36 acres of native habitats to development and training activities on JBSA-LTA. • Potential for spread and proliferation of invasive or noxious species; however, implementation of an Invasive Species Management and Control plan would help control and/or limit the potential spread. • Minimal to no impacts to wildlife on JBSA-LMB due to limited wildlife habitat in the vicinity of the proposed JBSA-LMB projects. • Short- and long-term adverse impacts to wildlife habitats and some species on JBSA-LTA. • No discernible impacts to wetlands and water features. • No impacts to protected species with potential habitat on JBSA-Lackland lands due to their lack of presence on the installation. No impacts to eight protected species occurring on the Comal Springs area of the Edwards Aquifer due to minimal increased water withdrawals.	• No change from baseline conditions
Cultural Resources	• No effect on historic properties on JBSA-LMB from new construction. • Adverse effect on one NRHP-eligible building (Building 437) and Q-Area Historic District of which this building is a contributing element. A Historic American Building Survey/Historic American Engineer Recordation documentation of Building 437 would diminish impacts. • Two NRHP-eligible buildings slated for demolition (Buildings 435 and 436) have already been mitigated through SHPO-approved Historic American Building Survey documentation of Buildings 425 and 426. Therefore, the Proposed Action would not have an adverse impact upon Buildings 435 and 436.	• No change from baseline conditions
Hazardous Materials and Waste	• Asbestos containing material and lead based paint assessments required prior to demolition. • No collection, storage, or improper disposal of hazardous substances, including asbestos. • Long-term beneficial impacts from removal of pesticide contaminated soils, if found. • No additional hazardous wastes generated; however, medical waste in the form of animal carcasses would continue to be occasionally generated. • No impacts to or from Environmental Restoration Program sites.	• No change from baseline conditions

Table 2-1 Summary of Environmental Impacts (Continued)

Resource	Proposed Action Update and Expand MWD Campus	No-action Alternative
Utilities and Infrastructure	• Long-term increase in electricity and natural gas usage due to expansion of MWD campus; however, sufficient capacity exists to accommodate the increase. • Increase in solid, non-hazardous waste generated during from demolition and construction; however, sufficient capacity exists at landfill to accommodate the increase. • No change in water or wastewater such that it exceeds the capacity of the utility providers or infrastructure. • Long-term increase in storm water runoff due to total increased impervious cover. • Beneficial impacts to the drainage of storm water from the JBSA-LTA to Medio Creek due to conversion of approximately 44,690 sf of structures located within the 100-year flood plain to a natural, vegetated state.	• No change from baseline conditions
Safety	• No change in number and severity of incidents related to training. • No increase in the number or severity of traffic accidents. • Short-term increase in the potential for incidents during construction.	• No change from baseline conditions
Socioeconomic Resources	• Benefit from expenditures incurred from the construction and demolition of the MWD campus facilities. • No change to long-term employment rates or local business function.	• No change from baseline conditions
Environmental Justice	• There would be no disproportionate and adverse impacts to minority or low-income populations as a result of the Proposed Action.	• No change from baseline conditions

Table 2-2 Summary of Measures to Minimize Impacts

Resource	Measures to Minimize or Reduce Impacts and BMPs
Air Quality	• No mitigation is proposed. BMPs to reduce the impact to local air quality would include watering the disturbed area of the construction, covering dirt and aggregate trucks and/or piles, prevention of dirt carryover to paved roads, the use of erosion barriers and wind breaks, and the use of low sulfur and bio-diesel fuel in construction/transport vehicles.
Noise	• No mitigation is proposed. BMPs to reduce construction-associated noise include equipping noise-generating heavy equipment with the manufacturer's standard noise control devices, properly maintain all equipment, limiting construction hours to between 0700 and 1900 hours, and reducing occupational exposure by requiring workers to wear appropriate hearing protection. Use of berms or screen walls could be utilized as noise buffers to reduce distraction to MWDs from the construction noise.
Land Use	• No mitigation or BMPs are proposed.
Earth Resources	• No mitigation is proposed. BMPs to reduce impacts to earth resources include site-specific sediment and erosion control plans to prevent soil disturbance, capture and contain loose soil, and slow the movement of storm water during heavy rains, such as watering of the soil, and re-vegetating areas to prevent erosion.
Water Resources	• No mitigation is proposed. The SWPPP would include implementation of appropriate BMPs, such as silt fencing and rock filter dams, during construction activities.
Biological Resources	• Mitigation to prevent adverse impacts to migratory birds, and ensure compliance with the Migratory Bird Treaty Act, includes conducting the demolition, construction, and clearing activities during the non-breeding season for most migratory birds (August through January); keeping the removal of trees to a minimum to reduce impacts on resident and nesting bird species; and revegetation of cleared areas with suitable native grasses and trees. BMPs include implementation of an Invasive Species Management and Control Plan to help control the potential spread of invasive species and other standard construction BMPS for runoff control and hazardous material spill control and clean up.
Cultural Resources	• To mitigate impacts to one NRHP-eligible building, Section 106 coordination would be required, as well as documentation through an American Building Survey/Historic American Engineer Recordation. Historic District impacts would be mitigated through consultation with the Advisory Council on Historic Preservation during Section 106 coordination.
Hazardous Materials and Waste	• No mitigation or BMPs are proposed.
Utilities and Infrastructure	• No mitigation is proposed. A SWPPP would be developed for the construction of the Proposed Action, and it would include the implementation of appropriate BMPs, such as silt fencing and rock filter dams.
Safety	• No mitigation is proposed. BMPs to reduce the risk of potential bodily injury, death or property damage would include posting signs in unfamiliar work areas to mark detours, alternate parking areas, time delays, potentially dangerous work areas, and use of personal protective equipment.
Socioeconomic Resources	• No mitigation or BMPs are proposed.
Environmental Justice	• No mitigation is proposed. BMPs to reduce noise impacts would include utilization of standard noise control devices on equipment and limitation of hours of construction. Additionally, noise level reduction properties of building's construction materials would serve to lessen noise impacts.

Notes:
BMP – Best Management Practices

CHAPTER 3
AFFECTED ENVIRONMENT

3.1 INTRODUCTION

This chapter describes the current conditions of the environmental resources, either man-made or natural, that would be affected by implementation of the Proposed Action or No-action Alternative. Section 3.3 focuses on the conditions at the proposed project site and surrounding area. The baseline conditions presented in this chapter are described to the level of detail necessary to support analysis of potential impacts presented in Chapter 4, Environmental Consequences.

3.2 INSTALLATION LOCATION, HISTORY, AND CURRENT MISSION

JBSA-Lackland is the USAF's only site for enlisted Basic Military Training, and also offers professional, technical skills, and English language training for members of the US Air Force, other military services, government agencies, and allies. JBSA-Lackland hosts numerous tenants including the Air Reserve Command's 433rd Airlift Wing, the Texas Air National Guard 149th Fighter Wing, the 59th Medical Wing, the Air Force Intelligence, Surveillance and Reconnaissance Agency, and the 67th Network Warfare Wing. JBSA-Lackland is located within the City of San Antonio and unincorporated Bexar County, Texas.

In 1942, Lackland AFB began as the San Antonio Aviation Cadet Center (SAACC). An increased demand for Airmen arose during America's mobilization after Pearl Harbor, and aviation cadets quickly mobilized at Kelly Field for pilot, navigator, or bombardier training. To ensure the demand for pilots was met, the SAACC facility received designation as an independent military installation with a preflight school, classification center, station hospital, and several other units (USAF 2012a). Approximately 90,000 candidates for flying training passed through the preflight school before the need diminished. The school was closed in 1945 and the installation's new mission became receiving veterans from the combat theaters and either reassigning them or separating them. In 1946, the mission of the installation changed again when the base was redesignated as the Army Air Force Military Training Center, becoming the sole basic military training mission for the Army Air Force. In 1947, the War Department named the base for Brigadier General Frank D. Lackland. In 2010, in accordance with congressional legislation implementing the recommendations of the 2005 Base Realignment and Closure Commission, Fort Sam Houston, Lackland AFB, Randolph AFB, and the 502d Air Base Wing merged to form Joint Base San Antonio.

Currently, JBSA-Lackland, known as the "Gateway to the Air Force," is home to the 37th Training Wing, which is the largest training wing in the US Air Force. The 37th Training Wing is responsible for four primary training missions which graduates more than 80,000 students annually and provides base operations and support to 45,000 people (Bexar County 2010).

3.3 DESCRIPTION OF THE AFFECTED ENVIRONMENT

3.3.1 Air Quality

3.3.1.1 Air Quality Standards and Regulations

The United States Environmental Protection Agency (USEPA) has established primary and secondary National Ambient Air Quality Standards (NAAQS) under the Clean Air Act Amendments of 1990 (CAAA). The CAAA also set emission limits for certain air pollutants from specific sources, set new source performance standards based on best demonstrated technologies, and established national emission standards for hazardous air pollutants.

The CAAA specifies two sets of standards – primary and secondary – for each regulated air pollutant. Primary standards define levels of air quality necessary to protect public health, including the health of sensitive populations such as people with asthma, children, and the elderly. Secondary standards define levels of air quality necessary to protect against decreased visibility and damage to animals, crops, vegetation, and buildings. Federal air quality standards are currently established for six pollutants (known as criteria pollutants), including carbon monoxide (CO), nitrogen dioxide (NO_2), ozone (O_3), sulfur oxides (SOx, commonly measured as sulfur dioxide – SO_2), lead, particulate matter equal to or less than 10 micrometers in aerodynamic diameter (PM_{10}) and particulate matter equal to or less than 2.5 micrometers in aerodynamic diameter ($PM_{2.5}$). Although O_3 is considered a criteria pollutant and is measurable in the atmosphere, it is often not considered as a pollutant when reporting emissions from specific sources, because O_3 is not typically emitted directly from most emissions sources. Ozone is formed in the atmosphere from its precursors – nitrogen oxides (NOx) and volatile organic compounds (VOCs) – that are directly emitted from various sources. Thus, emissions of NOx and VOCs are commonly reported instead of O_3.

The NAAQS for the six criteria pollutants are shown in Table 3-1. Units of measure for the standards shown in this table are micrograms per cubic meter of air (µg/m3), except for ozone, which is in parts per million (ppm).

The USEPA classifies the air quality within an Air Quality Control Region (AQCR) according to whether the region meets federal primary and secondary air quality standards. An AQCR or portion of an AQCR may be classified as attainment, non-attainment, or unclassified with regard to the air quality standards for each of the criteria pollutants. "Attainment" describes a condition in which standards for one or more of the six pollutants are being met in an area. The area is considered an attainment area for only those criteria pollutants for which the NAAQS are being met. "Nonattainment" describes a condition in which standards for one or more of the six pollutants are not being met in an area. "Unclassified" indicates that air quality in the area cannot be classified and the area is treated as attainment. An area may have all three classifications for different criteria pollutants.

Table 3-1 National Ambient Air Quality Standards

Pollutant	Standard Value ($\mu g/m^3$)[a]	Standard Type
CO		
1-hr average	40,000	Primary
8-hr average	10,000	Primary
NO_2		
1-hr average[b]	188	Primary and secondary
Annual average	100	
O_3		
8-hr average (2008 std)[c]	0.075	Primary
8-hr average (1997 std)[d]	0.08	Primary
Lead		
Quarterly average	1.5	Primary
PM_{10}		
24-hr average[e]	150	Primary and secondary
$PM_{2.5}$		
24-hr average[f]	35	Primary
Annual average[g]	15	Primary
SO_2		
1-hour average[h]	196	Primary
3-hr average	1,300	Secondary
24-hr average	365	Primary
Annual average	80	Primary

Notes:

Source: USEPA 2012a

[a] Units for ozone are parts per million (ppm).

[b] To attain this standard, the 3-year average of the 98th percentile of the daily maximum 1-hour average at each monitor within an area must not exceed this 188 $\mu g/m^3$.

[c] To attain the 8-hour ozone standard, the 3-year average of the fourth-highest daily maximum 8-hour average ozone concentrations measured at each monitor within an area over each year must not exceed 0.075 ppm.

[d] (1) To attain this standard, the 3-year average of the fourth-highest daily maximum 8-hour average ozone concentrations measured at each monitor within an area over each year must not exceed 0.08 ppm.

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

(3) USEPA is in the process of reconsidering these standards (set in March 2008).

[e] The 24-hour standard for PM_{10} is not to be exceeded more than once per year.

[f] The $PM_{2.5}$ 24-hour standard is based on the 3-year average 98_{th} percentile of 24-hour concentrations at each population-oriented monitor.

[g] The $PM_{2.5}$ annual standard is based on 3-year average of annual arithmetic means.

[h] Final rule signed June 2, 2010. To attain this standard, the 3-year average of the 99_{th} percentile of the daily maximum 1-hour average at each monitor within an area must not exceed 197 $\mu g/m^3$.

The CAAA requires federal actions to conform to any applicable state implementation plan (SIP). USEPA has promulgated regulations implementing this requirement (USEPA 2003a and USEPA 2003b). A SIP must be developed to achieve the NAAQS in non-attainment areas (i.e., areas not currently attaining the NAAQS for any pollutant) or to maintain attainment of the NAAQS in maintenance areas (i.e., areas previously non-attainment areas but are currently attaining that NAAQS). General conformity refers to federal actions other than those conducted according to specified transportation plans. Therefore, the General Conformity rule applies only to non-transportation actions in non-attainment or maintenance areas. Such actions must perform a determination of conformity with the SIP if the emissions resulting from the action exceed applicability thresholds specified for each pollutant and classification of nonattainment.

Both direct emissions from the action itself and indirect emissions that may occur at a different time or place but are an anticipated consequence of the action must be considered. The Transportation Conformity Rule applies to transportation plans, programs, and projects which are developed, funded, or approved by the Federal Highway Administration or Federal Transit Administration. This project would not be developed, funded, or approved by either of these organizations; therefore, the Transportation Conformity Rule does not apply to this project since the Proposed Action is not a transportation project.

The applicability thresholds are shown in Table 3-2.

Table 3-2 General Conformity Applicability Thresholds

NAAQS Pollutant	Type of Nonattainment or Maintenance Area	Applicability Threshold (tpy)
Ozone	Extreme NAAs	10 tpy VOC or NO_x
	Severe NAAs	25 tpy VOC or NO_x
	Serious NAAs	50 tpy VOC or NO_x
	Marginal or moderate NAAs inside an ozone transport region	50 tpy VOC (100 tpy NO_x)
	Maintenance areas inside an ozone transport region	50 tpy VOC (100 tpy NO_x)
CO	All NAAs	100 tpy
SO_2	All	100 tpy
PM_{10}	Serious NAAs	70 tpy PM_{10}
	Moderate NAAs	100 tpy PM_{10}
	All Maintenance areas	100 tpy
$PM_{2.5}$	All	100 tpy
Lead	All NAAs	25 tpy Pb
	All Maintenance areas	25 tpy Pb

Note:
CO = carbon monoxide
NAA = nonattainment area
NO_x = nitrogen oxides
O_3 = ozone
Pb = lead
$PM_{2.5}$ = particulate matter equal or less than 2.5 micrometers in diameter
PM_{10} = particulate matter equal or less than 10 micrometers in diameter
SO_2 = sulfur dioxide
tpy = tons per year

A number of actions are exempted from the requirements of general conformity including:

- Actions that do not have emissions increases.
- Actions with an emissions increase that is clearly *de minimis* (21 actions are listed; primarily actions that are administrative, legal, or routine in nature including routine movement of mobile assets, material and personnel as well as routine maintenance and repair).
- Actions that are not reasonably foreseeable or that respond to natural disasters or emergencies.
- Actions that have been approved under specified Federal programs.

If an action triggers the applicability thresholds and is not exempt from the requirements, the Federal agency must demonstrate and document that the direct and indirect emissions would conform to the SIP. In particular, it must be demonstrated that the proposed action will not:

- Cause or contribute to a new violation of an NAAQS.
- Interfere with the SIP.
- Increase the frequency or severity of existing violations.
- Delay attainment or any required progress toward that attainment.

The determination generally involves emission estimation and air quality modeling for the entire nonattainment or maintenance area (usually a multi-county area). If the initial conformity determination demonstrates that the proposed action does not conform to the SIP, measures must be established and committed to mitigate the projected air quality impacts. A timeline for implementation of these measures may be specified; however, enforcement measures must also be established to ensure that they are implemented as required.

3.3.1.2 Regional Air Quality

JBSA-Lackland is located within the Metropolitan San Antonio Interstate AQCR 217, which consists of the counties of Atascosa, Bandera, Bexar, Comal, Dimmitt, Edwards, Frio, Gillespie, Gonzales, Guadalupe, Karnes, Kendall, Kerr, Kimble, Kinney, La Salle, Mason, Maverick, Medina, Real, Uvalde, Val Verde, Wilson, and Zavala. The San Antonia Metropolitan Statistical Area (MSA) (Bexar, Comal, Guadalupe, and Wilson Counties) is designated as a basic nonattainment area for ozone with deferred attainment date under their Early Action Compact (EAC). Therefore, JBSA-Lackland is subject to the General Conformity regulations (40 CFR Parts 6, 51 and 93). This requires a conformity determination for each pollutant where the total direct and indirect emissions from a Federal action exceeds the corresponding *de minimis* level (as displayed in Table 3-2).

Potential new emissions from the Proposed Action would occur primarily from construction activities at JBSA-Lackland and would include activities such as grading, excavation, filling, and equipment operation. Thus, emissions would be localized within the area surrounding the project location. For this reason, the analysis in this EA will address potential impacts within the San Antonia MSA, instead of the entire AQCR that covers a large geographical area.

3.3.1.3 Greenhouse Gases

The six GHGs covered by the Kyoto Protocol include carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulfur hexafluoride (SF_6). The emissions of each GHG are calculated separately and then converted to CO_2 equivalents (CO_{2eq}) on the basis of their global warming potential (GWP) the universal unit of measurement expressed in terms of one unit of carbon dioxide. GWP is used to evaluate the release of different GHGs against a common basic measure of how much a given mass of greenhouse gas is estimated to contribute to climate change. It is a relative scale which compares the gas in question to that of the same mass of carbon dioxide (whose GWP is by definition 1). Table 3-3 lists the GWP (USEPA 2005) of the six GHGs regulated under the Kyoto Protocol.

Table 3-3 Global Warming of Kyoto Protocol GHGs

Gas	Chemical Formula	GWP[a]
Carbon dioxide	CO_2	1
Methane	CH_4	21
Nitrous oxide	N_2O	310
Hydrofluorocarbons	HFCs	various
Perfluorocarbons	PFCs	various
Sulfur hexafluoride	SF_6	23,900

Notes:
CH_4 = methane
CO_2 = carbon dioxide
GWP = global warming potential
HFCs = hydrofluorocarbons
N_2O = nitrous oxide
PFCs = perfluorocarbons
SF_6 = sulfur hexafluoride
[a] Source: USEPA 2005

Only three of the Kyoto GHGs, are considered in the emissions from the Proposed Action. These three GHGs, CO_2, CH_4, and N_2O, represent the majority of CO_{2eq} associated with operations in the Proposed Action. The other Kyoto GHGs were not considered in the potential emissions from the Proposed Action as they are presumed to be not emitted due to the proposed nature of the action. HFCs are most commonly used in refrigeration and air conditioning systems; PFCs and SF_6 are predominantly emitted from various industrial processes including aluminum smelting, semiconductor manufacturing, electric power transmission and distribution, and magnesium casting.

Direct emissions of CO_2, CH_4 and N_2O occur naturally to the atmosphere but human activities have increased global GHG atmospheric concentrations. The 2010, total US GHG emissions were 6,821,800,000 metric tons of CO_{2eq} (USEPA 2012c). US total GHG emissions have risen 10.5 percent from 1990 to 2010 (USEPA 2012c).

3.3.2 Noise

3.3.2.1 Definition of the Resource

Noise is sound that, if loud enough, can induce hearing loss and can be undesirable if it annoys people due to interference with ordinary daily activities, such as communication or sleep. A person's reaction to noise varies according to the duration, type, and characteristics of the source, distance between the source and receiver, receiver's sensitivity, background noise level and time of day.

Sound is a series of vibrations (energy) transmitted through a medium that are perceived by a receiver. Sound varies in intensity and frequency. It is measured by accounting for the energy level represented by the amplitude (volume) and frequency (pitch) of those vibrations and comparing that to a baseline standard. Sound pressure level (SPL) described in decibels (dB) is used to quantify sound intensity. It is a measure of the maximum sound pressure at a given instant and known distance. The dB is a logarithmic unit that expresses the ratio of the SPL to a standard reference level. When using decibels to depict airborne SPLs, zero dB is the threshold

of human hearing and exponential increases occur every ten dB. An event that generates 60 dB of sound is ten times louder than one that generates 50 dB.

The Day-Night Average Sound Level (DNL) is one of the most common ways to describe ambient noise exposure over an extended period of time. DNL is the metric recognized by the US government for measuring noise and its impacts on humans (US Air Force 2010a). It describes a receiver's cumulative noise exposure from all events occurring during a 24-hour period; events occurring between 10:00 p.m. and 7:00 a.m. ("environmental night") are increased by 10 dB to account for greater nighttime sensitivity to noise events. The SPL represented by a given decibel value is usually adjusted to make it more relevant to sound that the human ear hears especially well; for example, an "A-weighted" decibel (dBA) is derived from emphasizing mid-range frequencies to which the human ear responds especially well and de-emphasizing the lower and higher range frequencies.

The Maximum Sound Level (Lmax) is the peak value of all the A-Weighted Sound Levels that occur during a noise event. The limitation of this metric for noise (annoyance) analysis is that peak sound level without a context of duration or time of day does not adequately address annoyance. For example, most would agree that a single 140 dB Lmax event lasting 3 seconds (i.e., an aircraft flyover) that occurs once per day around 1:00 p.m. is less annoying than a 95 dB Lmax event (a jackhammer in a construction site) that lasts for 6 hours, every day and occurs at 11:00 p.m.

Federal and local governments have established noise guidelines and regulations for the purpose of protecting citizens from potential hearing damage and from various other adverse physiological, psychological, and social effects associated with noise.

Hearing Loss. The potential for permanent hearing loss arises from direct exposure to noise on a regular, continuing long-term basis to levels about 75 dBA DNL. Hearing loss is not expected in people exposed to 75 dBA DNL or less for eight hours per day, as long as noise exposure over the remaining 16 hours per day is low enough to not substantially contribute to the 24-hour average (USEPA 1974).

Construction Noise. Building construction and demolition work can cause an increase in sound that is well above the ambient level. Table 3-4 lists noise levels associated with the types of construction equipment expected to be utilized during demolition, site preparation, construction, and finishing work associated with the Proposed Action. As shown in Table 3-4 the construction equipment produces peak SPLs ranging from 75 to 85 dBA at 50 feet (ft) from the source; which decreases by six dBA with every doubling of the distance from the source. It should also be noted that this table includes the level generated, but does not account for the ability of sound to be reflected/absorbed by nearby objects, which could further reduce noise levels.

Table 3-4 Construction Equipment Peak Sound Pressure Levels

Equipment	Generated Noise[1] dBA				
	50 ft	100 ft	200 ft	400 ft	800 ft
Backhoe	78	72	66	60	54
Compactor	83	77	71	65	59
Crane	81	75	69	63	57
Dump Truck	76	70	64	58	52
Excavator	81	75	69	63	57
Front-end Loader	79	73	67	61	55
Grader	85	79	73	67	61
Paver	77	71	65	59	53
Pickup Truck	75	69	63	57	51
Roller	80	74	68	62	56
Scraper	84	78	72	66	60

Source: USDOT 2006
Notes:
[1] Noise from a single source.
dBA - "A-weighted" decibel
ft - feet

Traffic Noise

Different types of transportation vehicles produce various noise levels. These noise levels also vary with the speed of the vehicle. The principle noise sources of highway vehicles are the engine, the exhaust system, and the tires. At higher speeds (greater than 30 miles per hour), tire noise is typically the predominant noise source. Note also that highway traffic noise is not constant, but rather fluctuates with the volume, speed, and composition of vehicles using the highway at any given time. Freeway traffic noise levels at a distance of 50 ft typically range from 70-80 dBA (Colorado DOT 2011).

Noise barriers are solid obstructions built between a highway and a noise receptor. Barriers can be made of earth berms, wood, concrete, and other materials. Vegetation can also be used as a noise barrier. A 200-foot width of dense vegetation can reduce noise by 10 dB. Additionally, buildings typically provide 20 dB of outdoor-to-indoor noise level reduction depending on the type of walls and windows (US Navy 2005). Sound from a line-source, such as a highway, decreases at a rate of approximately 3 dBA with every doubling of the distance from the source.

Noise from Dogs at MWD Campus

According to AFI 31-202, *Military Working Dog Program*, MWD facilities should be located in remote areas of the base for noise abatement. It is important to avoid sites near runways, taxiways, engine test cells, small arms ranges or other areas where the time weighted overall SPL for any 24 hour periods exceeds 75 adjusted decibels (US Air Force 2009). Noise generated within the kennels and from surrounding areas can affect the MWD's rest and training. If it is unavoidable to locate MWD facilities in busy areas of the base, then visual and noise barriers such as berms/screen walls should be incorporated to mitigate distractions and prevent stress to the MWDs.

3.3.2.2 Affected Environment

The ambient noise environment at JBSA-Lackland is affected mainly by military operations and automobile traffic, which is characteristic of most Air Force installations with a flying mission. Military aircraft operations at JBSA-Lackland is the primary noise source in the eastern portion of the installation (US Air Force 2010a).

However, since JBSA-Lackland is primarily a training base, most operations are conducted during daylight hours and on weekdays. The Base controls and schedules missions to keep noise levels low, especially at night, and aircraft maintenance engine run-up locations have been established in areas to minimize noise for the surrounding areas. The Air Force engages in a program of extensive local community outreach to facilitate land use planning to foster the establishment of compatible uses in the vicinity of its installations. The Air Installation Compatible Use Zone (AICUZ) program at JBSA-Lackland is an ongoing process. AICUZ provides guidance to air bases and local communities in planning land uses compatible with airfield operations by describing existing aircraft noise and flight safety zones on and near USAF installations. The Proposed Action is not located in close proximity to the active runway and all proposed projects lie outside of the 65 dBA DNL noise contour associated with aircraft operations.

Transportation noise in the project areas is from vehicle use and consists of passenger vehicles, delivery and fuel trucks, and military vehicles. Passenger vehicles comprise most of the vehicles present on base and the surrounding roadways. Additionally, the project site on JBSA-LMB is located approximately 0.48 miles from Interstate 410, and the project site on JBSA-LTA is located approximately 0.26 miles from US Highway 90.

In addition to transportation noise, the project site on JBSA-LTA may periodically be exposed to noise from the small arms training range or blasts from explosive ordnance training on the facility. The US Air Force Firing Range on JBSA-LTA is located approximately 1.53 miles from the proposed Project 9 and 11 sites and approximately 1.66 miles from the location of proposed Project 12. Weapons used at the firing range include the M16, M4, M-248, Squad Automatic Weapon, M240 Bravo, .50 caliber, and grenades. Short-duration noise such as gunfire can exceed the 85 dBA level and may be as high as 160 dBA (US Air Force 2011a). The distance from the Firing Range to the proposed project sites is such that the noise would be reduced below 65 dBA.

3.3.2.3 Noise-sensitive Receptors

A noise-sensitive receptor is commonly defined as the occupants of any facility where a state of quietness is a basis for use such as a residence, hospital, or church. Potential noise-sensitive receptors in the proposed project area on JBSA-LMB include multiple residential neighborhoods and the Words of Life Apostolic Church. The Church is located approximately 0.3 miles southeast of the proposed Project 1 location. There is one residential area approximately 0.12 miles east of the proposed Project 1 location, another residential neighborhood approximately 0.07 miles south of the proposed Project 6 site, and an additional residential neighborhood approximately 0.12 miles west of the proposed Project 2 site. Potential noise sensitive receptors in the proposed project area on JBSA-LTA include a residential neighborhood located

approximately 0.44 miles and 0.31 miles northwest of the proposed Project 10 and proposed Project 9/11 sites, respectively. There is an additional residential area located approximately 0.21 miles north of the proposed Project 12 site. No on-installation potential noise-sensitive receptors were identified in the proximity of the proposed projects.

The closest potential noise-sensitive receptors to the proposed construction activities are the various off-base residences located 0.07 miles south of the project site on JBSA-LMB and the off-base residences located 0.21 miles northeast of the project site on JBSA-LTA. These noise sensitive receptors all lie outside of the 65 dBA noise contour associated with aircraft operations.

The off-base residences nearest the JBSA-LTA proposed sites are situated approximately 80 feet from the US Highway 90 access road, and approximately 175 feet from US Highway 90, where traffic noise is elevated. According to the Texas Department of Transportation (TXDOT), approximately 63,000 vehicles travel daily along US Highway 90 near the project site on JBSA-LTA (TXDOT 2008). Assuming a traffic noise level of 80 dBA on US Highway 90, the residents closest to the sites on JBSA-LTA would be expected to experience a noise level of 77 to 80 dBA outside the home. Noise reduction properties of building materials could potentially reduce the noise levels within the home to between 57 dBA and 60 dBA.

A primary noise source in the area surrounding the JBSA-LMB site is traffic from Interstate 410. The distance of the highway from the closest noise-sensitive receptor to the project site is such that traffic noise levels would be approximately 59-64 dBA outside the residences and approximately 39-44 dBA inside the homes. Additionally, there is a road immediately adjacent to the neighborhood which likely produces occasional elevated traffic noise. Across the road, approximately 300 feet from the closest residences, are the MWD kennels. Although no noise studies have been conducted at the MWD campus to determine noise levels generated from the dog kennels, SPLs at animal shelters can often exceed 100 dB (Coppola). Using this as a baseline noise level and considering the distance to the residences, it is expected that barking from the on-base kennels produces outside noise levels at the nearest residences between 64 dB and 74 dB. Indoor noise levels resulting from barking dogs would be approximately 44 to 54 dB. Therefore, it is likely that noise from barking dogs is the largest contributor to the ambient noise environment at these noise-sensitive receptors on JBSA-LMB.

3.3.3 Land Use

3.3.3.1 Definition of the Resource

Land use describes the activities that take place in a particular area and generally refers to human modification of land, often for residential or economic purposes. It is important as a means to determine if there is sufficient area for proposed activities and to identify any potential conflicts with local land use plans. The two main objectives of land use planning are to ensure orderly growth and compatible uses among adjacent property parcels or areas. Management plans and zoning regulations determine the type and extent of land use allowable in areas and are often intended to protect environmentally sensitive areas. However, there is no nationally recognized convention or uniform terminology for describing land use categories.

The United States Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS) maintains an inventory of Prime and Unique Farmlands and defines these terms in 7 CFR 657 – *Prime and Unique Farmlands*. Prime farmlands are lands that have the best characteristics for crop production and are available for this use. Food, feed, forage, fiber, and oilseed crops are acceptable uses of prime farmlands. Characteristics for crop production that are considered include soil properties, growing season, and moisture supply needed to produce sustained high yields of crops in cost effective manner. Unique farmlands are those lands other than prime farmlands that are used to produce specific high value food and fiber crops.

JBSA-Lackland utilizes 14 land use designations: administrative, airfield, airfield runway/taxiway/apron, aircraft operations and maintenance, community-commercial, community-service, housing-accompanied, housing-unaccompanied, industrial, medical, open space, outdoor recreation, training-indoor, and training-outdoor (US Air Force 2010a). The Air Force's comprehensive planning process utilizes functional analysis, which determines the degree of connectivity among land uses as well as between on- and off-installation land uses, to determine future installation development and facilities planning (US Air Force 2010a).

3.3.3.2 Affected Environment

This section describes the existing land uses and aesthetics for the property surrounding the 12 proposed projects located both on JBSA-LMB and JBSA-LTA.

The portion of JBSA-LMB that would be affected by the Proposed Action is considered Main Base South West (USAF 2002a) and its land use is currently designated as "Training-Indoor" and "Training-Outdoor" (US Air Force 2010a). JBSA-LTA primarily consists of unimproved land used for training and munitions storage areas, and has a smaller cantonment area that contains housing and a mission related area named Medina Annex. The portion of JBSA-LTA that would be affected by the Proposed Action is currently designated as "Open Space" land usage (US Air Force 2006). All of the property affected by the Proposed Action on JBSA-LMB is considered Prime Farmland. Additionally, all of the property on JBSA-LTA, except the area where Project 12 would be constructed, is considered Prime Farmland. These areas are discussed in more detail in Section 3.3.4.

Project 10 of the Proposed Action addresses the demolition of the existing MWD buildings located within the 100-year floodplain on JBSA-LTA and Project 9 includes the new construction of those MWD operations outside the floodplain. Additional information on the floodplain within the footprint of the Proposed Action can be found in Section 3.3.5, Water Resources.

3.3.4 Earth Resources

Geology at JBSA-LMB Project Sites - A portion of the subject property at the JBSA-LMB is located in the ancestral flood plain of the San Antonio River/Leon Creek drainage system. There are three geologic formations that affect migration of groundwater in the shallow subsurface. These include the surficial Quaternary Leona formation (terrace deposits), and the underlying Navarro Clay (Kknm) and Eocene Midway Group (Emi), both of which are marine deposited units. The Leona Formation (Qle) consists of terrace deposits of fine silt to coarse gravel, and

conceals a large portion of the underlying geology. The Midway Group consists of silty sandy clay that is massive and poorly bedded, and is approximately 460 to 500 feet thick in the study area. The Navarro Clay is a stiff, blocky, mottled gray to tan clay (USGS 1992).

Groundwater is most commonly found in the Leona formation, but not typically found lower in the underlying Navarro Clay and/or Midway Group. The Navarro Clay is approximately 600 to 800 feet thick in the study area and forms the lower confining unit for the groundwater bearing portion of the Leona Formation. The aquifer is discontinuous, of poor quality, and is not used as a water resource in the vicinity of JBSA-Lackland (USAF 2010b).

The lithology in the northeast portion of the subject property in the area of Projects 5 and 7 generally consists of Leona formational materials. The Leona deposits are comprised of predominantly terrace deposits of sediments of clay and clayey silt that grade downward into sand and gravel. The Navarro Clay, described above, outcrops over the southern half of the subject property, in the areas of Projects 1, 3, 4, 6 and 8. The eastern portion of the Project 3 area appears to have a veneer of Qle outcropping. The Midway Group consists mainly of sandy clay and occurs in the northwest portion of the subject property, in the Project 2 area.

Geology at JBSA-LTA Project Sites - The subject property at the JBSA-LTA is located in the ancestral flood plain of the San Antonio River/Leon Creek/Medio Creek drainage system. There are three geologic formations that affect migration of groundwater in the shallow subsurface. These include the surficial Quaternary alluvium and Quaternary terrace deposits (both stream deposited sediments), and the underlying Navarro Clay, described above.

Groundwater is most commonly found in the lower clayey gravel and basal gravel units immediately overlying the Navarro Clay. The aquifer is discontinuous, of poor quality, and is not used as a water resource in the vicinity of JBSA-Lackland (USAF 2010b).

Project 10 area is comprised primarily of Quaternary alluvium, while Project areas 9, 11 and 12 are comprised primarily of Quaternary terrace deposits. The lithology at the site generally consists of discontinuous layers of clayey units (clay and silty clay) at the surface with clayey to sandy gravel at the base of the alluvium/terrace deposits. The alluvium is comprised predominantly of an upper silty clay that grades downward into sand and gravel. The terrace deposits are comprised of predominantly floodplain sediments of clay and clayey silt that grade downward into sand and gravel. Beneath this upper clay and silty clay unit is sand to sandy gravel that typically extends to the base of the depositional unit and above the Navarro Clay.

Soil at JBSA-LMB Project Sites - For the JBSA-LMB Projects 3 and 6, the proposed areas are comprised primarily of Houston Black gravelly clay, with 1 to 3% slopes. The Houston Black gravelly clay (1 to 3% slopes) is gently sloping, has medium to slow runoff, and has low risk of erosion hazard. For the JBSA-LMB Projects 1, 2, 4, 5, 7, and 8, the proposed areas are comprised primarily of Houston Black gravelly clay, with 3 to 5% slopes. The Houston Black gravelly clay (3 to 5% slopes) is moderately well drained, has low to moderately low capacity to transmit water, and is slightly susceptible to erosion (NRCS 2012).

The elevation of the subject property on the JBSA-LMB ranges from 750 feet above sea level near Project 2, to 716 feet above sea level at the southern end of the proposed areas (USGS

1993). Approximately 72 acres of land included in the Proposed Action on JBSA-LMB are considered prime farmland (NRCS 2011).

Soil JBSA-LTA - The soil types vary across the proposed project sites on the JBSA-LTA. Project 12 area is comprised primarily of Houston Black gravelly clay, with 5 to 8% slopes. The Houston Black gravelly clay (5 to 8% slopes) is moderately sloping, has rapid runoff, and is susceptible to erosion. The western portion of Project 9 area is comprised of Houston Black gravelly clay, with 1 to 3% slopes. The Houston Black gravelly clay (1 to 3% slopes) is gently sloping, has medium to slow runoff, and has low risk of erosion hazard. The central portion of the Project areas 9 and 11 is comprised of Branyon Clay, with 1 to 3% slopes. These soils are deep, moderately well drained, nearly level to gently sloping clayey soils on broad ancient stream terraces. The far eastern portion of the Project 9 and 11 areas and the entire Project 10 area are comprised of Lewisville silty clay, with 0 to 1% slopes. The Lewisville silty clay is a well drained soil with a parent material of alluvium of the quaternary age derived of mixed sources, composed of silty clay; it has a moderately-high to high capacity to transmit water. The elevation of the subject property on the JBSA-LTA ranges from 746 feet above sea level near Project 12 to 686 feet above sea level at the eastern end of the proposed area for Project 10 (USGS 1993). Approximately 81 acres of land included in the Proposed Action on JBSA-LTA are considered prime farmland, and approximately 0.2 acres of land, where the Project 12 MWD lab would be constructed, is not considered prime farmland.

3.3.5 Water Resources

3.3.5.1 Groundwater

A shallow alluvial aquifer in San Antonio, located between 5 and 15 feet below ground surface (bgs), contains groundwater not suitable for use as a potable water source due to poor water quality. Low-permeable Del Rio clay separates this aquifer from the underlying Edwards Aquifer (USAF 2010a). The primary source of water for the proposed project area and JBSA-Lackland is groundwater from the Edwards Aquifer. Water from the aquifer is primarily used for municipal, irrigation, and recreational purposes and approximately 54 percent is used for municipal supply (TWDB 2012). The aquifer is composed primarily of limestone formed during the early Cretaceous Period. Water level of the aquifer has a tendency to fluctuate quickly in response to changes in extremes due to plentiful rainfall or drought. Water from the aquifer discharges through natural springs or wells, including municipal supply wells located in the San Antonio region (TWDB 2012). The median recharge rate for the period of record (1934-2010) is 560,900 acre-feet/year with a median well withdrawal of 327,200 acre-feet/year. Depth to groundwater in Bexar County ranged from 667.1 feet to 682.7 ft above mean sea level (MSL) in 2010 (EAA 2011), indicating shallow groundwater at JBSA-Lackland. Currently there are no groundwater wells located within the proposed project area.

3.3.5.2 Surface Water

JBSA-Lackland is located within the San Antonio River Basin. Surface water on the installation includes Leon Creek, Medio Creek, Long Hollow Creek, various ponds, and water hazards developed for training. Medio Creek is located within 2,000 ft east of the proposed JBSA-LTA project area. The portion of Medio Creek east of the proposed project area is designated by the

US Fish and Wildlife Service (USFWS) National Wetlands Inventory (NWI) as a lower perennial riverine waterbody with an unconsolidated bottom and permanent flooding or water flow (R2UBH) (USFWS 2012a).

Leon Creek is located approximately 9,000 ft east of the proposed JBSA-LMB project area within. Leon Creek is designated by the USFWS NWI as a lower perennial riverine waterbody with an unconsolidated bottom and permanent flooding or water flow (R2UBH) (USFWS 2012a). Based on review of topographic mapping, Leon Creek flows south and continues approximately 19 miles into Medina River, which flows an additional nine miles southeast before its confluence with the San Antonio River. Along the southern boundary of JBSA-Lackland, there is also a drainage ditch designated by the USFWS NWI as an intermittent streambed waterbody that has a temporary water flow (R4SBA) with a portion that has been excavated (R4SBAx) (USFWS 2012a). This drainage ditch is adjacent southwest of the proposed project area and flows directly into Leon Creek. A complete discussion of wetlands associated with the proposed project is included in Section 3.3.6 Biological Resources.

The 2010 Texas Integrated Report listed Lower Leon Creek as an impaired waterway due to low dissolved oxygen and perfluorocarbons (PFCs) in edible tissue (TCEQ 2010). A 2010 Study of dissolved oxygen on the Lower Leon Creek found that the segment of the creek near the proposed project site can fully support a healthy aquatic ecosystem (SARA 2010). Therefore, while Lower Leon Creek is currently still listed as impaired, water quality is improving such that it is expected to be removed from the impaired water list in 2012. If this occurs, the TCEQ will not develop Total Maximum Daily Loads for this waterway (TCEQ 2011).

3.3.5.3 Floodplains

Federal agencies are required, under EO 11988, *Floodplain Management*, to provide leadership and take action to reduce the risk of flood loss; minimize the impacts of floods on human safety, health, and welfare; and restore and preserve the natural and beneficial values of floodplains when acquiring, managing, or disposing of federal lands. As depicted in Figure 1-3, the Federal Emergency Management Association (FEMA) has designated a portion of the existing MWD Campus on the JBSA-LTA as being located within the 100-year floodplain of Medio Creek. Approximately 44,690 square feet of existing structures proposed for demolition are located within the 100-year floodplain. The proposed project area within the JBSA-LMB is located outside the 100-year and 500-year floodplains.

3.3.6 Biological Resources

3.3.6.1 Definition of the Resource

Biological resources include plant and animal species and the habitats in which they occur. For this analysis, biological resources are divided into the following categories: vegetation, wildlife, wetlands, and protected species. Vegetation and wildlife refer to the plant and animal species, both native and introduced, which characterize the region. Wetlands are special habitats that support specific plants and wildlife. Protected species are plant and animal species in need of protection to ensure that the species do not decline to extinction.

3.3.6.1.1 Vegetation

The Federal Noxious Weed Act (7 USC 2801 et seq.), enacted in January 1975, established a Federal program to control the spread of noxious weeds. It gave the Secretary of Agriculture authority to designate plants as noxious weeds by regulation; to inspect, seize and destroy product; and to quarantine areas, if necessary, to prevent the spread of such weeds.

EO 13112 was issued in 1999 to enhance federal coordination and response to the complex and accelerating problem of invasive species. The EO defines an invasive species as a species not native to the region or area whose introduction (by humans) causes or is likely to cause harm to the economy or the environment, or harms animal or human health (NISC 2005).

3.3.6.1.2 Wildlife

The Fish and Wildlife Coordination Act (16 USC 661-667e) requires consultation with the USFWS and the fish and wildlife agencies of States where the "waters of any stream or other body of water are proposed or authorized, permitted or licensed to be impounded, diverted . . . or otherwise controlled or modified" by any agency under a Federal permit or license. The purpose of the act is to recognize the vital contribution of wildlife resources to the nation and to require equal consideration and coordination of wildlife conservation with water resources development programs.

3.3.6.1.3 Wetlands and Waters of the US

Wetlands provide diverse habitats for numerous species, protection from flooding and erosion, and are also important in the recycling of nutrients. The United States Army Corps of Engineers (USACE) regulates "Waters of the US", wetlands, and special aquatic sites under Section 404 of the CWA and Section 10 of the Rivers and Harbors Act. The USACE and USEPA define wetlands (in 40 CFR 230.3[t]) as "*those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas*." This definition takes into consideration three distinct environmental parameters: hydrology, soil, and vegetation. Positive wetland indicators of all three parameters are normally present in wetlands.

As defined by the USACE and the USEPA, Waters of the US include:

1) *All waters which are currently used, or were used in the past, or may be susceptible to use in interstate or foreign commerce, including all waters which are subject to the ebb and flow of the tide; these are referred to as traditional navigable waters (TNWs);*
2) *All interstate waters including interstate wetlands;*
3) *All other waters such as intrastate lakes, rivers, streams (including intermittent streams), mudflats, sand flats, wetlands, sloughs, prairie potholes, wet meadows, playa lakes, or natural ponds, the use, degradation or destruction of which could affect interstate or foreign commerce including any such waters:*

i) *Which are or could be used by interstate or foreign travelers for recreational or other purposes; or*

ii) From which fish or shellfish are or could be taken and sold in interstate or foreign commerce; or

iii) Which are used or could be used for industrial purpose by industries in interstate commerce;

4) All impoundments of waters otherwise defined as Waters of the US under the definition;

5) Tributaries of waters identified in paragraphs (1) through (4) above;

6) The territorial seas;

7) Wetlands adjacent to Waters (other than waters that are themselves wetlands) identified in paragraphs (1) through (6).

i) The term "adjacent" means bordering, contiguous, or neighboring. Wetlands separated from other Waters of the United States by man-made dikes or barriers, natural river berms, beach dunes and the like are "adjacent wetlands."

ii) Waste treatment systems, including treatment ponds or lagoons designed to meet the requirements of the CWA (other than cooling ponds as defined in 40 CFR 123.11(m) which also meet the criteria of this definition) are not Waters of the U.S.

iii) *Waters of the US do not include prior converted cropland. Notwithstanding the determination of an area's status as prior converted cropland by any other federal agency, for the purposes of the CWA, the final authority regarding CWA jurisdiction remains with the EPA* (40 CFR 230.3(s))

In 2006, the Supreme Court addressed the jurisdictional scope of Section 404 of the CWA, specifically the term "the Waters of the US", in *Rapanos v. US* and in *Carabell v. US* The decision provides two new analytical standards for determining whether water bodies that are not TNWs, including wetlands adjacent to those non-TNWs, are subject to CWA jurisdiction:

1. If the waterbody is relatively permanent, or if the waterbody has a wetland that directly abuts (e.g., the wetland is not separated from the tributary by uplands, a berm, dike, or similar feature) a relatively permanent waterbody, otherwise known as the Plurality Test.
2. If a waterbody, in combination with all wetlands adjacent to that waterbody, has a significant nexus with TNWs, which can be determined using the Kennedy Test.
    a. Justice Kennedy stated during *Rapanos* that "*wetlands possess the requisite nexus, and thus come within the statutory phrase 'navigable waters,' if the wetlands, either alone or in combination with similarly situated lands in the region, significantly affect the chemical, physical, and biological integrity of other covered waters more readily understood as 'navigable.*"

EO 11990, Protection of Wetlands, signed by President Carter in 1977, requires federal agencies to minimize the destruction, loss or degradation of wetlands, and to preserve and enhance the natural and beneficial values of wetlands. It also requires that agencies avoid construction or providing assistance for new construction located in wetlands, to the extent practicable.

3.3.6.1.4 Protected Species

The ESA provides a program for the conservation of threatened and endangered plants and animals and the habitats in which they are found. The lead federal agencies for implementing ESA are the USFWS and the US National Oceanic and Atmospheric Administration National Marine Fisheries Service (NMFS). The law requires federal agencies, in consultation with the USFWS and/or the NMFS, to ensure that actions they authorize, fund, or carry out are not likely to jeopardize the continued existence of any listed species or result in the destruction or adverse modification of designated critical habitat of such species.

Under the ESA (16 USC 1536), 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. USFWS/NMFS also maintains a list of species considered to be candidates for possible listing under the ESA. Although candidate species receive no statutory protection under the ESA, USFWS/NMFS has attempted to advise government agencies, industry, and the public that these species are at risk and might warrant future protection under the ESA. The USFWS also maintains a species of conservation concern list. This list includes unprotected species that are likely to become candidate species in the future under the ESA.

The Bald and Golden Eagle Protection Act (16 USC 668a; 50 CFR 22) was enacted to protect America's national symbol, the bald eagle (*Haliaeetus leucocephalus*). The golden eagle is a similar-appearing eagle, especially in immature life stages, and therefore was added to ensure protection of the bald eagle. This law, originally passed in 1940 and as amended, provides for the protection of the bald eagle and the golden eagle (*Aquila chrysaetos*) by prohibiting the take, possession, sale, purchase, barter, offer to sell, purchase or barter, transport, export or import, of any bald or golden eagle, alive or dead, including any part, nest, or egg, unless allowed by permit. The USFWS defines disturbance to eagles as "to agitate or bother a bald or golden eagle to a degree that causes, or is likely to cause, based on the best scientific information (1) injury to the eagle, (2) a decrease in its productivity by substantially interfering with normal breeding, feeding, or sheltering behavior, or (3) nest abandonment" (50 CFR Part 22.3).

The Migratory Bird Treaty Act (MBTA) (16 USC 703-712) authorizes the US commitment to comply with international conventions (i.e., with Japan, Russia, Canada, and Mexico) for the protection of migratory bird resources. The conventions protect selected species of migratory birds that occur in the US and each country at some time during the annual life cycle of the species. EO 13186, Responsibilities of Federal Agencies to Protect Migratory Birds, was signed by President Clinton in January 2001. The EO directs executive departments and agencies to take further actions to implement the MBTA by developing a Memorandum of Understanding (MOU) with the USFWS to promote the conservation of migratory bird populations.

3.3.7 Affected Environment

3.3.7.1.1 Vegetation

Bexar County is located in a physiographic transition zone of the Balcones Canyon Lands, which includes portions of three physiographic regions: the Edwards Plateau, the Blackland Prairie, and the Rio Grande Plain (also known as the South Texas Coastal Plain). The Edwards Plateau is

north and west; the Blackland Prairie is east and southeast; and the Rio Grande Plain is south and southwest of Bexar County. The flora found in Bexar County is a mixture of the vegetation found in three biotic provinces; the Balconian (associated with the Edwards Plateau), the Texan (associated with the Blackland Prairie), and the Tamaulipan (associated with the South Texas Coastal Plain) (USAF 2011b). This subregion is comprised of a landscape dissected by numerous high gradient streams in steep-sided canyons that flow south and southeast to the Gulf of Mexico (Riskind and Diamond 1988). Ecologically, the US Fish and Wildlife Service and Forest Service place the project area within Bailey's Prairie Brushland Province of the Prairie Division (Bailey 1980). This province is described as a region of rolling plains and plateaus sometimes dissected by canyons, and typically contain arid grasslands with scattered shrubs and low growing trees.

The vegetative communities associated with the proposed nine JBSA-LMB projects (Figure 2-2) and four JBSA-LTA projects (Figure 2-4) are quite different. Historically, the native vegetation of the main base was composed of habitat similar to Blackland Prairie (USAF 2007a) and contained species such as little bluestem (*Schizachyrium scoparium*), big bluestem (*Andropogon geradii*), Indian Grass (*Sorghastrum nutans*), switchgrass (*Panicum virgatum*), sideoats grama (*Bouteloua curtipendula*), hairy grama (*Bouteloua hirsuta*), tall dropseed (*Sporobolus composites*), silver bluestem (*Bothriochloa laguroides*), and Texas winter-grass (*Nassella leucotricha*). Riparian areas contained various species of oak (*Quercus sp*.), pecan (*Carya illinoinensis)*, cedar elm (*Ulmus crassifolia)*, osage orange (*Maclura pomifera*), and mesquite (*Prosopis glandulosa*). As shown on Map 20 of the Integrated Natural Resource Management Plan (INRMP), (USAF 2007a) very little of this native habitat series remains on the main base. Most of the proposed projects on the main base are within areas designated as "improved grounds" (USAF 2007a) and are heavily maintained and mowed. Consequently, these areas contain little native vegetation. Most of the grass within this area is composed of lawn or turf species and the trees are decorative or ornamental varieties.

The vegetative community comprising the JBSA-LTA is more diverse. Vegetative surveys were conducted on the JBSA-LTA during 2010 and 2011. A total of 164 plant species were recorded for the JBSA-LTA during these survey periods. A complete listing of the noted species is shown in Appendix B. The same study also described and mapped the vegetative communities of the JBSA-LTA which are shown on Figure 3-1. A description of the existing habitat types and common vegetative species comprising the four JBSA-LTA projects are shown in Table 3-5. A breakdown of the existing habitat features is shown in Table 3-6. A map depicting the vegetative communities within the four proposed JBSA-LTA projects are shown in Figure 3-2.

Table 3-5 Existing Habitat Features and Area on the JBSA-LTA

Vegetative Type	Area
Disturbed/Highly Maintained	1145.43
Disturbed/Unmaintained	584.14
Floodplain/Ephemeral Channel	400.62
Mature Woods	28.55
Mixed Shrub Upland	143.03
Perennial Channel	135.11
Riparian	287.94
Road	132.57
Semi-Open Brushland	205.27
Shrub/Scrub	929.45

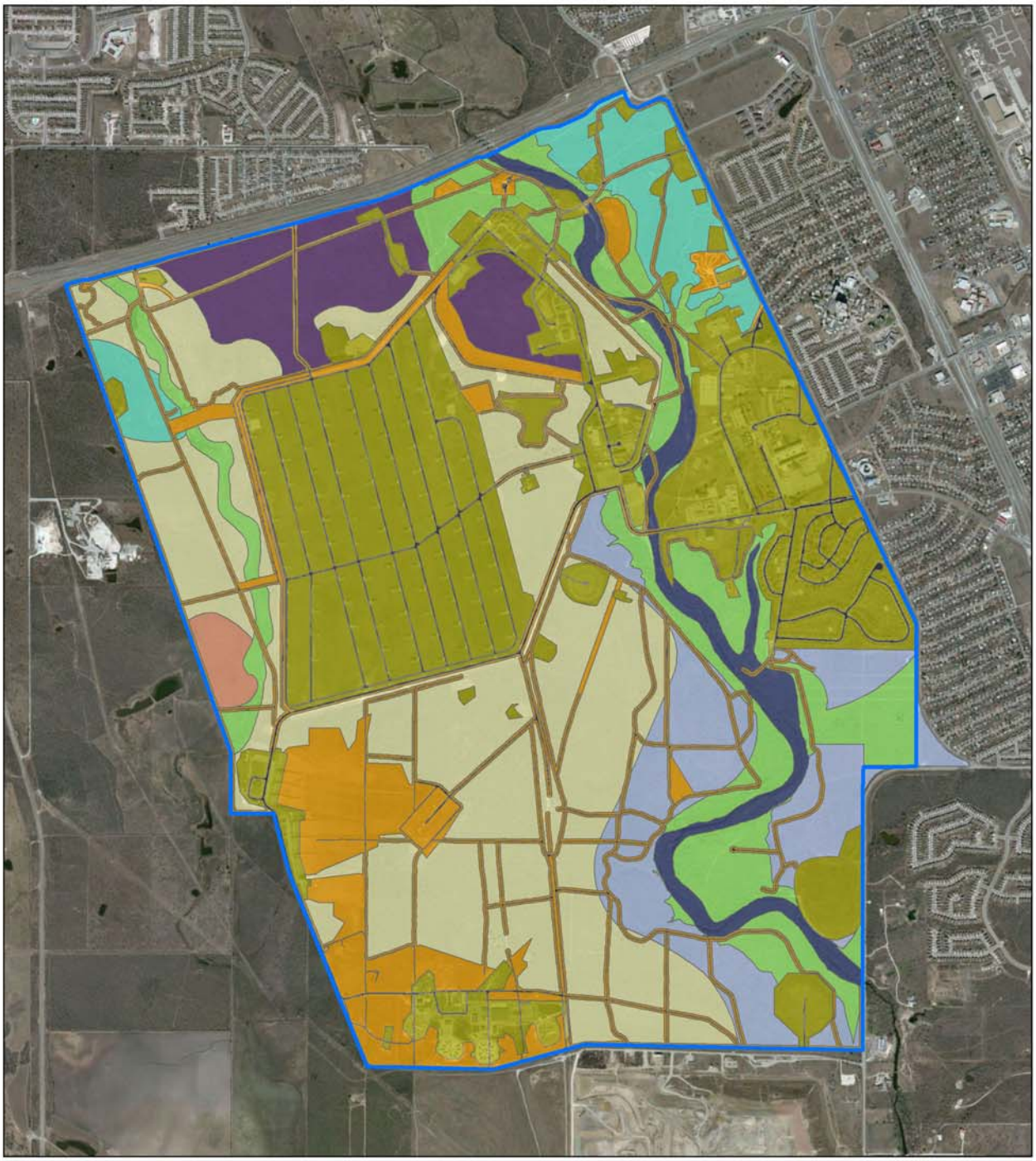


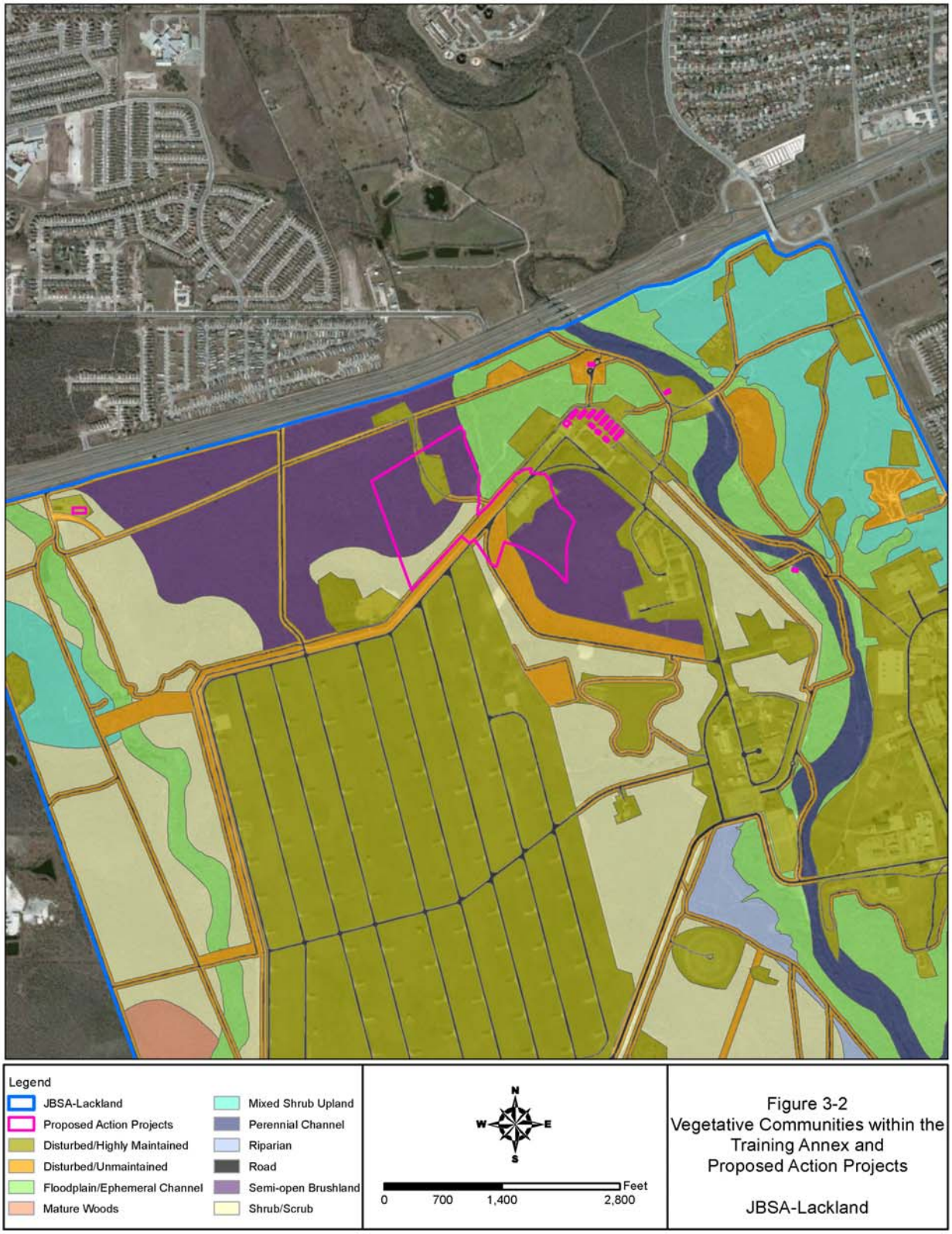
Figure 3-1
Vegetative Communities within the Training Annex

JBSA-Lackland

Table 3-6 Vegetative Community Descriptions

Vegetative Community	Description
Developed/Highly Maintained	These areas are located mostly in urban areas and contain mixed patches (i.e. lawns, gardens, etc.) of introduced and native vegetation. This community does provide suitable habitat to some common local wildlife species. Most of the housing, training, administrative buildings, athletic fields, and along roadways are comprised of mowed non-native grass species. The frequent mowing/maintenance inhibit re-introduction of native grassland species. These areas typically contain invasive grasses, woody, and herbaceous plant species. Common species associated with this community are: Bermuda grass (*Cynodon dactylon*), silver bluestem (*Bothriochloa laguroides*), silverleaf nightshade (*Solanum elaeagnifolium*), thistle sp., Johnson grass (*Sorghum halepense*), crabgrass species (*Digitaria sp.*), dandelion species, henbit (*Lamium amplexicaule*), Texas prickly pear (*Opuntia engelmannii*), honey mesquite (*Prosopis glandulosa*), various other ornamental trees and shrubs.
Disturbed/Unmaintained	These areas were disturbed in the past and have been left alone long enough for plants to start recruiting from adjacent areas. A common term frequently used for this type community is "overgrown areas". The species composition is very similar to the developed community; however, because it has been left untouched there is a higher density of weedy grass and forb species, usually with a few shrubs.
Mature Woods Ganjeno-Acacia-Mesquite	Honey mesquite, hackberry (*Celtis sp.*), western soapberry tree (*Sapindus saponaria*), silver bluestem, Texas prickly pear, Christmas cactus (*Cylindropuntia leptocaulis*), locoweed (*Astragalus mollissimus*). There was a big gap in the vertical vegetative structure. It consisted of a weedy herbaceous layer with a few scattered shrubs and dominated by the tree layer.
Shrub/Scrub	Very similar to the Ganjeno-Acacia-Mesquite Woods; however the community structure consisted of a shrub and mature woods that were both equally dominant. The dominant vegetation found in this habitat is composed of mesquite (*Prosopis glandulosa*), sugarberry (*Celtis laevigata*), cedar elm (*Ulmus crassifolia*), annual sunflower (*Helianthus annuus*), and ashy sunflower (*Helianthus mollis*).
Semi Open Brushland	This area is north-centrally located in the JBSA-LTA running north of Patrol Rd, to US Highway 90 and to the west and south of the dog training area. The common vegetation found in this habitat is composed of honey mesquite, Texas persimmon (*Diospyros texana*), sugarberry (*Celtis laevigata*), guajillo (*Acacia berlandieri*), agarito *(Mahonia trifoliolata*), Canada wildrye (*Elymus canadensis*), and the occasional live oak (*Quercus virginiana*). The area is composed of savannah like characteristics, exhibiting intermittent dispersal of dense mottes of the noted tree species. Small patches of grass and shrubland comprise the under and mid-story.
Mixed Shrub Upland	This habitat type is primarily located in the northeast corner of the JBSA-LTA surrounding the cleared areas used for the dog training in the uplands east of the Medina Creek riparian area. Common plants associated with this community include honey mesquite, Texas persimmon, Spanish dagger (*Yucca treculeana*), whitebrush (*Aloysia gratissima*), and huisache (*Acacia farnesiana*). Vegetation cover is continuous with a mix of both shrub and later successional tree species.

Source: USAF 2011b


Legend
JBSA-Lackland
Proposed Action Projects
Disturbed/Highly Maintained
Disturbed/Unmaintained
Floodplain/Ephemeral Channel
Mature Woods
Mixed Shrub Upland
Perennial Channel
Riparian
Road
Semi-open Brushland
Shrub/Scrub
N
W
E
S
0
700
1,400
2,800
Feet
Figure 3-2
Vegetative Communities within the Training Annex and Proposed Action Projects
JBSA-Lackland

3.3.7.1.2 Wildlife

At least 49 species of mammals have been recorded in the Texan Biotic Province, in which JBSA-Lackland is located (USAF 2006a). Examples of common mammalian species potentially occurring on 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*). Of these species, the Virginia opossum, common raccoon, and striped skunk would likely be the most common mammalian species found within the main base project area (USAF 2007a and 2010a).

Approximately 339 bird species have been recorded as occurring in Bexar County. Geographically, the County is situated along the central migration flyway. This ecotonal area represents a divide between eastern bird species reaching the westward limits of their range and western bird species reaching the eastward limits of their range. In addition, many coastal species are occasional visitors to the area (USAF 2010a). Some of the common native avian species potentially occurring within or near the project area 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 pelagica*), western kingbird (*Tyrannus verticalis*), blue jay (*Cyanocitt acristata*), American crow (*Corvus brachyrhnchos*), barn swallow (*Hirundo rustica*), northern mockingbird (*Mimus polyglots*), house finch (*Carpodacus mexicanus*), common grackle (*Quiscalus quscula*), great-tailed grackle (*Quiscalus mexicanus*), and brown-headed cowbird (*Molothrus ater*) (USAF 2007a, 2010a). Birds are highly mobile species and could occur throughout the base periodically and more commonly if suitable habitat exists.

At least 39 species of snakes, 5 species of salamanders, and 18 species of anurans (e.g., frogs and toads) have been recorded in the Texan Biotic Province (USAF 2006a). The majority of reptiles and amphibians that might occur on the Main Base would be associated with woodland habitat or riparian habitat along Leon Creek and would probably not be found in the proposed project areas on JBSA-LMB.

As shown in Figure 3-1, the JBSA-LTA contains several differing habitat types, and faunal surveys were conducted on the representative habitat types as recently as 2011. These surveys recorded one-hundred eight species of birds, eighteen herpetological species, and eighteen species of mammals as occurring on the JBSA-LTA (USAF 2011b). Some of the more common species of birds reported on the JBSA-LTA include: American crow (*Corvus brachyrhynchos*), American kestrel (*Falco sparverius*), American robin (*Turdus migrtatorius*), barn swallow (*Hirundo rustica*), black vulture (*Coragyps atratus*), Black-crested titmouse (*Baeolophus atricristatus*), and blue-gray gnatcatcher (*Polioptila caerulea*). Since birds are highly mobile any of the noted species could be found within the JBSA-LTA and four proposed projects, if suitable habitat exists for a given species.

Some of the more common mammalian species recorded for the JBSA-LTA include: bobcat (*Lynx rufus*), raccoon (*Procyon lotor*), coyote (*Canis latrans*), Eastern cottontail (*Sylvilagus*

floridanus), Eastern woodrat (*Neotoma floridana*), Mexican ground squirrel (*Spermophilus mexicanus*), Striped skunk (*Mephitis mephitis*), Virginia Opossum (*Didelphis virginiana*), and White-tailed deer (*Odocoileus virginianus*). Mammals are also highly mobile and any of the noted species could occur anywhere that suitable habitat exists for a given species within the JBSA-LTA and four proposed projects.

Some of the observed herpetological fauna species on the JBSA-LTA (USAF 2011b) include the Blanchard's cricket frog (*Acris crepitans blanchardi*), Rio Grande leopard frog (*Rana berlandieri*), plains narrow mouth toad (*Gastrophryne olivacea*), six-lined racerunner (*Cnemidophorus sexlineatus*), Texas fence lizard (*Sceloporus undulates consobrinus*), Texas spiny lizard (*Sceloporus olivacdeus*), Western diamondback rattlesnake (*Crotalus atrox*), and Western coachwhip (*Masticophis flagellum testaceus*). Most of the reptile and amphibian species observed in the JBSA-LTA were found in association with woodlands along riparian and floodplain areas and would not be expected to occur in the area associated with the four proposed JBSA-LTA projects.

3.3.7.1.3 Wetlands and Waters of the US

The project areas on JBSA-LMB and JBSA-LTA were assessed for Waters of the US and wetlands in May 2008 (USAF 2008) in accordance with the USACE Wetland Delineation Manual (USACE 1987). According to this manual, an area is identified as a wetland only if it meets all three wetlands parameters: hydric soils, hydrophytic vegetation, and wetlands hydrology. Field surveys consisted of identifying the vegetation, soils, and hydrology of potential wetland areas. A copy of the wetland delineation report is provided as Appendix C. The delineated wetlands/water features for the area containing the nine proposed Main Base projects are shown on Figure C5 of the Lackland Wetland Study. Water feature M13 is the only water feature near the proposed Main Base projects and consists of a shallow swale that exhibits no hydrologic connection to any Waters of the US. It is classified as a Palustrine Emergent Wetland but is not a Water of the US.

The delineated wetlands/water features for the JBSA-LTA are shown on Figures B2 and B3 of the Lackland Wetland Survey and contain wetlands/water features A1, A2, and A3. Features A1 and A2 are both classified as Palustrine Emergent, and are Waters of the US. They are located just to the west of proposed Project 12 on the JBSA-LTA. Feature A3 is classified as Palustrine Open Water Pond and is not a Water of the US. It was originally a borrow pit and is located just to the southwest of proposed Projects 10 and 12.

3.3.7.1.4 Protected Species

The proposed project is located in Bexar County, Texas which has a number of federally or state listed species. An updated list of federal and state listed threatened, endangered species, and candidate species for the project area is shown in Table 3-7. The USFWS has determined that there are no federally listed threatened or endangered species on JBSA-Lackland (USAF 2010a). The Texas Parks and Wildlife Department has also determined that currently there are no special species or natural communities on the base (USAF 2010a).

The JBSA-Lackland INRMP does however list suitable habitat for eight protected species as occurring on JBSA-Lackland lands. These species include the Black-capped vireo, Golden-

cheeked warbler, White-faced ibis, Cagle's map turtle, Texas horned lizard, Texas indigo snake, Texas tortoise, and Timber rattlesnake. While suitable habitat may exist on JBSA-Lackland for these species, only the Texas horned lizard and Cagle's map turtle have been observed on JBSA-Lackland lands. Cagle's map turtle is a resident and has been observed in the Medina River and other drainages on JBSA-LMB and JBSA-LTA. The Texas horned lizard was observed in 1992, but there have been no subsequent records for this species (USAF 2010a).

A number of karst species are federally-listed as threatened or endangered for Bexar County. Karst habitat primarily occurs north and northwest of San Antonio is not known to occur in the immediate project area (USAF 2007a); however, use of water from the Edwards Aquifer by JBSA-Lackland requires evaluation of karst species that are federally- or state-listed threatened or endangered species in Bexar County. In addition to the karst species, the USFWS lists in Bexar County three bird species as endangered; one mammal, the black bear, as threatened, and one bird and one plant as a candidate species (Table 3-7). Critical habitat is not designated in the project area for any of the potentially occurring federally-listed species (USFWS 2011a, 2012b, 2012c).

Table 3-7 Federal- and State-listed Threatened, Endangered, and Candidate Species of Bexar County

Common Name[1]	Scientific Name	Federal	State
Amphibians			
Texas salamander	*Eurycea neotene*	Under review[2]	Rare
Reptiles			
Texas horned lizard	*Phrynosoma cornutum*	NL	T
Texas indigo snake	*Drymarchon melanurus erebennus*	NL	T
Texas tortoise	*Gopherus berlandieri*	NL	T
Cagle's map turtle	*Graptemys caglei*	C	T
Canebrake rattlesnake	*Crotalus horridus*	NL	T
Birds			
American peregrine falcon	*Falco peregrinus anatum*	DL	T[3]
Black-capped vireo	*Vireo atricapilla*	E	E
Golden-cheeked warbler	*Dendroica chrysoparia*	E	E
Interior least tern	*Sterna antillarum athalassos*	NL[4]	E
Mountain plover	*Charadrius montanus*	NL[5]	Rare
Sprague's pipit	*Anthus spragueii*	C	Rare
White-faced ibis	*Plegadis chihi*	NL	T
Whooping crane	*Grus americana*	E	E
Wood stork	*Mycteria americana*	NL	T
Zone-tailed hawk	*Buteo albonotatus*	NL	T
Mammals			
Black bear	*Ursus americanus*	T/SA[6]	T
Gray wolf	*Canis lupus*	NL	E
Red wolf	*Canis rufus*	NL	E
Plants			
Bracted twistflower	*Streptanthus bracteatus*	C[7]	Rare

Source: TPWD 2011 and USFWS 2012b

Notes:

C – Candidate PT – Proposed Threatened
DL – Delisted Rare – Identified by TPWD as rare, but with no regulatory status
E – Endangered SA – Similarity of Appearance
NL – Not Listed T - Threatened

[1] Karst/cave species from Bexar County are not listed because karst formations are not present in the project area.
[2] On December 16, 2009, the USFWS published notice in the *Federal Register* that they were beginning a status review of 67 species, including the Texas salamander (USFWS 2009).
[3] Both subspecies of *Falco peregrinus (anatum* and *tundrius)* migrate across TX; however, F. p. *anatum* is also a resident breeder in west TX and listed as threatened by TPWD.
[4] The interior population of *Sterna antillarum* is federally listed as endangered; however, the USFWS does not consider the interior population to be present in Bexar County, TX (USFWS 2012b).
[5] USFWS published its withdrawal of the 2002 proposal to list the mountain plover as threatened on May 12, 2011. (USFWS 2011a)
[6] The Louisiana (LA) black bear (*U. a. luteolus*) is federally listed as threatened; due to similarity in appearance, any black bear found within the range of the LA black bear, which includes much of TX and all of LA and Mississippi, should be considered threatened.
[7] USFWS listed this plant as a candidate species on October 26, 2011.

JBSA-Lackland entered into consultation with the USFWS with respect to federally listed species in the Comal Springs and San Marcos Springs areas. These species are shown in Table 3-8.

Table 3-8 Federally Listed Edwards Aquifer Species

Species	*Scientific Name*	Status
San Marcos Salamander	*Eurycea nana*	FT
San Marcos gambusia	*Gambusia georgei*	FE
Fountain darter	*Etheostoma fonticola*	FE
Texas blind salamander	*Typhlomolge rathbuni*	FE
Texas wild rice	*Zizania texana*	FE
Comal Springs riffle beetle	Heterelmis comalensis	FE
Comal Springs dryopid beetle	*Stgoparnus comalensis*	FE
Peck's Cave amphipod	*Stygobromus pecki*	FE

Source: USAF 2010a and USFWS 2008.
FT – Federally Threatened
FE – Federally Endangered

The State of Texas lists four bird species and two (extirpated) mammal species as endangered and four reptile, four bird, and one mammal species as threatened. Texas Parks and Wildlife Department identifies several species as rare, but with no regulatory status. These species are not included in Table 3-8 unless they are also listed by the USFWS as threatened or endangered (TPWD 2011).

Bald eagles commonly use lakes and rivers for foraging, and riparian corridors for foraging, perching and nesting. The bald eagle is a scarce to occasional visitor to South Texas during winter and is not known to breed in the project area. Bald eagles were officially declared an endangered species in 1967, but recovered to the point they were taken off the endangered species list on June 28, 2007. The Golden Eagle is an occasional migrant to the general area. Both species are protected by the Migratory Bird Treaty Act and Bald and Golden Eagle Protection Act. It is highly improbable that either would occur in the project area.

Migratory birds are protected under the MBTA of 1918 and EO 13186, *Responsibilities of Federal Agencies to Protect Migratory Birds*.

JBSA-Lackland currently maintains a Migratory Bird Depredation Permit from the USFWS, issued for bird/wildlife aircraft strike hazard (BASH) prevention: American crow (*Corvus brachyrhynchos)*, barn swallow (*Hirundo rustica*), boat-tailed grackle (*Cassidix mexicanus*), brown-headed cowbird (*Molothrus ater*), cattle egret (*Bubulcus ibis*), chimney swift (*Chaetura pelagic*), eastern meadowlark (*Sturnella magna*), European starling (*Sturnus vulgaris*), house finch (*Carpodacus mexicanus*), killdeer (*Chadrius vociferous*), mourning dove (*Zenaida macroura*), common nighthawk (*Chordeiles minor*), red-winged blackbird (*Agelaius phoeniceus*), rock dove (*Columba livia*), 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 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 Lackland Natural Resources Manager, Wing Safety, or a 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 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 (USAF 2007a).

3.3.8 Cultural Resources

3.3.8.1 Regulations and Criteria

Cultural resources are prehistoric and historic sites, districts, structures, artifacts, or any other physical evidence of human activity considered important to a culture, subculture, or community for scientific, traditional, religious, or other reasons. A historic district is an area that "possesses a significant concentration, linkage, or continuity of sites, buildings, structures, or objects united historically or aesthetically by plan or physical development" (NPS 1997).

Numerous laws and regulations require that possible effects on cultural resources be considered during the planning and execution of federal undertakings. These laws and regulations stipulate a process of compliance, define the responsibilities of the federal agency proposing the actions, and prescribe the relationships among involved agencies. In addition to NEPA, the primary laws that pertain to the treatment of cultural resources during environmental analysis are the NHPA (especially Sections 106 and 110), the ARPA, the AIRFA, and the NAGPRA. Under AIRFA, JBSA-Lackland has no known traditional cultural properties or sacred sites to which the base must provide access.

Section 106 of NHPA requires that federal agencies give the Advisory Council on Historic Preservation a "reasonable opportunity to comment" on proposed actions. Federal agencies must consider whether their activities could affect historic properties that are already listed, determined eligible, or not yet evaluated under the National Register of Historic Places (NRHP) criteria. Properties that are either listed on or eligible for listing in the NRHP are provided the same measure of protection under Section 106.

The following criteria have been established as guidance for evaluating potential entries to the NRHP. "Significance" in American history, architecture, archeology, and culture is granted to districts, sites, buildings, structures, and objects that possess integrity of location, design, setting, materials, workmanship, feeling, and association, and that meet at least one of the following criteria:

- an association with events that have made a significant contribution to the broad patterns of history (Criterion A);
- an association with the lives of persons significant in history (Criterion B);
- embody the distinctive characteristics of a type, period, or method of construction; represent the work of a master; possess high artistic value; or represent a significant and distinguished entity whose components may lack individual distinction (Criterion C); or
- have yielded, or may likely yield, information important in prehistory or history (Criterion D).

Resources less than 50 years of age must be evaluated under Criterion Consideration G: Properties That Have Achieved Significance in the Last Fifty Years. This criterion requires that such resources be "exceptionally important" to qualify for listing. Resources less than 50 years of age must also meet the criteria for resources 50 years or older (i.e., A, B, C, or D) and retain their integrity.

3.3.8.2 Archaeological Resources

3.3.8.2.1 Previous Investigations

The JBSA-Lackland Cultural Resources Management Plan (CRMP) (USAF 2002b) identified a total of 19 prior archaeological surveys and other studies at the base since 1989 (Table 3-9).

These studies resulted in the recording and assessment of 36 archaeological sites within JBSA-LMB and the JBSA-LTA. Evaluation of these sites for inclusion in the National Register of Historic Places has been conducted over the past 15 years. The results of the eligibility determinations for sites within JBSA-LMB and the JBSA-LTA are noted in Table 3-10.

Of the 36 archaeological sites within JBSA-LMB and JBSA-LTA, none are within the proposed project site proper. Two sites on the JBSA-LTA, site 41BX1102 and 41BX1098, are immediately adjacent to properties to be demolished or to be constructed at the JBSA-LTA. Of the 36 sites, all but two (sites 41BX465 and 41BX1114) have been determined ineligible for inclusion in the NRHP. Sites 41BX465 and 41BX1114 are of undetermined eligibility, but are not in proximity to the proposed project site.

Table 3-9 Previous Archaeological Investigations at JBSA–Lackland

	Project Date	Project Type	Reference	Performing Organization	Contracting Agency
1	1989	Limited Survey of Leon Creek part of Base	EH&A 1989	Espey Huston & Associates, Inc.	
2	1993	Limited Reconnaissance and Overview Report	Dalbey 1993	US Army Corps of Engineers	US Army Corps of Engineers, Fort Worth District (USACE-FW)
3	1993a	Survey of 7 proposed construction areas	DeVore 1993a	National Park Service	Interagency Archaeological Services, National Park Service (IAS-NPS)
4	1993b	Cultural Resource Assessment of Base and Annex	DeVore 1993b	National Park Service	IAS-NPS
5	1993	20 acre survey of Prime RIBS portion of Annex	Petraglia and Knepper 1993	Engineering Sciences, Inc.	US Air Force
6	1994	Geoarchaeological studies of 41BX1006	Nordt 1994	Center for Archaeological Research, University of Texas, San Antonio (CAR-UTSA)	IAS-NPS
7	1994	Shovel Testing of 5 sites in Prime RIBS area	Taylor 1997	CAR-UTSA	IAS-NPS
8	1994	Shovel Testing of Wherry Housing Area	Raymond 1997	CAR-UTSA	IAS-NPS
9	1994	Shovel Testing at Four Special Use Areas on Base and Annex	Durst 1997	CAR-UTSA	IAS-NPS
10	1994	Testing of site 41BX1065	Rector 1997	CAR-UTSA	IAS-NPS
11	1994	Prehistoric and Historic Overview of Base and Annex	Reese et al. 1994	Geo-Marine, Inc.	USACE-FW
12	1994	Work Plan for conducting Surveys at Base and Annex	CAR-UTSA 1996	CAR-UTSA	IAS-NPS
13	1994	Survey of 3,860-acres of the Undeveloped Areas on Lackland Base and Lackland Training Annex	Nickels et al. 1997	CAR-UTSA	IAS-NPS
14	1996	Phase II Testing of Eight Sites in Lackland Training Annex Housing Area	Houk and Nickels 1997	CAR-UTSA	Western Archaeological Conservation Center, National Park Service (WACC-NPS)
15	1997	Discovery and Assessment of 41BX1208	Nickels 1997	CAR-UTSA	WACC-NPS
16	1997	Testing of 2,545-m Sewer Line on Lackland AFB	Nickels and Scease 1997	CAR-UTSA	WACC-NPS

Table 3-9 Previous Archaeological Investigations at JBSA-Lackland (Continued)

	Project Date	Project Type	Reference	Performing Organization	Contracting Agency
17	1997	Popular Report on Cultural Resources at Lackland	Nickels and Fox 1998	CAR-UTSA	WACC-NPS
18	2003	Cultural Resource Management Plan	USAF 2002b	Geo-Marine, Inc.	US Air Force Air Education and Training Command
19	2006	Archaeological Eligibility Testing of 23 Sites on Lackland Air Force Base	Huhnke et al. 2006	Geo-Marine, Inc.	Air Force Center for Environmental Excellence

Notes:
CAR-UTSA – Center for Archeological Research – University of Texas San Antonio
IAS-NPS – Interagency Archaeological Services- National Park Service
USACE-FW – US Army Corps of Engineers – Forth Worth District
WACC-NPS – Western Archeological Conservation Center – National Park Service

Table 3-10 Eligibility Determinations for Sites Within JBSA–Lackland

Site No.	Site Type	Cultural Affiliation	Contractor's Primary Reference	SHPO Letter Reference	Summary Eligibility Status
41BX465	Lithic workshop	Unknown Prehistoric	McGraw 1977	N/A	Undetermined
41BX1070	Quarry	Unknown Prehistoric	Nickels et al. 1997:172-176; Houk and Nickels 1997:143	Bruseth 1997a, 1997b	Ineligible
41BX1071	Open Camp/ Quarry	Transitional Archaic	Nickels et al. 1997:172-176	Bruseth 1997a	Ineligible
41BX1079	Quarry	Unknown Prehistoric	Nickels et al. 1997:172-176	Bruseth 1997a	Ineligible
41BX1080	Quarry	Unknown Prehistoric	Nickels et al. 1997:172-176	Bruseth 1997a	Ineligible
41BX1081	Quarry	Unknown Prehistoric	Nickels et al. 1997:172-176	Bruseth 1997a	Ineligible
41BX1082	Open Camp/ Quarry	Unknown Prehistoric	Nickels et al. 1997:172-176	Bruseth 1997a	Ineligible
41BX1083	Quarry	Unknown Prehistoric	Nickels et al. 1997:172-176	Bruseth 1997a	Ineligible

Table 3-10 Eligibility Determinations for Sites Within JBSA–Lackland (Continued)

Site No.	Site Type	Cultural Affiliation	Contractor's Primary Reference	SHPO Letter Reference	Summary Eligibility Status
41BX1084	Quarry	Unknown Prehistoric	Nickels et al. 1997:172-176	Bruseth 1997a	Ineligible
41BX1085	Quarry	Unknown Prehistoric	Nickels et al. 1997:172-176	Bruseth 1997a	Ineligible
41BX1093	Open campsite	Unknown Prehistoric	Nickels et al. 1997:172-176	Bruseth 1997a	Ineligible
41BX1094	Quarry	Unknown Prehistoric	Nickels et al. 1997:172-176	Bruseth 1997a	Ineligible
41BX1095	Quarry	Unknown Prehistoric	Nickels et al. 1997:172-176	Bruseth 1997a	Ineligible
41BX1096	Quarry	Unknown Prehistoric	Nickels et al. 1997:172-176	Bruseth 1997a	Ineligible
41BX1097	Quarry	Unknown Prehistoric	Nickels et al. 1997:172-176	Bruseth 1997a	Ineligible
41BX1098	Quarry	Unknown Prehistoric	Nickels et al. 1997:172-176	Bruseth 1997a	Ineligible
41BX1099	Open Camp/ Quarry	Unknown Prehistoric	Nickels et al. 1997:172-176	Bruseth 1997a	Ineligible
41BX1100	Open Camp/ Quarry	Early, Late Archaic	Nickels et al. 1997:172-176	Bruseth 1997a	Ineligible
41BX1101	Open Camp/ Quarry	Late and Transitional Archaic	Nickels et al. 1997:172-176	Bruseth 1997a	Ineligible
41BX1102	Open campsite	Late Archaic	Nickels et al. 1997:172-176; Houk and Nickels 1997:14	Bruseth 1997a, 1997b	Ineligible
41BX1103	Open campsite	Transitional Archaic	Nickels et al 1997: 172-176; Houk and Nickels 1997: 143	Bruseth 1997a, 1997b	Ineligible
41BX1104	Open Camp/ Quarry	Early, Middle, Late Archaic, Late Prehistoric	Nickels et al. 1997:172-176	Bruseth 1997a	Ineligible
41BX1105	Open campsite	Unknown Prehistoric	Nickels et al. 1997:172-176; Houk and Nickels 1997:14	Bruseth 1997a	Ineligible

Table 3-10 Eligibility Determinations for Sites Within JBSA–Lackland (Continued)

Site No.	Site Type	Cultural Affiliation	Contractor's Primary Reference	SHPO Letter Reference	Summary Eligibility Status
41BX1106	Open campsite	Unknown Prehistoric	Nickels et al. 1997:172-176; Houk and Nickels 1997:14	Bruseth 1997a	Ineligible
41BX1107	Open campsite	Unknown Prehistoric	Nickels et al. 1997:172-176	Bruseth 1997a	Ineligible
41BX1110	Quarry	Unknown Prehistoric	Nickels et al. 1997:172-176	Bruseth 1997a	Ineligible
41BX1111	Quarry	Unknown Prehistoric	Nickels et al. 1997:172-176	Bruseth 1997a	Ineligible
41BX1112	Quarry	Unknown Prehistoric	Nickels et al. 1997:172-176	Bruseth 1997a	Ineligible
41BX1113	Quarry	Unknown Prehistoric	Nickels et al. 1997:172-176	Bruseth 1997a	Ineligible
41BX1114	Quarry	Early Archaic	Nickels et al. 1997:172-176	Bruseth 1997a	Undetermined
41BX1114			Houk and Nickels 1997:143	Bruseth 1997b	Ineligible
41BX1116	Quarry	Unknown Prehistoric	Nickels et al. 1997:172-176	Bruseth 1997a	Ineligible
41BX1117	Quarry	Unknown Prehistoric	Nickels et al. 1997:172-176	Bruseth 1997a	Ineligible
41BX1118	Quarry	Unknown Prehistoric	Nickels et al. 1997:172-176	Bruseth 1997a	Ineligible
41BX1208	Lithic Scatter	Unknown Prehistoric	Nickels et al. 1997:172-176; Houk and Nickels 1997:14		Ineligible
41BX1749	Lithic Scatter	Unknown Prehistoric	Figueroa et al. 2008; Figueroa 2008		Ineligible

3.3.8.3 Historic Resources

3.3.8.3.1 Previous Investigations

The JBSA-Lackland CRMP (USAF 2002b) identified a total of 180 NRHP-eligible historic properties. Building inventories and evaluations have been conducted at JBSA-Lackland (including the JBSA-LMB, Kelly Field Annex, and Medina Base, now known as the JBSA-LTA) and former Kelly AFB as part of Section 106 and 110 compliance. All pre-1947 buildings at the former Kelly AFB received Historic American Buildings Survey Level IV documentation in 1997 (Freeman 1997). The 1600 and 1700 Art Modern Area at Kelly AFB was assessed (Kane and Freeman 1995) and an NRHP nomination form completed for the Kelly Field Historic District (Geo-Marine 2000). Three architectural surveys were conducted at the JBSA-LMB for pre-World War II and World War II-era buildings (USACERL 1992; Cleveland and Chancellor 2000; and 3D/International 1994). As a result of these surveys, one pre-World War II and seven World War II buildings were recommended eligible for listing on the NRHP.

Cold War-era buildings were first addressed in 1995 as part of a survey of individual storage sites for Sandia Laboratories (Lamb Associates 1995). This was followed by an evaluation of buildings at Security Hill (at the former Kelly AFB) by Earth Tech (Earth Tech 1998). In 1999, JBSA-LTA was inventoried as part of a nationwide examination of nuclear weapons storage infrastructure (Bilderback and Binder 1975). A Cold War study was also conducted in 2000 by Cleveland and Holland. In 2002, as part of an AETC survey to provide a more consistent approach to Cold War surveys across the command, Cold War-era buildings at the JBSA-LMB, JBSA-LTA, and former Kelly AFB (including Security Hill) were evaluated (Salo et al. 2002). During this investigation, 131 resources were recommended eligible for listing in the NRFP (three resources at Security Hill and 128 resources associated with the Medina Base Historic District).

In summary, the following buildings at JBSA-Lackland are NRHP-eligible or recommended eligible for listing on the NRHP:

- 36 properties in Kelly Field Historic District (1600 and 1700 Areas)
  (Buildings 1607, 1609, 1610, 1618, 1625, 1627, 1632, 1635, 1638, 1643, 1644, 1645, 1650, 1676, 1680, 1681, 1682, 1683, 1684, 1685, 1686, 1687, 1688, 1689, 1690, 1691, 1692, 1693, 1694, 1696, 1750, 1752, 1753, 1755, 1757, 1758)
- 5 individual properties at former Kelly AFB (excluding Security Hill) (Buildings 879, 909, 910, 912, and 1044)
- 3 properties in the Security Hill Historic District
- 1 individual property at JBSA-LMB
  (Building 2213)
- 7 World War II Temporary Buildings at JBSA-LMB
  (Buildings 5432, 6146, 6147, 6148, 6149, 6150, and 6152)

- 128 properties in the Medina Base Historic District at JBSA-LTA (Buildings 301, 340, 341, 400, 402, 403, 404, 421, 425, 426, 427, 431, 433, 434, 435, 436, 437, 439, 440, 441, 442, 443, 444, 501-571, 573-599, 1100-1106)

Currently, the remaining unevaluated resources (or resources requiring re-evaluation) that were constructed prior to 1977 are undergoing assessment for the three areas of JBSA-Lackland (JBSA-LMB, Kelly Field Annex, and JBSA-LTA). As a result of the preliminary assessment, no additional resources are recommended eligible for listing on the NRHP (Hersch and Prior 2012).

3.3.8.3.2 Historic Properties

Of the seven buildings scheduled for demolition at the JBSA-LMB, none are NRHP-eligible. Buildings 7561, 7562, and 7563 are all training aid buildings constructed in 1984. These buildings were evaluated in 2002 and recommended not NRHP-eligible under Criterion Consideration G for properties under 50 years of age due to lack of exceptional importance (Salo et al. 2002). Since they remain under 50 years of age, no further evaluation is necessary at this time.

Buildings 7475, 7481, and 7485 are technical training labs/shops constructed in 1951. As buildings supporting a standard military mission, they were found to lack historical or architectural significance, and thus, noted as ineligible in the 2002 CRMP (USAF 2002b).

Building 7570, a troop shelter, was constructed in 1995. As a resource under 50 years of age, yet constructed after the end of the Cold War in 1991, this resource fails to meet the requirements for exceptional importance under Criterion Consideration G.

Fifteen buildings at JBSA-LTA are proposed for demolition in the Proposed Action. Three of these buildings (435 [former Plant Storage], 436 [former Lunch Room], and 437 [former Central Battery Charging]) are eligible properties, associated with the historic Plant 1 within the Medina Base Historic District—a discontiguous district that includes 128 NRHP-eligible properties.

The remaining twelve buildings at JBSA-LTA are under 50 years of age and do not meet the requirement for exceptional importance under Criterion Consideration G (Salo et al. 2002). Buildings 450, 452, 454, 456, and 458 are security police canine kennels constructed in 1968. Buildings 462, 464, and 466, also security police canine kennels, were constructed in 1974. Buildings 468 and 470 are technical training classrooms constructed in 1982, and Buildings 471 and 472 (technical training support and training aid, respectively) were built in 1986. Since these buildings remain under 50 years of age, no further evaluation is necessary at this time.

3.3.9 Hazardous Materials and Waste

Hazardous materials use and management at JBSA-Lackland are regulated under the TSCA, Occupational Safety and Health Administration (OSHA), Emergency Planning and Community Right–to-Know Act, and Air Force Occupational Safety and Health Standards. The regulations require personnel using hazardous material to be trained in the application, management, handling, and storage of material; to know the location of material safety data sheets (MSDSs) for all hazardous materials that they are using; and to wear the correct personal protective equipment (PPE) required for materials that are being used. JBSA-Lackland has a Spill

Prevention, Control and Countermeasures Plan (SPCCP) in place that establishes procedures, methods, equipment, and other criteria to prevent and respond to discharges of oil products and hazardous substances on JBSA-Lackland and associated property. The SPCC is written in accordance with 40 CFR, Chapter 112, Oil Pollution Prevention (USAF 2006b).

3.3.9.1 Asbestos

The majority of buildings on JBSA-Lackland proposed for demolition within the current MWD training campus have not previously been assessed for asbestos containing material (ACM). Currently, only Building 7475 has been assessed and found to contain asbestos. The JBSA-Lackland Review and Update of Asbestos Management and Operation Plans requires an ACM survey be conducted prior to demolition of any buildings (WESTON 2012a).

3.3.9.2 Lead-Based Paint

The buildings on JBSA-Lackland that are proposed for demolition within the current MWD training campus have not been assessed for lead-based paint (LBP). The JBSA-Lackland Review and Update of Lead Based Paint Management and Operations Plans require an LBP survey be conducted prior to demolition of any buildings (WESTON 2012b).

3.3.9.3 Pesticides/Herbicides

Pesticide application and management at JBSA-Lackland is accomplished in accordance with the Pest Management Plan which has been prepared in accordance with DoD Instruction 4150.07 and as outlined in the Armed Forces Pest Management Board's Technical Information Memorandum No. 18. The JBSA-Lackland pest management is conducted by the Civil Engineer Pest Management shop. Pesticide use on sensitive areas such as wetlands, golf course ponds, or creeks require appropriate controls for application (US Air Force 2010c). Past and present use of the subject properties for MWD training suggests that current and historical use of pesticides on the training sites is probable.

3.3.9.4 Hazardous Waste

Hazardous wastes are defined by the Solid Waste Disposal Act, as amended by RCRA, which was further amended by the Hazardous and Solid Waste Amendments, RCRA subtitle C (40 CFR, Parts 260 through 270). Hazardous wastes are defined as wastes with properties that are dangerous or potentially harmful to human health or the environment. Hazardous wastes are regulated by the USEPA. However, in Texas, the USEPA has delegated its hazardous waste regulatory authority to the State of Texas, Texas Commission on Environmental Quality (TCEQ). Additionally, JBSA-Lackland hazardous waste management is regulated under AFI 32-7013, *Hazardous Waste Management and Minimization*.

Hazardous waste regulations are implemented at JBSA-Lackland through hazardous waste permitting procedures and the JBSA-Lackland *Hazardous Waste Management Plan*. The plan details hazardous waste packaging, turn-in, transportation, storage, recordkeeping, and emergency procedures. Hazardous waste is generated at JBSA-Lackland from aircraft, vehicle, building, and equipment maintenance; medical waste; spent hazardous materials; and spills. Air

Force waste management operations at JBSA-LMB and JBSA-LTA are registered with the USEPA under identification numbers TX4571524129 and TX4570099933, respectively (USAF 2007b and TCEQ 2012). Currently, there are no industrial activities that occur at the existing MWD training campus that would generate hazardous waste; however, any animal carcasses that result from day-to-day operations of the MWD training facility are disposed of as medical waste.

3.3.9.5 Environmental Restoration Program

The Environmental Restoration Program (ERP) at JBSA-Lackland was implemented by the DoD to identify and evaluate areas and constituents of concern from toxic and hazardous material disposal and spill sites. Once the areas and constituents had been identified, the ERP was tasked to remove the hazards in an environmentally responsible manner. All response actions are based upon provisions of CERCLA, and the *Superfund Amendments and Reauthorization Act of 1986* as clarified in 1991 by EO 12580, *Superfund Implementation.*

There are no ERP sites on JBSA-LTA on or near the proposed project sites (WESTON 2011). On JBSA-LMB, Area of Concern (AOC) 15 is a 6-acre former landfill located beneath proposed Project 7. Previous trenching activities at AOC 15 have unearthed materials such as wood, ACM, clay pipe, steel wire, concrete, and tile; however, soil and soil gas samples were collected in 2007 and no VOCs were detected. Metals and semivolatile organic compounds were detected at AOC 15, but all levels were below Texas Risk Reduction Program Residential Assessment Levels (USACE 2008).

3.3.10 Utilities and Infrastructure

The following sections provide a summary of infrastructure found at the proposed project area and existing facilities, specifically power supply, natural gas supply, solid waste management, water supply, wastewater services, and storm water systems.

3.3.10.1 Electricity

The service provider for electrical utilities in the greater San Antonio region and JBSA-Lackland is CPS Energy. JBSA-Lackland operates the Valley Hi substation located just off Valley Hi Drive on the main base. Three feeders (No. 113, 569 and 796) from the on-installation substation provide power to the Main Base Switching Station and have load ratings of 20.4 mega watts (MW), 17.8 MW and 18.2 MW, respectively (at normal rating and 90° Fahrenheit [F]) (USAF 2011c).

The maximum annual system distribution capacity for electricity at JBSA-Lackland is 664,884 MW (Abdulahad 2012). JBSA-Lackland electricity consumption reported for FY 2011 was 144,561 mega watt hours (MWH) for JBSA-LMB and 37,741 MWH for the JBSA-LTA (Abdulahad 2011). The total electrical consumption in FY 2011 at JBSA-Lackland was 27 percent of the capacity.

3.3.10.2 Natural Gas

CPS Energy also is the service provider for natural gas to the greater San Antonio area and JBSA-Lackland. An 8-inch pipeline enters JBSA-Lackland at Five Palms Street on the southern

end of JBSA-LMB and connects to a natural gas network comprised of 41 miles of pipeline. JBSA-LMB's natural gas network includes 48 pounds per square inch (psi) distribution loop encircling the western half of JBSA-Lackland and an 18 psi loop that encircles the eastern side of the Base (USAF 2011c). The combined CPS Energy natural gas line capacity for JBSA-Lackland is 9.254 million cubic feet per day (MCF/d). In addition to the CPS Energy pipelines, United Gas maintains an 8-inch, 250 psi pipeline that runs along the northern border of the installation. JBSA-Lackland has contracted with United Gas to supply up to 4.93 MCF/d for this pipeline (USAF 2011c). The JBSA-LTA natural gas network is comprised of 12 psi distribution piping mains, valves, service lines, service regulators, cathodic protection systems and meters. Natural gas to the JBSA-LTA is supplied through one connection located on the northeastern border of the main cantonment area (Carbonell 2012).

JBSA-Lackland natural gas usage reported for FY 2011 was 928,730 thousand cubic feet (KCF) for JBSA-LMB and JBSA-LTA (Abdulahad 2011). This is approximately 27 percent of the natural gas line capacity.

3.3.10.3 Solid Waste Disposal

Municipal solid waste management and compliance at Air Force installations are established in AFI 32-7042, *Solid and Hazardous Waste Compliance*. AFI 32-7042 incorporates by reference the requirements of RCRA Subtitle D, 40 CFR 240 through 244, 257, and 258, and all other applicable federal regulations, AFIs, and DoD directives. In general, AFI 32-7042 establishes the requirement for installations to have a solid waste management program that incorporates the following: a solid waste management plan; procedures for handling, storage, collection, and disposal of solid waste; record keeping and reporting; and recycling of solid waste, as addressed in AFI 32-7080, *Pollution Prevention Program*.

The 2010 Integrated Solid Waste Management Plan for JBSA-Lackland states that nonhazardous solid waste at JBSA-Lackland is collected and disposed of by C-6 Disposal Systems, a private contractor (USAF 2010d). Nonhazardous solid waste is disposed of at a private landfill serving the greater San Antonio area - Covel Gardens Recycling Processing and Disposal, located less than three miles south of the proposed project area (USAF 2011c). Covel Gardens Landfill had a life expectancy of at least 75 years at the current disposal rate, receiving approximately 1.6 million tons of solid waste per year and a permitted capacity of 124.1 million cubic yards (Covel Gardens 2012 and USAF 2011c).

In 2011, JBSA-Lackland generated approximately 121,800 tons of solid waste, of which approximately 12,400 tons were disposed of in Covel Gardens Landfill (Lopez 2012). This solid waste disposal accounts for less than one percent of the daily waste disposed at Covel Gardens Landfill. The remaining 109,400 tons of material including concrete, asphalt, soil, compost, mulch, paper, plastic, and aluminum were recycled (Lopez 2012). The MWD campus primarily generates municipal solid waste that is collected and disposed at Covel Gardens Landfill. Any animal carcasses that result from day-to-day operations of the MWD training facility are disposed of as medical waste.

3.3.10.4 Water Supply and Wastewater

Water Supply

The Edwards Aquifer, as described in Section 3.3.5.1, is the primary water supply for the greater San Antonio area and JBSA-Lackland. JBSA-Lackland currently maintains six supply wells that pump water from the Edwards Aquifer with a withdrawal capacity of 13.22 million gallons per day (MGD) (USAF 2011c). At peak withdrawal conditions, the JBSA-Lackland wells operated at 16 percent (2.08 MGD) of the total design capacity. The FY 2012 JBSA (Lackland, Randolph, and Fort Sam Houston) pumping allowance from Edwards Aquifer is 12,012 acre-feet, as regulated by the January 2008 USFWS Biological Opinion (USFWS 2008). JBSA-Lackland is allocated 48.8 percent of this withdrawal, which equates to 5,861.86 acre-feet/year (1,910,094 kilo-gallons [kgal]/year or 5.23 MGD). The overall withdrawal from Edwards Aquifer has been mandated by the USFWS to remain less than 572,000 acre-feet/year (186,387,017 kgal/year or 510.65 MGD) (USWFS 2008).

The water system network at JBSA-Lackland is comprised of more than 60 miles of water main lines and four elevated storage tanks, providing a total storage capacity of 1.28 MGD (USAF 2011c). The majority of this water supply infrastructure, including wells and water pipelines, is maintained by JBSA-Lackland. However, a portion of the JBSA-Lackland supply infrastructure has been privatized and is now supported by SAWS (Abdulahad 2011).

JBSA-Lackland water usage reported for FY 2011 was 739,607 kgal for JBSA-LMB and JBSA-LTA (Abdulahad 2011). This equates to approximately 45 percent of the water allocated to JBSA-Lackland by the USFWS Biological Opinion. JBSA-Lackland has instituted a number of water saving initiatives, such as installation of a wash water recycling system and retrofitting existing fixtures (AETC 2009). In addition, Lackland purchased 165,404 kgal of recycled water from SAWS in FY 2011 for use at the golf course, the parade grounds, and the Wilford Hall Medical Center cooling tower (Abdulahad 2011).

Wastewater

SAWS provides wastewater collection and treatment services to JBSA-Lackland. The approximately 44-mile sewer main network is primarily gravity fed and has a rated capacity of 9.79 MGD. Lift stations and force mains are used to connect individual facilities to the main system. The estimated daily wastewater discharge volume is 1.6 MGD, or approximately 16 percent of the rated capacity (USAF 2011c). In FY 2011, JBSA-LMB reportedly discharged 364,225 kgal of wastewater and the JBSA-LTA discharged 78,288 kgal of wastewater (Abdulahad 2011). Wastewater is discharged to the Leon Creek Waste Water Treatment Plant (WWTP). The permitted daily average and daily maximum flows for Leon Creek WWTP are 36.5 MGD and 92 MGD, respectively (USAF 2011c). MWD handlers working on MWD training courses currently use three portable toilets on the JBSA-LMB MWD campus. These portable toilets are waterless and the waste is collected and disposed by a private contractor. Animal excrement generated during daily operation of the MWD training facility is washed through drains into the sanitary sewer system (Day 2012).

3.3.10.5 Drainage of Storm Water

JBSA-Lackland operates under the Multi-Sector General Permit TXR050000 for storm water discharges related to industrial activities and maintains a Texas Pollutant Discharge Elimination System (TPDES) Municipal Separate Storm Sewer System (MS4) General Permit (Permit No. TXR040068). In accordance with these permits, JBSA-Lackland has implemented and maintains a SWPPP to minimize storm water pollution and to implement sampling and monitoring systems (USAF 2011d).

The majority of storm water runoff on JBSA-Lackland is drained through a series of channels consisting of natural drainages, open man-made ditches and underground storm drainages to various permitted outfall locations, such as Leon Creek, Indian Creek and Medio Creek. Medio Creek serves as the main discharge location for the portion of the proposed project area located on the JBSA-LTA. Leon Creek serves as the main discharge location for the JBSA-LMB (USAF 2011d).

3.3.11 Safety

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. The elements of an accident-prone environment include the presence of hazards and an exposed population at risk of encountering a hazard. Numerous approaches are available to manage the operational environment to improve safety, including reducing the magnitude of a hazard through engineering and administrative controls as well as proper use of PPE. The primary safety categories discussed in this analysis include Ground, Traffic, and Construction Safety.

Ground Safety

Both natural and man-made environmental hazards may be present at JBSA-Lackland at any time due to the varied activities that take place on the installation. Naturally-occurring potential health and safety hazards include insects, snakes, rough terrain, climactic conditions and flash floods. Potential man made health and safety hazards include occupational noise exposure, ground traffic (i.e. driving to get to the work site) and general injuries due to motor vehicle accidents.

The USAF categorizes incidents that occur while on the job as one of five classes. These classifications begin with the most severe and conclude with general mishaps that are used to help identify prevention methods. Within the fifth classification of incidents the Air Force also has indentified three other sub classifications, none of which were recorded at the 341 TRS. The USAF classification according to the Department of the Air Forces Standard No. A2, Mishap Investigation and Reporting are as follows:

- Class A – Total cost of $2,000,000 or more for property damage, or a permanent total disability or fatality. Property damage includes all government equipment, vehicles, or munitions.
- Class B – Total cost of $500,000 or more but less than $2,000,000 for property damage. Permanent partial disability or hospitalization of three or more people.

- Class C – Total cost of $50,000 or more but less than $500,000 for property damage. Minor injury, minor occupational illness. An injury resulting in a lost workday case, or an occupational illness that causes loss of time from work at any time. An occupational injury or illness resulting in permanent change of job.
- Class D – Any non-fatal injury or occupational illness that does not meet the definition of lost workdays (lost time). These are cases where, because of injury or occupational illness, the employee only works partial days, has restricted duties, or is transferred to another job, lost consciousness, required medical treatment greater than first aid, or incurred a significant injury or illness diagnosed by a physician or other health care professional.
- Class E Events – These occurrences do not meet reportable mishap classification criteria, but are deemed important to investigate/report for mishap prevention. Class E reports provide an expeditious way to disseminate valuable mishap prevention information. These events also include the following:
    - Property Damage Events – Mishaps that do not have an injury or illness and the direct cost totals $2,000 or more but less than $50,000.
    - High Accident Potential (HAP) Events – Any hazardous occurrence that has a high potential for becoming a mishap.
    - Laser or Radio Frequency (RFR) incidents or accidents. All incidents or accidents involving alleged or suspected exposures of laser radiation need to be investigated according to Air Force Office of Safety and Health (AFOSH) Std 48-139 Laser Radiation Protection Program Paragraph 2.6, immediately reported via the Laser Injury Hotline (1-800-473-3549 or DSN 240-4784) and reported in Air Force Safety Automated System (AFSAS). Similarly, alleged or suspected RFR exposures in excess of exposure limits will be investigated and reported as prescribed in AFOSH 48-9, and reported in AFSAS (USAF 2010e).

From 2002 to present there have been 24 ground incidents in the 37 Training Wing (TRW). Eight of the incidents were due to environmental conditions ranging from exposed metal and inoperable windows to distracted worker incidents. Of these incidents there were two Class C incidents and six Class D incidents.

The remaining 16 incidents all involved injuries while working directly with a MWD. The incidents occurred during activities that ranged from grooming and transporting of dogs to walking and training with the MWD. Of these incidents, seven were Class C and nine incidents were classified as Class D. One of the Class C incidents involved the exterior grounds around the training buildings (Smith 2012).

Traffic Safety

Motor vehicle accidents have been a moderate issue over the past decade for the 37 TRW. From 2003-2007 and 2011-present, the average number of traffic accidents from vehicles traveling to and from the multiple work areas on JBSA-LMB and JBSA-LTA was two per year (Smith 2012). Data from 2008-2010 was unavailable at the time of this report. Of the years for which

data was available, there have been four years (none of which were consecutive) where there were no recorded traffic incidents. There is no obvious trend that the number of incidents are increasing or decreasing over time.

Construction Safety

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 risk of illness, injury, death, and property damage. The health and safety of construction contractors are safeguarded by OSHA regulations. 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. Construction related hazards that are typical for construction activities include biological hazards, slips trips and falls, use of hand and power tools, repetitive motion injuries, proper lifting and material handling, heavy equipment, heat or/and cold stress, noise exposure, proper PPE, and using the proper tool for the job. Additionally, contractors must maintain cleanliness at the construction site. Construction debris which can be blown around a construction site can also pose a hazard to those working and driving in the area of the construction.

3.3.12 Socioeconomic Resources

JBSA-Lackland is located in Bexar County, Texas, 12.8 miles southwest of downtown San Antonio. Due to the nature of the Proposed Action and the fact that it would not include changes to population, housing, or education, the scope of this section is limited to an analysis of the existing economic conditions at JBSA-Lackland and its areas of influence.

3.3.12.1 Economic Activity

JBSA-Lackland's economic influences are geographically far-reaching, affecting Atascosa, Bandera, Bexar, Comal, Guadalupe, Kendall, Medina, and Wilson Counties (Bexar County 2010). The installation generates economic activity in the region through employee payrolls, service contracts, construction programs, local procurements, and other expenditures. The surrounding communities and JBSA-Lackland depend on one another for employment, goods, and services.

JBSA-Lackland is home to more than 120 DoD and associate organizations, including the 37th Training Wing, the largest training wing in the US Air Force (USAF 2010f). JBSA-Lackland is the Air Force's only site for enlisted basic military training and also offers professional and technical skills, and English language training for members of the Air Force, other military services, government agencies, and allies (US Air Force 2010f).

In FY 2010, the installation supported approximately 6,675 active duty military personnel, approximately 3,250 trainees, approximately 3,745 Appropriated Funds (APF) Civilians, and approximately 2,515 other Civilians with a total payroll of over $1.8 billion (USAF 2010f). The Base is the second largest employer in the City of San Antonio (Bexar County 2010). The total annual expenditures at JBSA-Lackland are over $750 million and include construction services; and other materials, equipment, and supplies procured. JBSA-Lackland's total annual economic impact estimate for FY 2010 was over $3.2 billion (USAF 2010f).

3.3.13 Environmental Justice

EO 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*, provides that "…each Federal Agency shall make achieving environmental justice part of its mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low-income populations." In an accompanying Presidential memorandum, the President specified that federal agencies shall analyze the environmental effects of their proposed actions on minority and low-income communities, including human health, economic, and social effects when such analysis is required by NEPA.

This analysis follows the *Guide for Environmental Justice Analysis with the Environmental Impact Analysis Process*, November 1997, and the CEQ Environmental Justice Guidance under NEPA, December 1997.

In order to determine if minority and low-income populations are disproportionately impacted by the Proposed Action or No-action Alternative, two areas of comparison must first be determined:

- the area potentially affected by impacts from resources (i.e., air quality, noise, land use), or Region of Influence (ROI), and
- the larger regional community that includes the affected area and serves as a Community of Comparison (COC).

Depending on the alternatives, each resource (i.e., air quality, noise, land use) can impact a different ROI. The ROI is the geographic region that would be influenced by a resource as a result of the proposed project. The ROI for this environmental justice analysis includes the census tracts affected by the Proposed Action, including census tract 1614 which is comprised of JBSA-Lackland. The COC is the regional area surrounding the ROI that is the demographic area used to compare and analyze the potential environmental justice impacts that results in the identification of an environmental justice community. For this analysis the COC is the City of San Antonio (COSA).

Disadvantaged groups within the ROI and COC, including low-income and minority communities, are specifically considered in order to assess the potential for disproportionate occurrence of impacts. For the purposes of this analysis, disadvantaged groups are defined as follows:

- *Minority Population:* Black or African Americans; American Indians and Alaska Native; Asian; Native Hawaiian and Other Pacific Islander; and some other race. For the 2010 Census, race and Hispanic origin (ethnicity) were considered two separate concepts and were recorded separately. For the purposes of this analysis, the total minority race population will be separate from the total Hispanic population to determine total minority race population from the Hispanic total within the affected areas.
- *Low-Income Population:* Persons living below the poverty level, according to income data collected in US Census 2010.

Table 3-11 summarizes census data on minority and low-income populations for the affected Census Tracts (the ROI) and for the COSA (the COC). Additional information is provided for Bexar County, the State of Texas, and the US.

At least one criteria listed below must be met to determine if an environmental justice community is present:

- If the percentage of minority or low-income population within the ROI is greater than that of the community of comparison, the affected area is considered to be a minority or low-income population.
- If the minority population (including Hispanics or Latinos) or low-income population of the ROI is greater than 50 percent, the affected area is considered a majority-minority or majority low-income population.

Table 3-11 Percent Minority Population and Low-Income Population for Proposed Site

Demographic Area	Total population	Total Hispanic/ Latino population	Percent Hispanic/ Latino population	Total minority race population	Percent minority race	All income levels	Percent low- income
Region of Influence (ROI)							
Census Tract 1614	9,945	777	8	2,739	28	915	15
Census Tract 1615.01	7,656	6,197	81	1,796	23	7, 482	25
Census Tract 1615.03	3,901	3,239	83	921	24	3,867	37
Census Tract 1615.04	4,341	3,686	85	1,055	24	3,682	22
Census Tract 1616	3,958	3,144	79	1,096	28	4,800	40
Census Tract 1618.01	4,028	2,464	61	1,016	25	3,900	14
Census Tract 1618.02	5,319	4,112	77	1,589	30	5,131	37
Census Tract 1719.03	6,626	5,020	76	1,585	24	6,735	16
Census Tract 1719.19	3,201	2,185	68	830	26	2,177	6
Census Tract 1719.20	8.811	6,424	73	2,221	25	8,840	10
Census Tract 9800.03	1,802	353	19	509	28	1,257	7
Community of Comparison (COC)							
COSA	1,327,407	838,952	63	318,463	24	489,289	19
Others							
Bexar County	1,714,773	1,006,958	59	404,845	24	1,682,820	17
State of Texas	25,145,561	9,460,921	38	6,765,008	27	24,652,927	18
United States	308,745,538	50,325,523	16	57,117,925	19	296,141,149	14

Source: USCB 2010a-b, USCB 2011a-d
COC – Community of Comparison
COSA – City of San Antonio
ROI – Region of Influence

According to the percentages listed in 3-11, an environmental justice community is present in the area of the Proposed Action. Census Tracts 1614, 1615.01, 1615.03, 1615.04, 1616, 1618.01, 1618.02, 1719.03, 1719.19, 1719.20, and 9800.03 have environmental justice communities because the total percent minority race population or the total percent Hispanic/Latino populations are greater than the COC, making them a majority-minority population. Additionally, Census Tracts 1615.01, 1615.03, 1615.04, 1616, and 1618.02 are considered environmental justice communities because the percent low income populations are greater than the COC, making the Census Tracts majority low-income populations.

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CHAPTER 4
ENVIRONMENTAL CONSEQUENCES

4.1 INTRODUCTION

This chapter describes the potential environmental consequences that are likely to occur as a result of implementation of the Proposed Action or No-action Alternative. The No-action Alternative provides a baseline against which the impacts of the Proposed Action can be compared. Discussion of mitigation measures and best management practices are included, as necessary. If the actions result in irreversible or irretrievable results, it is noted within the sections below. Criteria and assumptions used to evaluate potential impacts are discussed at the beginning of each section.

4.2 CHANGE IN CURRENT MISSION

The activities associated with implementation of the Proposed Action would not change the current mission of the installation. Revitalization of the MWD campus at JBSA-Lackland would support the current and future mission of the installation, the 341 TRS, and the DoD.

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

4.3.1 Air Quality

The following factors were considered in evaluating air quality: (1) the short- and long-term air emissions generated from road construction and paving; building construction and demolition; and on-road vehicle activities; (2) the type of emissions generated; and (3) the potential for emissions to result in ambient air concentrations that exceed one of the NAAQS or SIP requirements. A conformity analysis is not required if the emissions of NO_x and VOCs are emitted in quantities less than the corresponding *de minimis* level. The air pollutant emission calculations for the Proposed and No-action Alternative included in the sections below are detailed in Appendix D. For purposes of analysis, impacts to air quality would be considered significant if emissions from the alternatives would be considered regionally significant by the USEPA. Impacts would also be significant if the total of direct and indirect emissions from the Proposed Action equaled or exceed any of the rates set forth in 40 CFR 51.853(b)1 or 2.

Potential emissions from the Proposed Action would occur primarily from construction and demolition activities at JBSA-Lackland and would include activities such as grading, excavation, filling, and equipment operation. Thus, emissions would be localized within the area surrounding the project location. For this reason, the analysis in this EA will address potential impacts within the San Antonia MSA, instead of the entire AQCR that covers a large geographical area.

4.3.1.1 Proposed Action

Emissions for the Proposed Action are summarized in Table 4-1 and would occur during the new building construction, the demolition of existing buildings, road construction and asphalt paving.

The long-term activities of the MWD campus would not change; the Proposed Action would make the activities associated with MWD operation more efficient and replace aging infrastructure and buildings with more energy efficient replacements. Therefore, long-term emissions from the operation of the MWD would not be expected to increase.

Under the Proposed Action it is anticipated that the completion of all 12 projects would take longer than one year. For the purpose of this conformity determination, it has been assumed that all emissions associated with the 12 projects of the Proposed Action would take place during a one year period. This provides a conservative estimate of project emissions for comparison to the General Conformity *de minimis* thresholds.

Review of emissions from Proposed Action in Table 4-1 indicates that the greatest impact to the annual local emissions during the project would be PM_{10} with a 47.0 tpy increase. The emissions would be temporary and would be eliminated after the activity is completed.

Table 4-1 Expected Emissions per Construction Year

	CO	VOC	NO_x	SO_x	PM_{10}	$PM_{2.5}$
Proposed Action (tpy)	21.9	2.7	10.9	1.4	47.0	5.4

Notes:
CO = carbon monoxide
MSA = Metropolitan Statistical Area
NO_x = nitrogen oxides
$PM_{2.5}$ = particulate matter equal or less than 2.5 micrometers in diameter
PM_{10} = particulate matter equal or less than 10 micrometers in diameter
SO_x = sulfur oxides
tpy = tons per year
VOC = volatile organic compound

4.3.1.2 No-action Alternative

There would be no new emissions associated with the No-action Alternative and therefore there would be no change to the current annual emissions at JBSA-Lackland. It is unknown if changes in future off-property development or traffic growth trends would affect air quality.

4.3.1.3 General Conformity

The General Conformity rule is set forth in the CFR, 40 CFR 51 Subpart W – Determining Conformity of General Federal Action to State and Federal Implementation Plans. According to 40 CFR 51.853(b), Federal actions require a conformity determination for each pollutant where the total of direct and indirect emissions in a nonattainment or maintenance area caused by a Federal action would equal or exceed any of the rates in paragraphs 40 CFR 51.853(b)1 or 2. The emission calculations used in this general conformity applicability determination are in Appendix D.

The Proposed Action and No-action Alternative would be located in Bexar County, which is currently designated basic nonattainment area for O_3. All other criteria pollutants are in attainment. Effective July 20, 2012, Bexar County will be designated as unclassifiable/attainment. The three-year average ozone concentrations in Bexar County are

very close to exceeding the 8-hour ozone standard. Therefore, emissions associated with the Proposed Action and No-action Alternative have been compared to the General Conformity *de minimis* thresholds. The O_3 precursor (NO_x and VOC) emissions are subject to General Conformity requirements. In accordance with the requirements of 40 CFR 51.853(b)1, the *de minimis* threshold set for basic O_3 nonattainment areas is 100 tpy for O_3 precursors VOC and NO_x.

The annual emission increases associated with the Proposed Action, No-action Alternative, and comparison with the *de minimis* thresholds are presented in Table 4-2. Table 4-2 shows that the annual emissions of NO_x and VOCs during the construction periods of the Proposed Action and No-action Alternative are less than the *de minimis* thresholds. Therefore, no further analysis is necessary.

Table 4-2 Comparison of Emissions to *de minimis* Thresholds

Pollutants	Proposed Action Emissions (tpy)	No-action Alternative Emissions (tpy)	*De minimis* Threshold (tpy)
NO_x	10.9	0.0	100
VOC	2.7	0.0	100

Notes:
NO_x = nitrogen oxides
tpy = tons per year
VOC = volatile organic compound

4.3.1.4 Regional Significance

Table 4-3 compares the net emissions from the Proposed Action to the 2008 San Antonio MSA emissions. All emissions would fall well below the 10 percent level that would be considered regionally significant by the USEPA.

Table 4-3 Percent of Regional Emissions

	CO	VOC	NO_x	SO_x	PM_{10}	$PM_{2.5}$
Proposed Action (tpy)	21.9	2.7	10.9	1.4	47.0	5.4
Percent of Regional Emissions	7.22E-03	4.54E-03	0.018	5.08E-03	0.049	0.043
2008 San Antonio MSA Emissions (tpy)[a]	303,123	59,419	60,045	27,571	95,688	12,659

Notes:
CO = carbon monoxide
MSA = Metropolitan Statistical Area
NO_x = nitrogen oxides
$PM_{2.5}$ = particulate matter equal or less than 2.5 micrometers in diameter
PM_{10} = particulate matter equal or less than 10 micrometers in diameter
SO_x = sulfur oxides
tpy = tons per year
VOC = volatile organic compound
[a] Includes emissions from point, area, on-road, non-road mobile sources, and biogenic sources. San Antonio MSA consists of Bexar, Comal, Guadalupe, and Wilson Counties. Source: Emissions come from an extract of USEPA's National Emission Inventory (NEI). Data for year 2008 were extracted from USEPA 2012b. NEI is an emissions database developed by USEPA, 2008 is the latest year of emissions available.
http://www.epa.gov/ttn/chief/net/2008inventory.html

4.3.1.5 Greenhouse Gases

Under the Proposed Action approximately 5,144 metric tons of CO_{2eq} would be released. The amount of CO_{2eq} released under the Proposed Action represents less than 0.000001 percent of the 2010 US anthropogenic emissions of CO_{2eq}. This is a limited amount of emissions that would not contribute significantly to climate change, but any emission of GHGs represents an incremental increase in global GHG concentrations. The USAF is poised to support climate-changing initiatives globally, while preserving military operations, sustainability, and readiness by working, where possible, to reduce GHG emissions (AFCEE 2012).

Activities under the Proposed Action are not subject to the requirements of the USEPA National Greenhouse Gas Reporting Rule. The Proposed Action does include the construction of new facilities, renovation, or repair and alteration of facilities that might be subject to requirements under EO 13514. The construction vehicles and on-road vehicles used under the Proposed Action would not be considered in GHG target reductions under EO 13514.

4.3.1.6 Measures to Reduce Impacts

Little impact to local air quality would be expected from the Proposed Action associated with the MWD revitalization at JBSA-Lackland. Therefore, no mitigative actions are proposed. BMPs would include watering the disturbed area of the construction, covering dirt and aggregate trucks and/or piles, prevention of dirt carryover to paved roads, the use of erosion barriers and wind breaks, and the use of low sulfur and bio-diesel fuel in construction/transport vehicles.

4.3.2 Noise

The following factors were considered in evaluating potential noise impacts: (1) the degree to which noise levels generated by construction activities were higher than the ambient noise levels; (2) the degree to which there is annoyance and/or interference with activity as a result of the alternative; and (3) the proximity of potential noise-sensitive receptors to the noise source.

Because the MWDs are already being kenneled and trained in the project area, under the Proposed Action there would not be a quantifiable change in noise level associated with barking on JBSA-LMB or JBSA-LTA. Therefore, analysis of the noise impacts will only include noise generated by construction activities.

Noise naturally dissipates by atmospheric attenuation as it travels through the air. Factors that can affect the amount of attenuation are ground surface, foliage, topography, and humidity. Assuming that noise from the construction equipment radiates equally in all directions, the sound intensity would diminish inversely as the square of the distance from the source. Therefore, in a free field (no reflections of sound), SPLs from construction noise decreases 6 dB with every doubling of the distance from the source (USEPA 1997). Impacts from noise would be considered significant if the alternatives resulted in a noise level increase of 10 dB or more from baseline conditions at potential noise-sensitive receptors, or if noise level increases became detrimental to the MWD training mission.

4.3.2.1 Proposed Action

The increased noise levels associated with the Proposed Action would come from the construction of new facilities and the demolition of existing facilities on the MWD campus. The noise associated with the operation of machinery on construction sites is typically short-term, intermittent, and highly localized; therefore, would not accumulate over time and would last only as long as the duration of construction and demolition activities.

It is anticipated that typical construction vehicles and equipment to be used during demolition, site preparation, construction, and finishing work would be similar to those presented in Table 3-4. Construction equipment expected to be used at the site would produce peak SPLs ranging from 75 to 85 dBA at 50 ft from the source. The SPL decreases 6 dBA with every doubling of distance from the source (USEPA 1977). It should also be noted that Table 3-4 includes the SPL generated at various distances from the source, but does not account for the ability of sound to be reflected/absorbed by nearby objects, which could further reduce noise levels. For day/night average sound levels, construction noise does not typically generate a predicted noise exposure of 65 dBA DNL or greater because, even at extremely high rates of operation, including limited nighttime operation (2200-0700 hrs), the equipment itself does not generate noise so intense that it would produce a 65 dBA DNL.

Areas adjacent to proposed construction activities would temporarily experience peak outside noise levels similar to those noted in Table 3-4. The closest noise-sensitive receptors to the JBSA-LMB project site are the residences located 0.07 miles (approximately 370 ft) south of the project site. Due to the distance from the site, short-term, peak, outside noise levels from construction activities would be approximately 67 dBA to 73 dBA at the nearest residences. This is within the range of noise levels produced at the residences by dogs barking at the nearby MWD kennels. Additionally, if new kennel facilities are consistent with current design, there would be no change to noise levels resulting from barking dogs.

The closest potential noise-sensitive receptors to the project sites on JBSA-LTA are the residences located 0.21 miles (approximately 1,110 ft) northeast of the proposed Project 12 site. These residences are separated from the proposed project site by US Highway 90 and already experience outside elevated noise levels from traffic estimated at 77 to 80 dBA. Peak outside noise levels at the residences from the construction activity would be approximately 55 to 61 dBA, not accounting for additional noise reduction resulting from the vegetation noise barrier. These projected noise levels would be less than the noise experienced from highway traffic.

Sound levels within the residences would be even lower due to the sound transmission loss through building walls and windows. Noise levels within buildings are generally reduced by 20 dB, depending on the type of walls and windows (US Navy 2005). Therefore, peak interior noise levels at the closest residences from construction at the JBSA-LMB site would be reduced to 47 dBA to 53 dBA, and peak interior noise levels at the closest residences from construction at the JBSA-LTA site would be reduced to 35 dBA to 41 dBA. Therefore, outdoor and indoor noise levels at the residences near the JBSA-LTA project sites would experience construction noise levels below baseline levels. At residences near proposed JBSA-LMB construction activities, outdoor and indoor construction noise levels would be within the range of baseline noise generated from dogs barking at the nearby kennels at the MWD campus.

Air Force and civilians working within the MWD Campus and other facilities near the proposed project sites would experience short-term elevated noise levels due to construction activities. In some cases, these facilities are immediately adjacent to, or adjoining the proposed construction sites. Workers would experience noise levels similar to those noted in Table 3-4, not accounting for additional noise reduction properties of building materials. Considering a 20 dB decrease in noise levels due to noise-reflective properties of windows and walls, building occupants of facilities within 50 feet of construction could expect to experience peak noise levels of 65 dB or less. All noise generated from construction activities would be limited to daytime hours and would only last as long as the duration of the project activities.

With regard to noise impacts to the MWDs, kennel facilities are designed with noise reducing materials; therefore, construction noise should not contribute extra stress to the MWDs while they are inside kennel facilities. Additionally, loud noises are a component of the MWDs training, so the short-term increased noise levels outside of the kennels should not be detrimental to their training.

4.3.2.2 No-action Alternative

Under the No-action Alternative, no construction activities would occur and there would be no change in the baseline conditions described in Section 3.3.2. It is unknown if there would be changes to future noise levels due to off-property development or traffic growth trends.

4.3.2.3 Measures to Reduce Impacts

Noise-generating heavy equipment at the project site should be equipped with the manufacturer's standard noise control devices (i.e., mufflers, baffling, and/or engine enclosures). All equipment should be properly maintained to ensure that no additional noise from worn or improperly maintained equipment parts is generated. Construction activities would occur between 0700 and 1900 hours and would be conducted according to OSHA regulations 29 CFR 1910.95 and 29 CFR 1926.52. Occupational exposure to the noise from heavy equipment could be reduced by requiring workers to wear appropriate hearing protection. Hearing protective devices such as ear plugs or ear muffs should be worn at all locations where workers may be exposed to high noise levels. Use of berms or screen walls could be utilized as noise buffers to reduce distraction to the MWDs from the construction noise. No mitigation measures would be required.

4.3.3 Land Use

The following factors were considered in evaluating potential land use: (1) the degree to which the action would adversely affect existing sensitive land uses; (2) the degree to which construction and/or resultant road routes would interfere with the activities or functions of adjacent existing or proposed land uses; and (3) the degree to which any physical changes in land use would affect surrounding uses and compatibility with land use plans. The alternatives could have a significant effect if they: 1) conflict in substantial fashion with existing land uses and master planning efforts undertaken by the installation, or 2) conflict in substantial fashion with off-base land uses and master planning efforts of surrounding jurisdictions.

4.3.3.1 Proposed Action

Under the Proposed Action, the construction and demolition activities would result in a land use designation change on JBSA-LTA. The existing land that is designated "Training – Outdoor" at the Project 11 site would change to "Open Space," and the land considered "Open Space" in the Project 10 and 12 project sites would change to "Training – Outdoor." These designation changes would be compatible with the existing land uses. There would be no change to the land use designation on JBSA-LMB. Additionally, the Proposed Action is not expected to result in conflict with existing on- or off-base land uses or master planning efforts undertaken by the installation or surrounding jurisdictions.

The Proposed Action would result in the loss of approximately 153 acres of land that is classified as prime farmland; however, since the land has historically been used to support military missions and operations at JBSA-LMB since the 1940s, and at JBSA-LTA since the 1950s, the land has realistically been unavailable for agricultural use for over sixty years. Therefore, the loss of this prime farmland is not considered a major impact.

4.3.3.2 No-action Alternative

Under the No-action Alternative, there would be no change in the baseline land use designations described in Section 3.3.3.

4.3.3.3 Measures to Reduce Impacts

The Proposed Action would result in compatibility with existing land use in the vicinity; therefore, no mitigation measures or BMPs are proposed.

4.3.4 Earth Resources

Protection of unique geological features, minimization of soil erosion, and the siting of facilities in relation to potential geologic hazards are considered when evaluating potential impacts of the alternatives on earth resources. Generally, impacts can be avoided or minimized if proper land conservation and erosion control measures are incorporated into project development.

Effects on geology and soils could be significant if they alter the lithology, stratigraphy, and geological structures or change the soil composition, structure, or function within the environment.

4.3.4.1 Proposed Action

JBSA-LMB

Under the Proposed Action, demolition of four existing buildings would occur at Projects 2, 4, and 5. None of the construction or demolition projects are located within the 100-year floodplain on the JBSA-LMB. Areas where the buildings would be removed would be susceptible to increased erosion. To minimize erosion, the contractor would be responsible for watering the area during demolition activities, as well as re-vegetating the area once demolition is complete.

The construction and demolition areas anticipated to be disturbed on JBSA-LMB would be in areas currently developed with roads and/or buildings. Portions of these areas are vegetated and/or landscaped areas. Once construction commences, areas disturbed would be susceptible to erosion on a short term basis. Construction of the new roads and infrastructure would generate dust and result in soil disturbance; however, this disturbance would be short-term, would fall off rapidly with distance from the construction site, and would last only as long as the duration of construction.

Because the disturbed areas on JBSA-LMB would be more than one acre in size, a TPDES general construction permit would be required, which includes compliance with City of San Antonio ordinance 94002 for protection of MS4s. Coverage under this permit requires the submittal of an NOI, development and implementation of a SWPPP, and incorporation of BMPs within the SWPPP for sediment control during excavation and construction activities. BMPs could include use of silt fencing, rock filter dams or hay bales, watering the area during construction and demolition activities, and re-vegetating the area once site activities are complete. It is expected that the implemented BMPs would help to minimize erosion on the project sites.

Construction vehicle traffic is expected to be limited to the footprint of the areas proposed for construction and for demolition, and haul routes are anticipated to be on existing roads. Therefore, construction vehicle traffic would not be expected to impact soils or geology at the proposed sites.

The Proposed Action would result in the loss of approximately 72 acres of prime farmland on JBSA-LMB; however, this land is already developed with structures supporting the mission and operations of the installation, and has not recently been used for agricultural purposes. The proposed projects under the Proposed Action would not be expected to alter the lithology, stratigraphy, and geological structures or change the soil composition, structure, or function within the project sites.

JBSA-LTA

Under the Proposed Action, four of the proposed projects (Projects 9 through 12) are located on the JBSA-LTA, only two of which (Projects 9 and 12) would require construction of necessary infrastructure, including sidewalks and utilities, to support the new facilities located on the JBSA-LTA. Additionally as part of Project 9, asphalt roadways would be constructed around the kennels for quick pickup/delivery of MWDs. Project 11, a mobile grooming station, and Project 10, the demolition of the existing buildings located within the 100-year floodplain on the JBSA-LTA, would not contain new construction elements. For Project 10, demolition is planned for the existing buildings located within the 100-year floodplain on the JBSA-LTA. Demolition includes Buildings 435, 436, 437, 450, 452, 454, 456, 458, 462, 464, 466, 468, 470, 471, and 472. Demolition of these buildings would total approximately 44,690 sf.

The excavation and construction operations and demolition of buildings would temporarily increase the potential for erosion and sedimentation runoff into Medio Creek. From construction of the Projects 9 and 12, and demolition and removal of the existing buildings under Project 10, there would be a short-term increase in soil disturbance and dust generated, which would be

limited to those areas on or near construction operations and would occur only for the duration of construction. Areas where the buildings are removed would be susceptible to increased erosion.

Construction of the new roads and infrastructure would also generate dust and result in soil disturbance; however, this disturbance would be short-term, would fall off rapidly with distance from the construction site, and would last only as long as the duration of construction.

Because the disturbed areas on JBSA-LTA would be more than one acre in size, a TPDES general construction permit would be required, which includes compliance with City of San Antonio ordinance 94002 for protection of MS4s. Coverage under this permit requires the submittal of an NOI, development and implementation of a SWPPP, and incorporation of BMPs within the SWPPP for sediment control during excavation and construction activities. BMPs could include use of silt fencing and hay bales, watering the area during construction and demolition activities, and re-vegetating the area once site activities are complete. It is expected that the implemented BMPs would prevent sediment loading of the nearby creek and would help to minimize erosion on the project sites.

Construction vehicle traffic is expected to be limited to the footprint of the areas proposed for construction and for demolition, and separate haul routes would only be constructed for areas without existing roads. The construction areas anticipated to be disturbed would be undeveloped portions of the Project 9 site in the proximity of Patrol Rd. Project 12, construction of a MWD training laboratory, would be performed in a brush-cleared, but vegetated area and adjacent roads would accommodate construction vehicle traffic.

Construction and demolition activities would be expected to last approximately 24 months. Due to the short duration of construction activities, no long-term or permanent effects to earth resources would be anticipated from vehicular traffic or ground disturbance associated with the Proposed Action. Therefore, it is anticipated that underlying soils would remain relatively intact. The Proposed Action would result in the loss of approximately 81 acres of prime farmland on JBSA-LTA; however, this land is used to support the mission and operations of the installation, and has not recently been used for agricultural purposes. As a result of minimal disturbance in the project areas, the Proposed Action would not be expected to alter the lithology, stratigraphy, or geological structures; or change the soil composition, structure, or function.

4.3.4.2 No-action Alternative

Under the No-action Alternative, there would be no construction or demolition activities and therefore, no change in the baseline conditions described in Section 3.3.4.

4.3.4.3 Measures to Reduce Impacts

Construction impacts to earth resources from the Proposed Action are anticipated to be temporary in nature and would not require mitigation measures. However, proposed construction projects should include site-specific sediment and erosion control plans that detail BMPs to prevent soil disturbance, capture and contain loose soil, and slow the movement of storm water during heavy rains. Fugitive dust from construction and demolition activities would

be minimized by watering of the soil, and areas where existing buildings are removed would be re-vegetated to prevent erosion, when not reconstructed.

4.3.5 Water Resources

Impacts to water resources would be considered significant if the Proposed Action resulted in one or more of the following:

- Reduction in water supply to existing users
- Violation of existing water quality standards and applicable regulations
- Probability of flooding in the project area increases

4.3.5.1 Proposed Action

Groundwater

While the shallow alluvial aquifer is located between 5 and 15 feet bgs, and potable groundwater at the project location is estimated to be shallow, excavation activities related to the construction and demolition of facilities associated with the MWD Campus Revitalization are not anticipated to reach a depth of greater than 5 feet below ground surface. Demolition waste materials would be properly inspected and disposed so that groundwater would not be impacted. Disposal of hazardous materials and wastes is discussed in further detail in Section 4.3.8, Hazardous Materials and Wastes, and disposal of non-hazardous materials and wastes is discussed further in Section 4.3.9, Utilities and Infrastructure. Implementation of the Proposed Action would not be expected to violate existing water quality standards and applicable regulations.

A minor impact to the quantity of groundwater is anticipated under the Proposed Action due to the construction of new latrines on JBSA-LMB. Assuming low-flow fixtures would be installed in the facilities, and 35 people would use the facilities throughout the day, an annual increase of approximately 65,200 gallons of water would be expected. The amount is less than one percent of the current usage of water for JBSA-LMB and the JBSA-LTA and sufficient capacity exists to support this increase.

Surface Water

As part of the Proposed Action, the construction and demolition of MWD facilities would occur within the Medio Creek and Leon Creek drainage basins. All construction activities would be located outside of the banks of Leon Creek and Medio Creek. Therefore, the construction activities would have no direct impact on Leon Creek or Medio Creek. However, during construction activities, exposed soils could create the temporary potential for erosion and increased sediment runoff into Medio Creek or Leon Creek. Demolition of 44,690 square feet of existing facilities currently located within the 100-year floodplain on the JBSA-LTA could also temporarily impact Medio Creek due to the potential for erosion and increased sediment runoff.

These short-term impacts would be covered under the TPDES construction general permit (CGP) permit. Coverage under this permit requires the submittal of an NOI, development and implementation of a SWPPP, and incorporation of BMPs within the SWPPP for sediment control during excavation and construction activities.

Additionally, there would be an overall increase in impervious cover on JBSA-LMB and JBSA-LTA of 600 percent and 43 percent, respectively. Storm water runoff from impervious surfaces on JBSA-LMB would discharge to Leon Creek through drainage ditches, and to Medio Creek from JBSA-LTA through newly constructed storm sewers. The increase in impervious cover would result in a total increase in storm water runoff by approximately 35.6 cubic feet per second on JBSA-LMB and 3.7 cubic feet per second on JBSA-LTA; however, this increase could be accommodated by existing and newly constructed storm sewer infrastructure, and drainage ditches. Although there would be indirect impacts to Leon Creek and Medio Creek due to increases in storm water discharge, the discharged water would not be expected to contribute to water quality concerns of either creek or downstream surface water bodies. Additionally, no violation of existing water quality standards and applicable regulations would be expected.

In accordance with permitting requirements and in order to minimize the potential for increased sediment loading of drainage areas and downstream surface waterbodies, a SWPPP would be developed for the construction of the Proposed Action. The SWPPP would include the implementation of appropriate BMPs, such as silt fencing and rock filter dams, during construction activities.

Floodplains

As discussed in Section 3.3.5.3, approximately 44,690 square feet of existing structures proposed for demolition are located within the 100-year floodplain, and no new construction is proposed within a 100-year of 500-year floodplain. Section 60.3 (d) (3) of the National Flood Insurance Program requires that communities prohibit encroachments, fill, new development, substantial improvements, and other development within the adopted regulatory floodway unless it has been demonstrated through an engineering analysis using hydraulic modeling techniques that the proposed project would not result in any increase in flood levels within the community of the base flood (100-year) discharge. No major alterations to drainage patterns or flood carrying capacities of water courses would occur as part of the Proposed Action; therefore, the probability of flooding in the project area is not expected to increase. The project would comply with any stipulated permit condition, including engineering analysis or No-rise Certification (as required).

As discussed in the previous subsection, during construction and demolition activities, exposed soils could create the temporary potential for erosion and increased sediment runoff into the floodplain of Medio Creek or Leon Creek. In addition to any FEMA stipulated permit conditions and in order to minimize the potential for increased sediment loading of drainage areas and downstream surface waterbodies, a SWPPP would be developed for the construction of the Proposed Action. The SWPPP would include the implementation of appropriate BMPs, such as silt fencing and hay bales, during construction activities. Impacts to the floodplain of Medio Creek or Leon Creek are anticipated to be managed through the use of these BMPs. Therefore, no impacts to the floodplain are expected as a result of the proposed action.

4.3.5.2 No-action Alternative

Under the No-action Alternative, there would be no change in the baseline conditions of groundwater, surface water, and floodplains described in Section 3.3.5. Additionally, structures

located within the 100-year floodplain on JBSA-LTA would continue to be susceptible to flooding.

4.3.5.3 Measures to Reduce Impacts

In accordance with permitting requirements and in order to minimize the potential for increased sediment loading of drainage areas and downstream surface waterbodies, a SWPPP would be developed for the construction of the Proposed Action. The SWPPP would include the implementation of appropriate BMPs, such as silt fencing and rock filter dams, during construction activities. No mitigation measures are proposed.

4.3.6 Biological Resources

Impacts to biological resources would be considered significant if the Proposed Action or No-action Alternative resulted in

- An adverse effect to any Federally, state, or locally regulated or regionally sensitive species or valuable natural resource (sensitive plant/animal community)
- An adverse effect to endangered, threatened or candidate species or if it adversely modified or destroyed their critical habitat under the ESA
- An impact to Federally protected wetlands as promulgated under Section 404 of the CWA through direct removal, filling, changes in hydrology, or other means
- Adverse effects on birds protected by the MBTA

4.3.6.1 Proposed Action

Vegetation

Construction and operation of the proposed Military Working Dog Campus on JBSA-LMB shown in Figure 2-2 would primarily impact improved grounds. Due to the maintenance activities associated with care of these lands there would be minimal impacts to any wildlife species. This area is already disturbed and does not support natural vegetation. The construction and operation of the four proposed projects on the JBSA-LTA would potentially impact several types of vegetation and wildlife habitat. As shown in Figure 2-4, proposed Project 10, would demolish the existing MWD buildings within the 100-year floodplain of Medino Creek and relocate to outside the floodplain. Projects 9, 11, and 12 would be constructed within the JBSA-LTA to replace those facilities. The impacts of relocation, demolition and construction of the four proposed projects to the vegetative communities on the JBSA-LTA are shown in Table 4-4. The locations of the proposed projects with respect to existing vegetative communities are shown on Figure 3-2.

Table 4-4 Impacts on Vegetative Communities of the JBSA-LTA

Vegetative Type	Impacted Acreage
Disturbed/Highly Maintained	10.27
Disturbed/Unmaintained	7.13
Floodplain/Ephemeral Channel	0.10
Road	1.33
Semi-open brushland	30.28
Shrub/Scrub	5.56

With construction of the four proposed projects on the JBSA-LTA, the two resources most likely to be impacted by the Proposed Action are approximately 30 acres of Semi-open brushland and about 6 acres of Shrub/Scrub habitats. Under existing conditions there are approximately 205 acres of Semi-open brushland and 929 acres of Shrub/Scrub habitats on the JBSA-LTA. Construction and operation of the four proposed projects on the JBSA-LTA, would adversely impact approximately 15% of the Semi-open brushland habitat and ≤ 1% of the Shrub/Scrub community as shown on Figure 3-2.

Invasive plant species are present throughout the base and ten of the observed 164 plant species on the JBSA-LTA (USAF 2011b) are considered noxious or invasive species. Invasive or noxious species can adversely impact natural plant communities and ecosystems by replacing native species, and altering ecosystem functions. They are opportunistic and sometimes common along roadsides and disturbed areas. One example is the Chinese tallow tree that is found across the JBSA-LTA project area (USAF 2011b). With construction and operation of the proposed projects there would be a potential for the spread and proliferation of invasive or noxious species. Implementation of an Invasive Species Management and Control plan as recommended for the JBSA-LTA (USAF 2011b) would help control and/or limit the potential spread of these species.

Wildlife

Wildlife habitat is minimal in the vicinity of the proposed JBSA-LMB projects. Consequently, impacts to wildlife resulting from the demolition activities, and construction and operation of these projects would be minimal. Construction of the proposed four projects on the JBSA-LTA could adversely impact wildlife habitats and some species short-term during the construction period and long-term after construction and operation of the facilities. Approximately 30 acres of Semi-open brushland habitat and 6 acres of Shrub/Scrub habitat would be converted to training facilities for MWD. Loss of this habitat represents a loss of approximately 15% and ≤ 1% respectively of these habitats on the JBSA-LTA, and might result in reduced carrying capacity for some species of wildlife. The groups of species most likely to be impacted would include mammals and birds that use the semi-open brushland and scrub/scrub habitats.

Current noise levels exist from operation of the existing MWD facilities and wildlife has become accustomed to these. Demolition of this facility and relocating it to the south would temporarily increase noise levels in the new project area and might impact resident wildlife during the construction period, but impacts would diminish to pre-construction levels upon completion and initiation of operation. Relocation of this facility in the same area should only have short term noise impacts to resident wildlife species. The area directly impacted by the action is small (55

acres) and similar wildlife habitat occurs in the immediate surrounding areas; therefore, any impact on wildlife due to increased noise levels in the proposed project area would be short-term and should not significantly affect the overall carrying capacity of the JBSA-LTA for most species of wildlife.

Wetlands and Waters of the US

The project area was assessed for the occurrence of Waters of the US and wetlands by the USACE in 2008 (USAF 2008). A copy of the delineation report is shown in Appendix C. The delineated wetlands/water features for the area containing the eight proposed JBSA-LMB projects are shown on Figure C5 of the Lackland Wetland Study. Water feature M13 is the only water feature near the proposed JBSA-LMB projects and consists of a shallow swale that exhibits no hydrologic connection to any Waters of the US. It is classified as a Palustrine Emergent Wetland but is not a Water of the US. There would be minimal impacts to this water feature with construction and operation of the proposed projects. The delineated wetlands/water features for the JBSA-LTA are shown on Figures B2 and B3 of the Lackland Wetland Study and contain wetlands/water features A1, A2, and A3. Features A1 and A2 are both classified as Waters of the US, whereas, Feature A3 is not classified as a Water of the US. There would be no discernable impacts to these wetlands and water feature associated with the Proposed Action.

Protected Species

The proposed project is located in Bexar County, Texas which has a number of federally or state listed species. An updated list of federal and state listed threatened, endangered species, and candidate species for the project area is shown in Table 3-7. The USFWS has determined that there are no federally listed threatened or endangered species on JBSA-Lackland (USAF 2010a). The Texas Parks and Wildlife Department has also determined that currently there are no special species or natural communities on the base (USAF 2010a).

Eight protected species have potential habitat that occurs on JBSA-Lackland lands (USAF 2010a). Only species associated with scrub/shrub and woodland habitats such as the Black-capped vireo, Golden-cheeked warbler, Texas horned lizard, Texas indigo snake, Texas tortoise, and Timber rattlesnake would have potential habitat that might be impacted by the proposed projects on the JBSA-LTA. However, since none have been confirmed to presently occur on JBSA-Lackland lands there should be no impacts to these species.

The predominance of lands associated with the proposed JBSA-LMB project areas are classified as improved grounds and are heavily maintained. Habitat suitable for most wildlife and protected species is minimal. Consequently, the potential for any impacts to occur to these species would not be expected with the Proposed Action.

- An adverse effect to any Federally, state, or locally regulated or regionally sensitive species or valuable natural resource (sensitive plant/animal community)
- An adverse effect to endangered, threatened or candidate species or if it adversely modified or destroyed their critical habitat under the ESA

A number of karst species are federally-listed as threatened or endangered and occur in Bexar County. Karst habitat primarily occurs north and northwest of San Antonio is not known to

occur in the immediate project area (USAF 2007); however, use of water from the Edwards Aquifer by JBSA-Lackland requires evaluation of karst species that are federally- or state-listed threatened or endangered species in Bexar County. These eight species are shown in Table 3-8.

The DoD and JBSA-Lackland have been coordinating with the USFWS since 1996 with respect to their ESA responsibilities and federally listed species occurring in the Comal Springs and San Marcos Springs areas of the Edwards Aquifer. The USFWS issued a BO dated January 11, 2008 which evaluated the effects of Edwards Aquifer groundwater withdrawals for the support of existing and future missions at DoD military installations in Bexar County for (1) Fort Sam Houston, (2) Lackland, and (3) Randolph (USFWS 2008). This BO evaluated the effects for eight species, which are shown in Table 3-8. The BO addressed DoD aquifer use for current and projected missions for the time period 2006-2012. The BO found that this action is not likely to jeopardize the continued existence of the noted species. The USFWS also determined that any incidental take from the DoD's actions would not likely result in jeopardy to any of the eight species or the destruction or adverse modification of critical habitat for these species (USFWS 2008).

The 2008 BO addresses combined water withdrawals from the Edwards Aquifer for the time frame January 1, 2008 through December 31, 2012. Withdrawals by all the three DoD installations are not to exceed a total of 12,012 acre-feet/year. JBSA-Lackland's portion of this annual allocation for the Edwards Aquifer is approximately 4,100 acre-feet/year. The reported total annual use of Edwards Aquifer water for JBSA-Lackland in FY2011 was 2,270 acre-feet (USAF 2012b). With construction and operation of the proposed projects there would be an associated increase in annual water use from the Edwards Aquifer by JBSA-Lackland. Proposed features requiring increased water use include latrines. The projected increase in water use associated with construction of these facilities is approximately ≤0.5 acre-feet/year. An increase of this magnitude would be expected to have minimal or no impacts on the eight species addressed in the BO since the total water usage would be well below the established limit of 4,100 acre-feet/year.

In addition to the karst species, the USFWS lists three bird species as endangered; one mammal, the black bear, as threatened, and one bird and one plant as a candidate species (Table 3-7) for Bexar County. Critical habitat is not designated in the project area for any of the potentially occurring federally-listed species (USFWS 2011a, 2012b, 2012c); therefore, there would be no impact to critical habitat as a result of the Proposed Action.

Although both the Bald Eagle and the Golden Eagle are species protected by the MBTA and Bald and Golden Eagle Protection Act, it is highly improbable that either would occur in the project area. Consequently, construction and operation of the proposed projects would not be expected to impact either of these species.

If construction of the proposed project occurs during the nesting season, it is possible that the Proposed Action could result in an incidental take of migratory bird nests if BMPs are not implemented.

Although the project area on JBSA-LMB does not contain high value habitat for birds, several migratory bird species could utilize structures or landscaping for nesting or roosting (e.g., barn

swallow, chimney swift, common nighthawk, killdeer, house finch, grackles). Some migratory species could be impacted by the proposed demolition actions on both the JBSA-LMB and JBSA-LTA, if these actions occur during the migratory bird species nesting season. Similarly, the various habitat types on the JBSA-LTA do contain potential nesting habitat for migratory birds and construction activities could impact these species if they occur during the birds nesting season. Potential impacts to nesting migratory birds could include destruction of nests, incidental take of eggs, and young. These impacts would be avoided with implementation of the noted BMPs discussed below in Section 4.3.6.3.

4.3.6.2 No-action Alternative

Under the No-action Alternative, there would be no construction or demolition activities due to the Proposed Action; therefore, no change in the baseline conditions described in Section 3.3.6.

4.3.6.3 Measures to Reduce Impacts

Demolition, construction, and clearing activities would be conducted during the non-breeding season for most migratory birds (August through January) to ensure compliance with the MBTA. This mitigation measure has been included in the Proposed Action to reduce the potential adverse impacts on biological resources, especially protected or sensitive species.

Removal of trees would be held to a minimum to reduce impacts on populations of resident and nesting bird species. To mitigate for the loss of shrub/scrub habitats, the areas to be demolished would be revegetated with suitable native grasses and tree species. Only non-invasive species of vegetation would be utilized for revegetation of denuded areas. All tree clearing construction activities should be performed prior to migratory bird nesting season or after the young have fledged.

If construction is scheduled to begin during the nesting season, a site-specific survey for nesting migratory birds should be conducted at least two weeks prior to demolition or start of construction activities. If nesting migratory birds are found to be present steps should be taken to prevent them from establishing nests. If nests are found during the survey that contains eggs or young, construction should be postponed until the birds have left the nest.

With construction and operation of the projects proposed for JBSA-LMB and JBSA-LTA there is a potential for the spread and proliferation of invasive or noxious species. Implementation of an Invasive Species Management and Control plan as recommended for the JBSA-LTA (USAF 2011b) would help control and/or limit the potential spread of these species.

Standard construction BMPs (e.g., rock filter dams/silt fences along the west edge of the right of way, drip pans under construction vehicles, hazardous waste/spill response plan, daily collection of human trash, portable toilets) for runoff control and hazardous material spill control and clean up would also be implemented to prevent adverse impacts to wildlife habitat and waterways.

4.3.7 Cultural Resources

Significant impacts to cultural resources would occur only if the Proposed Action would adversely affect historic properties (archeological or historic resources eligible for the NRHP).

An adverse effect is an undertaking that diminishes the integrity of a property's location, design, setting, materials, workmanship, feeling, or association. An adverse effect can occur through the destruction or alteration of the property, isolation from or alteration of the environment, introduction of intrusive elements (visual, audible, or atmospheric), neglect, and the transfer, lease, or sale of the property (Advisory Council on Historic Preservation and GSA Interagency Training Center 1995).

The nature and potential significance of cultural resources in the potentially affected areas were identified by considering the following definition: Historic properties, under 36 CFR Part 800, are defined as "any prehistoric or historic district, site, building, structure, or object included in, or eligible for inclusion in, the NRHP." For the purpose of these regulations this term includes artifacts, records, and remains that are related to and located within such properties. The term "eligible for inclusion in the NRHP" includes both properties formally determined as such by the Secretary of the Interior and all other properties that meet NRHP-listing criteria.

4.3.7.1 Proposed Action

4.3.7.1.1 Archaeological Resources

The Proposed Action would involve demolition of seven buildings at JBSA-LMB and 15 buildings at JBSA-LTA. The Proposed Action would also include new construction at JBSA-LMB and JBSA-LTA. There are no archaeological properties within the proposed Area of Potential Effect (APE), either at JBSA-LMB or at JBSA-LTA. Site 41BX1102 is immediately adjacent to buildings to be demolished at JBSA-LTA (Buildings 435, 436, and 437) and site 41BX1098 is in the immediate vicinity of the proposed construction near the northwest corner of the JBSA-LTA. However, both site 41BX1102 and 41BX1098 have been determined ineligible for inclusion in the NRHP. Therefore, there is no potential for impact to a historic property within the footprints presently defined for demolition or construction.

4.3.7.1.2 Historic Resources

The Proposed Action would involve demolition of seven buildings at JBSA-LMB and demolition of 15 buildings at JBSA-LTA. The Proposed Action would also include new construction at JBSA-LMB and JBSA-LTA.

None of the seven buildings on JBSA-LMB proposed for demolition under the Proposed Action (Buildings 7475, 7481, 7485, 7561, 7562, 7563, and 7570) are NRHP-eligible. New construction on JBSA-LMB would have no effect on historic properties, for no NRHP-eligible districts are present and no NRHP-eligible buildings would be affected.

Twelve of the buildings on JBSA-LTA proposed for demolition under the Proposed Action (Buildings 450, 452, 454, 456, 458, 462, 464, 466, 468, 470, 471, and 472), are not NRHP-eligible. The Proposed Action, however, would have an adverse effect on one NRHP-eligible building (Building 437) and would adversely affect the Q-Area Historic District of which this building is a contributing element. Two NRHP-eligible buildings, 435 and 436, have undergone mitigation for demolition and received Texas State Historic Preservation Office (SHPO) approval of the mitigation efforts in a letter dated June 11, 2012. (In a letter dated March 9, 2012, SHPO requested Historic American Building Survey Level II documentation of Buildings

425 and 426, in lieu of Buildings 435 and 436, as mitigation for the demolition of Buildings 435 and 436). Prior to demolition of Building 437, Section 106 coordination with the SHPO would be required. Because a historic district would be adversely affected, the Advisory Council on Historic Preservation would also be invited to participate in the Section 106 coordination. Although Section 106 coordination would be required, Building 437 is a minor facility (central battery charging building) that played a support role in the historic Medina Base mission during the Cold War. Thus, with Historic American Building Survey/Historic American Engineer Recordation documentation of Building 437, the impacts to the building would be mitigated.

New construction proposed for the JBSA-LTA would have no adverse effect on NRHP-eligible buildings or the Medina Base Historic District. The Medina Base Historic District is a discontiguous district with non-contributing buildings interspersed outside the boundaries of the district. Although part of the proposed new construction would occur adjacent to the storage igloos, which contribute to the Medina Base Historic District, they would fall outside of the area delineated for the NRHP-eligible storage igloos. Thus, the proposed new construction would have no effect on the Medina Base Historic District.

4.3.7.2 No-action Alternative

Since the No-action Alternative would not result in ground disturbance or the demolition of NRHP-eligible buildings, there would be no potential to affect archaeological or historic properties; therefore, there would be no change to baseline conditions as described in Section 3.3.7.

4.3.7.3 Measures to Reduce Impacts

There would be no impacts to archaeological and historic resources as a result of construction activities on JBSA-LMB and JBSA-LTA. Demolition activities on JBSA-LTA would adversely affect one NRHP-eligible building and a Historic District. Therefore, Section 106 consultation would be required, as well as mitigation of the loss through American Building Survey/Historic American Engineer Recordation documentation of this building. Impacts to the Historic District would be mitigated through consultation with the Advisory Council on Historic Preservation during Section 106 coordination. This mitigation measure has been included as part of the Proposed Action to reduce the potential adverse impacts on historic resources.

4.3.8 Hazardous Materials and Waste

The degree to which the proposed land acquisition, and construction and demolition activities associated with the Proposed Action could affect the existing environmental management practices was considered in evaluating potential impacts to hazardous materials and wastes, including ERP sites. Significant impacts could result if non-hazardous/regulated and hazardous substances were collected, stored and /or disposed of improperly.

4.3.8.1 Proposed Action

4.3.8.1.1 Hazardous Materials

The use of hazardous materials during the implementation of the Proposed Action is expected to be limited to construction vehicle maintenance (fuel, oils, and lubricants) and construction activities (asphalt, paints, etc.). These materials would be required to be properly contained, manifested, and managed according to all federal, state, and local regulations, AFIs and DoD Directives. Authorization from the JBSA-Lackland 802 CES/CEAN would be required prior to use of hazardous materials. Additionally, prior to the construction of new MWD training facilities, and the demolition of buildings associated with the current MWD campus, the contractor would be required to prepare a site/project specific SPCCP to guide construction activities. The plan would require TCEQ approval before work commences.

Asbestos

Most of the buildings on JBSA-Lackland that are scheduled for demolition have not been assessed for ACM, with the exception of Building 7475. Prior to demolition, an ACM assessment must be conducted in coordination with the Base Asbestos Program Officer. If asbestos is found within the structures, the waste generated from demolition must be handled, accumulated, and disposed of in accordance with all federal, state, and local regulations. There is the potential to encounter ACM during the Proposed Action based on the ages of some of the buildings that are scheduled for demolition. Under the Proposed Action, any hazardous substances, including asbestos would be collected, stored and/or disposed of properly to avoid impacts to the environment.

Lead-based Paint

The buildings on JBSA-Lackland that are scheduled for demolition have not been assessed for LBP. Prior to demolition, a LBP survey must be conducted in coordination with the LBP Management Officer. If LBP is found within the structures, the waste generated from demolition must be handled, accumulated, and disposed of in accordance with all federal, state, and local regulations. There is the potential to encounter previously unidentified LBP during the Proposed Action, based on the ages of the buildings scheduled for demolition. Under the Proposed Action, LBP would not be collected, stored and/or disposed of improperly.

Pesticides

Currently, the JBSA-Lackland Pest Management Plan applies only to commercially available pesticides. Base records indicate the historical applications of several pesticides that are no longer approved for use. Although these pesticides were used in accordance with manufacturers' guidance and directions, the potential exists for residual concentrations in the soil underlying on-base facilities. If it is necessary to remove soils for off-site disposal, a limited number of random samples would need to be collected to assess the presence or absence of pesticides in soil, and to properly categorize the soil for hazardous constituents per applicable state and federal regulations. Long-term impacts resulting from the Proposed Action would be positive in the removing of pesticide contaminated soils, if it is found. Any application of pesticides at the new MWD training facilities would conform to requirements outlined in the JBSA-Lackland Pest

Management Plan. Under the Proposed Action, pesticides would not be collected, stored and /or disposed of improperly.

4.3.8.1.2 Hazardous Waste

Under the Proposed Action animal carcasses resultant from general operation of the MWD training facility would continue to be disposed as medical waste. Since there would be no increase in the number of MWDs at the MWD campus, there would be no anticipated increase in medical waste as a result of the Proposed Action. No additional hazardous wastes are expected to be generated as a result of the Proposed Action. If hazardous waste is encountered during construction or demolition activities of the Proposed Action, JBSA-Lackland environmental personnel would be contacted and proper disposal procedures would be followed according to federal, state and JBSA-Lackland guidelines.

4.3.8.1.3 Environmental Restoration Program

As discussed in Section 3.3.9.5, there are no ERP sites on JBSA-LTA that would be affected by the Proposed Action. Any excavation activities associated with Project 7 would have the potential to encounter buried debris. Any debris encountered would have to be managed by the contractor according to state and federal regulations.

4.3.8.2 No-action Alternative

Under the No-action Alternative, there would be no change from the baseline conditions described in Section 3.3.8.

4.3.8.3 Measures to Reduce Impacts

No adverse impacts with regard to hazardous materials and wastes would be expected from the Proposed Action. All hazardous materials and wastes would be managed according to established plans and state and federal regulations. No mitigative actions or BMPs are proposed.

4.3.9 Utilities and Infrastructure

Impacts to utilities and infrastructure would be considered significant if the Proposed Action resulted in one or more of the following:

- Prolonged disruption of utility services
- Reduction in water supply to existing users
- A change in demand which exceeds the capacity of the utility providers
- Violation of existing water quality standards and applicable regulations

4.3.9.1 Proposed Action

4.3.9.1.1 Electricity

Implementation of the Proposed Action would result in a long-term increase in electrical usage due to the expansion of the MWD campus; however, there would be no increase in personnel. Additional infrastructure would be constructed as a part of the Proposed Action to support this

increase, such that there would be no adverse effects on the utilities system at JBSA-Lackland. Additionally, JBSA-Lackland has sufficient remaining electrical distribution capacity to support this increase in usage.

4.3.9.1.2 Natural Gas

Under the Proposed Action, there would be a long-term increase in natural gas consumption due to the expansion of the MWD campus; however, there would be no increase in personnel and the kennels proposed for construction on the JBSA-LTA would not use natural gas. Additional infrastructure would be constructed as a part of the Proposed Action to support the increase associated with MWD campus expansion, such that there would be no adverse effects on the utilities system at JBSA-Lackland. Additionally, JBSA-Lackland has sufficient remaining natural gas distribution capacity to support this increase in usage. All construction and demolition activities would be coordinated with CPS Energy and all utilities would be located and clearly identified prior to construction/demolition. The Proposed Action would not be expected to produce a break in service to unrelated and nearby facilities. Therefore, implementation of the Proposed Action would have no adverse impacts on natural gas utilities within JBSA-Lackland.

4.3.9.1.3 Solid Waste Disposal

The Proposed Action involves demolishing approximately 72,096 sf of existing structures on JBSA-LMB and JBSA-LTA. It is anticipated that the demolition would generate approximately 5,587 tons of concrete and building materials. Approximately 256,293 sf of new construction would be associated with the Proposed Action, resulting in 498 tons of waste. Table 4-5 shows the estimated amount of debris associated with construction and demolition activities.

The solid waste generated during construction and demolition activities would consist of materials such as solid pieces of concrete and asphalt, metals, and lumber. Solid waste generated during demolition and construction would be disposed of in accordance with all federal, state, and local laws. Depending on the construction debris materials, solid waste may be diverted from a landfill through recycling or reuse. For materials not diverted, the construction contractor would be responsible for dispose of materials at Covel Gardens Landfill.

MWD training operations under the Proposed Action would not be expected to generate any additional municipal solid waste. Therefore, MWD operations under the Proposed Action would not result in impacts to landfill capacity.

Table 4-5 Construction and Demolition Associated Waste (Continued)

Table 4-5 Construction and Demolition Associated Waste

Project Number[a]	Project Description	Area Affected (sf)	Rate of Debris (lb/sf)[b]	Estimated Solid Waste Generated from Action (Tons)
1	Construct a grooming station on JBSA-LMB near Building 7498.	1,792	3.89	3.49
	Construct a vehicle washrack and 3 MWD training labs on JBSA-LMB.	30,000	3.89	58.35
2	Demolish Buildings 7561, 7562, and 7563.	3,731	155	289.15
3	Construct latrines on JBSA-LMB near Building 7650.	500	3.89	0.97
	Construct MWD headquarters building on JBSA-LMB.	26,201	3.89	50.96
4	Demolish training labs (Buildings 7481, 7485, 7570).	16,762	155	1299.06
	Construct on MWD training lab on JBSA-LMB.	9,000	3.89	17.51
5	Demolish Building 7475	6,913	155	535.76
6	Construct MWD Hospital Recovery Kennel on JBSA-LMB	7,200	3.89	14.00
7	Construct Drug Vehicle Training Lot on JBSA-LMB.	43,600	3.89	84.80
8	Construct parking lot east of Building 7700.	81,000	3.89	157.55
9	Construct eight kennels on JBSA-LTA.	48,000	3.89	93.36
10	Demolish existing building located within the 100-year floodplain on the JBSA-LTA	44,690	155	3463.48
12	Construct MWD lab on the JBSA-LTA	9,000	3.89	17.51
			TOTAL	**6,085.95**

Notes:
lb/sf = pounds per square foot
N/A = Not Applicable
sf = square feet
[a] Note that Project Number 11 includes the use of a mobile grooming station on JBSA-LTA and would not generate construction or demolition debris; therefore, it is not included in this table.
[b] USEPA 1998. Estimated non-residential construction debris rates, as reported in the *Characterization of Building-Related Construction and Demolition Debris in the United States*, are 3.89 lbs/sf, and non-residential demolition rates are estimated to be 155 lbs/sf. Demolition debris rate includes concrete slabs.

Covel Gardens Landfill receives approximately 1.6 million tons of solid waste per year (USAF 2011c). If all the solid, non-hazardous waste generated from the Proposed Action were disposed of at Covel Gardens Landfill, this would represent a one-time annual increase of approximately 1 percent by weight. Covel Gardens Landfill currently has a life expectancy of 75 years (Covel Gardens 2012); therefore, the short-term increase from the Proposed Action would not be expected to exceed the capacity of the landfill.

4.3.9.1.4 Water Supply and Wastewater

As discussed in Section 4.3.5, approximately 65,200 gallons of additional water would be used annually on JBSA-LMB associated with the construction of latrines (Project 3). This amount is less than one percent of the current usage of water for JBSA-LMB and the JBSA-LTA and sufficient capacity exists to support this increase. No additional long-term increase in water usage is expected on JBSA-LTA as a result of the Proposed Action.

A comparable amount of wastewater on JBSA-LMB would be discharged to the sanitary sewer system, and no long-term increase of wastewater would be expected at JBSA-LTA. The additional wastewater generated at JBSA-LMB is expected to be accommodated by the existing infrastructure in place at the JBSA-LMB. Animal excrement would continue to be washed into the sanitary sewer system and ultimately treated at the Leon Creek WWTP. Since there would be no change in the number of MWDs present at the MWD campus, there would be no expected change in the amount of wastewater generated as a result of animal waste. Therefore, the Proposed Action would not generate a change in water or wastewater such that it exceeds the capacity of the utility providers or infrastructure.

4.3.9.1.5 Drainage of Storm Water

Construction activities at JBSA-LMB would result in a total increase of approximately 180,890 square feet of impervious cover, or a 660 percent increase. This additional impervious surface would result in a total increase in storm water runoff by approximately 35.6 cubic feet per second. Storm water runoff from the new facilities would be discharged to Leon Creek via existing drainage ditches in the vicinity of the proposed project site. The capacity of the drainage ditches would be evaluated prior to construction to ensure that they could handle the increase amount of storm water runoff. If additional capacity is needed, improvements to the storm water draining system would be included in construction efforts.

As part of the Proposed Action, beneficial impacts to the drainage of storm water from the JBSA-LTA to Medio Creek would be expected due to the demolition of approximately 44,690 sf of structures currently located within the 100-year floodplain of the creek. Storm water from surrounding properties would be expected to flow more naturally into the creek without diversion from the existing 15 structures currently located within the floodplain. Construction activities at JBSA-LTA would result in a total increase of approximately 19,050 square feet of impervious cover, or a 43 percent increase. This additional impervious surface would result in a total increase in storm water runoff by 3.7 cubic feet per second. Although there would be an increase in total storm water runoff, the Proposed Action would not result in an increase in the amount of storm water runoff per acre of impervious cover on JBSA-LTA. Storm water runoff from the new facilities would be managed by newly constructed storm sewers constructed as part

of the Proposed Action that would be designed to handle the increased runoff. Storm water would be discharged from the storm sewer to Medio Creek.

4.3.9.2 No-action Alternative

Under the No-action Alternative, there would be no change to baseline conditions of utilities and infrastructure described in Section 3.3.9.

4.3.9.3 Measures to Reduce Impacts

In accordance with permitting requirements and in order to minimize the potential for increased sediment loading of drainage areas and downstream surface waterbodies, a SWPPP would be developed for the construction of the Proposed Action. The SWPPP would include the implementation of appropriate BMPs, such as silt fencing and rock filter dams, during construction activities. Likewise, all solid wastes generated during the construction phase and subsequent operation would be disposed of properly.

4.3.10 Safety

The potential to increase or decrease safety risks to the public, the military, and property were analyzed in this section. Measures to reduce risk potential are also addressed. Naturally occurring and man-made hazards may exist for personnel and are considered in this section. The Proposed Action has the potential to increase the risk for accidental death, serious bodily injury, illness or property damage. Analysis of construction safety considered health and safety of personnel for physical hazards, proper techniques, and PPE, and best practices for construction site cleanliness. Significant impacts to ground, traffic, or construction safety would occur if there is an increase in the number and severity of incidents at the MWD training sites, proposed construction sites, or surrounding roads.

4.3.10.1 Proposed Action

Ground Safety

During and after the Proposed Action construction, the training of MWDs would continue and there would be no anticipated increases in incidents directly related to the MWDs. The Proposed Action may temporarily displace members of the 341 TRS from their current work locations; however, the relocation of work areas would be chosen to cause as little disruption as possible. Short term changes to work areas, travel routes and parking locations could result in a potential increase of incidents (i.e. slips, trips and falls, traffic accidents) due to the unfamiliar location and the additional distance that may be required to travel to the final work area. However, the posting of signage in unfamiliar work areas would increase the awareness of the new locations and could help to minimize the potential for increase of incidents.

After construction, the new training facilities would be a safer environment as all buildings would be built to current code, and would be designed with state-of-the–art technology which would help reduce the safety hazards to which MWD trainers are currently exposed. Therefore, the number and severity of incidents related to training would not be anticipated to increase as a result of the Proposed Action.

Traffic Safety

Construction activities of any magnitude would change the dynamics of travel around the installation especially in the area closest to the work being conducted. The ingress and egress of additional contractor's vehicles and construction equipment would add congestion to the CVIA/ECP thereby adding to the potential for an accident. The added traffic from such vehicles and equipment would also hinder the routes available through the base and increase the flow of traffic through any established detour routes, thus increasing the likelihood of an incident. Communication to base residents and employees well in advance of construction commencement would be necessary in order for them to plan alternate travel routes, as needed. Signage placed around the base to clearly mark detours, alternate parking areas, expected time delays and potentially dangerous work areas would help to minimize congestion, traffic accidents, and hazards for pedestrians during the construction time period, thus reducing the risk of potential bodily injury, death or property damage. By implementing these BMPs, it is not expected that the Proposed Action would result in an increase in the number or severity of traffic accidents.

Construction Safety

Construction is an inherently dangerous activity due to the use of large, powerful and noisy pieces of equipment; however, during construction activities associated with the Proposed Action, additional measures would be taken in order to protect both the construction workers and the residents of the installation. There would be a short-term increase in the potential for incidents during this time. Clear demarcation of the work area as well as fencing would be needed to keep construction activities and debris in the area and bystanders out of the potentially dangerous work areas. All construction contractors would be accountable for maintaining a safety program which protects their employees and limits the exposure to all base personnel during the time of work. Construction employees would be given the proper training to identify hazards as well as all necessary PPE to do their jobs safely. The PPE would include hard hats, steel toed boots, hearing protection, work gloves, reflective vests, safety harnesses, signaling flags, communication devices and any other equipment deemed necessary in the safety plan. Use of PPE and signage at the construction site would protect workers and bystanders from sharp or heavy tools and construction materials, loose construction debris, large and noisy moving equipment, as well as biological such that an increase in the number or severity of construction accidents would not be expected under the Proposed Action.

The buildings to be demolished have not previously been surveyed for asbestos or lead-based paint; however, the base asbestos and LBP management plans require surveys be conducted prior to any building demolition. Appropriate PPE would be required for the workers performing the surveys to minimize their exposure to these hazardous materials. Additional details can be found in Section 4.3.8 Hazardous Materials and Waste.

4.3.10.2 No-action Alternative

Under the No-action Alternative, there would be no change from the baseline conditions described in Section 3.3.10.

4.3.10.3 Measures to Reduce Impacts

No mitigation measures would be required. BMPs such as posting signs in unfamiliar work areas to mark detours, alternate parking areas, expected time delays and potentially dangerous work areas; and communication with base residents and employees well in advance of construction commencement would help to minimize congestion, traffic accidents, and hazards for pedestrians during the construction time period. This would help to reduce the risk of potential bodily injury, death or property damage. Additionally, use of signage and PPE such as hard hats, steel toed boots, hearing protection, work gloves, reflective vests, safety harnesses, signaling flags at the construction site would protect workers and bystanders from sharp or heavy tools and construction materials, loose construction debris, large and noisy moving equipment, as well as biological hazards.

4.3.11 Socioeconomic Resources

Since the Proposed Action would not affect local populations, housing, or education, the socioeconomic analysis in this EA was limited to effects on the economy. Socioeconomic impacts would be considered significant if long-term employment rates decreased or the amount of local business decreased.

4.3.11.1 Proposed Action

Under the Proposed Action, the local economy would benefit from expenditures incurred from the construction and demolition of the MWD campus facilities. Construction materials and goods (e.g, gasoline for equipment and trucks) would be expected to be purchased from the local area. However; it should be noted that employment in the area would not increase since it is expected that the construction companies would utilize their current employees. The Proposed Action would not affect long-term employment rates or decrease local business.

4.3.11.2 No-action Alternative

Under the No-action Alternative, there would be no change in the baseline conditions described in Section 3.3.11.

4.3.11.3 Measures to Reduce Impacts

The Proposed Action would have short-term positive impacts on the local economy; therefore, no mitigation or BMPs are proposed.

4.3.12 Environmental Justice

In order to comply with EO 12898, ethnicity and poverty status in the study area has been analyzed. The ROI for each resource area has been evaluated within the COC in order to identify the presence or absence of environmental justice populations. Environmental justice impacts would be considered significant if there are disproportionate and adverse impacts to minority or low-income populations as a result of the Proposed Action.

4.3.12.1 Proposed Action

As established in earlier sections, the ROI for the environmental justice analysis are the Census Tracts affected by the Proposed Action. There are minority and low-income populations present within the ROI that could be impacted by the Proposed Action. Since it is unknown which residences within these Census Tracts are minorities or low-income, for purposes of this analysis, it was assumed that all residences within Census Tracts 1614, 1615.01, 1615.03, 1615.04, 1616, 1618.01, 1618.02, 1719.03, 1719.19, 1719.20, and 9800.03 were minority or low-income. These populations are hereinafter referred to as environmental justice communities.

Most impacts would be localized to the project site and would not impact surrounding communities. Construction activities would result in a short-term increase in noise levels at residences of environmental justice communities; however, the distance of the construction activities to the environmental justice communities would result in an attenuation of outdoor construction noise to a range of approximately 67 dBA to 73 dBA for the residences located near JBSA-LMB, and 61 dBA to 55 dBA for the residences located near the sites on JBSA-LTA. These noise levels are within the range of baseline noise levels at the residences. Additionally, interior noise levels within the residences would be reduced below the levels which cause hearing loss and annoyance, due to the properties of the building's construction materials. Construction noise would be limited to the hours of 7:00 a.m. and 7:00 p.m. and would last only as long as the duration of construction activities. There would be no disproportionate and adverse impacts to minority or low-income populations as a result of the Proposed Action.

4.3.12.2 No-action Alternative

Under the No-action Alternative, there would be no change to baseline conditions described in Section 3.3.12 and no impacts to environmental justice communities.

4.3.12.3 Measures to Reduce Impacts

No mitigation measures are proposed as a result of the Proposed Action. However, for construction related noise, BMPs to reduce noise would include utilization of standard noise control devices on equipment and limitation of hours of construction. Additionally, noise level reduction properties of building's construction materials would serve to lessen noise impacts.

4.3.13 Cumulative Impacts

Air Quality

The short term emissions from the Proposed Action are from mobiles sources (equipment and vehicles), fugitive dust and asphalt evaporative emissions. These emissions quickly dissipate within the vicinity of activity source, resulting in a temporary minor impact when considering similar impacts from the reasonably foreseeable actions of others (such as form projects described in Section 2.5). The emissions associated with these other projects are of the same nature as the MWD revitalization, in that they are short-term emissions that quickly dissipate within the vicinity of the activity source. The cumulative impact of emissions from all the projects listed here and the MWD revitalization would not be greater than 10 percent of the San Antonio MSA, therefore they would not cumulatively be considered regionally significant.

Long-term emissions from the operation of the MWD would not be expected to increase and therefore would not contribute to long-term cumulative air quality impacts.

Noise

The actions of the major known projects described in Section 2.5 are all principally construction projects of temporary duration, and their noise impacts would not be appreciably different from those projects that are part of the Proposed Action. None of the projects described in Section 2.5 are located on JBSA-LTA; therefore, there would be no cumulative noise effects on noise-sensitive receptors on or near the JBSA-LTA. If future additional off-installation development were to occur near the JBSA-LTA project area, it is likely that increased traffic on US Highway 90 and nearby roadways would result in increases in vehicle noise in the proposed project area.

For JBSA-LMB construction and demolition activities associated with the Proposed Action, the only cumulative projects close enough to potentially generate cumulative noise impacts are the DLIELC/IAAFA ADP and TSA Canine Academy. The distance of construction activities from the DEIELC/IAAFA ADP to noise sensitive receptors described in Section 3.3.2.3 is such that construction noise would be expected to produce a peak SPL of approximately 53 dBA at the noise sensitive receptors. The distance of TSA Canine Academy construction activities to residences described in Section 3.3.2.3 would result in noise levels of approximately 71 dBA. These SPLs, in combination with that from construction and demolition associated with the Proposed Action (73 dBA) would be expected to produce a peak SPL of 75.1 dBA. This is only slightly higher than that from the Proposed Action and from noise levels produced at the residences by dogs barking at the nearby MWD kennels. Therefore, the projects described in Section 2.5 would have short-term, minor, adverse cumulative impacts on existing noise levels in the area when combined with impacts from the Proposed Action. Additionally, the area surrounding the proposed JBSA-LMB construction activities is heavily developed and additional future development in the area is unlikely. However, if future additional off-installation development were to occur near the JBSA-LMB project area, it is likely that increased traffic on Medina Base Road would result in increases in vehicle noise in the proposed project area.

Land Use

Projects described in Section 2.5, when considered with the Proposed Action, would not adversely affect land use resources. The Proposed Action would result in land use designation changes on JBSA-LTA that would remain compatible with existing land uses. These impacts would be limited to JBSA-LTA and would not contribute to land use impacts from the reasonably foreseeable actions of other projects described in Section 2.5, as all of those project's land use impacts would be limited to JBSA-LMB. Additionally, there would be no change to land use on JBSA-LMB as a result of the Proposed Action; therefore, the Proposed Action would not contribute to cumulative effects to land use on JBSA-LMB. The loss of prime farmland associated with the Proposed Action is not anticipated to be a major impact since the land has historically been used to support military missions and operations since the 1940s. Additionally, other projects listed in Section 2.5 would be constructed on areas already urbanized or on military lands. Therefore, there would not be a cumulative impact to Prime Farmlands.

Earth Resources

Construction and demolition activities occurring within the JBSA-LTA under the Proposed Action would likely have a small increase in soil erosion potential due to the demolition

activities planned in the Medio Creek floodplain, though these would be short term in duration and managed by BMPs included in the SWPPP. It is anticipated that the activities under the Proposed Action would result in very little, if any, contribution to soil erosion within the JBSA-LMB and other areas of the JBSA-LTA. The cumulative effect of loss of soils due to erosion from the combined actions of the proposed project and others is not known; however, it is anticipated that should all similar projects utilize local/state/federal BMPs, that the effect would be minimized. There would be no impacts to geology as a result of activities under the Proposed Action and any impacts to soils from foot and vehicular traffic would be localized to the JBSA-LMB and JBSA-LTA operational sites. Therefore, these actions would not contribute to impacts to geology and soils resulting from other DoD activities on the installation, as described in Section 2.5. The loss of prime farmland associated with the Proposed Action is not anticipated to be a major impact since the land has historically been used to support military missions and operations since the 1940s. Additionally, other projects listed in Section 2.5 would be constructed on areas already urbanized or on military lands. Therefore, there would not be a cumulative impact to Prime Farmlands.

Water Resources

The Proposed Action would not impact groundwater; however, would contribute an increase in surface water discharge to Leon Creek on JBSA-LMB, and Medio Creek on JBSA-LTA. No additional development is programmed for the vicinity of the JBSA-LTA MWD campus; therefore, no cumulative impacts to Medio Creek are expected. Additional installation development on JBSA-LMB including the DLIELC and IAAFA academic campus and TSA Canine Academy, could result in increases in storm water runoff, such that storm water outfalls would need to be upgraded beyond any upgrades included as part of the Proposed Action. The actions of others (section 2.5) in conjunction with the minimal impact of the Proposed Action could result in adverse impacts to the water quality of Leon Creek; however, it is anticipated that all similar projects would utilize local/state/federal BMPs, thereby minimizing any impacts. Potential impacts from construction or demolition activities would be temporary and minimized, if not eliminated through the implementation of a SWPPP.

Biological Resources

With the Proposed Action there would be some long-term adverse effects to wildlife from conversion of native habitats (36 acre) to development and training activities on JBSA-LTA; however, revegetation of demolished building sites within the floodplain on JBSA-LTA would allow for eventual restoration of some wildlife habitat. With implementation of the ACC, TSA Canine Academy, and DLIELC/IAAFA projects, there would be minimal long-term adverse cumulative impacts to wildlife habitats since the majority of lands containing these projects are currently developed, landscaped, and maintained. Additional long-term habitat losses are probable with construction of the SAWS and Growdon Road projects. With the SAWS project, approximately 38 acres would be needed for the pipeline right of way. It appears to contain various wildlife habitats which would be impacted. With the Growdon Road project approximately 232 acres would be acquired. Of this land, the gate project would impact approximately 80 acres of developed lands and agriculture lands. About 12-acres of the 80-acre parcel to be developed contains marginal wildlife habitat and construction would have minimal impacts on wildlife habitat. Long-term future development of the remaining 152 acres could

have long-term adverse impacts on wildlife habitat and wildlife if the remaining lands along the northern edge of this property become developed.

No federally listed endangered or threatened species occur on JBSA-Lackland so there would be no impacts on federally-listed species on JBSA-LMB or JBSA-LTA. However, due to increased use of approximately ≤ 0.5 ac-ft/yr of Edwards Aquifer water, the Proposed Action could have a negligible short-term and long-term indirect impact on eight federally-listed species occurring in the Comal and San Marcos Springs systems. No additional water use would be expected to occur with construction of the SAWS project. However, additional water usage may occur with construction of the ACC, DLIELC/IAAFA, TSA Canine Academy, and Growdon Road projects and would also result in short-term and long-term, negligible impacts on the eight federally-listed species. It is anticipated that cumulatively all the known future actions would not cause JBSA-Lackland to exceed its allocated water use level established in the 2008 BO.

Cumulatively, all of the projects have the potential to have short-term adverse impacts to nesting migratory birds, if demolition or construction activities occur during the migratory bird nesting season. Implementation measures to avoid these impacts are discussed in Section 4.3.6.3.

There would also be short-term negligible adverse impacts on wildlife species from noise levels during all construction activities. The Proposed Action would not impact wetlands; therefore, it would not contribute to cumulative effects to wetlands.

Cultural Resources

Archaeological Resources - The Proposed Action would have no effect on known archeological properties; consequently, the Proposed Action would not contribute to any cumulative effect trends for these resources in the project area.

Historic Resources - Since there are no historic resources within the MWD project area on JBSA-LMB, there would be no cumulative effects from the Proposed Action. The demolition of Building 437 at JBSA-LTA would be a mitigatable adverse impact, and thus, the Proposed Action would not contribute to any major adverse cumulative effect trends for these resources in the project area.

Hazardous Materials and Waste

The Proposed Action would require the proper management of minimal amounts of potential hazardous materials, including ACM and LBP, if found during surveys of buildings to be demolished. Management of these materials would occur under the existing JBSA-Lackland management programs and would not result in adverse effects. Periodic generation of animal carcasses as medical waste would result from continued operation of the MWD campus; however, the amount of waste generated would not increase as a result of the Proposed Action. The occasional medical waste generated would contribute minimally to the overall medical waste generated at JBSA-Lackland (including that from the Ambulatory Care Center described in Section 2.5). All potential hazardous materials and wastes generated from projects described in Section 2.5 would be managed under JBSA-Lackland management programs and would not result in adverse effects. The actions of others (e.g. Section 2.5 projects) and the Proposed Action are anticipated to cumulatively contribute over time to a reduced capacity in the nearest hazardous waste landfill and or increased use of treatment systems to reduce the materials to

non-hazardous or less hazardous constituents which may ultimately displace capacity in a more common solid waste landfill (i.e. Covel Gardens Landfill). This effect is anticipated to be minimal and minor.

Utilities and Infrastructure

The Proposed Action would result in an increase in electrical and natural gas usage associated with the expansion of the MWD campus. This increase, in conjunction with the actions of others (e.g. section 2.5 projects) are anticipated to cumulatively diminish the existing capacity for distribution of these utilities. The cumulative increase in usage is not expected to exceed existing capacity; however, additional infrastructure may be necessary to support the increase. Long-term impacts to water usage and wastewater under the Proposed Action would contribute to the overall increase in water usage and wastewater discharged to the sanitary sewer. Cumulative impacts to water usage are expected to be minor since the overall increase in water usage as a result of the Proposed Action is expected to be less than one percent. Additionally, long-term beneficial impacts may result from improvements and upgrades associated with other projects. Cumulative impacts to wastewater are expected to be minor due to the improvements to the sanitary sewer line associated with the Western Watershed Sewer Relief Line C project.

The increase in solid waste disposal as a result of the Proposed Action would contribute to the overall increase in solid waste generated at JBSA-Lackland from construction of the Ambulatory Care Center, the DLIELC/IAAFA project, the SAWS Western Watershed Sewer Relief Line C, TSA Canine Academy, and the Growdon Gate/Road. It is anticipated that solid waste generated from all these activities would be disposed at Covel Gardens Landfill; however, the additional load on landfill operations would be distributed over several years. This increase could have the potential to shorten the lifespan of the landfill; however, it is believed that the landfill could accommodate this increase in solid waste load.

Potential short-term increases in soil erosion and sediment loading under the Proposed Action could contribute to the overall increase in erosion and sediment loading resulting from other projects considered, including the construction of the entire Western Watershed Sewer Relief Line. However, BMPs implemented under the individual SWPPPs for each segment of construction would reduce erosion and sediment loading such that there would be *de minimis* impacts to storm water. Additionally, the removal of structures within the floodplain is expected to improve storm water flow and is not expected to contribute to adverse impacts to storm water flow from other projects.

Socioeconomic Resources

The MWD Campus Revitalization would not affect local populations, housing or education; therefore, the Proposed Action would not contribute to cumulative effects for these components of Socioeconomic Resources. However, short-term economic expenditures associated with the construction of the Proposed Action and other installation development projects described in Section 2.5 would cumulatively have beneficial socioeconomic effects in and around the area of JBSA-Lackland.

Safety

Considering the cumulative projects listed in Section 2.5, the potential for cumulative effects resides most likely with the DLIELC and TSA Canine Academy projects due to their proximity

to the Proposed Action projects. Implementation of the Proposed Action in combination with demolition and construction for the DLEILC and TSA Canine Academy sites would increase short term traffic congestion, construction debris and noise, and the number of contracted employees performing work in the areas. Each of these factors would increase the risk of potential for accident, injury, property damage or death. Each project manager would be required to develop and implement a health and safety program that would address all safety concerns, train personnel adequately, and mitigate the chances of any incidents.

Environmental Justice

There is an environmental justice population in the ROI. Most impacts to resources would be localized to the project site and would not impact surrounding communities. Cumulative construction noise impacts to minority populations from the Proposed Action or those reasonably foreseeable actions of others (i.e. Section 2.5 projects) would be temporary and would not exceed baseline conditions. Therefore, cumulative noise impacts would not disproportionately and adversely impact minority or low-income populations identified nearest to the proposed project.

CHAPTER 5
LIST OF PREPARERS

Name/Organization	Degree	Resource Area	Years of Experience
Tamara Carroll/WESTON	BS, Bioenvironmental Science	Project Manager, Resource Lead, Land Use, Noise, Safety, Socioeconomics, Environmental Justice	10
Corey Ricks/WESTON	AAS, Electronics Technology; BS, Geography	GIS Analyst	8
Ashley Naber/WESTON	BAIS, International Business; MAG, Resource and Environmental Studies	Resource Specialist, Land Use, Noise, Socioeconomics, Environmental Justice	1
Barry Peterson/WESTON	BS, Meteorology; MS, Atmospheric Sciences	Resource Lead, Air Quality	11
Kevin Wooster/WESTON	BS, Geology; MS, Hydrogeology	Resource Lead, Earth Resources	24
Colin Meneilly/WESTON	BS, Bioenvironmental Science	Resource Lead, Hazardous Materials and Wastes	14
Lori Kalich/WESTON	BS, Bioenvironmental Science	Resource Lead, Water Resources, Infrastructure and Utilities	9
Nora McGuire/WESTON	AS, Biology; BS, Environmental Science	Resource Specialist, Safety	3
Douglas Hagemeier/WESTON	BS, Biology; MS, Biology	NEPA Lead, Quality Assurance/Quality Control	30
Jim Randolph/WESTON	BS, Biology; MS, Zoology	Resource Lead, Biology	37
Duane Peter/Geo-Marine, Inc.	BA, History; MA, Anthropology	Resource Lead, Cultural Resources (Archaeological Resources)	35
Marsha Prior/Geo-Marine, Inc.	BA, Sociology; MA, Anthropology; PhD, Anthropology	Resource Lead, Cultural Resources (Historic Resources)	19

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CHAPTER 6
LIST OF PERSONS AND AGENCIES CONSULTED

Federal Agencies

Federal Emergency Management Agency
Kyle Mills

JBSA-Lackland
Andrew Riley, Civil Engineering Squadron
Ed Roberson, Civil Engineering Squadron
Elias Abdulahad, Civil Engineering Squadron
Francisco Carbonell, Civil Engineering Squadron
Judy Lopez, Civil Engineering Squadron
Nick Smith, Civil Engineering Squadron

US Army Corps of Engineers
Stephen Brooks, Regulatory Branch, Permit Section

USEPA
Lisa Jackson, Administrator, Region 6

USFWS
David Frederick, Field Supervisor

State Agencies

State Historical Commission
F. Lawrence Oaks, State Historic Preservation Officer

Texas Commission on Environmental Quality
Richard Hyde, Deputy Director, Office of Permitting and Registration

Texas Parks and Wildlife Department
David Sager, Chief, Ecosystem/Habitat Assessment Branch

Texas Review and Comment System
Denise Francis, State Single Point of Contact

Local Agencies

Alamo Area Council of Governments
Tiffany Pickens, Community Relations Coordinator

City of San Antonio
James Henderson
John Cantu, Environmental Manager, Capital Improvements Management Services Department
Nefi Garza, P.E., CFM, Assistant Director of Public Works/FPA

Covel Gardens Landfill
Bryan Turner

Tribal Agencies

Comanche Tribe
Johnny Wauqua, Chariman

Mescalero Apache and Affiliated Tribes
Mark Chino, President

Tonkawa Tribe
Donald Patterson, President

Wichita and Affiliated Tribes
Leslie Standing, President

CHAPTER 7
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Appendix A

Interagency/Intergovernmental Coordination and Public Participation

Signed General Scoping Letters

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DEPARTMENT OF THE AIR FORCE
502D AIR BASE WING
JOINT BASE SAN ANTONIO

Edward L. Roberson, P.E.
Chief, Asset Optimization
802 CES/CEAO
1555 Gott Street
Lackland AFB TX 78236-5645

Ms. Lisa Jackson
Administrator
USEPA
Region 6
1445 Ross Avenue, Suite 1200
Dallas, TX 75202

SUBJECT: Military Working Dog Campus Revitalization Environmental Assessment (EA) at Lackland Air Force Base, Texas

Dear Ms. Jackson,

The 802d Civil Engineer Squadron (CES) at Lackland Air Force Base (AFB) TX is preparing an *Environmental Assessment* addressing the *Military Working Dog Campus Revitalization at Lackland Air Force Base, Texas*. The environmental impact analysis process for this EA is being conducted by the Air Education and Training Command (AETC) and 802 CES in accordance with Council on Environmental Quality regulations pursuant to the requirements of the National Environmental Policy Act (NEPA) of 1969.

Lackland AFB has the mission of operating the Military Working Dog (MWD) Program for the United States Air Force. The mission of the 341st Training Squadron (TRS) is to provide trained MWD, handlers, trainers, and kennel masters for the Department of Defense (DoD), other government agencies and allies through training, logistical support, veterinary support, a breeding program, and research and development for security efforts worldwide. Currently, the existing MWD campus does not allow for future expansion of the MWD mission primarily because there is a shortage of land available for new construction on Lackland Main Base (LMB). Facilities used for MWD training are not contiguous on either LMB or the Lackland Training Annex (LTA), thereby reducing training effectiveness. Additionally, the campus currently has many logistical deficiencies.

To address logistical deficiencies of the MWD campus and allow for future expansion of the MWD mission, thirteen projects are proposed within LMB and LTA. On LMB, these projects include construction of a grooming station, vehicle washrack, training labs, latrines, MWD Headquarters and parking lot, physical therapy center, drug vehicle training lot, and indoor

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Please address your questions or comments on the DOPAA by mail to Mr. Nicholas Smith, 802 CES/CEAOP, 1555 Gott Street, Lackland AFB, Texas 78236-5645.

Sincerely

Edward L Roberson

EDWARD L. ROBERSON, P.E.

Attachments:
1. Figure of Proposed Action projects on LMB
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3. Distribution List

DEPARTMENT OF THE AIR FORCE
502D AIR BASE WING
JOINT BASE SAN ANTONIO

Edward L. Roberson, P.E.
Chief, Asset Optimization
802 CES/CEAO
1555 Gott Street
Lackland AFB TX 78236-5645

Mr. David Frederick
Field Supervisor
U.S. Fish and Wildlife Service
10711 Burnet Road, Suite 200
Austin, TX 78758-4460

SUBJECT: Military Working Dog Campus Revitalization Environmental Assessment (EA) at Lackland Air Force Base, Texas

Dear Mr. Frederick,

The 802d Civil Engineer Squadron (CES) at Lackland Air Force Base (AFB) TX is preparing an *Environmental Assessment* addressing the *Military Working Dog Campus Revitalization at Lackland Air Force Base, Texas*. The environmental impact analysis process for this EA is being conducted by the Air Education and Training Command (AETC) and 802 CES in accordance with Council on Environmental Quality regulations pursuant to the requirements of the National Environmental Policy Act (NEPA) of 1969.

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502D AIR BASE WING
JOINT BASE SAN ANTONIO

Edward L. Roberson, P.E.
Chief, Asset Optimization
802 CES/CEAO
1555 Gott Street
Lackland AFB TX 78236-5645

Mr. Frederick Land
U.S. Army Corps of Engineers
Regulatory Branch, Permit Section
Attn: CESWF-PER-R P.O. Box 17300
Fort Worth, TX 78612-0300

SUBJECT: Military Working Dog Campus Revitalization Environmental Assessment (EA) at Lackland Air Force Base, Texas

Dear Mr. Land,

The 802d Civil Engineer Squadron (CES) at Lackland Air Force Base (AFB) TX is preparing an *Environmental Assessment* addressing the *Military Working Dog Campus Revitalization at Lackland Air Force Base, Texas*. The environmental impact analysis process for this EA is being conducted by the Air Education and Training Command (AETC) and 802 CES in accordance with Council on Environmental Quality regulations pursuant to the requirements of the National Environmental Policy Act (NEPA) of 1969.

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502D AIR BASE WING
JOINT BASE SAN ANTONIO

Edward L. Roberson, P.E.
Chief, Asset Optimization
802 CES/CEAO
1555 Gott Street
Lackland AFB TX 78236-5645

Mr. Richard Hyde
Deputy Director
TCEQ
Office of Permitting and Registration
MC 122
P.O. Box 13087
Austin, TX 78711-3087

SUBJECT: Military Working Dog Campus Revitalization Environmental Assessment (EA) at Lackland Air Force Base, Texas

Dear Mr. Hyde,

The 802d Civil Engineer Squadron (CES) at Lackland Air Force Base (AFB) TX is preparing an *Environmental Assessment* addressing the *Military Working Dog Campus Revitalization at Lackland Air Force Base, Texas*. The environmental impact analysis process for this EA is being conducted by the Air Education and Training Command (AETC) and 802 CES in accordance with Council on Environmental Quality regulations pursuant to the requirements of the National Environmental Policy Act (NEPA) of 1969.

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502D AIR BASE WING
JOINT BASE SAN ANTONIO

Edward L. Roberson, P.E.
Chief, Asset Optimization
802 CES/CEAO
1555 Gott Street
Lackland AFB TX 78236-5645

Mr. F. Lawrence Oaks
State Historical Commision
State Historic Preservation Office
P.O Box 12276
Austin, TX 78111-2276

SUBJECT: Military Working Dog Campus Revitalization Environmental Assessment (EA) at Lackland Air Force Base, Texas

Dear Mr. Oaks,

The 802d Civil Engineer Squadron (CES) at Lackland Air Force Base (AFB) TX is preparing an *Environmental Assessment* addressing the *Military Working Dog Campus Revitalization at Lackland Air Force Base, Texas*. The environmental impact analysis process for this EA is being conducted by the Air Education and Training Command (AETC) and 802 CES in accordance with Council on Environmental Quality regulations pursuant to the requirements of the National Environmental Policy Act (NEPA) of 1969.

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Edward L. Roberson, P.E.
Chief, Asset Optimization
802 CES/CEAO
1555 Gott Street
Lackland AFB TX 78236-5645

Ms. Denise Francis
Single Point of Contact
TRACs
P.O. Box 12428 Room 441-A
Austin, TX 78711-2428

SUBJECT: Military Working Dog Campus Revitalization Environmental Assessment (EA) at Lackland Air Force Base, Texas

Dear Ms. Francis,

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JOINT BASE SAN ANTONIO

Edward L. Roberson, P.E.
Chief, Asset Optimization
802 CES/CEAO
1555 Gott Street
Lackland AFB TX 78236-5645

Mr. Kyle Mills
FEMA
800 North Loop 288
Denton, TX 76209

SUBJECT: Military Working Dog Campus Revitalization Environmental Assessment (EA) at Lackland Air Force Base, Texas

Dear Mr. Mills,

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Edward L. Roberson, P.E.
Chief, Asset Optimization
802 CES/CEAO
1555 Gott Street
Lackland AFB TX 78236-5645

Ms. Tiffany Pickens
Community Relations Coordinator
AACOG
8700 Tesoro Drive, Suite 700
San Antonio, TX 78217-6228

SUBJECT: Military Working Dog Campus Revitalization Environmental Assessment (EA) at Lackland Air Force Base, Texas

Dear Ms. Pickens,

The 802d Civil Engineer Squadron (CES) at Lackland Air Force Base (AFB) TX is preparing an *Environmental Assessment* addressing the *Military Working Dog Campus Revitalization at Lackland Air Force Base, Texas*. The environmental impact analysis process for this EA is being conducted by the Air Education and Training Command (AETC) and 802 CES in accordance with Council on Environmental Quality regulations pursuant to the requirements of the National Environmental Policy Act (NEPA) of 1969.

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Edward L. Roberson, P.E.
Chief, Asset Optimization
802 CES/CEAO
1555 Gott Street
Lackland AFB TX 78236-5645

Mr. David Sager
Chief
TPWD
Ecosystem/Habitat Assessment Branch
4200 Smith School Road
Austin, TX 78744-3291

SUBJECT: Military Working Dog Campus Revitalization Environmental Assessment (EA) at Lackland Air Force Base, Texas

Dear Mr. Sager,

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Lackland AFB has the mission of operating the Military Working Dog (MWD) Program for the United States Air Force. The mission of the 341st Training Squadron (TRS) is to provide trained MWD, handlers, trainers, and kennel masters for the Department of Defense (DoD), other government agencies and allies through training, logistical support, veterinary support, a breeding program, and research and development for security efforts worldwide. Currently, the existing MWD campus does not allow for future expansion of the MWD mission primarily because there is a shortage of land available for new construction on Lackland Main Base (LMB). Facilities used for MWD training are not contiguous on either LMB or the Lackland Training Annex (LTA), thereby reducing training effectiveness. Additionally, the campus currently has many logistical deficiencies.

To address logistical deficiencies of the MWD campus and allow for future expansion of the MWD mission, thirteen projects are proposed within LMB and LTA. On LMB, these projects include construction of a grooming station, vehicle washrack, training labs, latrines, MWD Headquarters and parking lot, physical therapy center, drug vehicle training lot, and indoor

recovery kennel, as well as demolition of several buildings to accommodate construction activities. On LTA, MWD facilities currently located within the 100-year floodplain would be demolished and reconstructed outside of the floodplain. Relocation would include eight kennels, a Block I Handlers Course, two Handlers Course Search Labs, a Vet Clinic, Kitchen, Indoor Kennel, DTS Lab, cement pad, three obstacle courses, four exercise pens, and four shade structures. Additionally, a new training lab would be constructed on the far northwest corner of LTA and a mobile grooming station would be utilized near the existing kennels and moved near the new kennels, once constructed. The attached figures show the locations of the Proposed Action on LMB and LTA.

The proposed EA analyzes the potential environmental effects at Lackland AFB associated with the construction, demolition, and operation of the 13 projects proposed to revitalize the MWD campus. A No-action Alternative is also examined that would involve the continued use of the existing MWD Campus facilities without revitalization.

In accordance with Executive Order 12372, *Intergovernmental Review of Federal Programs*, we request your participation in the NEPA process by providing comments on the Proposed Action and any potential environmental consequences that might concern you. To facilitate cumulative impact analysis, we would appreciate identification of major projects in the vicinity that may contribute to cumulative effects. Please provide written comments or information at your earliest convenience but no later than 30 days from the date of this letter. We have also attached a listing of federal, state, and local agencies that have been contacted. If there are additional agencies that you feel should review and comment on the proposed activities, please include them in your distribution of this letter and the attachments. When complete, we will mail a copy of the Draft EA and the proposed Finding of No Significant Impact, if applicable, for your review.

Please address your questions or comments on the DOPAA by mail to Mr. Nicholas Smith, 802 CES/CEAOP, 1555 Gott Street, Lackland AFB, Texas 78236-5645.

Sincerely

Edward L Roberson

EDWARD L. ROBERSON, P.E.

Attachments:
1. Figure of Proposed Action projects on LMB
2. Figure of Proposed Action projects on LTA
3. Distribution List

DEPARTMENT OF THE AIR FORCE
502D AIR BASE WING
JOINT BASE SAN ANTONIO

Edward L. Roberson, P.E.
Chief, Asset Optimization
802 CES/CEAO
1555 Gott Street
Lackland AFB TX 78236-5645

Mr. Nefi Garza, P.E., CFM
Assistant Director of Public Works/FPA
City of San Antonio
P.O. Box 839966
San Antonio, TX 78283

SUBJECT: Military Working Dog Campus Revitalization Environmental Assessment (EA) at Lackland Air Force Base, Texas

Dear Mr. Garza, P.E., CFM,

The 802d Civil Engineer Squadron (CES) at Lackland Air Force Base (AFB) TX is preparing an *Environmental Assessment* addressing the *Military Working Dog Campus Revitalization at Lackland Air Force Base, Texas*. The environmental impact analysis process for this EA is being conducted by the Air Education and Training Command (AETC) and 802 CES in accordance with Council on Environmental Quality regulations pursuant to the requirements of the National Environmental Policy Act (NEPA) of 1969.

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502D AIR BASE WING
JOINT BASE SAN ANTONIO

Edward L. Roberson, P.E.
Chief, Asset Optimization
802 CES/CEAO
1555 Gott Street
Lackland AFB TX 78236-5645

Mr. James Henderson
City of San Antonio
P.O. Box 839966
San Antonio, TX 78283

SUBJECT: Military Working Dog Campus Revitalization Environmental Assessment (EA) at Lackland Air Force Base, Texas

Dear Mr. Henderson,

The 802d Civil Engineer Squadron (CES) at Lackland Air Force Base (AFB) TX is preparing an *Environmental Assessment* addressing the *Military Working Dog Campus Revitalization at Lackland Air Force Base, Texas*. The environmental impact analysis process for this EA is being conducted by the Air Education and Training Command (AETC) and 802 CES in accordance with Council on Environmental Quality regulations pursuant to the requirements of the National Environmental Policy Act (NEPA) of 1969.

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DEPARTMENT OF THE AIR FORCE
502D AIR BASE WING
JOINT BASE SAN ANTONIO

Edward L. Roberson, P.E.
Chief, Asset Optimization
802 CES/CEAO
1555 Gott Street
Lackland AFB TX 78236-5645

Mr. John Cantu
Environmental Manager
City of San Antonio
Capital Improvements Management Services Dept.
111 E. Soledad, Suite 675
San Antonio, TX 78205

SUBJECT: Military Working Dog Campus Revitalization Environmental Assessment (EA) at Lackland Air Force Base, Texas

Dear Mr. Cantu,

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Sincerely

Edward L Roberson

EDWARD L. ROBERSON, P.E.

Attachments:
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2. Figure of Proposed Action projects on LTA
3. Distribution List

General Scoping Letter Attachments

(*No document text on this page*)



Lackland Main Base Project List

1. Construct Grooming Station
2. Demo Bldgs 7561, 7562, 7563; Construct 3 Labs and Wash Rack
3. Construct Latrines
4. Demo Bldgs 7481, 7485, and 7570; Construct MWD Headquarters
5. Demo Bldg 7475 and Construct Lab
6. Construct Physical Therapy Center
7. Construct Drug Vehicle Training Lot
8. Demo Bldg 7594 and Replace in Place with Indoor Recovery Kennel
9. Construct Parking Lot

Legend

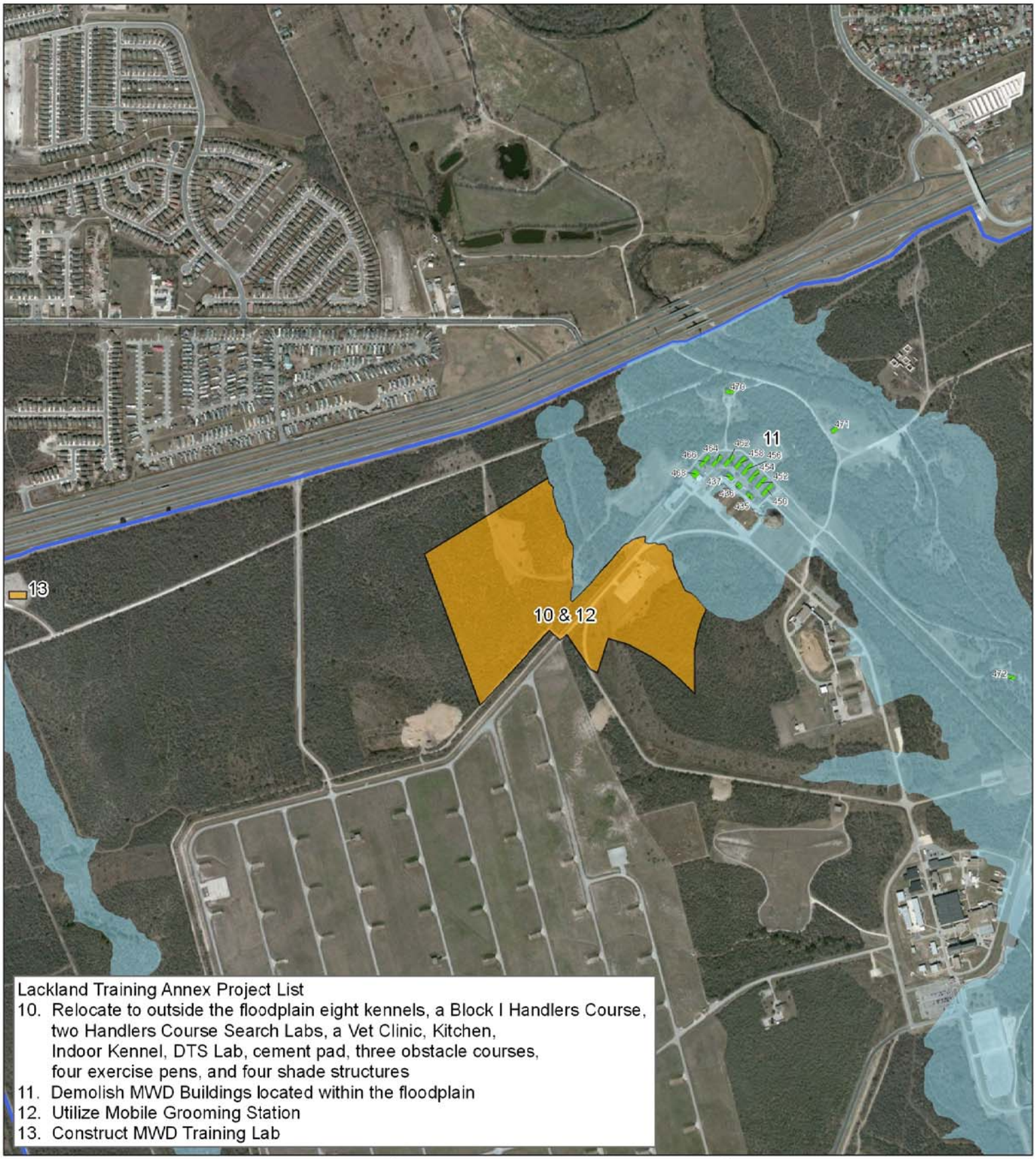
- Lackland Air Force Base
- Proposed Project Areas

N W E S

0 200 400 800 Feet

Attachment 1
Lackland Main Base
Proposed Action Projects

Lackland AFB


11
10 & 12
13
Lackland Training Annex Project List
10. Relocate to outside the floodplain eight kennels, a Block I Handlers Course, two Handlers Course Search Labs, a Vet Clinic, Kitchen, Indoor Kennel, DTS Lab, cement pad, three obstacle courses, four exercise pens, and four shade structures
11. Demolish MWD Buildings located within the floodplain
12. Utilize Mobile Grooming Station
13. Construct MWD Training Lab
Legend
Lackland Air Force Base
Construction Project Areas
Buildings to be Demolished
100-Year Floodplain
N
W
E
S
0
550
1,100
2,200
Feet
Attachment 2
Lackland Training Annex
Proposed Action Projects
Lackland AFB

Attachment 3 - Distribution List
Military Working Dog Campus Revitalization Environmental Assessment
Lackland Air Force Base, Texas
11 May 2012

General

Agency	Department	Title	Title-1	Name	Last Name	Address	City	State	Zip Code
USEPA	Region 6	Administrator	Ms.	Lisa	Jackson	1445 Ross Avenue, Suite 1200	Dallas	TX	75202
U.S. Fish and Wildlife Service		Field Supervisor	Mr.	David	Frederick	10711 Burnet Road, Suite 200	Austin	TX	78758-4460
U.S. Army Corps of Engineers	Regulatory Branch, Permit Section		Mr.	Stephen	Brooks	Attn: CESWF-PER-R P.O. Box 17300	Fort Worth	TX	76102-0300
TCEQ	Office of Permitting and Registration	Deputy Director	Mr.	Richard	Hyde	MC 122 P.O. Box 13087	Austin	TX	78711-3087
State Historical Commision	State Historic Preservation Office		Mr.	F. Lawrence	Oaks	P.O Box 12276	Austin	TX	78711-2276
TRACs		Single Point of Contact	Ms.	Denise	Francis	P.O. Box 12428 Room 441-A	Austin	TX	78711-2428
FEMA			Mr.	Kyle	Mills	800 North Loop 288	Denton	TX	76209
AACOG		Community Relations Coordinator	Ms.	Tiffany	Pickens	8700 Tesoro Drive, Suite 700	San Antonio	TX	78217-6228
TPWD	Ecosystem/Habitat Assessment Branch	Chief	Mr.	David	Sager	4200 Smith School Road	Austin	TX	78744-3291
City of San Antonio		Assistant Director of Public Works/FPA	Mr.	Nefi	Garza, P.E., CFM	P.O. Box 839966	San Antonio	TX	78283
City of San Antonio			Mr.	James	Henderson	P.O. Box 839966	San Antonio	TX	78283
City of San Antonio	Capital Improvements Management Services Dept.	Environmental Manager	Mr.	John	Cantu	111 E. Soledad, Suite 675	San Antonio	TX	78205

Attachment 3 - Distribution List
Military Working Dog Campus Revitalization Environmental Assessment
Lackland Air Force Base, Texas
11 May 2012

Tribal

Agency	Title	Title-1	Name	Last Name	Address	City	State	Zip Code
Comanche Tribe	Chairman	Mr.	Johnny	Wauqua	P.O. Box 908	Lawton	OK	73502
Mescalero Apache and Affiliated Tribes	President	Mr.	Mark	Chino	P.O. Box 227	Mescalero	NM	88340
Wichita and Affiliated Tribes	President		Leslie	Standing	P.O. Box 729	Andarko	OK	73005
Tonkawa Tribe	President	Mr.	Donald	Patterson	1 Rush Buffalo Road	Tonkawa	OK	74653

Signed Tribal Scoping Letter

(*No document text on this page*)

DEPARTMENT OF THE AIR FORCE
502D AIR BASE WING
JOINT BASE SAN ANTONIO

MAY 09 2012

Brigadier General Theresa C. Carter
502 ABW/CC
2080 Wilson Way
Joint Base San Antonio
Fort Sam Houston Texas 78234

Mr. Mark Chino
President
Mescalero Apache and Affiliated Tribes
P.O. Box 227
Mescalero New Mexico 88340

Dear Mr. Chino

The U.S. Air Force's Air Education and Training Command (AETC) and Joint Base San Antonio-Lackland are preparing an Environmental Assessment (EA) under the National Environmental Policy Act (NEPA) to assess potential environmental impacts from revitalization of the Military Working Dog (MWD) campus at Joint Base San Antonio-Lackland, Texas. Joint Base San Antonio-Lackland has the mission of operating the MWD Program for the United States Air Force. The mission of the 341st Training Squadron (TRS) is to provide trained MWD, handlers, trainers, and kennel masters for the Department of Defense (DoD), other government agencies and allies through training, logistical support, veterinary support, a breeding program, and research and development for security efforts worldwide. Currently, the existing MWD campus does not allow for future expansion of the MWD mission primarily because there is a shortage of land available for new construction on Joint Base San Antonio-Lackland Main Base (JBSA-LMB). Facilities used for MWD training are not contiguous on either JBSA-LMB or the Joint Base San Antonio-Lackland Training Annex (JBSA-LTA), thereby reducing training effectiveness. Additionally, the campus currently has many logistical deficiencies.

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Joint Base San Antonio-Lackland desires to initiate consultation with the Mescalero Apache and Affiliated Tribes so you can express your comments, concerns, and suggestions. These consultations, conducted pursuant to Section 106 of the National Historic Preservation Act, 36 CFR Part 800, and Executive Order 13175, will provide an excellent opportunity to exchange information, ask questions, and advise Joint Base San Antonio-Lackland of any concerns or suggestions you may have. Please let me know if you would like to meet to discuss this proposal and to plan how our staffs will communicate during the consultations. When complete, we will mail a copy of the Draft EA and Finding of No Significant Impact, if applicable, for your review. This will give you an additional opportunity to provide input.

If your staff has any questions please direct them to Mr. Nicholas Smith, Joint Base San Antonio-Lackland NEPA Project Manager, at (210) 671-0164, e-mail at nicholas.smith.48@us.af.mil, or regular mail at 802 CES/CEAOP, 1555 Gott St, Lackland Air Force Base Texas 78236-5645.

I appreciate your interest in consulting with Joint Base San Antonio-Lackland and look forward to working with the Mescalero Apache and Affiliated Tribes in the future.

Sincerely

THERESA C. CARTER
Brigadier General, USAF
Commander

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1. Figure of Proposed Action projects on JBSA-LMB
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DEPARTMENT OF THE AIR FORCE
502D AIR BASE WING
JOINT BASE SAN ANTONIO

MAY 09 2012

Brigadier General Theresa C. Carter
502 ABW/CC
2080 Wilson Way
Joint Base San Antonio
Fort Sam Houston Texas 78234

Mr. Gary McAdams
President
Wichita and Affiliated Tribes
P.O. Box 729
Andarko Oklahoma 73005

Dear Mr. McAdams

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DEPARTMENT OF THE AIR FORCE
502D AIR BASE WING
JOINT BASE SAN ANTONIO

MAY 09 2012

Brigadier General Theresa C. Carter
502 ABW/CC
2080 Wilson Way
Joint Base San Antonio
Fort Sam Houston Texas 78234

Mr. Donald Patterson
President
Tonkawa Tribe
1 Rush Buffalo Road
Tonkawa Oklahoma 74653

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Joint Base San Antonio-Lackland desires to initiate consultation with the Tonkawa Tribe so you can express your comments, concerns, and suggestions. These consultations, conducted pursuant to Section 106 of the National Historic Preservation Act, 36 CFR Part 800, and Executive Order 13175, will provide an excellent opportunity to exchange information, ask questions, and advise Joint Base San Antonio-Lackland of any concerns or suggestions you may have. Please let me know if you would like to meet to discuss this proposal and to plan how our staffs will communicate during the consultations. When complete, we will mail a copy of the Draft EA and Finding of No Significant Impact, if applicable, for your review. This will give you an additional opportunity to provide input.

If your staff has any questions please direct them to Mr. Nicholas Smith, Joint Base San Antonio-Lackland NEPA Project Manager, at (210) 671-0164, e-mail at nicholas.smith.48@us.af.mil, or regular mail at 802 CES/CEAOP, 1555 Gott St, Lackland Air Force Base Texas 78236-5645.

I appreciate your interest in consulting with Joint Base San Antonio-Lackland and look forward to working with the Tonkawa Tribe in the future.

Sincerely

THERESA C. CARTER
Brigadier General, USAF
Commander

Attachments:
1. Figure of Proposed Action projects on JBSA-LMB
2. Figure of Proposed Action projects on JBSA-LTA
3. Distribution List

DEPARTMENT OF THE AIR FORCE
502D AIR BASE WING
JOINT BASE SAN ANTONIO

MAY 09 2012

Brigadier General Theresa C. Carter
502 ABW/CC
2080 Wilson Way
Joint Base San Antonio
Fort Sam Houston Texas 78234

Mr. Wallace Coffee
Chairman
Comanche Tribe
P.O. Box 908
Lawton Oklahoma 73502

Dear Mr. Coffee

The U.S. Air Force's Air Education and Training Command (AETC) and Joint Base San Antonio-Lackland are preparing an Environmental Assessment (EA) under the National Environmental Policy Act (NEPA) to assess potential environmental impacts from revitalization of the Military Working Dog (MWD) campus at Joint Base San Antonio-Lackland, Texas. Joint Base San Antonio-Lackland has the mission of operating the MWD Program for the United States Air Force. The mission of the 341st Training Squadron (TRS) is to provide trained MWD, handlers, trainers, and kennel masters for the Department of Defense (DoD), other government agencies and allies through training, logistical support, veterinary support, a breeding program, and research and development for security efforts worldwide. Currently, the existing MWD campus does not allow for future expansion of the MWD mission primarily because there is a shortage of land available for new construction on Joint Base San Antonio-Lackland Main Base (JBSA-LMB). Facilities used for MWD training are not contiguous on either LMB or the Joint Base San Antonio-Lackland Training Annex (JBSA-LTA), thereby reducing training effectiveness. Additionally, the campus currently has many logistical deficiencies.

To address logistical deficiencies of the MWD campus and allow for future expansion of the MWD mission, thirteen projects are proposed within JBSA-LMB and JBSA-LTA. On JBSA-LMB, these projects include construction of a grooming station, vehicle washrack, training labs, latrines, MWD Headquarters and parking lot, physical therapy center, drug vehicle training lot, and indoor recovery kennel, as well as demolition of several buildings to accommodate construction activities. On JBSA-LTA, MWD facilities currently located within the 100-year floodplain would be demolished and reconstructed outside of the floodplain. Relocation would include eight kennels, a Block I Handlers Course, two Handlers Course Search Labs, a Vet Clinic, Kitchen, Indoor Kennel, DTS Lab, cement pad, three obstacle courses, four exercise pens, and four shade structures. Additionally, a new training lab would be constructed on the far northwest corner of JBSA-LTA and a mobile grooming station would be utilized near the existing kennels and moved near the new kennels, once constructed. The attached figures show the locations of the Proposed Action on JBSA-LMB and JBSA-LTA.

The proposed EA analyzes the potential environmental effects at Joint Base San Antonio-Lackland associated with the construction, demolition, and operation of the 13 projects proposed to revitalize the MWD campus. A No-action Alternative is also examined that would involve the continued use of the existing MWD Campus facilities without revitalization.

Joint Base San Antonio-Lackland desires to initiate consultation with the Comanche Tribe so you can express your comments, concerns, and suggestions. These consultations, conducted pursuant to Section 106 of the National Historic Preservation Act, 36 CFR Part 800, and Executive Order 13175, will provide an excellent opportunity to exchange information, ask questions, and advise Joint Base San Antonio-Lackland of any concerns or suggestions you may have. Please let me know if you would like to meet to discuss this proposal and to plan how our staffs will communicate during the consultations. When complete, we will mail a copy of the Draft EA and Finding of No Significant Impact, if applicable, for your review. This will give you an additional opportunity to provide input.

If your staff has any questions please direct them to Mr. Nicholas Smith, Joint Base San Antonio-Lackland NEPA Project Manager, at (210) 671-0164, e-mail at nicholas.smith.48@us.af.mil, or regular mail at 802 CES/CEAOP, 1555 Gott St, Lackland Air Force Base Texas 78236-5645.

I appreciate your interest in consulting with Joint Base San Antonio-Lackland and look forward to working with the Comanche Tribe in the future.

Sincerely

THERESA C. CARTER
Brigadier General, USAF
Commander

Attachments:
1. Figure of Proposed Action projects on JBSA-LMB
2. Figure of Proposed Action projects on JBSA-LTA
3. Distribution List

Tribal Scoping Letter Attachment

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Lackland Main Base Project List

1. Construct Grooming Station
2. Demo Bldgs 7561, 7562, 7563; Construct 3 Labs and Wash Rack
3. Construct Latrines
4. Demo Bldgs 7481, 7485, and 7570; Construct MWD Headquarters
5. Demo Bldg 7475 and Construct Lab
6. Construct Physical Therapy Center
7. Construct Drug Vehicle Training Lot
8. Demo Bldg 7594 and Replace in Place with Indoor Recovery Kennel
9. Construct Parking Lot

Legend

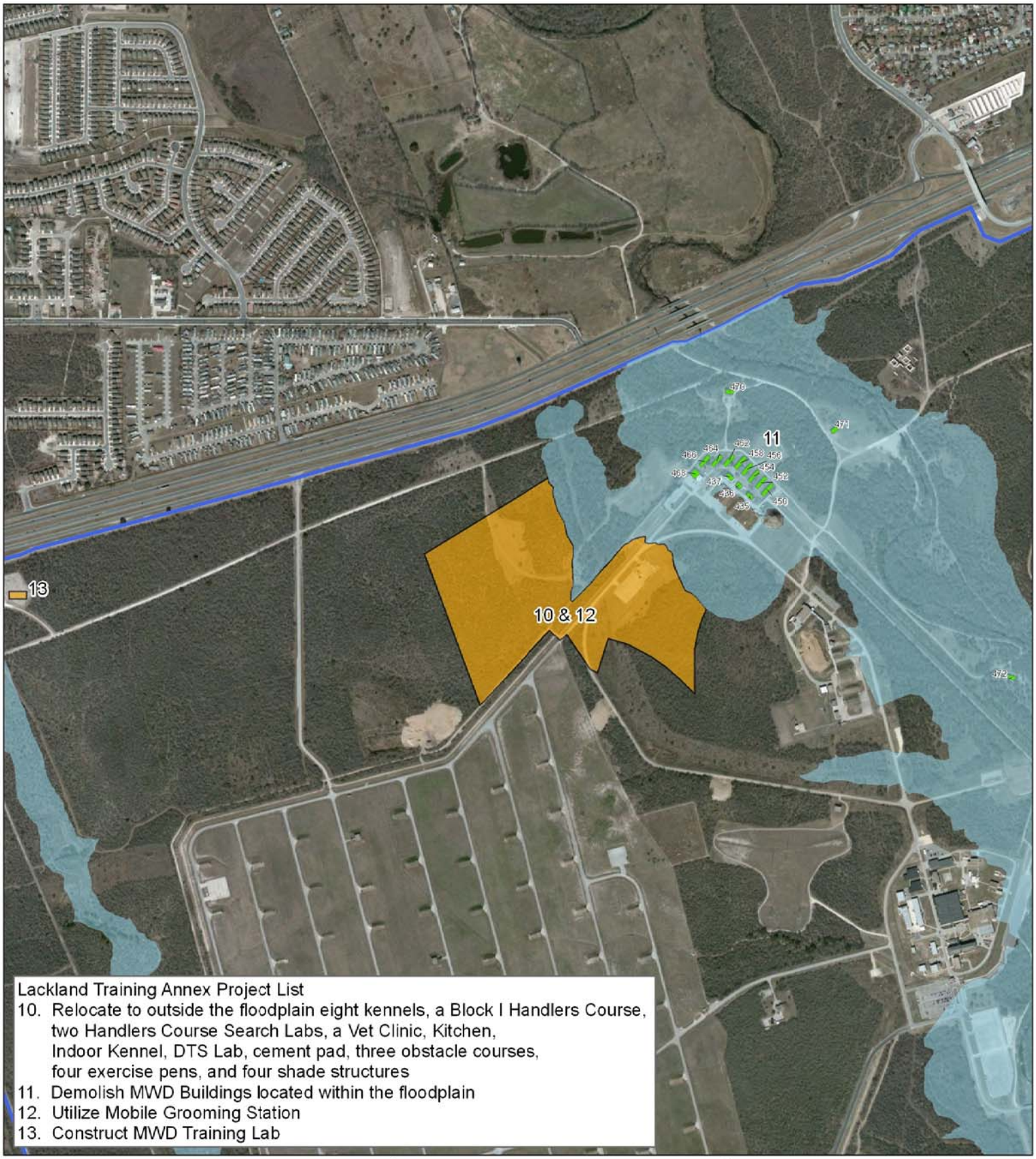
- Lackland Air Force Base
- Proposed Project Areas

N W E S

0 200 400 800 Feet

Attachment 1
Lackland Main Base
Proposed Action Projects

Lackland AFB



Lackland Training Annex Project List

10. Relocate to outside the floodplain eight kennels, a Block I Handlers Course, two Handlers Course Search Labs, a Vet Clinic, Kitchen, Indoor Kennel, DTS Lab, cement pad, three obstacle courses, four exercise pens, and four shade structures
11. Demolish MWD Buildings located within the floodplain
12. Utilize Mobile Grooming Station
13. Construct MWD Training Lab

Legend

- Lackland Air Force Base
- Construction Project Areas
- Buildings to be Demolished
- 100-Year Floodplain

N
W E
S

0 550 1,100 2,200 Feet

Attachment 2
Lackland Training Annex
Proposed Action Projects

Lackland AFB

Attachment 3 - Distribution List
Military Working Dog Campus Revitalization Environmental Assessment
Lackland Air Force Base, Texas
11 May 2012

General

Agency	Department	Title	Title-1	Name	Last Name	Address	City	State	Zip Code
USEPA	Region 6	Administrator	Ms.	Lisa	Jackson	1445 Ross Avenue, Suite 1200	Dallas	TX	75202
U.S. Fish and Wildlife Service		Field Supervisor	Mr.	David	Frederick	10711 Burnet Road, Suite 200	Austin	TX	78758-4460
U.S. Army Corps of Engineers	Regulatory Branch, Permit Section		Mr.	Stephen	Brooks	Attn: CESWF-PER-R P.O. Box 17300	Fort Worth	TX	76102-0300
TCEQ	Office of Permitting and Registration	Deputy Director	Mr.	Richard	Hyde	MC 122 P.O. Box 13087	Austin	TX	78711-3087
State Historical Commision	State Historic Preservation Office		Mr.	F. Lawrence	Oaks	P.O Box 12276	Austin	TX	78711-2276
TRACs		Single Point of Contact	Ms.	Denise	Francis	P.O. Box 12428 Room 441-A	Austin	TX	78711-2428
FEMA			Mr.	Kyle	Mills	800 North Loop 288	Denton	TX	76209
AACOG		Community Relations Coordinator	Ms.	Tiffany	Pickens	8700 Tesoro Drive, Suite 700	San Antonio	TX	78217-6228
TPWD	Ecosystem/Habitat Assessment Branch	Chief	Mr.	David	Sager	4200 Smith School Road	Austin	TX	78744-3291
City of San Antonio		Assistant Director of Public Works/FPA	Mr.	Nefi	Garza, P.E., CFM	P.O. Box 839966	San Antonio	TX	78283
City of San Antonio			Mr.	James	Henderson	P.O. Box 839966	San Antonio	TX	78283
City of San Antonio	Capital Improvements Management Services Dept.	Environmental Manager	Mr.	John	Cantu	111 E. Soledad, Suite 675	San Antonio	TX	78205

Attachment 3 - Distribution List
Military Working Dog Campus Revitalization Environmental Assessment
Lackland Air Force Base, Texas
11 May 2012

Tribal

Agency	Title	Title-1	Name	Last Name	Address	City	State	Zip Code
Comanche Tribe	Chairman	Mr.	Johnny	Wauqua	P.O. Box 908	Lawton	OK	73502
Mescalero Apache and Affiliated Tribes	President	Mr.	Mark	Chino	P.O. Box 227	Mescalero	NM	88340
Wichita and Affiliated Tribes	President		Leslie	Standing	P.O. Box 729	Andarko	OK	73005
Tonkawa Tribe	President	Mr.	Donald	Patterson	1 Rush Buffalo Road	Tonkawa	OK	74653

Final IICEP Scoping Mailing List

Scoping Mailing List
Military Working Dog Campus Revitalization
Environmental Assessment
11 May 2012

Agency	Department	Title	Title-1	Name	Last Name	Address	City	State	Zip Code
USEPA	Region 6	Administrator		Lisa	Jackson	1445 Ross Avenue, Suite 1200	Dallas	TX	75202
U.S. Fish and Wildlife Service		Field Supervisor		David	Frederick	10711 Burnet Road, Suite 200	Austin	TX	78758-4460
U.S. Army Corps of Engineers	Regulatory Branch, Permit Section			Stephen	Brooks	Attn: CESWF-PER-R P.O. Box 17300	Fort Worth	TX	76102-0300
TCEQ	Office of Permitting and Registration	Deputy Director		Richard	Hyde	MC 122 P.O. Box 13087	Austin	TX	78711-3087
State Historical Commision	State Historic Preservation Office			F. Lawrence	Oaks	P.O Box 12276	Austin	TX	78711-2276
TRACs		Single Point of Contact		Denise	Francis	P.O. Box 12428 Room 441-A	Austin	TX	78711-2428
FEMA				Kyle	Mills	800 North Loop 288	Denton	TX	76209
AACOG		Community Relations Coordinator		Tiffany	Pickens	8700 Tesoro Drive, Suite 700	San Antonio	TX	78217-6228
TPWD	Ecosystem/Habitat Assessment Branch	Chief		David	Sager	4200 Smith School Road	Austin	TX	78744-3291
ComancheTribe		Chairman		Johnny	Wauqua	P.O. Box 908	Lawton	OK	73502
Mescalero Apache and Affiliated Tribes		President		Mark	Chino	P.O. Box 227	Mescalero	NM	88340
Wichita and Affiliated Tribes		President		Leslie	Standing	P.O. Box 729	Andarko	OK	73005
Tonkawa Tribe		President		Donald	Patterson	1 Rush Buffalo Road	Tonkawa	OK	74653
City of San Antonio		Assistant Director of Public Works/FPA		Nefi	Garza, P.E., CFM	P.O. Box 839966	San Antonio	TX	78283
City of San Antonio				James	Henderson	P.O. Box 839966	San Antonio	TX	78283
City of San Antonio	Capital Improvements Management Services Dept.	Environmental Manager		John	Cantu	111 E. Soledad, Suite 675	San Antonio	TX	78205

IICEP Scoping Responses

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DEPARTMENT OF THE ARMY
FORT WORTH DISTRICT, CORPS OF ENGINEERS
P.O. BOX 17300
FORT WORTH, TEXAS 76102-0300

REPLY TO
ATTENTION OF

May 17, 2012

Planning, Environmental, and Regulatory Division
Regulatory Branch

SUBJECT: Project Number SWF-2012-00232, Military Working Dog Campus Revitalization at Lackland Air Force Base

Edward Roberson, P.E.
Chief, Asset Optimization
802 CES/CEAO
1555 Gott Street
Lackland AFB, TX 78236-5645

Dear Mr. Roberson:

Thank you for your letter received May 15, 2012 concerning a proposal by the802d Civil Engineer Squadron to revitalize the Military Working Dog Campus to include construction and demolition on the property located on Lackland Air Force Base in the City of San Antonio, Bexar County, TX. This project has been assigned Project Number SWF-2012-00232. Please include this number in all future correspondence concerning this project.

Ms. Elisha Bradshaw 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 Ms. Elisha Bradshaw at the address above or telephone (817) 886-1738 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

June 29, 2012

Planning, Environmental, and Regulatory Division
Regulatory Branch

SUBJECT: Project Number SWF-2012-00232, Military Working Dog Campus Revitalization at Lackland Air Force Base

Mr. Edward Roberson, P.E.
Chief, Asset Optimization
802 CES/CEAO
1555 Gott Street
Lackland AFB, Texas 78236-5645

Dear Mr. Roberson:

Thank you for your letter received May 15, 2012, concerning the proposal by the 802d Civil Engineer Squadron to revitalize the Military Working Dog Campus, located at Lackland Air Force Base, City of San Antonio, Bexar County, Texas. This project has been assigned Project Number SWF-2012-00232. Please include this number in all future correspondence concerning this project.

Under Section 404 of the Clean Water Act the U.S. Army Corps of Engineers (USACE) regulates the discharge of dredged and fill material into waters of the United States, including wetlands. USACE responsibility under Section 10 of the Rivers and Harbors Act of 1899 is to regulate any work in, or affecting, navigable waters of the United States. Based on your description of the proposed work, and other information available to us, we have determined this project will not involve activities subject to the requirements of Section 404 or Section 10. Therefore, it will not require Department of the Army authorization pursuant to Section 404 and/or Section 10. The USACE based this decision on a preliminary jurisdictional determination that there are no waters of the United States within the project site.

Thank you for your interest in our nation's water resources. If you have any questions concerning our regulatory program, please contact Ms. Elisha Bradshaw at the address above or telephone (817) 886-1738 and refer to your assigned project number.

Please help the Regulatory Program improve its service by completing the survey on the following website: http://per2.nwp.usace.army.mil/survey.html.

Sincerely,

Elisha Bradshaw

for Stephen L Brooks
Chief, Regulatory Branch

Bryan W. Shaw, Ph.D., *Chairman*
Buddy Garcia, *Commissioner*
Carlos Rubinstein, *Commissioner*
Mark R. Vickery, P.G., *Executive Director*

TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

Protecting Texas by Reducing and Preventing Pollution

May 17, 2012

Mr. Nicholas Smith
DOPAA
802 CES/CEAOP
1555 Gott Street
Lackland AFB, TX 78236-5645

Re: TCEQ Grant and Texas Review and Comment System (TRACS) #2012-218, City of Lackland AFB – Military Working Dog Campus Revitalization at Lackland Air Force Base, Texas

Dear Mr. Smith:

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 and Title 30, Texas Administrative Code § 101.30 indicates that the proposed action is located in the City of Lackland AFB 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 minimal dust and particulate emissions should be easily controlled by the construction contractors using standard dust mitigation techniques.

We recommend the environmental assessment address actions that will be taken to prevent surface and groundwater contamination.

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

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

NOTICE REVIEW/ENVIRONMENTAL CONSULTATION

☐ We have no comments to offer. ☒ We offer the following comments:

WE WOULD RECOMMEND THAT THE LOCAL & COUNTY FLOODPLAIN ADMINISTRATOR, AS WELL AS THE STATE NFIP COORDINATOR BE CONTACTED FOR THE REVIEW AND POSSIBLE PERMIT REQUIREMENTS FOR THIS PROJECT. IF FEDERALLY FUNDED, WE WOULD REQUEST PROJECT TO BE IN COMPLIANCE WITH EO 11988 & EO 11990.

Nefi Garza, PE
Assistant Director of Public Work
City of San Antonio
P. O. Box 839966
San Antonio, TX 78283
nefi.garza@sanantonio.gov
210-207-7785

Diane Bartlett
FPA
Bexar County
233 North Pecos Street, Suite 420
San Antonio, TX 78207
dbartlett@bexar.org
210-335-3843

Michael Segner, CFM
NFIP State Coordinator
Texas Water Development Board
P. O. Box 13231
Austin, Texas 78711-3231

REVIEWER:

Mayra G. Diaz
Floodplain Management and Insurance Branch
Mitigation Division
(940) 898-5541 DATE: June 18, 2012

TEXAS PARKS & WILDLIFE

Life's better outside.®

Commissioners

T. Dan Friedkin
Chairman
Houston

Ralph H. Duggins
Vice-Chairman
Fort Worth

Antonio Falcon, M.D.
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Karen J. Hixon
San Antonio

Dan Allen Hughes, Jr.
Beeville

Bill Jones
Austin

Margaret Martin
Boerne

S. Reed Morian
Houston

Dick Scott
Wimberley

Lee M. Bass
Chairman-Emeritus
Fort Worth

Carter P. Smith
Executive Director

June 26, 2012

Nicholas Smith
802 CES/CEAOP
1555 Gott Street
Lackland AFB, TX 78236-5645

RE: Request for information relating to environmental assessment for the proposed revitalization of the military working dog campus at Lackland Air Force Base, Bexar County, Texas

Dear Mr. Smith:

Texas Parks and Wildlife Department (TPWD) received your request for information to assist in the preparation of an environmental assessment (EA) for the proposed project referenced above. The environmental impact analysis process is being conducted by the Air Education and Training Command (AETC) and 802 CES per the National Environmental Policy Act (NEPA).

Project Description

Thirteen projects are proposed within Lackland Air Force Base Main Base (LMB) and Lackland Training Annex (LTA) to address logical deficiencies and allow future expansion of the Military Working Dog (MWD) Program. On LMB, these projects include construction of a grooming station, vehicle washrack, training labs, latrines, MWD headquarters and parking lot, physical therapy center, drug vehicle training lot and indoor recovery kennel. Several buildings on LMB would be demolished to accommodate construction activities. On LTA, MWD facilities currently located within the 100-year floodplain would be demolished and reconstructed outside of the floodplain. The relocation would include eight kennels, a Block I Handlers Course, two Handlers Course Search Labs, a veterinary clinic, kitchen, indoor kennels, DTS lab, cement pad, three obstacle courses, four exercise pens, and four shade structures.

TPWD Review Methods

As part of the review, TPWD searched the Texas Natural Diversity Database (TXNDD) of known records for species and rare resources within 1.5 miles of the project sites. TXNDD Element Occurrence (EOID) records found within a 1.5 mile radius provide a best estimate of the species and other rare resources that have potential to occur on a project site. **A lack of site-specific records should not be interpreted as presence/absence data, but instead that little information is available to date.**

Review of the TXNDD indicates no documented occurrences of rare species within 1.5 miles of the project site. However, please be aware that the TXNDD is intended

4200 SMITH SCHOOL ROAD
AUSTIN, TEXAS 78744-3291
512.389.4800
www.tpwd.state.tx.us

to assist users in avoiding harm to rare species or significant ecological features. Absence of information in an area does not imply that a species is absent from that area. Given the small proportion of public versus private land in Texas, the TXNDD does not include a representative inventory of rare resources in the state. Although it is based on the best data available to TPWD regarding rare species, the data from the TXNDD do not provide a definitive statement as to the presences, absence or condition of special species, natural communities, or other significant features within your project area. These data are not inclusive and **cannot be used as presence/absence data**. They represent species that could potentially be in your project area. This information cannot be substituted for on-the-ground surveys.

Please review the most current TPWD county list for Bexar County, as other rare species could be present depending upon habitat availability. These lists are available online at http://www.tpwd.state.tx.us/gis/ris/es/ .

For the USFWS rare species lists please visit: http://eco.fws.gov/tess_public/serviet/gov.doi.tess_public.serviets.EntryPage.

Federal Regulations

Migratory Bird Treaty Act (MBTA)

The Migratory Bird Treaty Act (MBTA) implicitly prohibits intentional *and unintentional* take of migratory birds, including their nests and eggs, except as permitted by the U.S. Fish and Wildlife Service (USFWS). Although not documented in the TXNDD, many bird species that are protected by the MBTA are known to reside in or migrate through the general area of the proposed project.

The nine proposed improvements on LMB would occur primarily in previously developed/disturbed areas representing low quality wildlife habitat.

The four proposed projects at LTA would likely involve clearing an area of woody vegetation within a large wooded tract that has been fragmented into woody patches by clearing for roads and structures. Although the surrounding area consists of fragmented wooded patches, typically patches ranging in size from five acres up to greater than 100 acres are suitable minimum patch sizes for a number of amphibians, reptiles, birds and mammals. Due to its proximity to a large metropolitan area, the available habitat at LTA may provide suitable nesting, feeding or loafing habitat for avian species not typically associated with or adapted to urban environments.

Recommendation: TPWD recommends scheduling any necessary vegetation clearing or trampling outside of the April 1-July 15 migratory bird nesting season in order to fully comply with the MBTA. Contractors should be made aware of the potential of encountering migratory birds on the proposed project sites and be instructed to avoid negatively impacting them. If clearing of herbaceous or woody vegetation must occur during the nesting season, a nest survey should be conducted by a qualified biologist prior to commencing work. If active nests are observed, TPWD recommends a 150 foot buffer of vegetation remain around the nests until the young have fledged or the nest is abandoned. More information regarding the MBTA is available from the U.S. Fish and Wildlife Service Southwest Regional Office (Region 2) at (505) 248-6879.

State regulations

Parks and Wildlife Code

State law prohibits any take (incidental or otherwise) of state-listed species. Laws and regulations pertaining to state-listed endangered or threatened animals are contained in Chapters 67 and 68 of the Texas Parks and Wildlife (TPW) Code; laws pertaining to endangered or threatened plants are contained in Chapter 88 of the TPW Code.

As stated above, the availability of patches of woodland and aquatic habitats interspersed with open areas near high density urban developments would be expected to provide suitable cover, feeding, loafing and nesting/breeding habitat for wildlife. The proximity of available wildlife habitat to the project area increases the probability of encountering wildlife in the project area during construction. A number of rare species associated with wooded or aquatic habitats are known to occur in Bexar County and can occur in close proximity to urban developments; snake encounters are of particular concern for TPWD.

Recommendation: Because snakes are generally perceived as a threat and killed when encountered during vegetation clearing or construction, TPWD recommends project plans include comments to inform contractors of the potential for protected species (*e.g.*, Timber/Canebrake rattlesnake, Texas indigo snake) to occur in the project areas. Contractors should be advised to avoid impacts to snakes as long as the safety of the workers is not compromised. If encountered, snakes should be permitted to safely leave project areas on their own. TPWD encourages construction sites to have a "no kill" policy in regard to wildlife encounters.

Attempting to catch and relocate snakes is not recommended. Please note that any state-listed species may only be handled by persons with a scientific collection permit which can be obtained from TPWD Wildlife Permits Program. For more information regarding this permit, please visit TPWD's wildlife permit website at: http://www.tpwd.state.tx.us/business/permits/land/wildlife/

Vegetation Impacts

According to the information provided, approximately 48 acres of wooded habitat at LTA would be permanently impacted to relocate existing facilities outside of the 100-year floodplain. Further fragmentation of existing woody patches reduces the potential biodiversity and habitat value to wildlife in the area.

Recommendation: TPWD recommends avoiding or minimizing vegetation impacts by limiting vegetation clearing to the greatest extent practicable. Additionally, TPWD recommends restoring the areas in which structures will be demolished in the floodplain. Restoration efforts should emphasize the use of locally native species of trees, shrubs and herbaceous vegetation. In addition to compensating for some of the wildlife habitat lost in the new construction areas, a well developed revegetation/restoration plan will enhance some of the ecological functions associated with floodplain (*e.g.*, slowing floodwaters, sequestering nutrients, minimizing erosion). TPWD strongly discourages the use of introduced, invasive grasses such as Bermuda grass (*Cynodon dactylon*) in post-construction revegetation plans.

TPWD appreciates the opportunity to provide comments and recommendations for this project. TPWD advises review and implementation of these recommendations. Please contact me at (361) 825-3240 or russell.hooten@tpwd.state.tx.us if you have any questions or we may be of further assistance.

Sincerely,

Russell Hooten
Wildlife Habitat Assessment Program
Wildlife Division

/rh 935

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Signed General Draft EA Letters

(*No document text on this page*)

DEPARTMENT OF THE AIR FORCE
502D AIR BASE WING
JOINT BASE SAN ANTONIO

Mr. Edward L. Roberson, P.E.
Chief, Asset Optimization
802 CES/CEAO
1555 Gott Street
Lackland AFB TX 78236-5645

Lisa Jackson
Administrator
USEPA
1445 Ross Avenue, Suite 1200
Dallas TX 75202

Dear Lisa Jackson

Enclosed for your review and comment is the Draft Environmental Assessment (EA) and proposed Finding of No Significant Impact (FONSI) for Military Working Dog (MWD) Campus Revitalization at Joint Base San Antonio-Lackland (JBSA-Lackland). The overall purpose of the project is to increase the effectiveness of the MWD mission by demolishing outdated and contaminated facilities currently used for MWD training, constructing new MWD facilities, co-locating MWD operations, and relocating MWD facilities outside of the 100-year floodplain. These upgrades would be accomplished through the implementation of 12 individual projects which are needed to correct deficiencies in the existing campus and to allow for future expansion of the MWD mission as determined by increases in world-wide security threats against the US Armed Forces and its allies. The existing campus does not allow for future expansion of the MWD mission primarily because there is a shortage of land available for new construction on JBSA-Lackland Main Base (JBSA-LMB). Additionally, facilities used for MWD training are not contiguous on either JBSA-LMB or JBSA-Lackland Training Annex (JBSA-LTA) and the campus currently has several logistical deficiencies.

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Sincerely

Edward L Roberson

EDWARD L. ROBERSON, P.E.

Attachments:
Draft EA and FONSI

DEPARTMENT OF THE AIR FORCE
502D AIR BASE WING
JOINT BASE SAN ANTONIO

Mr. Edward L. Roberson, P.E.
Chief, Asset Optimization
802 CES/CEAO
1555 Gott Street
Lackland AFB TX 78236-5645

David Frederick
Field Supervisor
U.S. Fish and Wildlife Service
10711 Burnet Road, Suite 200
Austin TX 78758-4460

Dear David Frederick

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502D AIR BASE WING
JOINT BASE SAN ANTONIO

Mr. Edward L. Roberson, P.E.
Chief, Asset Optimization
802 CES/CEAO
1555 Gott Street
Lackland AFB TX 78236-5645

Elisha Bradsaw
U.S. Army Corps of Engineers
Attn: CESWF-PER-R P.O. Box 17300
Fort Worth TX 78612-0300

Dear Elisha Bradshaw

Enclosed for your review and comment is the Draft Environmental Assessment (EA) and proposed Finding of No Significant Impact (FONSI) for Military Working Dog (MWD) Campus Revitalization at Joint Base San Antonio-Lackland (JBSA-Lackland) (Project Number SWF-2012-00232). The overall purpose of the project is to increase the effectiveness of the MWD mission by demolishing outdated and contaminated facilities currently used for MWD training, constructing new MWD facilities, co-locating MWD operations, and relocating MWD facilities outside of the 100-year floodplain. These upgrades would be accomplished through the implementation of 12 individual projects which are needed to correct deficiencies in the existing campus and to allow for future expansion of the MWD mission as determined by increases in world-wide security threats against the US Armed Forces and its allies. The existing campus does not allow for future expansion of the MWD mission primarily because there is a shortage of land available for new construction on JBSA-Lackland Main Base (JBSA-LMB). Additionally, facilities used for MWD training are not contiguous on either JBSA-LMB or JBSA-Lackland Training Annex (JBSA-LTA) and the campus currently has several logistical deficiencies.

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502D AIR BASE WING
JOINT BASE SAN ANTONIO

Mr. Edward L. Roberson, P.E.
Chief, Asset Optimization
802 CES/CEAO
1555 Gott Street
Lackland AFB TX 78236-5645

Richard Hyde
Deputy Director
TCEQ
MC 122
P.O. Box 13087
Austin TX 78711-3087

Dear Richard Hyde

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502D AIR BASE WING
JOINT BASE SAN ANTONIO

Mr. Edward L. Roberson, P.E.
Chief, Asset Optimization
802 CES/CEAO
1555 Gott Street
Lackland AFB TX 78236-5645

F. Lawrence Oaks
State Historical Commision
P.O Box 12276
Austin TX 78111-2276

Dear F. Lawrence Oaks

Enclosed for your review and comment is the Draft Environmental Assessment (EA) and proposed Finding of No Significant Impact (FONSI) for Military Working Dog (MWD) Campus Revitalization at Joint Base San Antonio-Lackland (JBSA-Lackland). The overall purpose of the project is to increase the effectiveness of the MWD mission by demolishing outdated and contaminated facilities currently used for MWD training, constructing new MWD facilities, co-locating MWD operations, and relocating MWD facilities outside of the 100-year floodplain. These upgrades would be accomplished through the implementation of 12 individual projects which are needed to correct deficiencies in the existing campus and to allow for future expansion of the MWD mission as determined by increases in world-wide security threats against the US Armed Forces and its allies. The existing campus does not allow for future expansion of the MWD mission primarily because there is a shortage of land available for new construction on JBSA-Lackland Main Base (JBSA-LMB). Additionally, facilities used for MWD training are not contiguous on either JBSA-LMB or JBSA-Lackland Training Annex (JBSA-LTA) and the campus currently has several logistical deficiencies.

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502D AIR BASE WING
JOINT BASE SAN ANTONIO

Mr. Edward L. Roberson, P.E.
Chief, Asset Optimization
802 CES/CEAO
1555 Gott Street
Lackland AFB TX 78236-5645

Denise Francis
Single Point of Contact
TRACs
P.O. Box 12428 Room 441-A
Austin TX 78711-2428

Dear Denise Francis

Enclosed for your review and comment is the Draft Environmental Assessment (EA) and proposed Finding of No Significant Impact (FONSI) for Military Working Dog (MWD) Campus Revitalization at Joint Base San Antonio-Lackland (JBSA-Lackland). The overall purpose of the project is to increase the effectiveness of the MWD mission by demolishing outdated and contaminated facilities currently used for MWD training, constructing new MWD facilities, co-locating MWD operations, and relocating MWD facilities outside of the 100-year floodplain. These upgrades would be accomplished through the implementation of 12 individual projects which are needed to correct deficiencies in the existing campus and to allow for future expansion of the MWD mission as determined by increases in world-wide security threats against the US Armed Forces and its allies. The existing campus does not allow for future expansion of the MWD mission primarily because there is a shortage of land available for new construction on JBSA-Lackland Main Base (JBSA-LMB). Additionally, facilities used for MWD training are not contiguous on either JBSA-LMB or JBSA-Lackland Training Annex (JBSA-LTA) and the campus currently has several logistical deficiencies.

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502D AIR BASE WING
JOINT BASE SAN ANTONIO

Mr. Edward L. Roberson, P.E.
Chief, Asset Optimization
802 CES/CEAO
1555 Gott Street
Lackland AFB TX 78236-5645

Kyle Mills
FEMA
800 North Loop 288
Denton TX 76209

Dear Kyle Mills

Enclosed for your review and comment is the Draft Environmental Assessment (EA) and proposed Finding of No Significant Impact (FONSI) for Military Working Dog (MWD) Campus Revitalization at Joint Base San Antonio-Lackland (JBSA-Lackland). The overall purpose of the project is to increase the effectiveness of the MWD mission by demolishing outdated and contaminated facilities currently used for MWD training, constructing new MWD facilities, co-locating MWD operations, and relocating MWD facilities outside of the 100-year floodplain. These upgrades would be accomplished through the implementation of 12 individual projects which are needed to correct deficiencies in the existing campus and to allow for future expansion of the MWD mission as determined by increases in world-wide security threats against the US Armed Forces and its allies. The existing campus does not allow for future expansion of the MWD mission primarily because there is a shortage of land available for new construction on JBSA-Lackland Main Base (JBSA-LMB). Additionally, facilities used for MWD training are not contiguous on either JBSA-LMB or JBSA-Lackland Training Annex (JBSA-LTA) and the campus currently has several logistical deficiencies.

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JOINT BASE SAN ANTONIO

Mr. Edward L. Roberson, P.E.
Chief, Asset Optimization
802 CES/CEAO
1555 Gott Street
Lackland AFB TX 78236-5645

Diane Bartlett
Bexar County
233 North Pecos Street, Suite 420
San Antonio TX 78207

Dear Diane Bartlett

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502D AIR BASE WING
JOINT BASE SAN ANTONIO

Mr. Edward L. Roberson, P.E.
Chief, Asset Optimization
802 CES/CEAO
1555 Gott Street
Lackland AFB TX 78236-5645

Michael Segner, CFM
NFIP State Coordinator
Texas Water Development Board
P.O. Box 13231
Austin TX 78711-3231

Dear Michael Segner

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502D AIR BASE WING
JOINT BASE SAN ANTONIO

Mr. Edward L. Roberson, P.E.
Chief, Asset Optimization
802 CES/CEAO
1555 Gott Street
Lackland AFB TX 78236-5645

Tiffany Pickens
Community Relations Coordinator
AACOG
8700 Tesoro Drive, Suite 700
San Antonio TX 78217-6228

Dear Tiffany Pickens

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502D AIR BASE WING
JOINT BASE SAN ANTONIO

Mr. Edward L. Roberson, P.E.
Chief, Asset Optimization
802 CES/CEAO
1555 Gott Street
Lackland AFB TX 78236-5645

David Sager
Chief
TPWD
4200 Smith School Road
Austin TX 78744-3291

Dear David Sager

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502D AIR BASE WING
JOINT BASE SAN ANTONIO

Mr. Edward L. Roberson, P.E.
Chief, Asset Optimization
802 CES/CEAO
1555 Gott Street
Lackland AFB TX 78236-5645

Nefi Garza, P.E., CFM
Assistant Director of Public Works/FPA
City of San Antonio
P.O. Box 839966
San Antonio TX 78283

Dear Nefi Garza

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502D AIR BASE WING
JOINT BASE SAN ANTONIO

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Chief, Asset Optimization
802 CES/CEAO
1555 Gott Street
Lackland AFB TX 78236-5645

James Henderson
City of San Antonio
P.O. Box 839966
San Antonio TX 78283

Dear James Henderson

Enclosed for your review and comment is the Draft Environmental Assessment (EA) and proposed Finding of No Significant Impact (FONSI) for Military Working Dog (MWD) Campus Revitalization at Joint Base San Antonio-Lackland (JBSA-Lackland). The overall purpose of the project is to increase the effectiveness of the MWD mission by demolishing outdated and contaminated facilities currently used for MWD training, constructing new MWD facilities, co-locating MWD operations, and relocating MWD facilities outside of the 100-year floodplain. These upgrades would be accomplished through the implementation of 12 individual projects which are needed to correct deficiencies in the existing campus and to allow for future expansion of the MWD mission as determined by increases in world-wide security threats against the US Armed Forces and its allies. The existing campus does not allow for future expansion of the MWD mission primarily because there is a shortage of land available for new construction on JBSA-Lackland Main Base (JBSA-LMB). Additionally, facilities used for MWD training are not contiguous on either JBSA-LMB or JBSA-Lackland Training Annex (JBSA-LTA) and the campus currently has several logistical deficiencies.

The EA analyzes the potential environmental effects at JBSA-Lackland associated with MWD campus revitalization. A No-action Alternative has also been examined that involves continued use of the existing MWD Campus facilities without revitalization. Based on the EA, the Air Force has prepared a proposed FONSI.

Copies of the Draft EA and FONSI are maintained at the City of San Antonio Central Library, 600 Soledad, San Antonio, TX 78205, (210) 207-2500. Electronic copies of the documents can also be found on the JBSA-Lackland website at http://www.jbsa.af.mil/library/environmentalinformation.asp.

In accordance with Executive Order 12372, *Intergovernmental Review of Federal Programs*, we request your participation in the process, and solicit any comments or concerns you may have on the Draft EA and proposed FONSI. Comments may be submitted no later than 30 days from

receipt of this letter and should be provided to Mr. Nick Smith, 802 CES/CEAOP, 1555 Gott Street, Lackland AFB, Texas 78236-5645.

Sincerely

EDWARD L. ROBERSON, P.E.

Attachments:
Draft EA and FONSI

DEPARTMENT OF THE AIR FORCE
502D AIR BASE WING
JOINT BASE SAN ANTONIO

Mr. Edward L. Roberson, P.E.
Chief, Asset Optimization
802 CES/CEAO
1555 Gott Street
Lackland AFB TX 78236-5645

John Cantu
Environmental Manager
City of San Antonio
111 E. Soledad, Suite 675
San Antonio TX 78205

Dear John Cantu

Enclosed for your review and comment is the Draft Environmental Assessment (EA) and proposed Finding of No Significant Impact (FONSI) for Military Working Dog (MWD) Campus Revitalization at Joint Base San Antonio-Lackland (JBSA-Lackland). The overall purpose of the project is to increase the effectiveness of the MWD mission by demolishing outdated and contaminated facilities currently used for MWD training, constructing new MWD facilities, co-locating MWD operations, and relocating MWD facilities outside of the 100-year floodplain. These upgrades would be accomplished through the implementation of 12 individual projects which are needed to correct deficiencies in the existing campus and to allow for future expansion of the MWD mission as determined by increases in world-wide security threats against the US Armed Forces and its allies. The existing campus does not allow for future expansion of the MWD mission primarily because there is a shortage of land available for new construction on JBSA-Lackland Main Base (JBSA-LMB). Additionally, facilities used for MWD training are not contiguous on either JBSA-LMB or JBSA-Lackland Training Annex (JBSA-LTA) and the campus currently has several logistical deficiencies.

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receipt of this letter and should be provided to Mr. Nick Smith, 802 CES/CEAOP, 1555 Gott Street, Lackland AFB, Texas 78236-5645.

Sincerely

EDWARD L. ROBERSON, P.E.

Attachments:
Draft EA and FONSI

Signed Tribal Draft EA Letters

(*No document text on this page*)

DEPARTMENT OF THE AIR FORCE
502D AIR BASE WING
JOINT BASE SAN ANTONIO

Mr. Edward L. Roberson, P.E.
Chief, Asset Optimization
802 CES/CEAO
1555 Gott Street
Lackland AFB TX 78236-5645

Johnny Wauqua
Chairman
Comanche Tribe
P.O. Box 908
Lawton OK 73502

Dear Johnny Wauqua

Enclosed for your review and comment is the Draft Environmental Assessment (EA) and proposed Finding of No Significant Impact (FONSI) for Military Working Dog (MWD) Campus Revitalization at Joint Base San Antonio-Lackland (JBSA-Lackland). The overall purpose of the project is to increase the effectiveness of the MWD mission by demolishing outdated and contaminated facilities currently used for MWD training, constructing new MWD facilities, co-locating MWD operations, and relocating MWD facilities outside of the 100-year floodplain. These upgrades would be accomplished through the implementation of 12 individual projects which are needed to correct deficiencies in the existing campus and to allow for future expansion of the MWD mission as determined by increases in world-wide security threats against the US Armed Forces and its allies. The existing campus does not allow for future expansion of the MWD mission primarily because there is a shortage of land available for new construction on JBSA-Lackland Main Base (JBSA-LMB). Additionally, facilities used for MWD training are not contiguous on either JBSA-LMB or JBSA-Lackland Training Annex (JBSA-LTA) and the campus currently has several logistical deficiencies.

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JBSA-Lackland desires to continue consultation with the Comanche Tribe so you can express your comments, concerns, and suggestions. These consultations, conducted pursuant to Section 106 of the National Historic Preservation Act, 36 CFR Part 800, and Executive Order 13175,

provide an excellent opportunity to exchange information, ask questions, and advise JBSA-Lackland of any concerns or suggestions you may have. As a part of this consultation, we request your participation in the process, and solicit any comments or concerns you may have on the Draft EA and proposed FONSI. Comments should be provided to Mr. Nick Smith, JBSA-Lackland NEPA Project Manager, via e-mail at nicholas.smith.48@us.af.mil, or regular mail at 802 CES/CEAOP, 1555 Gott Street, Joint Base San Antonio-Lackland, Texas 78236-5645.

Sincerely

Edward L Roberson

EDWARD L. ROBERSON, P.E.

Attachments:
Draft EA and FONSI

DEPARTMENT OF THE AIR FORCE
502D AIR BASE WING
JOINT BASE SAN ANTONIO

Mr. Edward L. Roberson, P.E.
Chief, Asset Optimization
802 CES/CEAO
1555 Gott Street
Lackland AFB TX 78236-5645

Mark Chino
President
Mescalero Apache and Affiliated Tribes
P.O. Box 227
Mescalero NM 88340

Dear Mark Chino

Enclosed for your review and comment is the Draft Environmental Assessment (EA) and proposed Finding of No Significant Impact (FONSI) for Military Working Dog (MWD) Campus Revitalization at Joint Base San Antonio-Lackland (JBSA-Lackland). The overall purpose of the project is to increase the effectiveness of the MWD mission by demolishing outdated and contaminated facilities currently used for MWD training, constructing new MWD facilities, co-locating MWD operations, and relocating MWD facilities outside of the 100-year floodplain. These upgrades would be accomplished through the implementation of 12 individual projects which are needed to correct deficiencies in the existing campus and to allow for future expansion of the MWD mission as determined by increases in world-wide security threats against the US Armed Forces and its allies. The existing campus does not allow for future expansion of the MWD mission primarily because there is a shortage of land available for new construction on JBSA-Lackland Main Base (JBSA-LMB). Additionally, facilities used for MWD training are not contiguous on either JBSA-LMB or JBSA-Lackland Training Annex (JBSA-LTA) and the campus currently has several logistical deficiencies.

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JBSA-Lackland desires to continue consultation with the Mescalero Apache and Affiliated Tribes so you can express your comments, concerns, and suggestions. These consultations, conducted pursuant to Section 106 of the National Historic Preservation Act, 36 CFR Part 800,

and Executive Order 13175, provide an excellent opportunity to exchange information, ask questions, and advise JBSA-Lackland of any concerns or suggestions you may have. As a part of this consultation, we request your participation in the process, and solicit any comments or concerns you may have on the Draft EA and proposed FONSI. Comments should be provided to Mr. Nick Smith, JBSA-Lackland NEPA Project Manager, via e-mail at nicholas.smith.48@us.af.mil, or regular mail at 802 CES/CEAOP, 1555 Gott Street, Joint Base San Antonio-Lackland, Texas 78236-5645.

Sincerely

Edward L Roberson

EDWARD L. ROBERSON, P.E.

Attachments:
Draft EA and FONSI

DEPARTMENT OF THE AIR FORCE
502D AIR BASE WING
JOINT BASE SAN ANTONIO

Mr. Edward L. Roberson, P.E.
Chief, Asset Optimization
802 CES/CEAO
1555 Gott Street
Lackland AFB TX 78236-5645

Leslie Standing
President
Wichita and Affiliated Tribes
P.O. Box 729
Andarko OK 73005

Dear Leslie Standing

Enclosed for your review and comment is the Draft Environmental Assessment (EA) and proposed Finding of No Significant Impact (FONSI) for Military Working Dog (MWD) Campus Revitalization at Joint Base San Antonio-Lackland (JBSA-Lackland). The overall purpose of the project is to increase the effectiveness of the MWD mission by demolishing outdated and contaminated facilities currently used for MWD training, constructing new MWD facilities, co-locating MWD operations, and relocating MWD facilities outside of the 100-year floodplain. These upgrades would be accomplished through the implementation of 12 individual projects which are needed to correct deficiencies in the existing campus and to allow for future expansion of the MWD mission as determined by increases in world-wide security threats against the US Armed Forces and its allies. The existing campus does not allow for future expansion of the MWD mission primarily because there is a shortage of land available for new construction on JBSA-Lackland Main Base (JBSA-LMB). Additionally, facilities used for MWD training are not contiguous on either JBSA-LMB or JBSA-Lackland Training Annex (JBSA-LTA) and the campus currently has several logistical deficiencies.

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JBSA-Lackland desires to continue consultation with the Wichita and Affiliated Tribes so you can express your comments, concerns, and suggestions. These consultations, conducted pursuant to Section 106 of the National Historic Preservation Act, 36 CFR Part 800, and Executive Order

13175, provide an excellent opportunity to exchange information, ask questions, and advise JBSA-Lackland of any concerns or suggestions you may have. As a part of this consultation, we request your participation in the process, and solicit any comments or concerns you may have on the Draft EA and proposed FONSI. Comments should be provided to Mr. Nick Smith, JBSA-Lackland NEPA Project Manager, via e-mail at nicholas.smith.48@us.af.mil, or regular mail at 802 CES/CEAOP, 1555 Gott Street, Joint Base San Antonio-Lackland, Texas 78236-5645.

Sincerely

Edward L Roberson

EDWARD L. ROBERSON, P.E.

Attachments:
Draft EA and FONSI

DEPARTMENT OF THE AIR FORCE
502D AIR BASE WING
JOINT BASE SAN ANTONIO

Mr. Edward L. Roberson, P.E.
Chief, Asset Optimization
802 CES/CEAO
1555 Gott Street
Lackland AFB TX 78236-5645

Donald Patterson
President
Tonkawa Tribe
1 Rush Buffalo Road
Tonkawa OK 74653

Dear Donald Patterson

Enclosed for your review and comment is the Draft Environmental Assessment (EA) and proposed Finding of No Significant Impact (FONSI) for Military Working Dog (MWD) Campus Revitalization at Joint Base San Antonio-Lackland (JBSA-Lackland). The overall purpose of the project is to increase the effectiveness of the MWD mission by demolishing outdated and contaminated facilities currently used for MWD training, constructing new MWD facilities, co-locating MWD operations, and relocating MWD facilities outside of the 100-year floodplain. These upgrades would be accomplished through the implementation of 12 individual projects which are needed to correct deficiencies in the existing campus and to allow for future expansion of the MWD mission as determined by increases in world-wide security threats against the US Armed Forces and its allies. The existing campus does not allow for future expansion of the MWD mission primarily because there is a shortage of land available for new construction on JBSA-Lackland Main Base (JBSA-LMB). Additionally, facilities used for MWD training are not contiguous on either JBSA-LMB or JBSA-Lackland Training Annex (JBSA-LTA) and the campus currently has several logistical deficiencies.

The EA analyzes the potential environmental effects at JBSA-Lackland associated with MWD campus revitalization. A No-action Alternative has also been examined that involves continued use of the existing MWD Campus facilities without revitalization. Based on the EA, the Air Force has prepared a proposed FONSI.

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JBSA-Lackland desires to continue consultation with the Tonkawa Tribe so you can express your comments, concerns, and suggestions. These consultations, conducted pursuant to Section 106 of the National Historic Preservation Act, 36 CFR Part 800, and Executive Order 13175,

provide an excellent opportunity to exchange information, ask questions, and advise JBSA-Lackland of any concerns or suggestions you may have. As a part of this consultation, we request your participation in the process, and solicit any comments or concerns you may have on the Draft EA and proposed FONSI. Comments should be provided to Mr. Nick Smith, JBSA-Lackland NEPA Project Manager, via e-mail at nicholas.smith.48@us.af.mil, or regular mail at 802 CES/CEAOP, 1555 Gott Street, Joint Base San Antonio-Lackland, Texas 78236-5645.

Sincerely

Edward L Roberson

EDWARD L. ROBERSON, P.E.

Attachments:
Draft EA and FONSI

Final Draft EA IICEP Mailing List

DEA IICEP Mailing List
Military Working Dog Campus Revitalization Environmental Assessment
JBSA-Lackland, Texas
12 September 2012

Agency	Department	Title	Title-1	Name	Last Name	Address	City	State	Zip Code
USEPA	Region 6	Administrator	Ms.	Lisa	Jackson	1445 Ross Avenue, Suite 1200	Dallas	TX	75202
U.S. Fish and Wildlife Service		Field Supervisor	Mr.	David	Frederick	10711 Burnet Road, Suite 200	Austin	TX	78758-4460
U.S. Army Corps of Engineers	Regulatory Branch, Permit Section	Project Manager	Ms.	Elisha	Bradshaw	Attn: CESWF-PER-R P.O. Box 17300	Fort Worth	TX	78612-0300
TCEQ	Office of Permitting and Registration	Deputy Director	Mr.	Richard	Hyde	MC 122 P.O. Box 13087	Austin	TX	78711-3087
State Historical Commision	State Historic Preservation Office		Mr.	F. Lawrence	Oaks	P.O Box 12276	Austin	TX	78111-2276
TRACs		Single Point of Contact	Ms.	Denise	Francis	P.O. Box 12428 Room 441-A	Austin	TX	78711-2428
FEMA			Mr.	Kyle	Mills	800 North Loop 288	Denton	TX	76209
Bexar County	FPA		Ms.	Diane	Bartlett	233 North Pecos Street, Suite 420	San Antonio	TX	78207
Texas Water Development Board		NFIP State Coordinator	Mr.	Michael	Segner, CFM	P.O. Box 13231	Austin	TX	78711-3231
AACOG		Community Relations Coordinator	Ms.	Tiffany	Pickens	8700 Tesoro Drive, Suite 700	San Antonio	TX	78217-6228
TPWD	Ecosystem/Habitat Assessment Branch	Chief	Mr.	David	Sager	4200 Smith School Road	Austin	TX	78744-3291
City of San Antonio		Assistant Director of Public Works/FPA	Mr.	Nefi	Garza, P.E., CFM	P.O. Box 839966	San Antonio	TX	78283
City of San Antonio			Mr.	James	Henderson	P.O. Box 839966	San Antonio	TX	78283
City of San Antonio	Capital Improvements Management Services Dept.	Environmental Manager	Mr.	John	Cantu	111 E. Soledad, Suite 675	San Antonio	TX	78205
Comanche Tribe		Chairman	Mr.	Johnny	Wauqua	P.O. Box 908	Lawton	OK	73502
Mescalero Apache and Affiliated Tribes		President	Mr.	Mark	Chino	P.O. Box 227	Mescalero	NM	88340
Wichita and Affiliated Tribes		President	Mr.	Leslie	Standing	P.O. Box 729	Andarko	OK	73005
Tonkawa Tribe		President	Mr.	Donald	Patterson	1 Rush Buffalo Road	Tonkawa	OK	74653

Notice of Availability of the Draft EA

PUBLIC NOTICE

NOTICE OF AVAILABILITY
DRAFT ENVIRONMENTAL ASSESSMENT AND
PROPOSED FINDING OF NO SIGNIFICANT IMPACT
FOR MILITARY WORKING DOG CAMPUS REVITALIZATION, JOINT BASE SAN ANTONIO - LACKLAND, TEXAS

An Environmental Assessment (EA) has been prepared to analyze the impacts from proposed revitalization of the existing Military Working Dog (MWD) campus at Joint Base San Antonio – Lackland (JBSA-Lackland), Texas. Upgrades to the MWD facilities are needed to correct deficiencies in the existing campus and to allow for future expansion of the MWD mission as determined by increases in world-wide security threats against the US Armed Forces and its allies. The EA, prepared in accordance with the National Environmental Policy Act (NEPA), Council on Environmental Quality regulations, and Air Force instructions implementing NEPA; evaluates potential impacts of the Proposed Action and No-action Alternative on the environment. Based on the EA, the Air Force has prepared a proposed Finding of No Significant Impact (FONSI).

Copies of the EA and proposed FONSI are available at the City of San Antonio Central Library, 600 Soledad, San Antonio, TX 78205, phone: (210) 207-2500. Electronic copies of the documents can also be found on the JBSA-Lackland website at http://www.jbsa.af.mil/library/environmentalinformation.asp.

Comments may be submitted through 26 November 2012 and should be provided to the NEPA Program Manager, 802 CES/CEAOP, 1555 Gott Street, Joint Base San Antonio - Lackland, TX 78236-5645.

PRIVACY ADVISORY NOTICE

Public comments on this Draft EA are requested pursuant to NEPA, 42 United States Code 4321, et seq. All written comments received during the comment period will be made available to the public and considered during the final EA preparation. Providing private address information with your comment is voluntary and such personal information will be kept confidential unless release is required by law. However, address information will be used to compile the project mailing list and failure to provide it will result in your name not being included on the mailing list.

Draft EA IICEP Responses

(*No document text on this page*)

Bryan W. Shaw, Ph.D., *Chairman*
Carlos Rubinstein , *Commissioner*
Toby Baker, *Commissioner*
Zak Covar, *Executive Director*

TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

Protecting Texas by Reducing and Preventing Pollution

November 1, 2012

Mr. Nick Smith
802 CES/CEAOP
1555 Gott Street
Lackland AFB, Texas 78236-5645

Re: TCEQ Grant and Texas Review and Comment System (TRACS) #2012-442, Bexar County, Demolition

Dear Mr. Smith:

The Texas Commission on Environment 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 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 may produce dust and particulate emissions, these actions are not anticipated to result in a significant impact upon air quality standards. Any dust and particulate emissions should be easily controlled by using standard dust mitigation techniques. Any debris or waste disposal should be at an appropriately authorized facility.

We do not anticipate significant long term environmental impacts from this project provided that associated construction and waste disposal activities are completed in accordance with applicable local, state, and federal environmental permits and regulations. We recommend that the applicant take necessary steps to ensure that best management practices are used to control runoff from construction sites in order to prevent detrimental impact to surface and ground water.

Thank you for the opportunity to review this project. If you have any questions, please contact Ms. Melanie Aldana at (512) 239-1622 or melanie.aldana@tceq.texas.gov.

Sincerely,

Susana M. Hildebrand, P.E.
Chief Engineer

(*No document text on this page*)

From:	SMITH, NICHOLAS B GS-11 USAF AETC 802 CES/CEAOP
To:	Carroll, Tamara
Cc:	BAUML, GEORGE A CTR USAF AETC 802 CES/CEAN; GONZALES, GABRIEL D GS-12 USAF AETC 802 CES/CEAOP
Subject:	FW: Tonkawa Tribe of Oklahoma NAGPRA
Date:	Thursday, November 01, 2012 12:50:45 PM
Attachments:	image001.jpg image003.jpg

Tamara,

No comments from the Tonkawa Tribe.

-Nick-

-----Original Message-----
From: Allen, Miranda [mailto:mallen@tonkawatribe.com]
Sent: Thursday, November 01, 2012 11:34 AM
To: SMITH, NICHOLAS B GS-11 USAF AETC 802 CES/CEAOP
Subject: Tonkawa Tribe of Oklahoma NAGPRA

TONKAWA TRIBE OF OKLAHOMA

Native American Graves Protection

and Repatriation Act

. 1 RUSH BUFFALO ROAD, TONKAWA, OKLAHOMA 74653 .

. PHONE (580) 628-2561 . FAX: (580) 628-9903 .

WEB SITE: www.tonkawatribe.com

Department of the Air Force

Mr. Nick Smith, JBSA-Lackland NEPA Project Manager:
Nicholas.smith.48@us.af.mil

Dear Sir,

Thank you for the chance to review and comment on the Draft Environmental Assessment (EA) for the Military Working Dog Campus Revitalization at Joint Base San Antonio-Lackland. At this time we currently have no questions or concerns involving the Draft EA and do not oppose the proposed Finding of No Significant Impact (FONSI) at this time.

However, if any human remains, funerary objects, or other evidence of historical or cultural significance is inadvertently discovered then the Tonkawa Tribe would certainly be interested in proper disposition thereof. The Tonkawa Tribe has no specifically designated historical or cultural sites identified in the above listed project area.

We appreciate notification by your office of the many projects on-going, and as always the Tonkawa Tribe is willing to work with your representatives in any manner to uphold the provisions of NAGPRA to the extent of our capability.

Respectfully,

Miranda "Nax'ce" Allen

NAGPRA Representative

02ETAU00-2013-I-0019

DEPARTMENT OF THE AIR FORCE
502D AIR BASE WING
JOINT BASE SAN ANTONIO

USFWS RECEIVED OCT 26 2012 ECOLOGICAL SERVICES AFS ALL

USFWS RECEIVED OCT 25 2012 ECOLOGICAL SERVICES Austin

T.S. Record 26 Oct 2012 BK

ORS FILE NO. DUE

Mr. Edward L. Roberson, P.E.
Chief, Asset Optimization
802 CES/CEAO
1555 Gott Street
Lackland AFB TX 78236-5645

David Frederick
Field Supervisor
U.S. Fish and Wildlife Service
10711 Burnet Road, Suite 200
Austin TX 78758-4460

NO ACTION
Date: Nov. 5, 2012
Consultation #: 02ETAU00-2013-I-0019
Approved by _____
Adam Zerrenner, Field Supervisor
U.S. FISH & WILDLIFE SERVICE, AUSTIN, TEXAS

Dear David Frederick

Enclosed for your review and comment is the Draft Environmental Assessment (EA) and proposed Finding of No Significant Impact (FONSI) for Military Working Dog (MWD) Campus Revitalization at Joint Base San Antonio-Lackland (JBSA-Lackland). The overall purpose of the project is to increase the effectiveness of the MWD mission by demolishing outdated and contaminated facilities currently used for MWD training, constructing new MWD facilities, co-locating MWD operations, and relocating MWD facilities outside of the 100-year floodplain. These upgrades would be accomplished through the implementation of 12 individual projects which are needed to correct deficiencies in the existing campus and to allow for future expansion of the MWD mission as determined by increases in world-wide security threats against the US Armed Forces and its allies. The existing campus does not allow for future expansion of the MWD mission primarily because there is a shortage of land available for new construction on JBSA-Lackland Main Base (JBSA-LMB). Additionally, facilities used for MWD training are not contiguous on either JBSA-LMB or JBSA-Lackland Training Annex (JBSA-LTA) and the campus currently has several logistical deficiencies.

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In accordance with Executive Order 12372, *Intergovernmental Review of Federal Programs*, we request your participation in the process, and solicit any comments or concerns you may have on the Draft EA and proposed FONSI. Comments may be submitted no later than 30 days from

29.3884, -98.6595

receipt of this letter and should be provided to Mr. Nick Smith, 802 CES/CEAOP, 1555 Gott Street, Lackland AFB, Texas 78236-5645.

Sincerely

Edward L Roberson

EDWARD L. ROBERSON, P.E.

Attachments:
Draft EA and FONSI

Texas Water Development Board

P.O. Box 13231, 1700 N. Congress Ave.
Austin, TX 78711-3231, www.twdb.texas.gov
Phone (512) 463-7847, Fax (512) 475-2053

November 15, 2012

Mr. Nick Smith
802 CES/CEAOP
1555 Gott Street
Lackland AFB, Texas 78236-5645

Re: Joint Base San Antonio-Lackland Project

Dear Mr. Riley:

This is in response your letter of October 25, 2012, concerning the referenced project. After a review of the information you provided for an Application for Approval of Reclamation Project, our findings indicate that as a participant in the National Flood Insurance Program (NFIP), the City of San Antonio has approval authority for projects within their jurisdiction. Please ensure that you coordinate with the community for any specific development in the Special Flood Hazard Area.

Thank you for bringing this matter to our attention.

Sincerely,

Michael Segner, CFM
NFIP State Coordinator

Our Mission

To provide leadership, planning, financial assistance, information, and education for the conservation and responsible development of water for Texas

Board Members

Billy R. Bradford Jr., Chairman
Joe M. Crutcher, Vice Chairman
Lewis H. McMahan, Member
Edward G. Vaughan, Member
Monte Cluck, Member
F.A. "Rick" Rylander, Member

Melanie Callahan, Executive Administrator

AACOG
Alamo Area Council
Of Governments

December 4, 2012

Mr. Roberson, P.E.
Chief, Asset Optimization
802 CES/CEAO
1555 Gott Street
Lackland AFB TX 78236

RE: Environmental Assessment (EA) of Military Working Dog Campus Revitalization, Joint Base San Antonio – Lackland Air Force Base.

Dear Mr. Roberson,

Thank you and Mr. Nick Smith for the presentation of the above referenced EA before the subcommittee of the AACOG Economic Development and Environmental Committee on November 27, 2012.

At this time staff has no additional questions or comments and per the subcommittee meeting, recommends a "*Consensus to Proceed*" for this project.

Should you have any questions or require additional information, please contact me at 210-362-5212.

Sincerely,

Joe Ramos
Senior Director
Alamo Area Council of Governments

Appendix B

Lackland Air Force Base Training Annex Wildlife Habitat Report

LACKLAND AIR FORCE BASE TRAINING ANNEX
WILDLIFE HABITAT STUDY REPORT

Final



Prepared for:

Weston Solutions, Inc.
70 N.E. Loop 410, Suite 600
San Antonio, TX 78216-5842

Prepared by:

Geo-Marine, Inc.
2201 K Avenue, Suite A2
Plano, Texas 75074

July 2011

EXECUTIVE SUMMARY

This report summarizes and evaluates the Lackland Air Force Base Training Annex lands flora and fauna resources and possibly occurring threatened, endangered, or sensitive species. Geo-Marine, Inc. performed this work under the Air Education and Training Commands Environmental Services Contract with Weston Solutions, Inc. Habitat and species surveys were conducted to examine species composition and to map habitat types throughout the annex. One-hundred and eight avian species were observed during this study with 47 of these species not previously reported in past surveys. There were 18 herpetological species observations with five previously unreported species. Two of the 18 mammal species observations were not reported in previous surveys. One-hundred and fifty-seven plant species were recorded with 11 of these species considered to be invasive. One-hundred and sixty-four plant species were observed with 10 of these species considered to be noxious or invasive species. No threatened, endangered, or sensitive species were found.

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LIST OF ACRONYMS AND ABBREVIATIONS

°F	Degree(s) Fahrenheit
AETC	Air Education and Training Command
AFB	Air Force Base
CFR	Code of Federal Regulations
CIR	Color Infrared
CS	Candidate
DL	Delisted
DoD	Department of Defense
E	Endangered
EO	Executive Order
ESA	Endangered Species Act
GIS	Geographic Information Systems
GMI	Geo-Marine, Inc.
GPS	Global Positioning System
IR	Infrared
LE	Listed Endangered
LTA	Lackland Training Annex
MBTA	Migratory Bird Treaty Act
MOA	Memorandum of Agreement
NMFS	National Marine Fisheries Service
NWS	National Weather Service
P	Proposed
PT	Proposed Threatened
SA	Similarity of Appearance
SAIA	Sikes Act Improvement Act
SOC	Species of Concern
SOI	Species of Interest
T	Threatened
T&E	Threatened and Endangered
TES	Threatened, Endangered, or Sensitive
TPWD	Texas Parks and Wildlife Division
TX	Texas
U.S.	United States
U.S.C.	United States Code
USAF	United States Air Force
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Survey

1.0 INTRODUCTION

Geo-Marine, Inc. (GMI) was contracted by Weston Solutions, Inc. (Weston) to perform a wildlife habitat study for the Lackland Air Force Base (AFB), Texas (TX) Training Annex (LTA). This work was performed under Air Education and Training Command's (AETC's) A-E Environmental Services Contract with Weston. GMI is a teaming subcontractor to Weston on the AETC environmental services contract. This report has been prepared in accordance with the scope of work determined by consultation with Weston and installation personnel. GMI prepared this report to summarize and evaluate the LTA's flora and fauna resources and possibly occurring threatened, endangered, or sensitive (TES) species.

The Sikes Act Improvement Act (SAIA), the Endangered Species Act (ESA), and Migratory Bird Treaty Act (MBTA) are a few of the comprehensive law and policy mechanisms mandating the conservation of natural resources on military lands while not interfering with military training and readiness initiatives. Legislation from these laws and policies requires allocate resources to implement these natural resource and conservation management plans (Integrated Natural Resources Management Plans [INRMPs]). Managing for plant communities, endangered species, migratory species, etc. requires a detailed knowledge of natural resources found within the military lands. This report was prepared to present and discuss the survey data and species observations.

2.0 PROJECT AREA DESCRIPTION

The majority of Lackland AFB's undeveloped land resides in the LTA which comprises about one-third of AFB's 9,606 acres. Approximately 35 percent of the LTA has been developed with the majority (approximately 20 percent) of the development comprising the munitions storage area. The remaining 15 percent contains military family housing, administrative/industrial areas, and training areas to include a live fire range. The LTA portion of Lackland AFB has the greatest potential for natural resources enhancement and protection especially within existing watersheds and wetlands. One of the program primary objectives is to limit, to the maximum extent practical, development or restrict development to existing developed areas allowing for the enhancement of natural resources components, such as re-establishment of native flora and improved and enhanced wetlands allowing mitigation for eliminating existing low-value wetlands in areas needed for mission enhancement.

2.1 LOCATION

Lackland AFB is located within the San Antonio city limits, in Bexar County, TX (**Figure 2-1**). The AFB is composed of the Main Base, the Kelly Field Annex, and the LTA. The LTA, a multiple use area (**Figure 2-2**), is located west of the Main Base and southwest of the intersection of Highway 90 and Loop 410. The LTA's estimated 3,986 acres is comprised of a small cantonment area, hazardous and radioactive waste disposal areas, storage bunkers, designated firing ranges, and large areas of undeveloped land. Medio Creek bisects and meanders through the LTA, and enters the Medina River, in southern Bexar County, approximately 4.8 miles to the south of the LTA. The LTA is bound by residential areas to the north and east, a landfill to the south, and privately owned ranches to the west.

2.2 GENERAL PHYSIOGRAPHY

Bexar County is located in a physiographic transition zone of the Balcones Canyon Lands, which includes portions of three physiographic regions: the Edwards Plateau, the Blackland Prairie, and the Rio Grande Plain (also known as the South Texas Coastal Plain). The Edwards Plateau is north and west; the Blackland Prairie is east and southeast; and the Rio Grande Plain is south and southwest of Bexar County. This subregion is comprised of a landscape dissected by numerous high gradient streams in steep-sided canyons that flow south and southeast to the Gulf of Mexico (**Figure 2-3**) (Riskind and Diamond 1988:1).

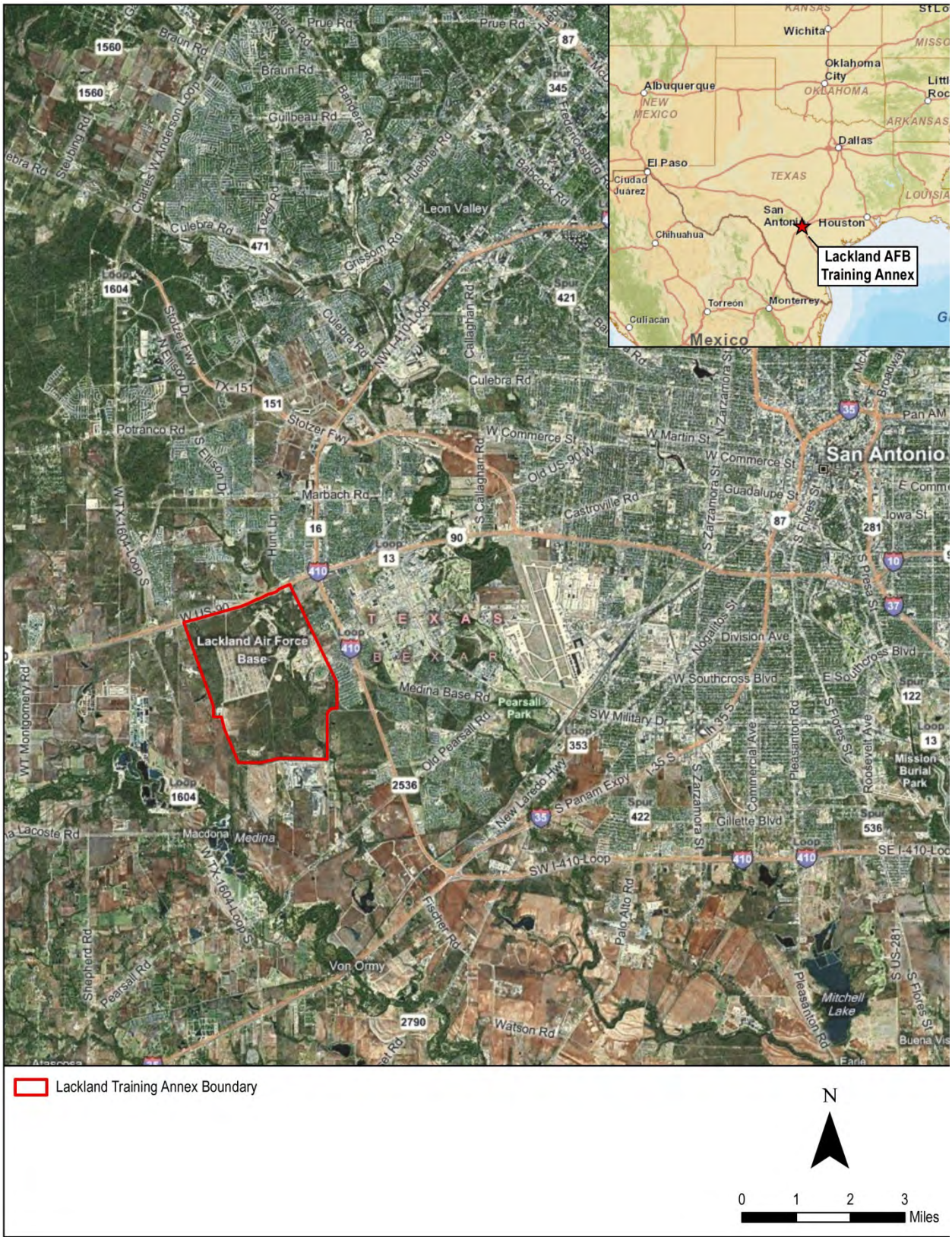


Figure 2-1. Overview map of Lackland Air Force Base training annex.

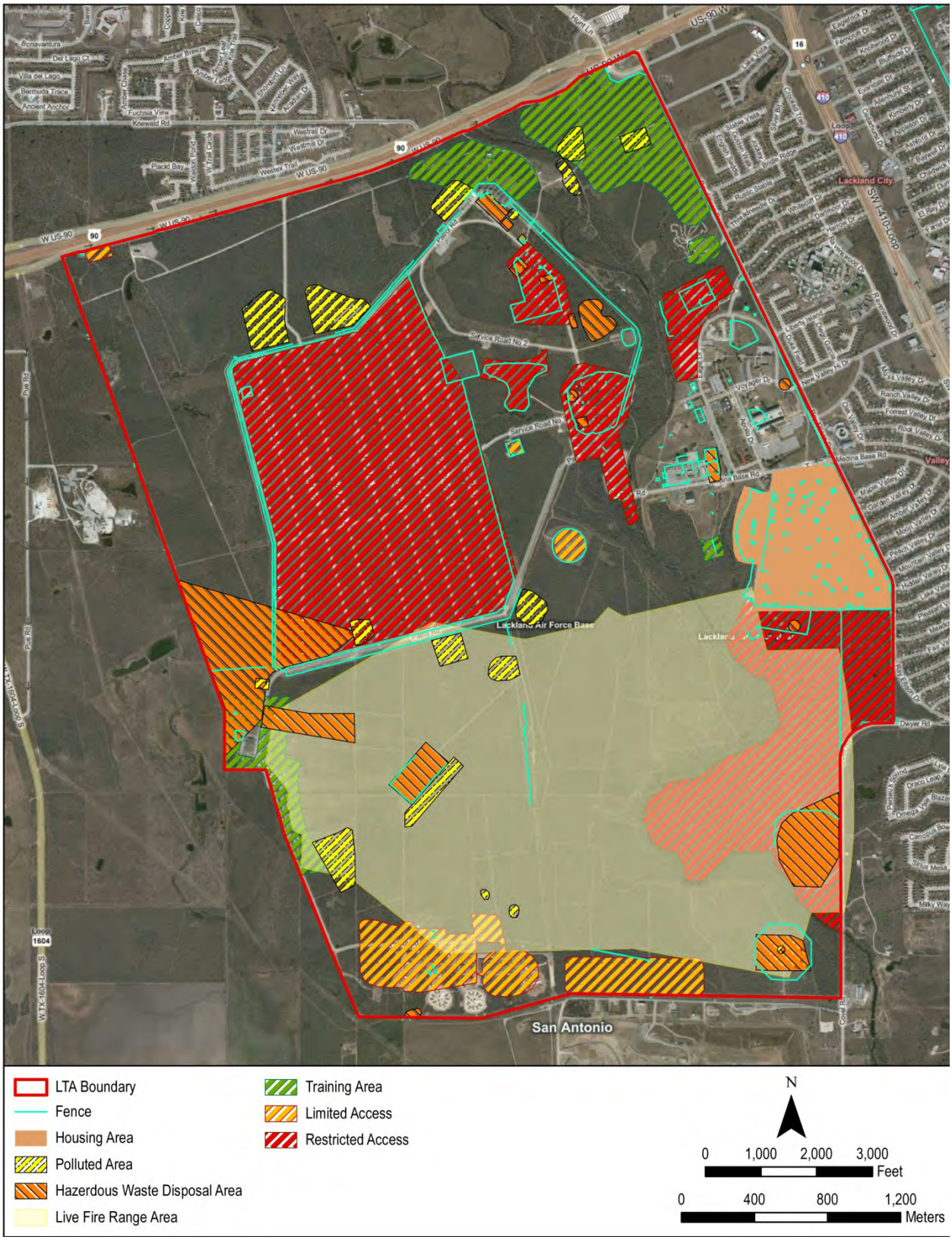


Figure 2-2. Map of the training annex training areas, range fans, impact areas, and restricted areas.

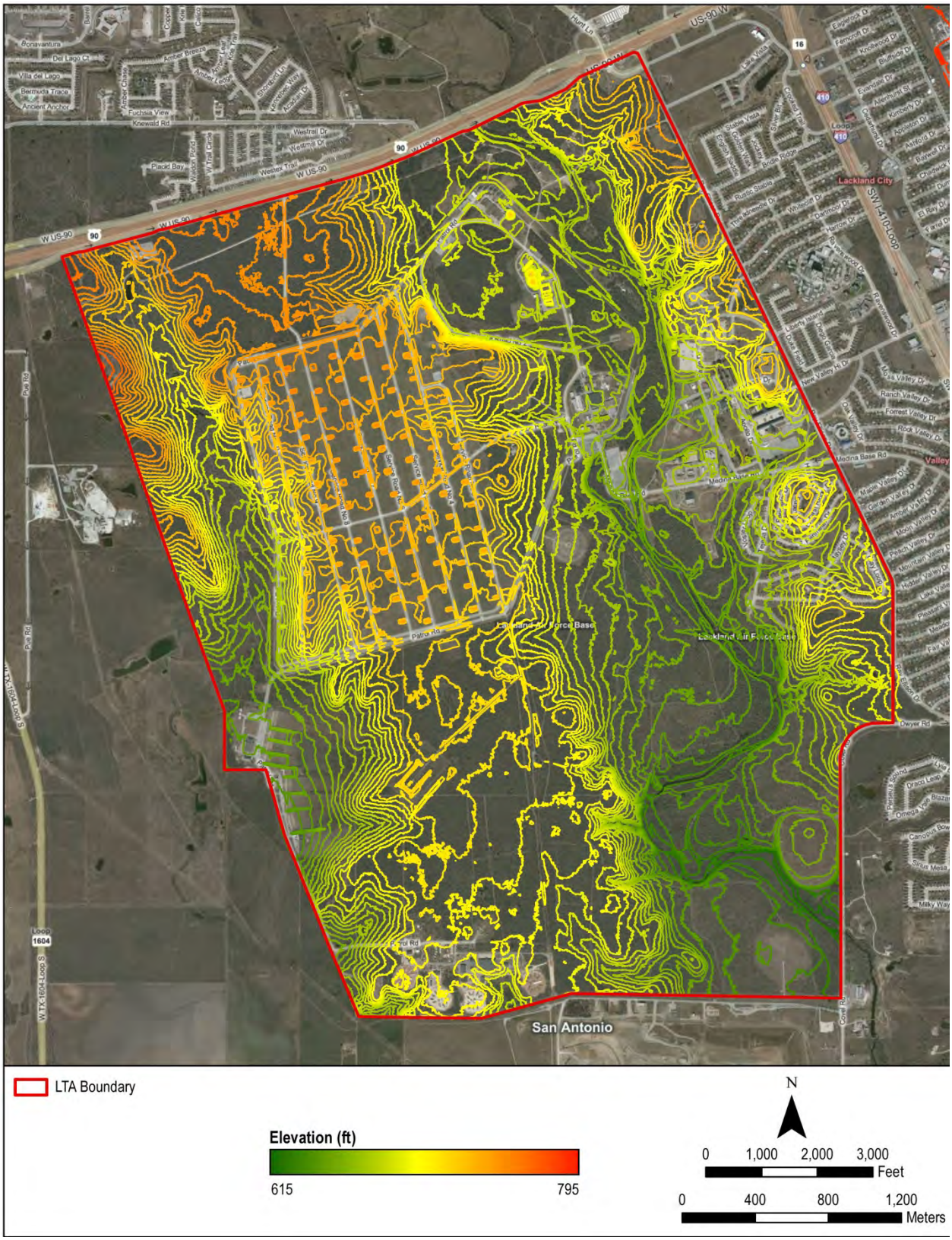


Figure 2-3. Map of the topography for the training annex area.

2.3 CLIMATE

The location of Bexar County on the edge of the Gulf Coastal Plains, South Texas Plains, and Edwards Plateau results in a modified subtropical climate, predominantly continental in winter and marine in summer. The temperature ranges from an average monthly high of 95 degrees Fahrenheit (°F) in August and an average monthly low of 39°F in January (National Weather Service [NWS] 2011). Northerly winds prevail during most of the winter; however, southeasterly winds from the Gulf of Mexico prevail sometimes for long periods during the winter and during most the summertime. Average annual rainfall is 28 inches and is fairly well distributed throughout the year. From April through September, rain generally falls during thunderstorms, and fairly large amounts fall in a short time. In winter, most of the precipitation is in the form of light rains or drizzle, but thunderstorms and heavy rains may occur in any month (Taylor et al. 1962, NWS 2010). Relative humidity ranges from approximately 80 percent during the early hours of the day to approximately 50 percent during the afternoon (Taylor et al. 1962).

2.4 HYDROLOGY AND SOILS

Hydrology within the project corridor was determined using two resources including United States (U.S.) Geological Survey (USGS) topographic maps and Color Infrared (CIR) aerial photography (**Figure 2-4**). The proposed project area is bisected by Medio Creek which meanders through the eastern portion of the LTA. The Medio Creek floodplain and riparian area contains multiple soil types which are historically frequently flooded and may range from thin layers to 70 inches of slowly permeable calcareous clay over alluvial clay and gravel layers. The surrounding soils consist of the Lewisville silty-clay with 1 to 3 percent slopes.

The *Soil Survey of Bexar County, Texas* (Taylor, et al. 1991) was utilized to determine soil types found in the project area. Twelve soil types (**Table 2-1** and **Figure 2-5**) were mapped within the LTA. There are no hydric soils occurring in the LTA project area.

2.5 VEGETATION

The flora found in Bexar county is a mixture of the vegetation found in three biotic provinces; the Balconian (associated with the Edwards Plateau), the Texan (associated with the Blackland Prairie), and the Tamaulipan (associated with the South Texas Coastal Plain) (**Table 2-2**). Prior to European settlement, the vegetation communities on the southeastern border of the Edwards Plateau were predominantly grasslands with woodlands and forests limited to hillsides and deeply incised limestone canyons (Weniger 1988). Current data, as provided by McMahan et al. (1984) in a detailed vegetation map of Texas, categorized the project area as urban. Although not a true vegetative community, urban areas contain mixed patches (i.e., lawns, gardens, etc.) of introduced cultivars and native vegetation. While this community is not ecologically important, it does provide suitable habitat to some common local wildlife species.

2.6 WILDLIFE

The fauna found in Bexar County, much like the vegetation, is a mixture of the fauna found in the three biotic provinces discussed in **Table 2-2**. Eastern cottontail (*Sylvilagus floridanus*), coyote (*Canis latrans*), white-tailed deer (*Odocoileus virginianus*), feral hog (*Sus scrofa*), javelina (*Pecari tajacu*), common raccoon (*Procyon lotor*). northern pygmy mouse (*Baiomys taylori*), and Southern plains woodrat (*Neotoma micropus*) are common mammals to the area. Northern cardinal (*Cardinalis cardinalis*), northern mockingbird (*Mimus polyglottos*), mourning dove (*Zenaida macroura*), white-winged dove (*Zenaida asiatica*), brown-headed cowbird (*Molothrus ater*), great-tailed grackle (*Quiscalus mexicanus*), lark sparrow (*Chondestes grammacus*), common ground-dove (*Columbina passerina*), European starling (*Sturnus vulgaris*), turkey vulture (*Cathartes aura*), golden-fronted woodpecker (*Melanerpes aurifrons*), and white-crowned sparrow (*Zonotrichia leucophrys*) are abundant birds through all habitat. Western diamondback rattlesnake (*Crotalus atrox*), Texas patchnose snake (*Salvadora grahamiae lineata*), Texas spiny lizard (*Sceloporus olivaceus*), and red-eared slider (*Trachemys scripta elegans*) are common reptiles, and Blanchard's cricket frog (*Acris crepitans blanchardi*), Rio Grande leopard frog (*Rana berlandieri*), and gulf coast toad (*Bufo valliceps*) are the common amphibians.

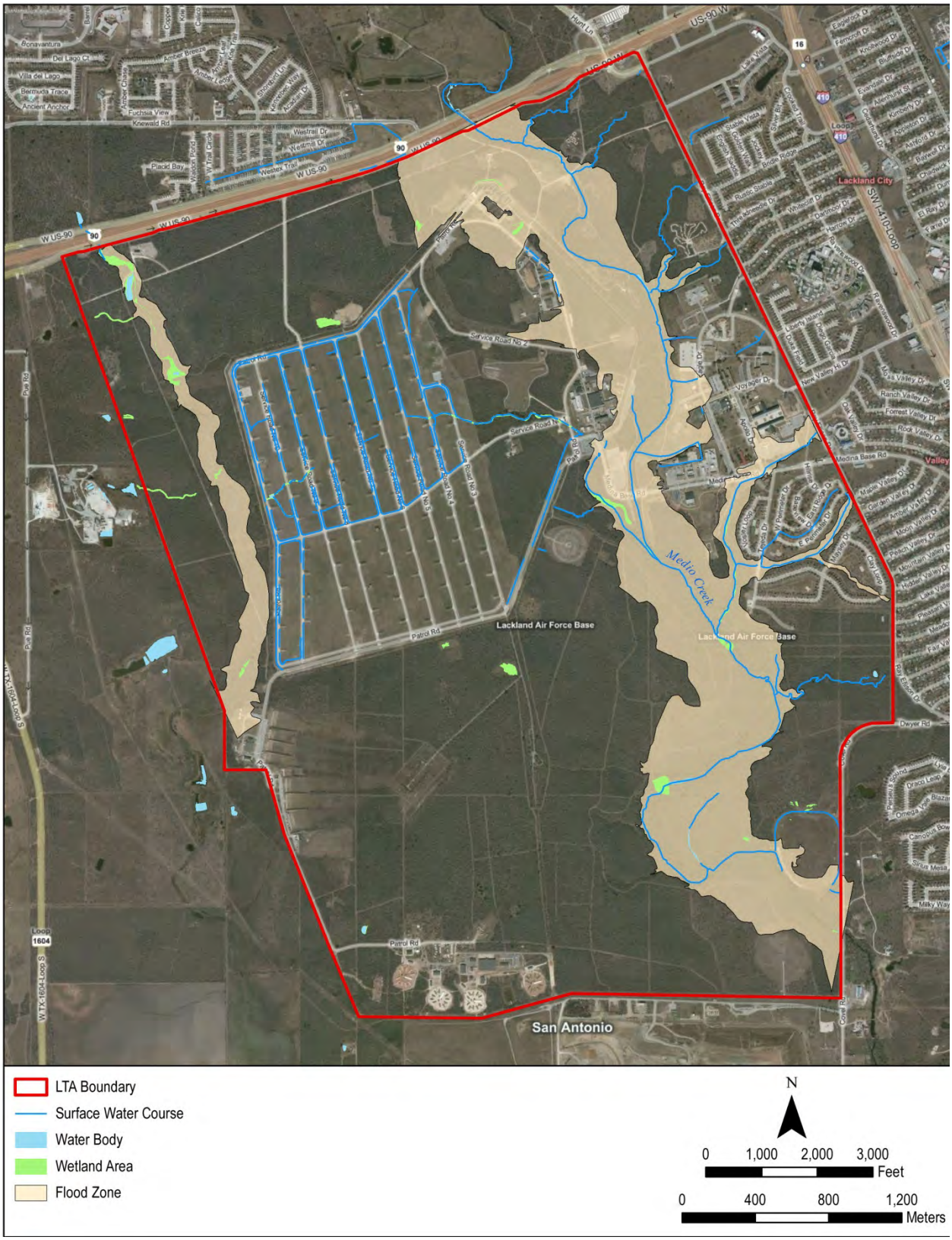


Figure 2-4. Map of the training area hydrography and wetland features.

Table 2-1
Soil Types of Lackland Air Force Base Training Annex

Soil Series	Series Symbol	Soil Series Description	Erosion Factor Associated with the Soil Series		
			Low	Moderate	High
Branyon clay, 1 to 3 percent slopes	HtB	This very deep, very gently sloping, moderately well drained soil is typically found on stream terraces. The surface layer is dark gray clay approximately 31 inches thick. Soil is calcareous and moderately alkaline throughout.		X	
Heiden clay, 1 to 3 percent slopes	HnB	These are deep, slowly permeable but well-drained clays and gently sloping. Typically, the surface layer is moderately alkaline, dark gray clay 6 inches thick. To a depth of 37 inches, the soil is moderately alkaline, very dark grayish brown clay.		X	
Heiden-Ferris complex, 5 to 10 percent slopes, severely eroded	HoD3	This complex is made deep, well-drained, gently rolling soils on hillsides. Permeability is slow, water capacity is high, and runoff is rapid.		X	
Houston Black clay, 1 to 3 percent slopes	HsB	This is a deep, moderately well drained, nearly level soil on smooth uplands. Permeability is slow, water capacity is high, and runoff is medium. Surface layers are about 38 inches thick and pebbles may make up 8 percent of this layer, by volume. Contains some lime concretions and fine gypsum crystals.			X
Houston Black gravelly clay, 1 to 3 percent slopes	HuB	This upland soil occurs as long, smooth slopes and undulating slopes along drainage ways. This soil has more pebbles than other Houston Black soils. The surface layer is black about 38 inches thick. Pebbles range from 0.5-3 inches. Runoff is medium to slow and water erosion is low.	X		
Houston Black gravelly clay, 3 to 5 percent slopes	HuC	This soil is found on narrow, convex ridges and valley walls in gently rolling landscapes. In comparison to HuB, it is more erodible, has a thinner surface layer, and a greater volume of pebbles. The surface layer is black and about 36 inches thick.		X	
Houston Black gravelly clay, 5 to 8 percent slopes	HuD	This soil occurs as convex slopes that parallel higher narrow ridges or as concave slopes at the head of major drainages. Rapid runoff and gravel make this soil more erodible. The surface layer is black and about 34 inches thick. Gravel makes up to 20 percent of this layer.			X
Lewisville silty clay, 0 to 1 percent slopes	LvA	This soil occurs on nearly level, broad terraces long rivers and creeks. The surface layer is silty clay or light clay and approximately 24 inches thick. Very low erosion risk but considered very dry. Lack of soil moisture is a limitation for plants.	X		
Lewisville silty clay, 1 to 3 percent slopes	LvB	Occurs as long, narrow sloping areas, separating terrace soils from upland soils. Sometimes found in major drainage ways. The surface layer is dark grayish brown and about 20 inches thick. Very susceptible to erosion.			X
Patrick soils, 1 to 3 percent slopes, rarely flooded	PaB	Occur as nearly level to gently sloping terraces along streams that drain limestone prairies. Mostly long and narrow, these soils are susceptible to erosion. The surface layer is clay loam, gravelly clay loam, silty clay, or light clay and is about 12 inches thick.			X
Hilly Gravelly Land, 5-25 percent slopes	HgD	This land occurs as knolls and narrow ridges. Soils are erosion resistant remnants of old waterways. Soils are caliche or gravel and calcareous.		X	
Trinity and Frio soils, 0 to 1 percent slopes, frequently flooded	Tf	Occupy long and narrow areas on the flood plains of small streams. Thin deposition of sediments and scouring is typical of these areas.			X

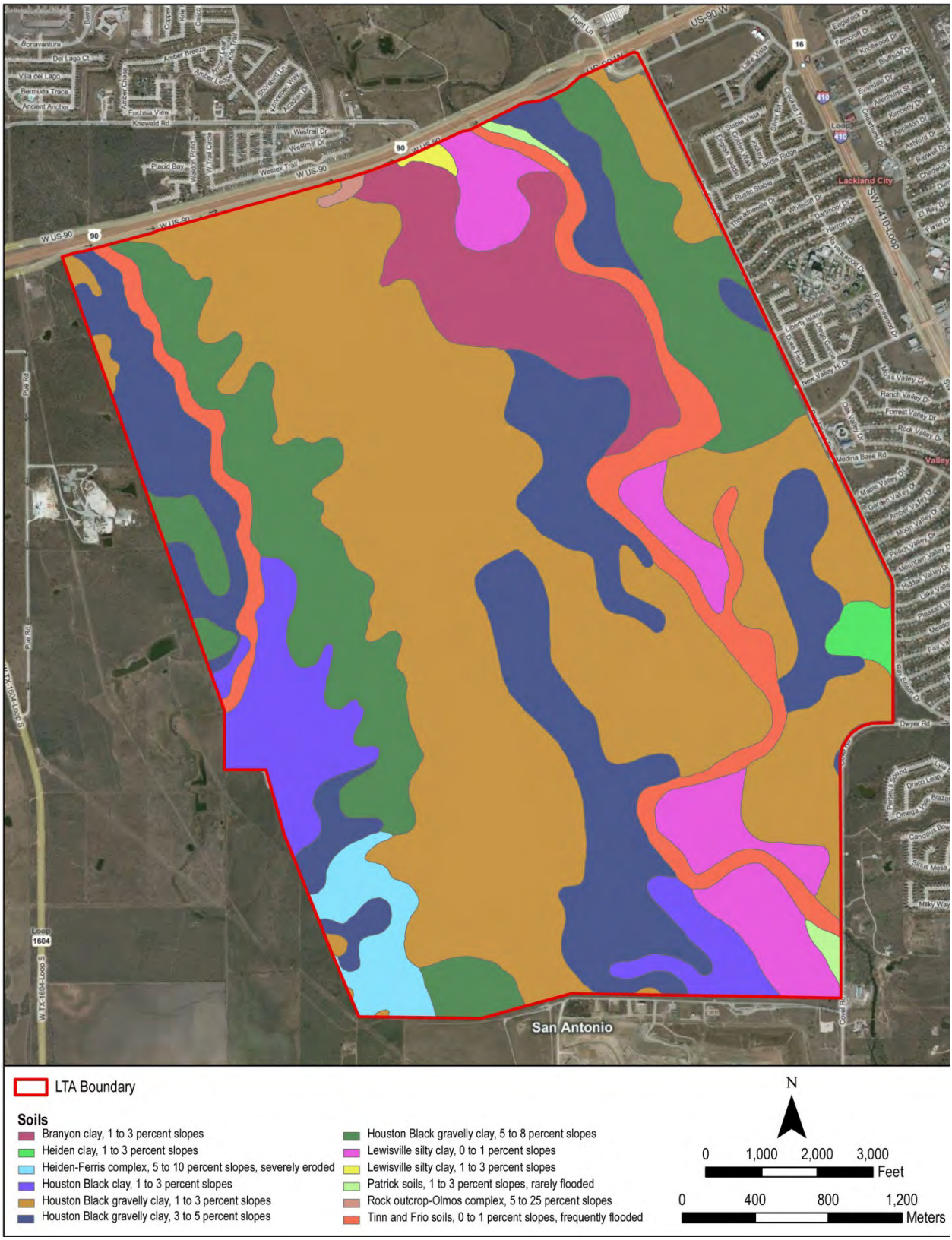


Figure 2-5. Map of the soils found in the training annex area.

Table 2-2
Flora Associated with the Three Provinces

Biotic Province	Associated Vegetation
Balconian Province[1]	Scrub forest (Mexican cedar, Texas oak, stunted live oak), Mesic forest (large live oaks, elms, hackberries, pecans), Mesquite throughout.
Texan Province	Oak-hickory forests in sandy soils dominated by post oaks, blackjack oaks, and hickories. Tall-grass prairies in clay soils.
Tamaulipan Province	Today - brushland dominated by thorny brush (mesquite, acacias, and mimosas), white brush, and prickly pear. Historically – grassland and savannah[2].

[1] Source: Provinces per Blair (1950)
[2] Source: (Bogush 1952; Bray 1906; Inglis 1964)

3.0 FLORA AND FAUNA GROUPS OF SPECIAL INTEREST

3.1 MIGRATORY BIRDS

The LTA provides habitat and open space for a wide variety of migratory birds. Migratory birds may use the LTA during annual migrations. The presence of migratory birds is an important indicator of ecosystem health. Primary considerations with regard to migratory bird management are compliance with the MBTA; implementation of migratory bird management actions in accordance with Executive Order (EO) 13186: Responsibilities of Federal Agencies to Protect Migratory Birds; and support, contribution and compatibility with the goals and efforts of numerous regional migratory and game bird conservation programs.

EO 13186, issued on 10 January 2001, requires all federal agencies taking actions that have, or are likely to have, a measurable negative effect on migratory bird populations to develop and implement, within two years, a Memorandum of Agreement (MOA) with the U.S. Fish and Wildlife Service (USFWS). The Department of Defense (DoD) has developed a MOA that addresses management actions and conservation of migratory birds on installations. Migratory bird surveys and breeding bird counts provide a strong, statistically valid framework for detecting trends in migratory bird populations and assist managers in meeting their bird conservation goals.

3.2 THREATENED, ENDANGERED, OR SENSITIVE SPECIES

The DoD manages nearly 25 million acres, supports over 300 listed species, and has the 3rd highest listed species occurrence among federal agencies. As a federal agency, the Air Force is required under the ESA of 1973 (16 U.S. Code [U.S.C.] 1531 et seq.) to protect and conserve (i.e., recover) listed species on its properties. The ESA acts to protect critically imperiled plant and animal species and requires federal agencies to: Protect endangered species from take (harm, kill, harass), Manage listed species, contributing to species recovery, and Consult with the USFWS and/or National Marine Fisheries Service (NMFS) when proposed actions may affect listed species. Furthermore, the Texas Parks and Wildlife Division (TPWD) maintains and protects many state species that are not protected by the ESA.

Threatened and endangered (T&E) species are those species listed by USFWS as threatened or endangered. The federal classification system for listed species is as follows:

- ***Endangered*** **(E):** Any species that is in danger of extinction throughout all or a portion of its range
- ***Threatened*** **(T):** Any species that is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range

- ***Proposed*** **(P):** Any species that has been proposed for listing as a threatened or endangered species
- ***Candidate*** **(CS):** Species for which there is sufficient information on biological vulnerability and threats to support proposals to list them as endangered or threatened

Pursuant to Section 7 of the ESA, Federal agencies such as the U.S. Air Force (USAF) must consult with USFWS if their action "may affect" a federally listed endangered or threatened species (50 Code of Federal Regulations [CFR] 402). Such consultations may be formal or informal. Section 9 of the ESA prohibits the “take” of a threatened or endangered species. A “take” includes the direct killing, harming, or harassing of a species, or destruction of habitat that may be important for the species' survival or recovery.

The endangered species program is categorized into three functional areas: protection, management, and monitoring. The first line of defense for endangered species, and the most important tool to avoid “take,” is protection of threatened and endangered species (individuals and populations) and their habitats from impacts due to training development or other actions that may affect the species. In order to protect any potential species of interest (SOI), surveys must be conducted to determine the presence or absence of any listed SOI on LTA. To prevent incidental harassment or take, Air Force determined that field surveys needed to be conducted in various habitats to determine the locations of the threatened, endangered, or species of concern. See **Table 3-1** for a list of potentially occurring TES species for Bexar County and their preferred habitat(s).

Table 3-1
Threatened, Endangered, or Sensitive Species Potentially Occurring on Lackland Air Force Base Training Annex Lands

Common Name (*Scientific Name*)	Federal Status	State Status	Preferred Habitat
AMPHIBIANS			
Cascade Caverns salamander (*Eurycea latitans complex*)		T	endemic; subaquatic; springs and caves in Medina River, Guadalupe River, and Cibolo Creek watersheds within Edwards Aquifer area
Comal blind salamander (*Eurycea tridentifera*)		T	endemic; semi-troglobitic; found in springs and waters of caves
Texas salamander (*Eurycea neotenes*)			endemic; troglobitic; springs, seeps, cave streams, and creek headwaters; often hides under rocks and leaves in water; restricted to Helotes and Leon Creek drainages
BIRDS			
American Peregrine Falcon (*Falco peregrinus anatum*)	DL	T	year-round resident and local breeder in west Texas, nests in tall cliff eyries; also, migrant across state from more northern breeding areas in US and Canada, winters along coast and farther south; occupies wide range of habitats during migration, including urban, concentrations along coast and barrier islands; low-altitude migrant, stopovers at leading landscape edges such as lake shores, coastlines, and barrier islands.
Arctic Peregrine Falcon (*Falco peregrinus tundrius*)	DL		migrant throughout state from subspecies’ far northern breeding range, winters along coast and farther south; occupies wide range of habitats during migration, including urban, concentrations along coast and barrier islands; low-altitude migrant, stopovers at leading landscape edges such as lake shores, coastlines, and barrier islands.

Table 3-1 (*continued*)
Threatened, Endangered, or Sensitive Species Potentially Occurring on Lackland Air Force Base Training Annex Lands

Common Name (*Scientific Name*)	Federal Status	State Status	Preferred Habitat
Black-capped Vireo (*Vireo atricapilla*)	LE	E	oak-juniper woodlands with distinctive patchy, two-layered aspect; shrub and tree layer with open, grassy spaces; requires foliage reaching to ground level for nesting cover; return to same territory, or one nearby, year after year; deciduous and broad-leaved shrubs and trees provide insects for feeding; species composition less important than presence of adequate broad-leaved shrubs, foliage to ground level, and required structure; nesting season March-late summer
Golden-cheeked Warbler (*Dendroica chrysoparia*)	LE	E	juniper-oak woodlands; dependent on Ashe juniper (also known as cedar) for long fine bark strips, only available from mature trees, used in nest construction; nests are placed in various trees other than Ashe juniper; only a few mature junipers or nearby cedar brakes can provide the necessary nest material; forage for insects in broad-leaved trees and shrubs; nesting late March-early summer
Interior Least Tern (*Sterna antillarum athalassos*)	LE	E	subspecies is listed only when inland (more than 50 miles from a coastline); nests along sand and gravel bars within braided streams, rivers; also know to nest on man-made structures (inland beaches, wastewater treatment plants, gravel mines, etc); eats small fish and crustaceans, when breeding forages within a few hundred feet of colony
Mountain Plover (*Charadrius montanus*)	PT	SOC	breeding: nests on high plains or shortgrass prairie, on ground in shallow depression; nonbreeding: shortgrass plains and bare, dirt (plowed) fields; primarily insectivorous
Peregrine Falcon (*Falco peregrines*)	DL	T	both subspecies migrate across the state from more northern breeding areas in US and Canada to winter along coast and farther south; subspecies (F. p. anatum) is also a resident breeder in west Texas; the two subspecies' listing statuses differ, F.p. tundrius is no longer listed in Texas; but because the subspecies are not easily distinguishable at a distance, reference is generally made only to the species level; see subspecies for habitat.
Sprague's Pipit (*Anthus spragueii*)	C	SOC	only in Texas during migration and winter, mid September to early April; short to medium distance, diurnal migrant; strongly tied to native upland prairie, can be locally common in coastal grasslands, uncommon to rare further west; sensitive to patch size and avoids edges.
Western Burrowing Owl (*Athene cunicularia hypugaea*)		SOC	open grasslands, especially prairie, plains, and savanna, sometimes in open areas such as vacant lots near human habitation or airports; nests and roosts in abandoned burrows
White-faced Ibis (*Plegadis chihi*)		T	prefers freshwater marshes, sloughs, and irrigated rice fields, but will attend brackish and saltwater habitats; nests in marshes, in low trees, on the ground in bulrushes or reeds, or on floating mats
Whooping Crane (*Grus americana*)	LE	E	potential migrant via plains throughout most of state to coast; winters in coastal marshes of Aransas, Calhoun, and Refugio counties

Table 3-1 (*continued*)
Threatened, Endangered, or Sensitive Species Potentially Occurring on Lackland Air Force Base Training Annex Lands

Common Name (*Scientific Name*)	Federal Status	State Status	Preferred Habitat
Wood Stork (*Mycteria americana*)		T	forages in prairie ponds, flooded pastures or fields, ditches, and other shallow standing water, including salt-water; usually roosts communally in tall snags, sometimes in association with other wading birds (i.e. active heronries); breeds in Mexico and birds move into Gulf States in search of mud flats and other wetlands, even those associated with forested areas; formerly nested in Texas, but no breeding records since 1960
Zone-tailed Hawk (*Buteo albonotatus*)		T	arid open country, including open deciduous or pine-oak woodland, mesa or mountain county, often near watercourses, and wooded canyons and tree-lined rivers along middle-slopes of desert mountains; nests in various habitats and sites, ranging from small trees in lower desert, giant cottonwoods in riparian areas, to mature conifers in high mountain regions
MAMMALS			
Black bear (*Ursus americanus*)	T/SA	T	bottomland hardwoods and large tracts of inaccessible forested areas; due to field characteristics similar to Louisiana Black Bear (LT, T), treat all east Texas black bears as federal and state listed Threatened
Cave myotis bat (*Myotis velifer*)		SOC	colonial and cave-dwelling; also roosts in rock crevices, old buildings, carports, under bridges, and even in abandoned Cliff Swallow (*Hirundo pyrrhonota*) nests; roosts in clusters of up to thousands of individuals; hibernates in limestone caves of Edwards Plateau and gypsum cave of Panhandle during winter; opportunistic insectivore
Ghost-faced bat (*Mormoops megalophylla*)		SOC	colonially roosts in caves, crevices, abandoned mines, and buildings; insectivorous; breeds late winter-early spring; single offspring born per year
Gray wolf (*Canis lupus*)		E	extirpated; formerly known throughout the western two-thirds of the state in forests, brushlands, or grasslands
Plains spotted skunk (*Spilogale putorius interrupta*)		SOC	catholic; open fields, prairies, croplands, fence rows, farmyards, forest edges, and woodlands; prefers wooded, brushy areas and tallgrass prairie
Red wolf (*Canis rufus*)		E	extirpated; formerly known throughout eastern half of Texas in brushy and forested areas, as well as coastal prairies
REPTILES			
Spot-tailed earless lizard (*Holbrookia lacerate*)		SOC	central and southern Texas and adjacent Mexico; moderately open prairie-brushland; fairly flat areas free of vegetation or other obstructions, including disturbed areas; eats small invertebrates; eggs laid underground
Texas garter snake (*Thamnophis sirtalis annectens*)		SOC	wet or moist microhabitats are conducive to the species occurrence, but is not necessarily restricted to them; hibernates underground or in or under surface cover; breeds March-August

Table 3-1 (*continued*)
Threatened, Endangered, or Sensitive Species Potentially Occurring on Lackland Air Force Base Training Annex Lands

Common Name (*Scientific Name*)	Federal Status	State Status	Preferred Habitat
Texas horned lizard (*Phrynosoma cornutum*)		T	open, arid and semi-arid regions with sparse vegetation, including grass, cactus, scattered brush or scrubby trees; soil may vary in texture from sandy to rocky; burrows into soil, enters rodent burrows, or hides under rock when inactive; breeds March-September
Texas indigo snake (*Drymarchon melanurus erebennus*)		T	Texas south of the Guadalupe River and Balcones Escarpment; thornbush-chaparral woodlands of south Texas, in particular dense riparian corridors; can do well in suburban and irrigated croplands if not molested or indirectly poisoned; requires moist microhabitats, such as rodent burrows, for shelter
Texas tortoise (*Gopherus berlandieri*)		T	open brush with a grass understory is preferred; open grass and bare ground are avoided; when inactive occupies shallow depressions at base of bush or cactus, sometimes in underground burrows or under objects; longevity greater than 50 years; active March-November; breeds April-November
Timber/Canebrake rattlesnake (*Crotalus horridus*)		T	swamps, floodplains, upland pine and deciduous woodlands, riparian zones, abandoned farmland; limestone bluffs, sandy soil or black clay; prefers dense ground cover, i.e. grapevines or palmetto
PLANTS			
Big red sage (*Salvia pentstemonoides*)		SOC	Texas endemic; moist to seasonally wet, steep limestone outcrops on seeps within canyons or along creek banks; occasionally on clayey to silty soils of creek banks and terraces, in partial shade to full sun; basal leaves conspicuous for much of the year; flowering June-October
Bracted twistflower (*Streptanthus bracteatus*)		SOC	Texas endemic; shallow, well-drained gravelly clays and clay loams over limestone in oak juniper woodlands and associated openings, on steep to moderate slopes and in canyon bottoms; several known soils include Tarrant, Brackett, or Speck over Edwards, Glen Rose, and Walnut geologic formations; populations fluctuate widely from year to year, depending on winter rainfall; flowering mid April-late May, fruit matures and foliage withers by early summer
Correll's false dragon-head (*Physostegia correllii*)		SOC	wet, silty clay loams on streamsides, in creek beds, irrigation channels and roadside drainage ditches; or seepy, mucky, sometimes gravelly soils along riverbanks or small islands in the Rio Grande; or underlain by Austin Chalk limestone along gently flowing spring-fed creek in central Texas; flowering May-September
Elmendorf's onion (*Allium elmendorfii*)		SOC	Texas endemic; grassland openings in oak woodlands on deep, loose, well-drained sands; in Coastal Bend, on Pleistocene barrier island ridges and Holocene Sand Sheet that support live oak woodlands; to the north it occurs in post oak-black hickory-live oak woodlands over Queen City and similar Eocene formations; one anomalous specimen found on Llano Uplift in wet pockets of granitic loam; flowering March-April, May

Table 3-1 (*continued*)
Threatened, Endangered, or Sensitive Species Potentially Occurring on Lackland Air Force Base Training Annex Lands

Common Name (*Scientific Name*)	Federal Status	State Status	Preferred Habitat
Hill Country wild-mercury (*Argythamnia aphoroides*)		SOC	Texas endemic; mostly in bluestem-grama grasslands associated with plateau live oak woodlands on shallow to moderately deep clays and clay loams over limestone on rolling uplands, also in partial shade of oak-juniper woodlands in gravelly soils on rocky limestone slopes; flowering April-May with fruit persisting until midsummer
Parks' jointweed (*Polygonella parksii*)		SOC	Texas endemic; mostly found on deep, loose, whitish sand blowouts (unstable, deep, xeric, sandhill barrens) in Post Oak Savanna landscapes over the Carrizo and Sparta formations; also occurs in early successional grasslands, along right-of-ways, and on mechanically disturbed areas; flowering June-late October or September-November
Sandhill woollywhite (*Hymenopappus carrizoanus*)		SOC	Texas endemic; disturbed or open areas in grasslands and post oak woodlands on deep sands derived from the Carrizo Sand and similar Eocene formations; flowering April-June

C = Candidate
E = Endangered
DL = Delisted
LE =Listed Endangered
PT = Proposed Threatened
T = Threatened
SA = Similarity of Appearance
SOC = Species of Concern

3.3 INVASIVE AND NOXIOUS SPECIES

Invasive and noxious species are a major threat to natural environments and biodiversity and are a leading factor in species becoming threatened or endangered because of their ability to alter nutrient flows and natural water flow pathways. It is estimated that 42 percent of the species protected by the ESA are at risk primarily because of invasive species (Pimental et al. 2005). Invasive and/or noxious species are any native or nonnative species whose introduction or invasion is likely to cause environmental harm and/or harm to human health (EO 13112 on Invasive Species, February 1999). Invasive/noxious species can, in many cases, out-compete common native plants which can result in crowding or displacement from their natural habitat and hybridization can result in the loss of genetic fidelity. Most invasive or noxious plants generally possess attributes that contribute to their ability to replace native plants including rapid growth rates, regeneration from seed and/or vegetative propagation, early maturation, prolific reproduction, and allelopathic qualities (producing toxins that prevent establishment of rival species). Furthermore, invasive plants often lack natural predators that would check their spread and growth. Uncontrolled invasive or noxious plants in an area generally reduce the value of the land for agricultural, wildlife, and native plant communities.

4.0 SURVEY METHODS

GMI was contracted to identify habitat types and survey for all wildlife, excluding aquatic animals, within the LTA. In the original statement of work, surveys were to be conducted for plants, birds, herpetofauna, and mammals; however, GMI biologists also ensured that listed species and potential supporting habitats as well as migratory birds and invasive species were appropriately documented. GMI determined that 40 listed species have the potential to occur in the LTA (**Table 3-1**). The list includes updates to state-listed species that went into effect on 28 February 2011. GMI biologists coordinated with Texas state officials and researched the USFWS online database to develop the list of species. GMI also determined habitat requirements and temporal occurrence associated with each of these species in an effort to appropriately conduct on-site surveys.

4.1 APPROACH

Developing a suitable survey approach was difficult due to the variety of species, the size of LTA, and the access restrictions for various areas throughout the project area. The LTA has 936 acres with restricted access, 1582 acres are limited access, and 208 acres comprise the training area. Surveys typically are designed to sample approximately 1 to 10 percent of a given area, depending on community heterogeneity. GMI analyzed all available data to determine how many possible communities (coarse scale) exist to insure that each area was adequately surveyed to delineate community types. The first step was to determine the habitat requirements and temporal occurrence of each species. With limited resources, it was not possible to develop a survey strategy for each individual species, instead habitats were identified that could potentially support a wide variety of the species and survey stations were randomly established in those habitats. Once all survey locations were established, GMI consulted with LTA Natural Resources personnel for approval of the survey design.

4.2 SURVEY METHODOLOGY DEVELOPMENT

Surveys were designed to randomly examine and LTA habitats and the species they support. In addition, GMI biologists researched the habitat requirements for possible TES species. Random survey stations and systematic plant survey transects were designed to provide maximum coverage of possible habitat types, insuring that all species were observed. Due to the density of vegetation and the reality of restricted access, GMI developed maps using existing Geographical Information Systems (GIS) habitat and vegetation data as well as aerial photographs to maximize winter and spring vegetation community surveys.

4.3 AVIAN SURVEY METHODOLOGY

Twenty unlimited distance avian point-count survey stations (**Table 4-1**) were randomly selected for avian species surveys. Some non-random decisions were made for station points using aerial analysis and species likely to occur in the LTA (**Figure 4-1**). Surveys began at dawn and continue through late morning, and resumed two hours prior to dusk each survey day.

In the field, the global positioning system (GPS) coordinates for each survey station were recorded to ensure location accuracy and allowed for repeated surveys. Surveys were conducted in 15-minute intervals at each station before moving to the next. Vocalizations were used to identify birds in areas of dense vegetation.

Prior to beginning the survey at each point, the avian biologists recorded general survey data: survey point number; weather data; and the start time on the field data sheet. All birds detected (i.e., heard and/or observed with the unaided eye or 10 X 50 PENTAX binoculars) during the survey were recorded. The number of each species along with its behavior (1 = Perched: 2 = Flight; 3 = Foraging: 4 = Nest Building; 5 = Mating Display; 6 = Other) and habitat type (**Table 4-2**) were recorded on the data sheet. While transitioning to survey stations, incidental sightings of avian species were recorded along with the GPS coordinates when possible.

Avian point count surveys were conducted from 12 to 16 January 2011 for resident species and 22 to 25 April 2011 for migratory species. All 20 of the scheduled avian survey points were completed in January and April. The likelihood of occurrence for each species was determined from regional bird distribution data (Arvin 2007). Three categories were selected to describe the primary occurrence status of each species: neotropical migrant/summer resident, migrant/summer or winter resident, and resident. A neotropical migrant is a bird species that breeds in the nearctics (north of Mexico) and migrates to areas south of the U.S./Mexico border (Central America south throughout South America) to winter before returning the following spring to nest. A summer resident is a bird species that nests in an area before departing to winter in another location. A migrant/summer or winter resident is a bird species that migrates south from breeding locations in northern North America to winter in southern areas of North America. A resident is a bird species that remains in an area during all seasons (**Figure 4-2**). Observation locations (point count station numbers) and numbers of each species observed are provided in the results section of the report.

Table 4-1
Coordinates of Avian Point Count Stations on Lackland Air Force Base Training Annex

Point No.	Latitude	Longitude
1	29.37896990	-98.68730170
2	29.37853441	-98.68356390
3	29.37480035	-98.68004527
4	29.36925588	-98.68070296
5	29.36357898	-98.68013626
6	29.38447347	-98.68037244
7	29.38602113	-98.67258336
8	29.38011706	-98.66824998
9	29.38384986	-98.65780760
10	29.38964409	-98.66322366
11	29.37380927	-98.65278000
12	29.35879949	-98.67009162
13	29.35145291	-98.67384264
14	29.35420804	-98.66625761
15	29.34929616	-98.65921661
16	29.35324808	-98.65602429
17	29.35858100	-98.65980075
18	29.36406371	-98.65277282
19	29.36682672	-98.66460093
20	29.36389162	-98.67380015

4.4 Reptile and Amphibian Survey Methodology

For herpetological surveys, cover boards and driving surveys were used to avoid trapping or harming any animals. Both techniques used are "passive" sampling techniques, and unlike trapping, the survey stations do not need to be checked frequently or even regularly (Grant et al.1991). Failure to check cover boards does not lead to mortality or stress to the study animals. Detection of different species varies enormously among species because of differences in their life histories, activity periods, population numbers, and microhabitat use. Detection biases are inherent in all general survey methods (Ryberg and Fitzgerald 2005).

4.4.1 Survey Stations/Cover Boards

Cover boards are useful tools for the inventory of many species of reptiles (Ryan et al. 2001). For this survey, 4-foot x 4-foot pieces of plywood were used as cover boards. GMI biologists established 20 random cover board stations (**Figure 4-3**) throughout various habitat types. Each station consisted of two to three cover boards and was established in mid-November 2010. This was done to allow adequate time for herpetofauna to locate and begin utilizing these areas before spring, when surveying is optimal. Photographs of herpetofauna stations are located in **Appendix A-1** and the coordinates can be found in **Table 4-3**.

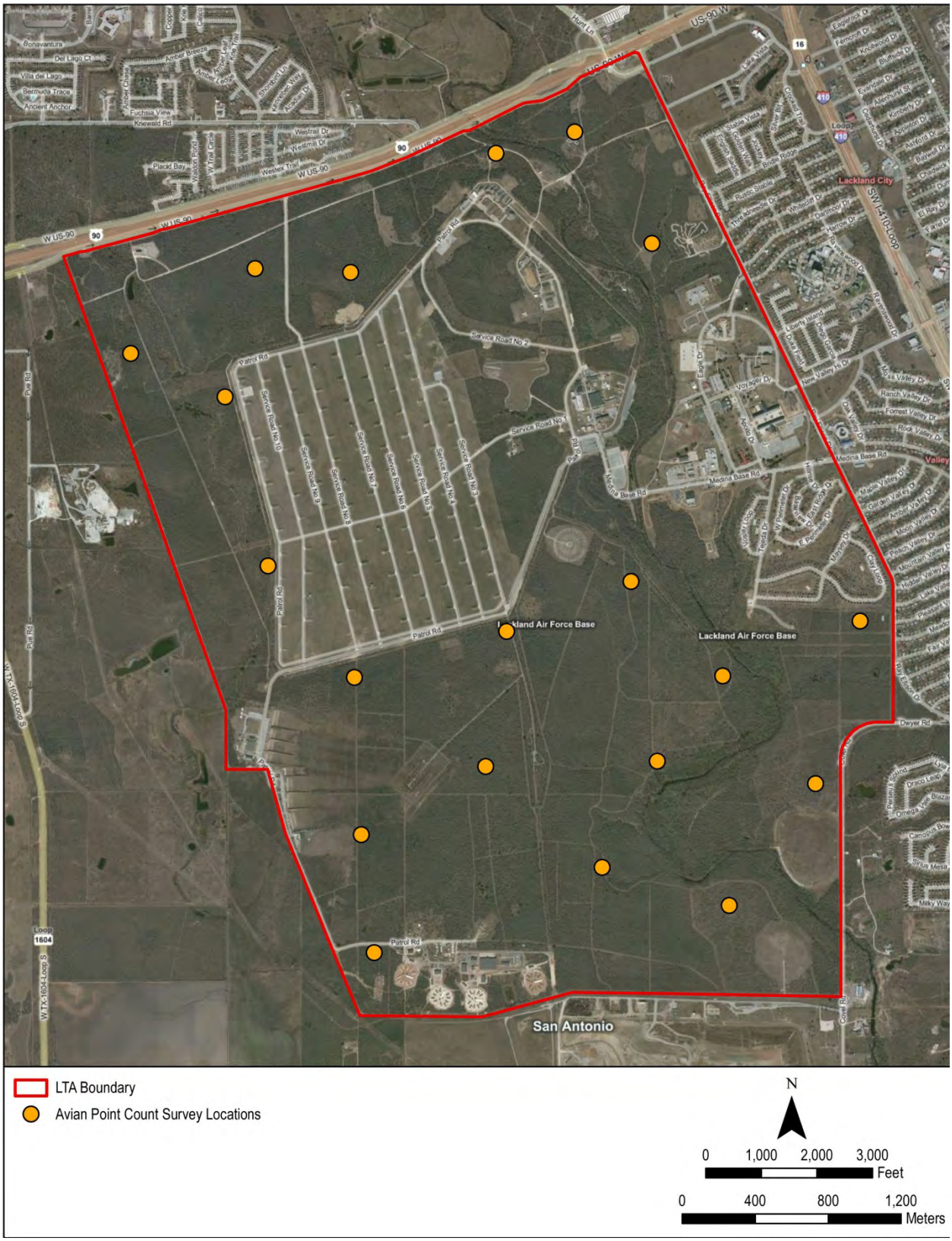


Figure 4-1. Map of the avian point count survey stations established in the training annex area.

Table 4-2
Avian Point Count Station - Habitat Classification

Code	Habitat Types
RI	Riparian
GR	Grassland
SH	Shrubland
MP	Mesquite Park
HW	Hardwoods
ST	Stock Tank
DI	Disturbed
MA	Maintained
UR	Urban
OT	Other



Figure 4-2. Photograph of long-billed thrasher, a resident species, taken during avian field surveys.

Cover boards were constructed and labeled, as seen in **Figure 4-4,** in order to deter anyone from moving the boards. Stacking multiple boards allows herpetofauna to thermo-regulate better than under a single board. Vegetation was cleared underneath one of the single boards to create multiple substrates for each station. Stations were monitored four times throughout the survey season (Survey Period 1: 25 to 30 March 2011, Survey Period 2: 21 to 29 April 2011). Stations were checked by lifting each cover board individually with the use of snake hooks to avoid getting bit by venomous snakes that could potentially be under the boards. The biologists would stand behind the board, for protection, as it was lifted. All herpetofauna species found were recorded along with time, temperature, and cloud cover.

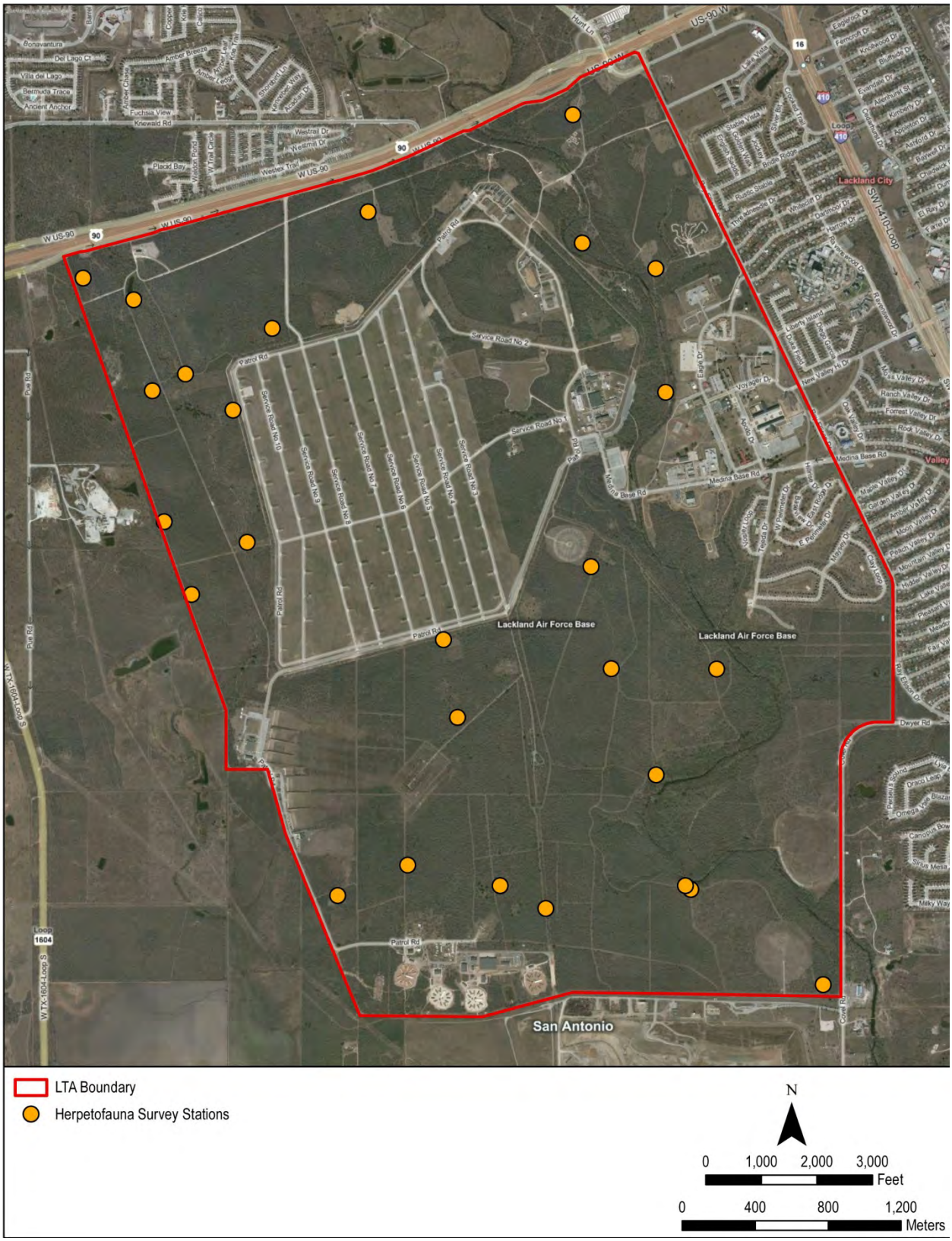


Figure 4-3. Map of the herpetofauna survey stations established in the training annex area.

Table 4-3
Coordinates of Herpetofauna Survey Stations on Lackland Air Force Base Training Annex

Station No.	Latitude	Longitude
1	29.36488989	-98.66888893
2	29.36104809	-98.66810739
3	29.35270782	-98.66572744
4	29.35268366	-98.65524288
5	29.35817463	-98.65688592
6	29.38607313	-98.67307265
7	29.37806345	-98.68342380
8	29.38031229	-98.67850000
9	29.38174611	-98.68633348
10	29.37076808	-98.68464492
11	29.36716187	-98.68310782
12	29.36974493	-98.67996722
13	29.37627811	-98.68074072
14	29.38449640	-98.66097918
15	29.37709597	-98.65628617
16	29.35373599	-98.67094616
17	29.36343314	-98.65941344
18	29.36340164	-98.65344343
19	29.36848570	-98.66053184
20	29.34775932	-98.64747653
21	29.35250040	-98.65493959
22	29.39084434	-98.66148265
23	29.37724493	-98.68530288
24	29.38282627	-98.68919527
25	29.38323049	-98.65681420
26	29.35158183	-98.66313416
27	29.35224080	-98.67490080

4.4.2 Driving Surveys

GMI biologists also conducted vehicle or driving surveys at dawn, dusk, and other appropriate times to survey for snakes. After speaking with a Texas biologist specializing in reptiles, GMI has concluded that snakes are often very active around and on roadways, providing excellent survey opportunities. No specific surveys routes were created for the herpetofauna driving surveys; instead, all roads were driven depending on military activity. On gravel roads, speeds were kept 20 miles per hour or less in order to see small reptile and amphibians. On paved roads, speeds were kept at a minimum depending on traffic. If traffic levels were high and constant, the posted speed limit was driven. Driving surveys occurred during two survey periods: Survey Period 1: 25 to 30 March 2011, Survey Period 2: 21 to 29 April 2011. All herpetofauna species were recorded along with the time, temperature, cloud cover, precipitation, GPS coordinates, and road type. Road kill specimens were also noted and then removed from the road to avoid counting the same specimen multiple times.

4.4.3 Auditory Survey

Frog and toad occurrence surveys were conducted during April 2011. The primary goals of these surveys were to locate isolated frog and toad populations within the wildlife habitat survey area and survey for occurrence. Auditory surveys were utilized to locate frogs and toads by listening for their mating calls for 30 minutes at each amphibian call survey location. The auditory surveys were conducted around stock tanks and Media Creek (**Figure 4-5**). Digital photographs were taken of incidental amphibian observations and used to supplement field data and further facilitate assessment of surveyed area.



Figure 4-4. Photograph of an example herpetofauna cover board station used in the training annex.

4.5 MAMMAL SURVEY METHODOLOGY

A GMI wildlife biologist evaluated survey methods for each potentially occurring mammal species. Mammals were surveyed using scent stations with motion-sensor game cameras, small mammal live traps, and, and by conducting night surveys using a thermal imaging camera and spotlight. Location coordinates of listed mammalian species observed during the surveys were recorded with a hand-held Trimble Geo XT® GPS unit. All mammals observed during the surveys were identified and enumerated. Mammal surveys were started on 11 January 2011 and concluded on 30 April 2011.

4.5.1 Mammal Scent Stations

Twenty-five scent stations were set up across the LTA in a variety of habitats suitable for detecting mammals (**Figure 4-6**). The coordinates of the survey stations are detailed in **Table 4-4.** Scent stations were baited with deer corn or a cotton ball soaked in *Canine Call,* a canid trapping lure. A Reconyx AC55 Rapidfire® or a Leaf River trail scan hunt 24-7® digital trail camera was placed adjacent to all of the scent stations. The motion-sensor cameras were set-up prior to dusk and left to run continuously to take pictures of anything moving within the sensors range. Those photographs were analyzed and all species captured on film were identified to the lowest taxon possible.

4.5.2 Small Mammal Trapping

The small mammal Sherman LiveTraps® were placed in locations (**Figure 4-7**) that either show noticeable use by small mammals or in areas of wood piles, rock rubble, or similar debris that attracts small mammals. Twenty traps were baited with a mix of milo and black oil sunflower seeds, left overnight, and checked the following morning. All small mammals trapped were counted, identified to species, and released at the capture location. Trapping occurred for three consecutive nights at each station as long as military training activities did not interfere with the baiting of traps in the evening or, more importantly, the checking of traps in the morning to prevent trap mortalities.

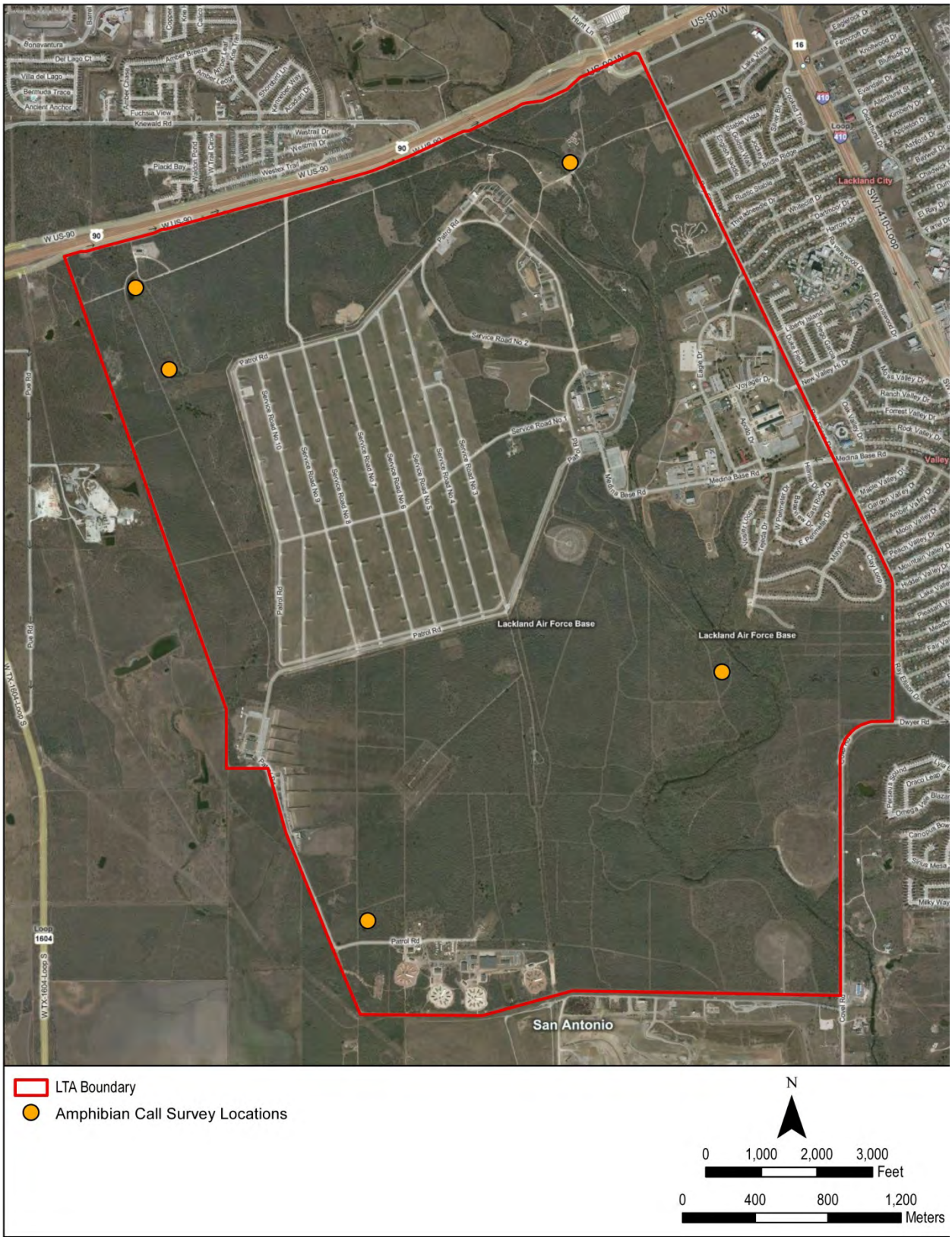


Figure 4-5. Map of training annex areas used for amphibian call surveys.

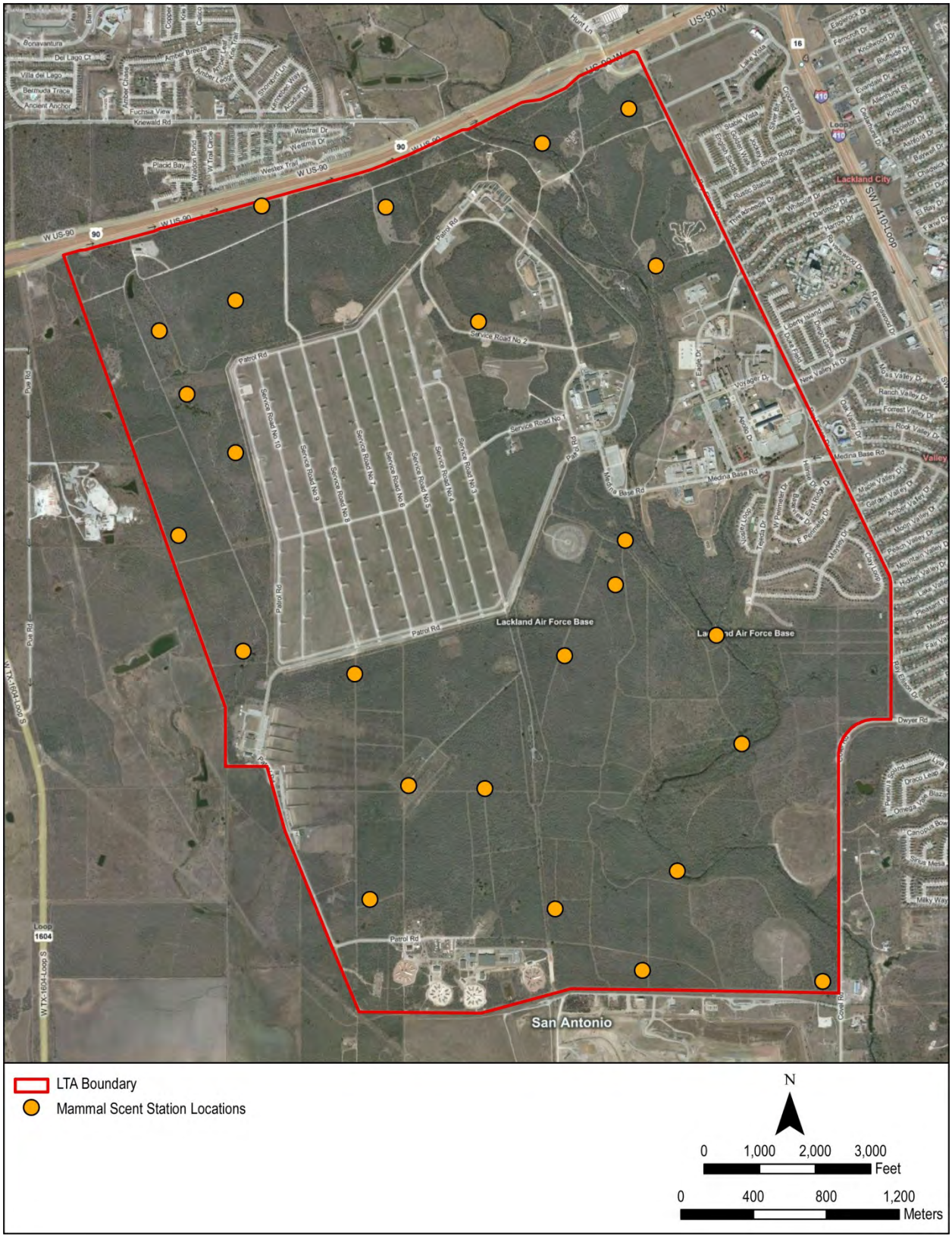


Figure 4-6. Map of mammal scent stations used for photographic monitoring in the training annex area.

Table 4-4
Coordinates of Mammal Scent Stations on Lackland Air Force Base Training Annex

Station No.	Latitude	Longitude
1	29.38327029	-98.65671288
2	29.37697316	-98.68331684
3	29.35188441	-98.67302045
4	29.35138591	-98.66254071
5	29.36421657	-98.68016041
6	29.37407197	-98.68056975
7	29.38012876	-98.68486636
8	29.38625647	-98.67201713
9	29.35327037	-98.65560823
10	29.35735379	-98.66649942
11	29.35955955	-98.65191972
12	29.36393275	-98.66196014
13	29.36308267	-98.67386357
14	29.36965664	-98.65850591
15	29.38053342	-98.66678949
16	29.39108486	-98.65823732
17	29.38162132	-98.68054692
18	29.35753150	-98.67081809
19	29.34832649	-98.65760961
20	29.34775310	-98.64740573
21	29.36494046	-98.65335070
22	29.36997764	-98.68381430
23	29.38631746	-98.67905092
24	29.36745927	-98.65907321
25	29.38937747	-98.66315174

4.5.3 Nocturnal Large Mammal Surveys

Biologists conducted visual surveys along roads, near water sources, and other possible locations using a thermal imaging camera (**Figure 4-8**). The wildlife biologist used 10x50 PENTAX® binoculars, Brinkmann Q-Beam Max Million III® spotlight and a Thermal-Eye X50 infrared (IR) camera to conduct the night mammal surveys. Three routes were established and surveyed a minimum of two times during the study. Surveys were chosen to avoid military training activity. Night surveys were conducted between the times of 30 minutes after sunset and 30 minutes before sunrise, when mammal activity increases and the heat signature of the vegetation is the least. When a mammal was located with the thermal imaging camera, the GMI biologist would identify it with aid of binoculars and spotlight. All mammals observed during nighttime surveys, including incidental observations in the headlights of the survey vehicle, were noted. Mammal survey route parameters are in **Appendix B-5**.

4.6 VEGETATION SURVEY METHODOLOGY

A purposive sampling effort was used to survey vegetation communities, habitats, and species. Purposive surveys are deliberate surveys that facilitate designing transects and point surveys which may be focused on areas of particular interest such as those likely to support high levels of species diversity and/or unique communities or community transition areas. Furthermore, vegetation density may make an area inaccessible or require an inordinate amount of time to survey. An extensive review of the ecological requirements for each T&E plant species was used to determine the area most likely supporting TES species. This information, in conjunction with findings from preliminary and previous surveys and existing vegetation, soil, and elevation data was mapped using ArcGIS to determine where the specific required parameters for each species overlap. Polygons or shapefiles were then created for areas of overlap to indicate locations of high probability (**Figure 4-9**) for the existence of each T&E species. Areas of possible disturbance were also identified and mapped to facilitate searches for invasive species.



Figure 4-7. Map of small mammal trapping locations in the training annex area.

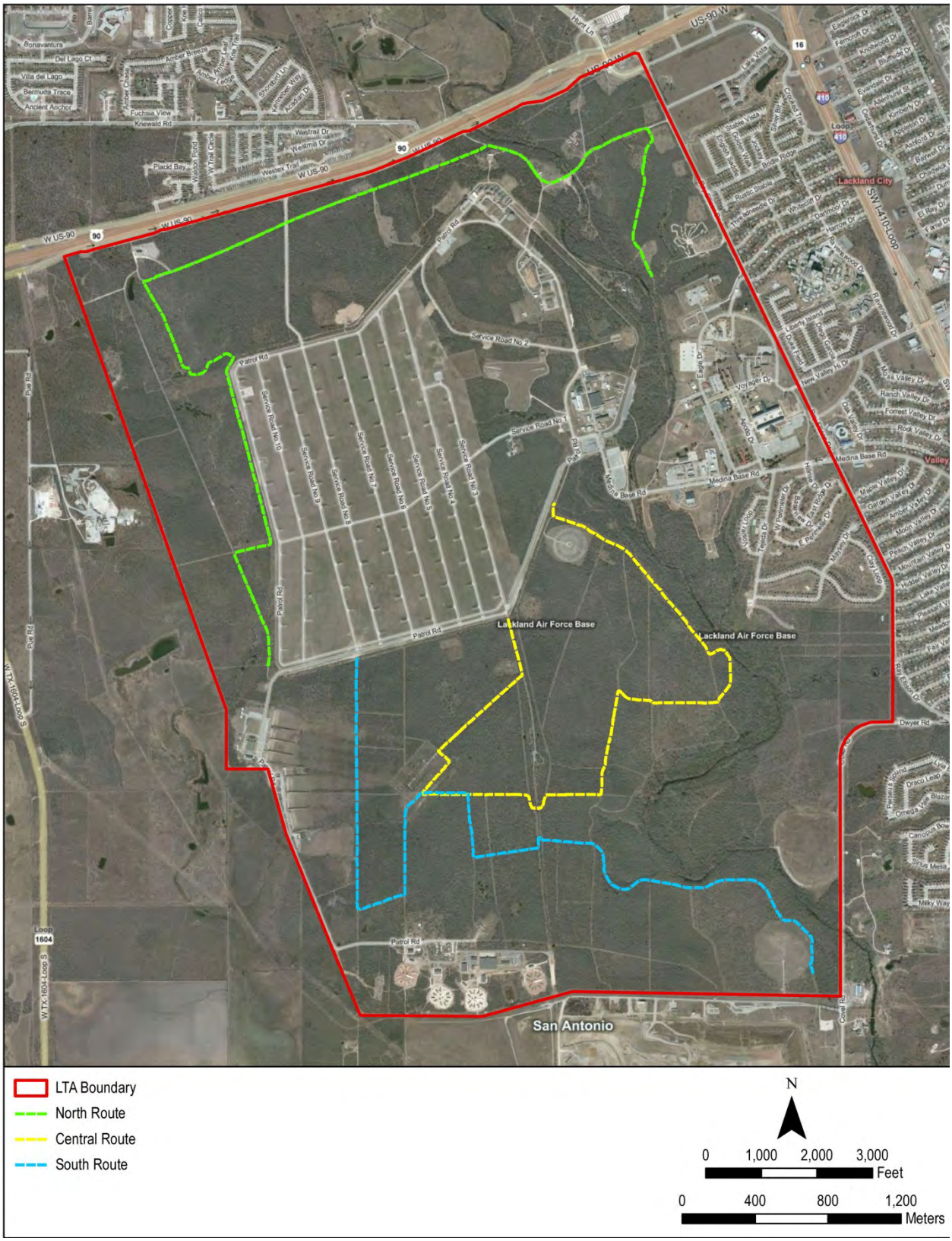


Figure 4-8. Map of the large mammal survey routes used for nocturnal surveys in the training annex area.

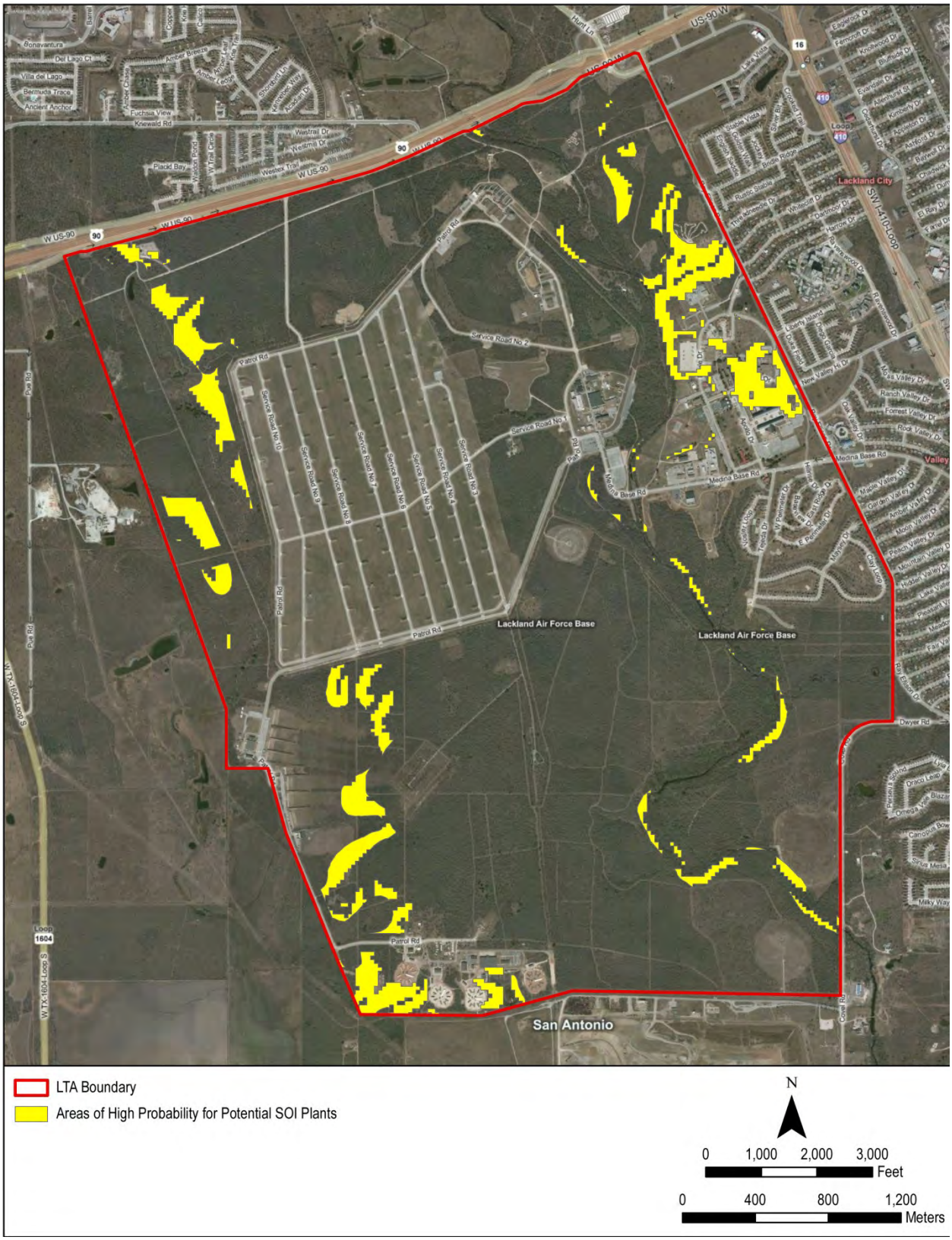


Figure 4-9. Map of training annex areas with potentially high biodiversity.

Roads were used as primary transects for surveying natural breaks (ecotones) in vegetation communities. Additional pedestrian surveys focused on high TES probability areas and were established using the previously described GIS spatial analysis. A list of potential community types was compiled prior to the spring field survey efforts. As field data collection progressed, modifications and additions were made to this list to account for new data collected in the LTA.

In the field, GPS coordinates were recorded for each species as well as for habitat and community boundaries. Data collected for each area and/or species include GPS coordinates, habitat or community description, species identifications and descriptions, representative photographs, and notes on invasive species occurrence and extent.

5.0 SURVEY RESULTS

5.1 Avian Surveys

One-hundred and eight bird species (n=108) (**Table 5-1**) were observed at point count stations or as incidental sightings. There were 60 species observed during winter surveys, 81 observed during spring surveys. Thirty-three species were observed during both seasons. The northern cardinal (*Cardinalis cardinalis*) and northern mockingbird (*Mimus polyglottis*) occurred most frequently during the surveys with frequency of occurrences at 11.46 percent and 9.88 percent, respectively (**Appendix B-1**). Observed avian composition was dominated by unidentified blackbirds (17.88 percent), white-winged doves (*Zenaida asiatica*; 11.27 percent), and northern cardinals at 10.37 percent (**Appendix B-2**). Forty-seven new species were observed during this study as compared to the 1992 and 1995 surveys (TNHP. 1992, 1995). There were two invasive and two opportunistic/parasitic species found during surveys, European starlings (*Sturnus vulgaris*), house sparrows (*Passer domesticus*), cattle egret (*Bubulcus ibis*) and brown-headed cowbirds (*Molothrus ater*). There were no TES species observed during surveys.

Table 5-1
Observed Avian Species

Common Name	Scientific Name	Winter	Spring
American Crow	*Corvus brachyrhynchos*		X
American Kestrel	*Falco sparverius*	X	
American Pipit	*Anthus rubescens*	X	
American Redstart*	*Setophaga ruticilla*		X
American Robin	*Turdus migratorius*	X	
American Wigeon	*Anas americana*	X	
Ash-throated Flycatcher*	*Myiarchus cinerascens*		X
Baltimore Oriole*	*Icterus galbula*		X
Barn Swallow	*Hirundo rustica*		X
Barred Owl*	*Strix varia*		X
Bewick's Wren*	*Thryomanes bewickii*	X	
Black Vulture	*Coragyps atratus*	X	x
Black-and-white Warbler*	*Mniotilta varia*		X
Black-bellied Whistling Duck*	*Dendrocygna autumnalis*		X
Blackbird	Unidentified Blackbird		X
Blackburnian Warbler*	*Dendroica fusca*		X
Black-crested Titmouse*	*Baeolophus atricristatus*	X	X
Black-throated Sparrow*	*Amphispiza bilineata*	X	
Blue-gray Gnatcatcher*	*Polioptila caerulea*	X	X
Blue-headed Vireo*	*Vireo solitarius*	X	
Brewer's Blackbird*	*Euphagus cyanocephalus*		X

Table 5-1 (*continued*)
Observed Avian Species

Common Name	Scientific Name	Winter	Spring
Brown-headed Cowbird	*Molothrus ater*	X	X
Bullock's Oriole*	*Icterus bullockii*		X
Cactus Wren	*Campylorhynchus brunneicapillus*		X
Carolina Chickadee	*Poecile carolinensis*	X	X
Carolina Wren	*Thryothorus ludovicianus*	X	X
Cassin's Sparrow*	*Aimophila cassinii*		X
Cattle Egret	*Bubulcus ibis*		X
Cave Swallow*	*Petrochelidon fulva*		X
Chimney Swift*	*Chaetura pelagica*		X
Chipping Sparrow	*Spizella passerina*	X	X
Common Grackle	*Quiscalus quiscula*	X	X
Common Ground-dove	*Columbina passerina*	X	X
Common Pauraque*	*Nyctidromus albicollis*		X
Cooper's Hawk	*Accipiter cooperii*	X	
Couch's Kingbird*	*Tyrannus couchii*		X
Crested Caracara*	*Caracara cheriway*	X	X
Curve-billed Thrasher*	*Toxostoma curvirostre*	X	X
Double-crested Cormorant	*Phalacrocorax auritus*		X
Eastern Bluebird	*Sialia sialis*	X	X
Eastern Phoebe	*Sayornis phoebe*	X	
Eastern Screech Owl	*Megascops asio*		X
European Starling	*Sturnus vulgaris*	X	X
Field Sparrow	*Spizella pusilla*	X	
Gadwall*	*Anas strepera*	X	
Golden-fronted Woodpecker	*Melanerpes aurifrons*	X	X
Grasshopper Sparrow	*Ammodramus savannarum*		X
Great Blue Heron*	*Ardea herodias*	X	
Great Egret	*Ardea alba*	X	X
Great Horned Owl	*Bubo virginianus*	X	
Greater Roadrunner	*Geococcyx californianus*	X	
Great-tailed Grackle	*Quiscalus mexicanus*	X	X
Green Heron*	*Butorides virescens*		X
Green-winged Teal	*Anas crecca*	X	
Harris's Hawk	*Parabuteo unicinctus*		X
Hermit Thrush	*Catharus guttatus*	X	
House Finch*	*Carpodacus mexicanus*	X	X
House Sparrow*	*Passer domesticus*	X	X
Hummingbird	*Archilochus spp.*		X
Indigo Bunting*	*Passerina cyanea*		X
Killdeer	*Charadrius vociferus*	X	X
Kingbird	*Tyrannus couchii*		X
Ladder-backed Woodpecker*	*Picoides scalaris*	X	X
Lark Sparrow	*Chondestes grammacus*		X

Table 5-1 (*continued*)
Observed Avian Species

Common Name	Scientific Name	Winter	Spring
Lesser Goldfinch	*Carduelis psaltria*	X	
Lincoln's Sparrow*	*Melospiza lincolnii*		X
Loggerhead Shrike	*Lanius ludovicianus*	X	
Long-billed Thrasher*	*Toxostoma longirostre*	X	X
Meadowlark	*Sturnella* spp.	X	
Mourning Dove	*Zenaida macroura*	X	X
Nashville Warbler*	*Vermivora ruficapilla*		X
Northern Bobwhite	*Colinus virginianus*		X
Northern Cardinal	*Cardinalis cardinalis*	X	X
Northern Flicker	*Colaptes auratus*	X	
Northern Harrier*	*Circus cyaneus*		X
Northern Mockingbird	*Mimus polyglottos*	X	X
Orange-crowned Warbler	*Vermivora celata*	X	
Osprey*	*Pandion haliaetus*	X	
Painted Bunting*	*Passerina ciris*		X
Pyrrhuloxia*	*Cardinalis sinuatus*	X	X
Red-billed Woodpecker	*Melanerpes carolinus*	X	
Red-eyed Vireo*	*Vireo olivaceus*		X
Red-shouldered Hawk	*Buteo lineatus*	X	X
Red-tailed Hawk	*Buteo jamaicensis*	X	
Red-winged Blackbird	*Agelaius phoeniceus*	X	X
Rock Pigeon	*Columba livia*		X
Ruby-crowned Kinglet	*Regulus calendula*	X	X
Rufous-crowned Sparrow*	*Aimophila ruficeps*		X
Savannah Sparrow	*Passerculus sandwichensis*	X	X
Scissor-tailed Flycatcher*	*Tyrannus forficatus*		X
Sharp-shinned Hawk*	*Accipiter striatus*	X	
Sparrow	*Spizella* spp		X
Summer Tanager*	*Piranga rubra*		X
Swainson's Hawk*	*Buteo swainsoni*		X
Swallow	*Petrochelidon*		X
Tennesse Warbler*	*Vermivora peregrina*		X
Turkey Vulture	*Cathartes aura*	X	X
Vermillion Flycatcher	*Pyrocephalus rubinus*		X
Western Kingbird*	*Tyrannus verticalis*		X
White-crowned Sparrow	*Zonotrichia leucophrys*	X	X
White-eyed Vireo*	*Vireo griseus*		X
White-winged Dove	*Zenaida asiatica*	X	X
Wild Turkey*	*Meleagris gallopavo*		X
Yellow-bellied Sapsucker	*Sphyrapicus varius*	X	
Yellow-billed Cuckoo*	*Coccyzus americanus*		X
Yellow-breasted Chat*	*Icteria virens*		X
Yellow-rumped Warbler	*Dendroica coronata*	X	

* New sighting to Lackland AFB compared to 1992 and 1995 surveys

5.2 Reptile and Amphibian Surveys

There were 18 herpetological species (**Table 5-2**) observed during multiple survey periods including two frog, two toad, seven lizard, one turtle, and six snake species. **Figure 5-1** depicts the road survey observations. Review of previous reports suggests that five of the observed species, the green anole (*Anolis carolinensis*), Schott's whipsnake (*Masticophis schotti schotti*), Texas coral snake (*Micrurus tener*), Texas rat snake (*Elaphe obsoleta lindheimeri*), and the western coachwhip (*Masticophis flagellum testaceus*) are new records for Lackland AFB and the LTA project area. See **Appendix B-3** for a list of observations by herpetofauna station. There were no TES species observed during surveys.

Table 5-2
Observed Herpetofauna Species

Common Name	Scientific Name
AMPHIBIANS	
Blanchard's Cricket Frog	*Acris crepitans blanchardi*
Rio Grande Leopard Frog	*Rana berlandieri*
Plains Narrowmouth Toad	*Gastrophryne olivacea*
Red-spotted Toad*	*Bufo punctatus*
REPTILES	
Mediterranean Gecko	*Hemidactylus turcicus*
Ground Skink	*Scincella lateralis*
Green Anole*	*Anolis carolinensis*
Six-lined Racerunner	*Cnemidophorus sexlineatus*
Texas Fence Lizard	*Sceloporus undulatus consobrinus*
Texas Spiny Lizard	*Sceloporus olivaceus*
Unidentified Lizard	*Sceloporus* spp.
Schott's Whipsnake*	*Masticophis schotti schotti*
Texas Coral Snake*	*Micrurus tener*
Texas Patchnose Snake	*Salvadora grahamiae lineata*
Texas Rat Snake*	*Elaphe obsoleta lindheimeri*
Western Coachwhip*	*Masticophis flagellum testaceus*
Western Diamondback Rattlesnake	*Crotalus atrox*
Red-eared Slider	*Trachemys scripta elegans*

* New sighting to Lackland AFB compared to 1992 and 1995 surveys

5.3 Mammal Surveys

There were 18 mammal species (**Table 5-3**) observed during multiple survey periods, herpetological cover board checks, and incidental observations (**Figure 5-2**). Two of the observed species, feral pig (*Sus scrofa*) and white-ankled mouse (*Peromyscus pectoralis*) are new records for Lackland AFB and the LTA project area (TNHP, 1995). See **Appendix B-4** for mammal scent station observations and **Appendix B-5** for the large mammal survey routes. There were no TES species observed during surveys.



Figure 5-1. Map of training annex herpetofauna road survey observations.

Table 5-3
Observed Mammal Species

Common Name	Scientific Name
Bobcat	*Lynx rufus*
Common Raccoon	*Procyon lotor*
Coyote	*Canis latrans*
Eastern Cottontail	*Sylvilagus floridanus*
Eastern Fox Squirrel	*Sciurus niger*
Feral Pig*	*Sus scrofa*
Common Gray Fox	*Urocyon cinereoargenteus*
Eastern Woodrat	*Neotoma floridana*
Hispid Cottonrat	*Sigmodon hispidus*
Javelina	*Pecari tajacu*
Mexican Ground Squirrel	*Spermophilus mexicanus*
Nine-banded Armadillo	*Dasypus novemcinctus*
Northern Pygmy Mouse	*Baiomys taylori*
Southern Plains Woodrat	*Neotoma micropus*
Striped Skunk	*Mephitis mephitis*
Virginia Opossum	*Didelphis virginiana*
White-ankled Mouse*	*Peromyscus pectoralis*
White-tailed Deer	*Odocoileus virginianus*

* New sighting to Lackland AFB compared to 1992 and 1995 surveys

5.4 VEGETATION SURVEYS

Botanical surveys were conducted on the LTA on 25-29 October 2010 and 11-15 April 2011. These surveys included a general inventory of the plant species encountered during the field effort and a vegetative community description, along with dominant species found within each community. In addition to the plant inventory and community determination, biologists also surveyed for TES and invasive/noxious plant species. Ten of the 164 plant species observed are considered noxious or invasive species (**Table 5-4**), which were found in disturbed areas scattered throughout the LTA project area. No rare, threatened, or plant species of concern were observed during surveys within the LTA project area.

Surveys were completed for 1192 acres (39%) of the approximately 3000 acres accessible for surveys. This level of survey intensity insured that sampling coverage was more than adequate to describe the natural communities in the LTA as well as providing full coverage of areas considered to be habitat for TES species. The areas surveyed are depicted in **Figure 5-3** and sample point locations are located in **Figure 5-4**, with the associated photographs in **Appendix A-6**.

Table 5-4
Observed Plant Species

FAMILY	NAME
ACANTHACEAE (ACANTHUS FAMILY)	*Ruellia occidentalis* (Wild Petunnia)
ACERACEAE (MAPLE FAMILY)	*Acer negundo* (Boxelder)
ALISMATACEAE (WATER PLAINTAIN FAMILY)	*Echinodorous* spp. (Burhead)
	Sagittaria platyphylla (Delta Arrowhead)
AMARANTHACEAE (AMARANTH FAMILY)	*Amaranthus blitoides* (Carelessweed)
	Amaranthus crassipes (Carelessweed)
	Amaranthus palmeri (Pigweed)
AMARYLLIDACEAE (AMARYLLIS FAMILY)	*Habranthus tubispathus var. texanus* (Copper Lily)
	Zephyranthes chlorosolen
ANACARDIACEAE (SUMAC FAMILY)	*Rhus lanceolata* (*Flameleaf Sumac*)
	Rhus toxicodendron (Poison Ivy)
APIACEAE (CELERY FAMILY)	*Ammoselinum popei* (Sand Parsley)
	Daucus pusillus (Wild Carrot)
	Spermolepsis divaricata
AQUIFOLIACEAE (HOLLY FAMILY)	*Ilex decidua* (Possumhaw)
ASCLEPIACACEAE (MILKWEED FAMILY)	*Asclepias viridiflora* (Green-flowered Milkweed)
	Matelea gonocarpa (Angularfruit Milkvine)
	Cynanchum racemosum var. *unifarium* (Talayote)
ASTERACEAE (ASTER FAMILY)	*Ambrosia artemisiifolia* (Short Ragweed)
	Ambrosia trifida var. texana (Giant Ragweed)
	Artemisia ludoviciana (White Sagebrush)
	Baccharis neglecta (Rooseveltweed)
	Cirsium horridulum (Thistle)
	Ratibida columnifera (Upright Prairie Coneflower)
	Coreopsis tinctoria (Golden Tickseed)
	Engelmannia peristenia (Engelmann's Daisy)
	Erigeron philadelphicus (Fleabane)
	Evax Verna (Rabbit Tobacco)
	Gaillardia pulchella (Indian Blanket)
	Helenium amarum (Bitterweed)
	Helenium microcephalum (Common Sneezeweed)
	Helianthus annuus (Sunflower)
	Hymenopappus artemisiifolius (Old Plainsman)
	Krigia occidentalis (Western Dwarf Dandelion)
	Pyrrhopappus pauciflorus (Small Flower Desert-Chicory)
	Ratibida peduncularis (Naked Mexican Hat)
	Senecio ampullaceus (Texas Ragwort)

Table 5-4 (*continued*)
Observed Plant Species

FAMILY	NAME
ASTERACEAE (ASTER FAMILY)	*Silphium asperrimum* (Rosinweed)
	Sonchus oleraceus (Common Sowthistle)
	Thelesperma filafolium (Greenthread)
	Vernonia lindheimeri (Ironweed)
	Xanthisma texanum (Sleepy Daisy)
	Gutierrezia texana (Texas Broomweed)
	Xanthium strumarium (Cocklebur)*
BERBERIDACEAE (BARBERRY FAMILY)	*Mahonia trifoliolata* (Algerita)
BIGNONIACEAE (TRUMPET CREEPERS)	*Campsis radicans* (Trumpet Creeper)
BRASSICACEAE (MUSTARD FAMILY)	*Lepidium virginicum* (Pepperweed)
BROMELIACEAE (PINEAPPLE FAMILY)	*Tillandsia recurvata* (Ball Moss)
CACTACEAE (CACTUS FAMILY)	*Echinocactus texensis* (Horse Crippler)
	Opuntia leptocaulis (Tasajillo)
	Opuntia lindheimeri (Pricklypear)
CAMPANULACEAE (BLUEBELL FAMILY)	*Triodanis biflora* (Small Venus' Looking-glass)
CAPRIFOLIACEAE (HONEYSUCKLE FAMILY)	Sambucus nigra (American Black Elderberry)
CARYPHLLACEAE (PINK FAMILY)	*Cerastium brachypodum* (Shortstalk Chickweed)
	Stellaria media (Common Chickweed)
	Stellaria prostrate (Prostrate Starwort)
CHENOPODIACEAE (GOOSEFOOT FAMILY)	*Chenopodium album* (Lambsquarter)
COMMELINACEAE (SPIDERWORT FAMILY)	*Commelina virginica* (Dayflower)
	Tradescantia gigantea (Spiderwort)
	Tradescantia ohioensis (Spiderwort)
CONVOLVULACEAE (MORNING GLORY FAMILY)	*Convolvulus equitans* (Bindweed)
	Cuscuta campestris (Lovevine)
	Ipomoea lindheimeri (Blue Morningglory)
CRASSULACEAE (STONECROP FAMILY)	*Sedum nuttallianum*
CUCURBITACEÀE (GOURD FAMILY)	*Cucurbita foetidissima* (Missouri Gourd)
CYPERACEAE (SEDGE FAMILY)	*Cyperus rotundus* (Purple Nutsedge)*
	Eleocharis macrostachya (Spikesedge)
	Eleocharis quadrangulata (Spikesedge)
	Scirpus sp.
EBENACEAE (EBONY FAMILY)	*Diospyros texana* (Texas Persimmon)
EUPHORBIACEAE (SPURGE FAMILY)	*Croton fruticulosus* (Bush Croton)
	Croton glandulosus (Vente Conmigo)
	Croton texensis (Texas Croton)
	Euphorbia albomarginata (Whitemargin Sandmat)

Table 5-4 (*continued*)
Observed Plant Species

FAMILY	NAME
EUPHORBIACEAE (SPURGE FAMILY)	*Euphorbia angusta* (Blackfoot Sandmat)
	Euphorbia marginata (Snow on the Mountain)
	Ricinus communis (Castorbean)
	Sapium sebiferum (Chinese Tallow)*
FABACEAE (BEAN FAMILY)	*Acacia angustissima var texensis* (Prairie Wattle)
	Acacia berlandieri (Guajillo)
	Acacia smallii (Sweet Acacia)
	Acacia farnesiana (Huisache)
	Aloysia gratissima (Whitebrush)
	Baptisia sphaerocarpa (Yellow Wild Indigo)
	Cassia fasciculate (Partridge Pea)
	Cassia lindheimeriana (Velvet Leaf Senna)
	Cassia texana (Texas Sensitive Pea)
	Crotalaria sagittalis (Arrowhead Rattlebox)
	Desmodium paniculatum (Panicledleaf Ticktrefoil)
	Lupinus subcarnosus (Texas Bluebonnet)
	Melilotus albu (Yellow Sweetclover)
	Parkinsonia aculeate (Retama)
	Prosopis glandulosa (Honey Mesquite)
	Mimosa nuttallii (Nuttal's Sensitive-briar)
	Sesbania drummondii (Poisonbean)
	Sophora affinis (Eve's Necklacepod)
	Tephrosia lindheimeri (Lindheimer's Hoarypea)
	Vicia caroliniana (Carolina Vetch)
FAGACEAE (BEECH FAMILY)	*Quercus virginiana* (Live Oak)
GERANIACEAE (GERANIUM FAMILY)	*Geranium carolinianum* (Crane's Bill)
OXALIDACEAE (WOODSORREL FAMILY)	*Oxalis dillenii* (Slender Yellow Woodsorrel)
HYDROPHYLLACEÀE (WATERLEAF FAMILY)	*Phacelia congesta* (Caterpillars)
LAMIACEAE (MINT FAMILY)	*Monarda citriodora* (Horsemint)
	Salvia coccinea (Scarlet Sage)
	Salvia farinacea (Mealy Blue Sage)
LILIACEAE (LILY FAMILY)	*Yucca treculeana* (Spanish Dagger)
MELIACEAE (MAHOGANY FAMILY)	*Melia azedarach* (Chinaberry)*
MORACEAE (MULBERRY FAMILY)	*Maclura pomifera* (Osage Orange)
PAPAVERACEAE (POPPY FAMILY)	*Argemone albiflora* (White Pricklypoppy)
PASSIFLORACEAE (PASSION FLOWER FAMILY)	*Passiflora affinis* (Passionflower)
	Passiflora foetida var. gossypifolia (Passionflower)
PLANTAGINACEAE (PLANTAIN FAMILY)	*Plantago major* (Plantain)*

Table 5-4 (*continued*)
Observed Plant Species

FAMILY	NAME
POACEAE (GRASS FAMILY)	*Andropogon gerardi* (Big Bluestem)
	Andropogon glomeratus (Bushy Bluestem)
	Andropogon tenarius (Splitbeard Bluestem)
	Bothriochloa ischaemum var. songarica (King Ranch Bluestem)*
	Bothriochloa saccharoides (Silver Bluestem)
	Bouteloua rigidiseta (Texas Grama)
	Cenchrus incertus (Coast Sandbur)
	Cynodon dactylon (Bermuda Grass)*
	Elymus canadensis (Canada Wildrye)*
	Sorghastrum nutans (Indiangrass)
	Sorghum halepense (Johnson Grass)*
POLYGONACEAE (KNOTWEED FAMILY)	*Rumex crispus* (Curly Dock)*
RHAMNACEAE (BUCKTHORN FAMILY)	*Colubrina texensis* (Texan Hogplum)
	Rhamnus caroliniana (Carolina Buckthorn)
	Condalia hookeri (Brazilian Bluewood)
RANUNCULACEAE (CROWFOOT FAMILY)	*Anemone heterophylla* (Tenpetal Thimbleweed)
	Clematis drummondii (Old Man's Beard)
	Clematis pitcheri (Purple Clematis)
	Delphinium virescens (Carolina Larkspur)
	Ranunculus macranthus (Buttercup)
ROSACEAE (ROSE FAMILY)	*Rubus trivialis* (Southern Dewberry)
RUBIACEAE (MADDER FAMILY)	*Galium texense* (Bedstraw)
	Hedyotis nigracans (Star Violet)
RUTACEAE (CITRUS FAMILY)	*Ptelea trifoliata* (Hoptree)
SALICACEAE (WILLOW FAMILY)	*Carya illinoinensis* (Pecan)
	Juglans microcarpa (River Walnut)
	Salix nigra (Black Willow)
SCROPHULARIACEAE (FIGWORT FAMILY)	*Castilleja indivisa* (Indian Paintbrush)
	Leucophyllum frutescens (Cenizo)
	Linaria texana (Texas Toadflax)
SMILACACEAE (BRIAR FAMILY)	*Smilax bona-nox* (Saw Greenbrier)
SOLANACEAE (NIGHTSHADE FAMILY)	*Capsicum annuum var. minus* (Bird-pepper)
	Physalis virginiana var. texana (Groundcherry)
	Physalis viscosa var. mollis (Groundcherry)
	Solanum americanum (Black Nightshade)
	Solanum elaeagnifolium (Silverleaf Nightshade)*
TYPHACEAE (CATTAIL FAMILY)	*Typha angustifolia* (Narrowleaf Cattail)

Table 5-4 (*continued*)
Observed Plant Species

FAMILY	NAME
ULMACEAE (ELM FAMILY)	*Celtis lindheimeri* (Hackberry)
	Celtis pallid (Spiny Hackberry)
	Ulmus crassifolia (Cedar Elm)
URTICACEAE (NETTLE FAMILY)	*Urtica chamaedryoides* (Heartleaf Nettle)
	Urtica urens (Dog Nettle)
VERBENACEAE (VERBENA FAMILY)	*Verbena bipinnatifida* (Prairie Verbena)
	Lantana camara (Lantana)*
VIOLACEAE (VIOLET FAMILY)	*Passiflora affinis* (Bracted Passionflower)
	Passiflora foetida var. gossypifolia (Cottonleaf Passionflower)
VISCACEAE (MISTLETOE FAMILY)	*Phorandendron tomentosum* (Mistletoe)
VITACEAE (GRAPE FAMILY)	*Cissus incisa* (Possum Grape)
	Parthenocissus quinquefolia (Virginia Creeper)
	Vitis berlandieri (Spanish Grape)
	Vitis mustangensis (Mustang Grape)
ZYGOPHYLLACEAE (CALTROP FAMILY)	*Guaiacum angustifolium engelm* (Guayacan)

* Indicates an invasive or noxious species

5.4.1 Habitat and Community Descriptions

A list of community types was compiled during the field sampling efforts. As field data collection progressed, GMI biologists identified and delineated the general vegetative communities of the LTA. The habitat and community boundary information was collected for each area and GPS coordinates, habitat or community description, species identifications and descriptions, representative photographs, and notes on invasive species occurrence and extent. The dominant community types on LTA were the developed/highly maintained and the shrub/scrub communities. The vegetative community boundaries are mapped in **Figure 5-5** and brief descriptions of the communities are located in **Table 5-5**.

5.4.2 Invasive Species

Ten invasive/noxious species were found in the LTA. There were areas in the LTA project area that could potentially contain invasive species in the near future due the characteristic site conditions and/or could currently harbor invasive species; however, the species may not have been growing and/or flowering at the time of the site surveys. The areas where invasive species occurred and areas where they are highly likely to occur are identified in **Figure 5-6**.

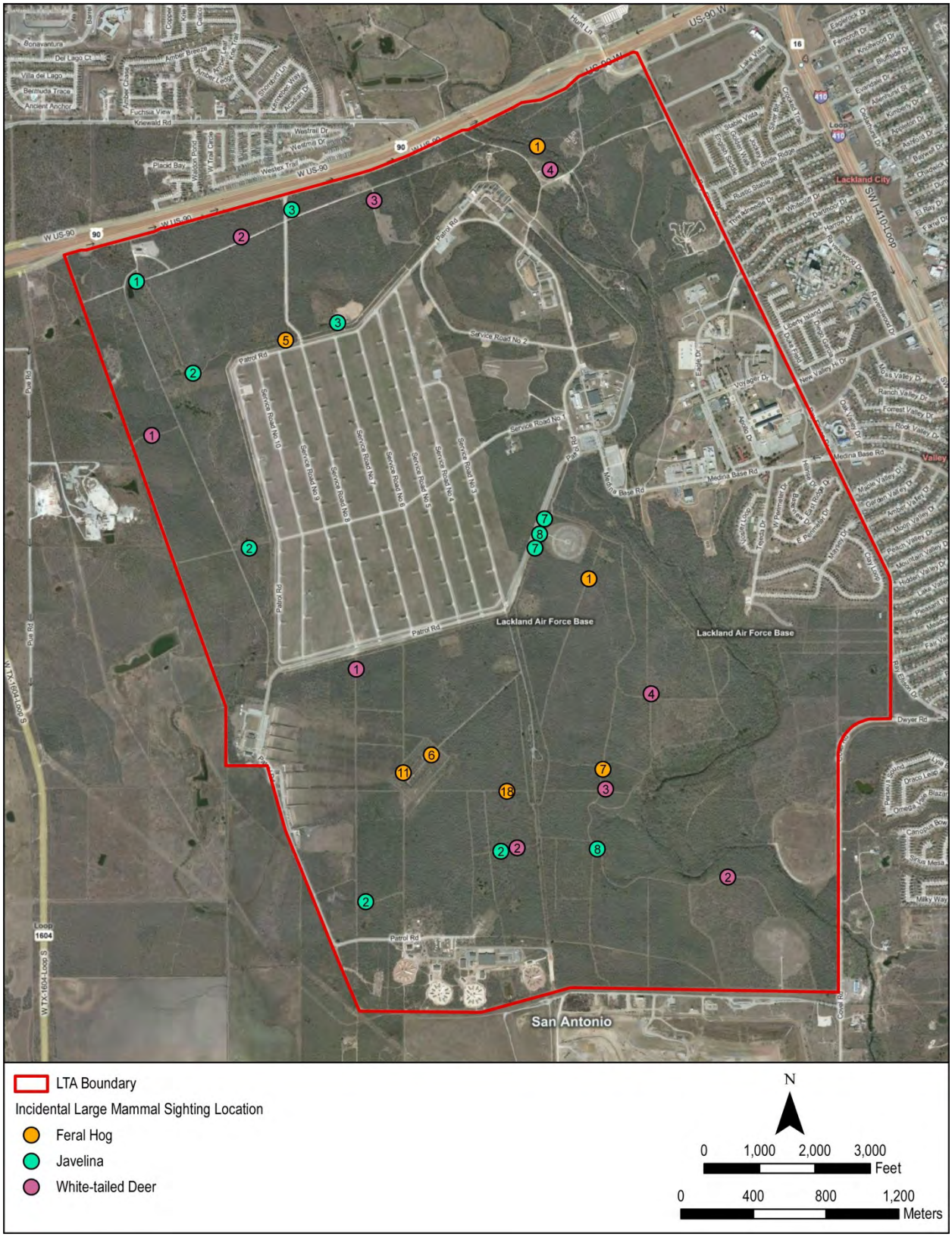


Figure 5-2. Map of incidental mammal observations made during transit between survey stations and/or transects in the training annex area.

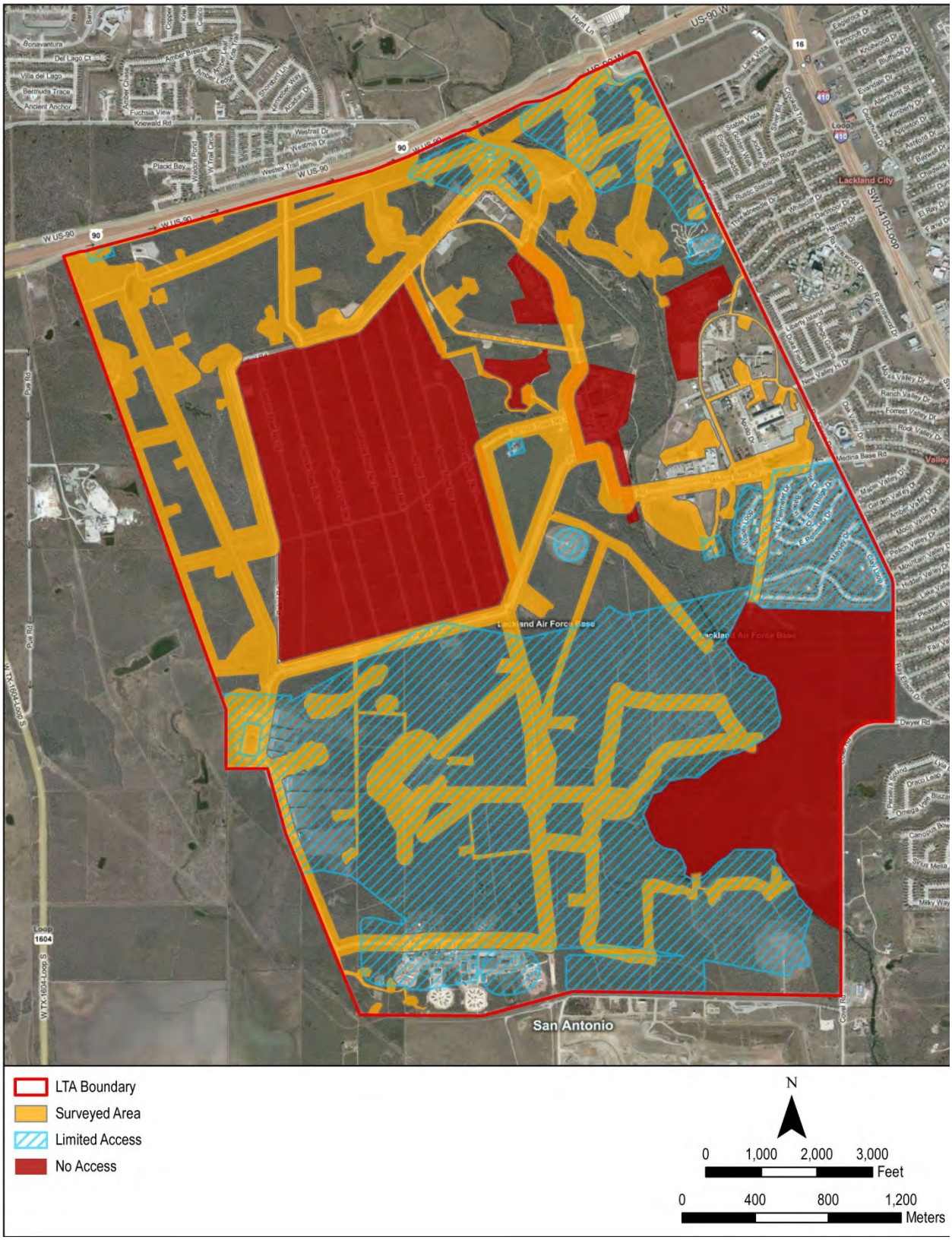


Figure 5-3. Map of plant species and habitat surveys for the training annex area.

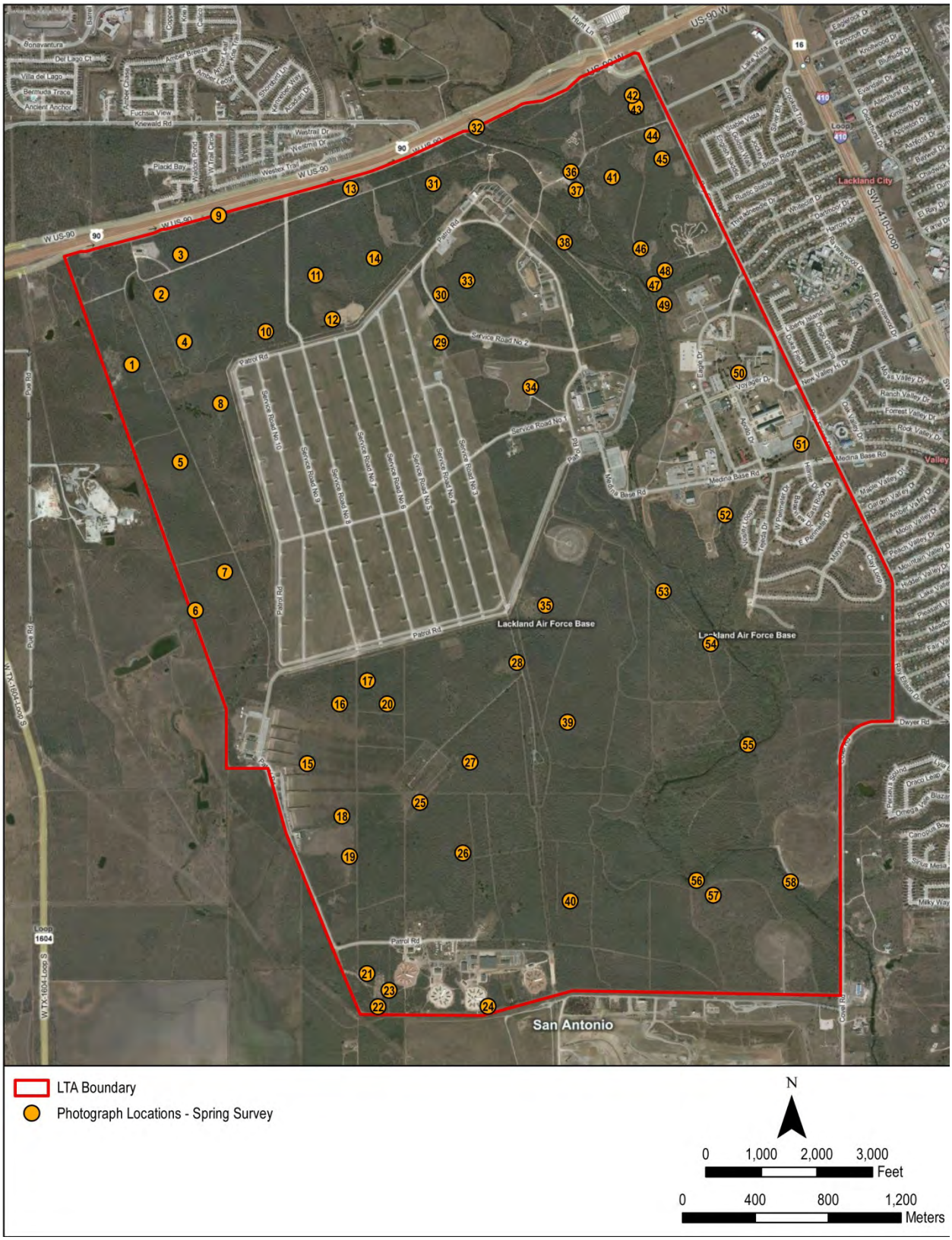


Figure 5-4. Photographic location map for the training annex spring survey.

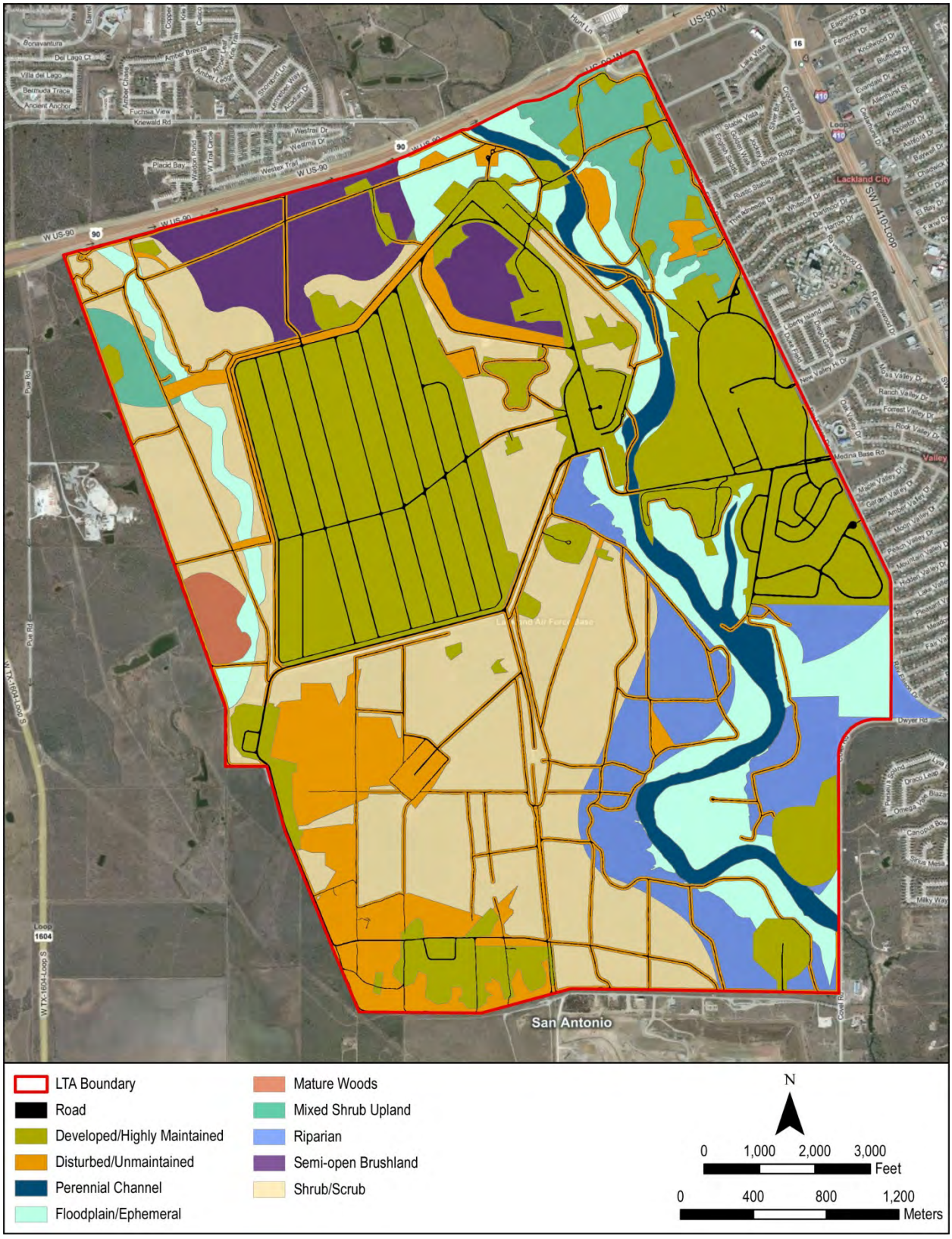


Figure 5-5. Map of plant communities found in the training annex area.

Table 5-5
Vegetative Community Descriptions

Habitat Type	Associated Vegetation
Developed/Highly Maintained	These areas are located mostly in urban areas and contain mixed patches (i.e., lawns, gardens, etc.) of introduced and native vegetation. This community does provide suitable habitat to some common local wildlife species. Most of the housing, training, administrative buildings, athletic fields, and along roadways are comprised of mowed non-native grass species. The frequent mowing/maintenance inhibits re-introduction of native grassland species. These areas typically contain invasive grasses, woody, and herbaceous plant species. Common species associated with this community are: Bermuda grass (*Cynodon dactylon*), silver bluestem (*Bothriochloa laguroides*), silverleaf nightshade (*Solanum elaeagnifolium*), thistle sp., Johnson grass (*Sorghum halepense*), crabgrass species (*Digitaria sp.*), dandelion species, henbit (*Lamium amplexicaule*), Texas prickly pear (*Opuntia engelmannii*), honey mesquite (*Prosopis glandulosa*), various other ornamental trees and shrubs
Disturbed/Unmaintained	These areas were disturbed in the past and have been left alone long enough for plants to start recruiting from adjacent areas. A common term frequently used for this type community is “overgrown areas”. The species composition is very similar to the developed community; however, because it has been left untouched there is a higher density of weedy grass and forb species, usually with a few shrubs.
Riparian (Ephemeral/Intermittent)	This habitat was a composition is a mix of open sedge/wet meadow where woody vegetation is lacking or sparse to areas covered by a dense canopy of shrubs and small trees that have almost entirely shaded out herbaceous ground cover. The wooded segments are primarily dominated with common buckthorn (*Rhamnus cathartica*) and several species of *Prunus* (chokecherry, wild plum, etc.). Similar habitat is also found along an old channel remnant located on the west side of Medio Creek south of Medina Base Road. This area is occasionally flooded, and has vegetation dominated by black willow and sugarberry. Common species in this community was: Pecan (*Carya illinoinensis*), maple (*Acer* sp.), winged elm (*Ulmus alata*), hackberry, cottonwood (*Populus* sp.), black willows (*Salix nigra*), blackberry (*Rubus* sp.), green briar (*Smilax* sp.), poison ivy (*Toxicodendron sp.*)
Perennial Channel	This is a narrow riparian habitat along Medio Creek on the eastern side of the LTA. The vegetation along the creek is composed of black “swamp” willow (*Salix nigra*), green ash (*Fraxinus pennsylvanica*), basswood (*Tilia caroliniana*), sugarberry (*Celtis laevigata*), cedar elm (*Ulmus crassifolia*), chinaberry (*Melia azedarach*), mesquite (*Prosopis glandulosa*), smartweed (*Polygonum hydropiperoides*), rattlebox (*Sesbania drummondii*), giant ragweed (*Ambrosia trifida*), and morning glory (*Ipomoea* sp.). The vegetation along the creek consists of the typical species for a riparian woodland habitat, with black willow and green ash being the prominent woody species. Despite the narrow reach of the riparian habitat, this zone is a valuable habitat for many species on the annex.

Table 5-5 (*continued*)
Vegetative Community Descriptions

Habitat Type	Associated Vegetation
Mature Woods Ganjeno-Acacia-Mesquite	Honey mesquite, hackberry (*Celtis sp.*), western soapberry tree (*Sapindus saponaria*), silver bluestem, Texas prickly pear, Christmas cactus (*Cylindropuntia leptocaulis*), locoweed (*Astragalus mollissimus*) There was a big gap in the vertical vegetative structure. It consisted of a weedy herbaceous layer with a few scattered shrubs and dominated by the tree layer.
Shrub/Scrub	Very similar the the Ganjeno-Acacia-Mesquite Woods; however the community structure consisted of a shrub and mature woods that were both equally dominant. The dominant vegetation found in this habitat is composed of mesquite (*Prosopis glandulosa*), sugarberry (*Celtis laevigata*), cedar elm (*Ulmus crassifolia*), annual sunflower (*Helianthus annuus*), and ashy sunflower (*Helianthus mollis*).
Woods/Parks	Mainly the dog training areas on the northern half of the LTA. Canada wildrye (*Elymus candensis*), live oak (*Quercus virginiana*), cedar elm (*Ulmus crassifolia*), hackberry (*Celtis laevigata*), bumelia (*Bumelia lanuginose*), coralberry (*Symphoricarpus orbiculatus*), guajillo (*Acacia* spp.), guayacan (*Porlieria augustifolia*), kidneywood (*Eysenhardtia* spp.), mescalbean (*Sophora secundiflora*), epherda (*Epherda* spp.), shrubby blue salvia (*Salvia ballotaeflora*), desert yaupon (*Schaefferia* spp.), little-leaf sumac (*Rhus microphylla*), spiny hackberry (*Celtis pallida*), Texas colubrina (*Colubrina texensis*), condalias (*Condilia* spp.), clematis (*Clematis* spp.), catclaw black-bruch acacia (*Acacia rigidula*), greenbrier (*Smilax* spp.), black walnut (*Juglans nigra*), pecan (*Carya illinoensis*), bald cypress (*Taxodium distichum*), willow (*Salix* spp.), sycamore (*Platanus occidentialis*), mulberry (*Morus* spp.), hoptree (*Ptelea trifoliate*), grape (*Vitis* spp.), honeysuckle (*Lonicera* spp.), and poison ivy (*Rhus radicans*).

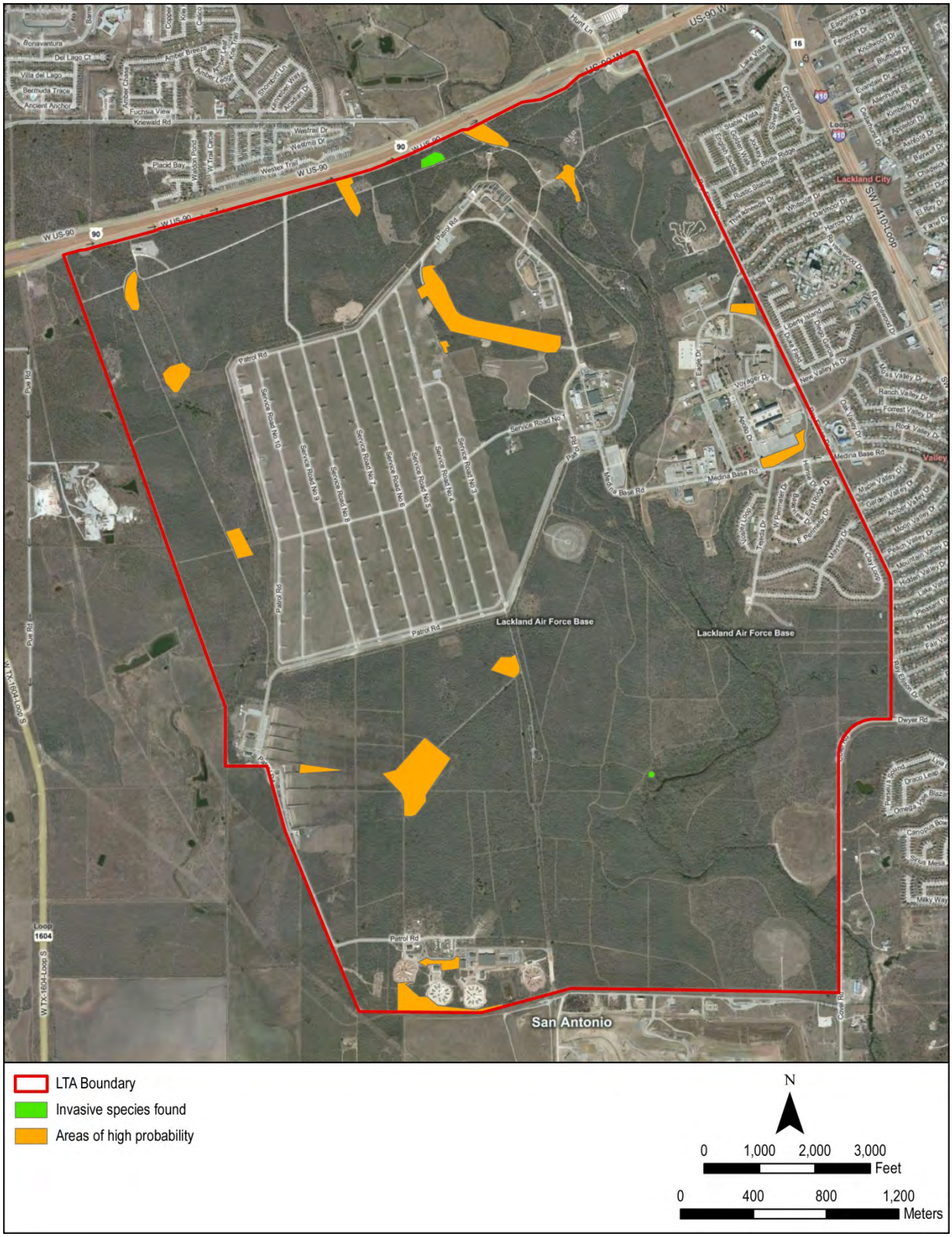


Figure 5-6. Training annex area map of invasive species observations and areas with conditions supporting invasive/noxious weed invasions.

6.0 DISCUSSION AND RECOMMENDATIONS

The surveys utilized in this project only provide a snapshot of the species diversity found in the LTA at the time of each survey. Animal populations will vary spatially and temporally depending on the season. Additionally, environmental factors such as droughts or other physical factors significantly affect animal and plant population dynamics in both the short- and long-term. To examine trends in specific species populations and communities would require annual/seasonal surveys.

There are many impacts from the drought conditions currently existing in Central Texas. Natural food, water, and cover have been severely impacted for many species occurring on the LTA. Drought conditions also impact flora and fauna surveys as many species remain dormant and/or migrate out of areas while searching for adequate habitat to support their growth and reproduction. Furthermore, drought conditions may result in more conflicts between humans and wildlife. Raccoons and deer, for example, will more likely seek gardens and yards for sustenance.

6.1 FAUNA

Stock tanks found randomly throughout the LTA are important sources of water for animals migrating through the LTA and/or living on LTA lands. Tanks are particularly important for amphibian reproduction because they provide a relatively predator-less area for egg and larval growth. Current tanks should be maintained as important water resources.

Feral hogs and javelina exist in large numbers throughout the LTA area. GMI biologists observed what appears to be an ongoing and active trapping effort to control feral hogs. There are many areas that would be amenable to increased trapping that would benefit native wildlife and plant communities. Feral hogs are heavy users of natural resources that other wildlife are dependent on, therefore, reducing the feral hog and javelina population should be a high priority for management.

6.2 FLORA

Invasive or noxious species can have serious consequences and impacts on natural plant communities and ecosystems by supplanting native species, natural resource utilization, and by altering ecosystem function. These species are opportunistic and typically are found in roadside and disturbed areas. An invasive species management plan should be developed and implemented to begin eradication and control of fast growing species such as the Chinese tallow tree that is found across the LTA project area. Management actions should focus on highly disturbed areas, current areas supporting invasive species, and corridors (e.g. streams and roads) that serve as conduits for invasion into new areas.

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APPENDICES

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APPENDIX A
PHOTOGRAPHS

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Appendix A-1
Herpetofauna Station Photographs



Station 1



Station 2



Station 3



Station 4



Station 5



Station 6



Station 7



Station 8



Station 9



Station 10



Station 11



Station 12



Station 13



Station 14



Station 15



Station 16



Station 17



Station 18



Station 19



Station 20



Station 21



Station 22



Station 23



Station 24



Station 25



Station 26



Station 27

Appendix A-2
Avian Photographs



American Kestrel



American Pipit



Barn Swallow



Black Vulture



Black-bellied Whistling Duck



Black-crested Titmouse



Cactus Wren



Carolina Wren



Cassin's Sparrow



Cattle Egret



Common Ground-dove



Crested Caracara



Curve-billed Thrasher



Eastern Bluebird



Eastern Phoebe



European Starling



Golden-fronted Woodpecker



Great Egret



Great Horned Owl



Greater Roadrunner



House Finches



House Sparrow



Inca Dove



Ladder-backed Woodpecker



Lark Sparrow



Long-billed Thrasher



Mourning Dove



Northern Bobwhite Quail



Northern Cardinal



Northern Mockingbird



Painted Bunting



Pyrrhuloxia



Red-shouldered Hawk



Red-tailed Hawk



Ruby-crowned Kinglet



Scissor-tailed Flycatcher



Swainson's Hawk



White-crowned Sparrow



White-winged Dove



Wild Turkey

Appendix A-3
Reptiles and Amphibian Photographs

Amphibians



Red-spotted Toad



Rio Grande Leopard Frog

Gecko



Mediterranean Gecko

Lizards



Texas Spiny Lizard



Unidentified Lizard



Ground Skink

Snakes



Schott's Whipsnake



Schott's Whipsnake



Texas Coral Snake



Texas Coral Snake



Texas Patchnose Snake



Texas Patchnose Snake



Texas Patchnose Snake



Western Diamondback Rattlesnake



Western Diamondback Rattlesnake



Western Diamondback Rattlesnake

Turtle



Red-eared Slider

Appendix A-4
Mammal Scent Station Photographs

Mammal Scent Station 1



White-tailed Deer



Coyote



Virginia Opossum



Common Gray Fox



Javelina



Javelinas

Mammal Scent Station 2



Coyote

Mammal Scent Station 3



Common Gray Fox



Common Raccoon



Coyote



Eastern Cottontail

Mammal Scent Station 4



Common Raccoons



Eastern Cottontail

Mammal Scent Station 5



White-tailed Deer



Coyotes

Mammals Scent Station 6



Feral Pigs (sows with piglets)



Javelinas



Striped Skunk



Javelinas



White-tailed Deer (doe and yearling)



Eastern Cottontail

Mammal Scent Station 7



White-tailed Deer (10 point buck)



White-tailed Deer (Doe)



Coyotes



White-tailed Deer (8 point buck)

Mammal Scent Station 8



Nine-banded Armadillo



Eastern Cottontail



Feral Pigs



Coyotes

Mammal Scent Station 9



Feral Pig (sow)



Javelina



Javelina (bottom), Feral Pig (top)



Common Raccoon



Javelina



Feral Pigs



Feral Pigs (sow and piglets)



Javelinas



Feral Pigs



Feral Pigs (the one in the center is sleeping)

Mammal Scent Station 9



Eastern Cottontail



White-tailed Deer (doe)

Mammal Scent Station 11



Feral Pig



Raccoons



Feral Pigs (sows and piglets)



Eastern Cottontail

Mammal Scent Station 12



Common Gray Fox



Coyote

Mammal Scent Station 13



Feral Pigs



Coyotes

Mammal Scent Station 14



Eastern Fox Squirrel

Mammal Scent Station 15



White-tailed Deer (top center, in the distance)



Coyote

Mammal Scent Station 16



No mammals were observed at this station.

Mammal Scent Station 17



White-tailed Deer (doe)



Coyote



Javelinas (scent marking behavior)

Mammal Scent Station 18



Feral Hog

Mammal Scent Station 19



Virginia Opossum



Coyotes

Mammal Scent Station 20



White-tailed Deer

Mammal Scent Station 21



Nine-banded Armadillo



Common Raccoon



Eastern Cottontail



Javelina

Mammal Scent Station 22



No mammals were observed at this station.

Mammal Scent Station 23



Virginia Opossum



Common Raccoon



Feral Hog (Boar) and Common Raccoon



Feral Hog (Boar)

Mammal Scent Station 24



No mammals were observed at this station.

Mammal Scent Station 25



Feral Pigs (Sows and Piglets)

Appendix A-5
Mammal Photographs



Common Raccoon



Coyote



Eastern Cottontail



Eastern Fox Squirrel



Feral Pigs (Sow and Piglets)



Feral Pig



Feral Pig



Sounder of Feral Pigs



Feral Piglets



Hispid Cotton Rat



Javelinas



Javelina



Javelina



Southern Plains Woodrat



Striped Skunk

Appendix A-6
Vegetation Sample Point Location Photographs

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SITE - 1



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SITE - 2



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SITE - 3



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SITE - 4



Facing North



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SITE - 5

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Facing North



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SITE - 7



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SITE - 8



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SITE - 10



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APPENDIX B
TABLES

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Appendix B-1
Avian Frequency of Occurrence

Species	Frequency of Occurrence
Northern Cardinal	11.46%
Northern Mockingbird	9.88%
Mourning Dove	6.53%
White-winged Dove	5.11%
Brown-headed Cowbird	3.35%
Great-tailed Grackle	3.00%
Lark Sparrow	2.47%
Common Ground-Dove	2.29%
European Starling	2.29%
Turkey Vulture	2.29%
Unidentified Sparrow	2.29%
Golden-fronted Woodpecker	2.12%
Ruby-crowned Kinglet	2.12%
White-crowned Sparrow	1.94%
Black-crested Titmouse	1.76%
Cattle Egret	1.76%
Pyrrhuloxia	1.76%
Great Egret	1.59%
Barn Swallow	1.41%
Ladder-backed Woodpecker	1.41%
Carolina Wren	1.23%
Chipping Sparrow	1.23%
Common Grackle	1.23%
House Finch	1.23%
Red-winged Blackbird	1.23%
Blue-gray Gnatcatcher	1.06%
Couch's Kingbird	1.06%
Savannah Sparrow	1.06%
Black Vulture	0.88%
Long-billed Thrasher	0.88%
Orange-crowned Warbler	0.88%
Rock Pigeon	0.88%
Cassin's Sparrow	0.71%
Cave Swallow	0.71%
Eastern Bluebird	0.71%
White-eyed Vireo	0.71%
Bewick's Wren	0.53%
Black-bellied Whistling Duck	0.53%

Species	Frequency of Occurrence
Bullock's Oriole	0.53%
Cactus Wren	0.53%
Cooper's Hawk	0.53%
Crested Caracara	0.53%
Curve-billed Thrasher	0.53%
Field Sparrow	0.53%
Hermit Thrush	0.53%
Painted Bunting	0.53%
Scissor-tailed Flycatcher	0.53%
Unidentified Meadowlark	0.53%
Ash-throated Flycatcher	0.35%
Black-throated Sparrow	0.35%
Chimney Swift	0.35%
Greater Roadrunner	0.35%
House Sparrow	0.35%
Killdeer	0.35%
Lincoln's Sparrow	0.35%
Northern Bobwhite	0.35%
Red-tailed Hawk	0.35%
Sharp-shinned Hawk	0.35%
Unidentified Blackbird	0.35%
Unidentified Warbler	0.35%
Wild Turkey	0.35%
Yellow-breasted Chat	0.35%
Yellow-rumped Warbler	0.35%
American Crow	0.18%
American Kestrel	0.18%
American Pipit	0.18%
American Redstart	0.18%
American Robin	0.18%
Barred Owl	0.18%
Black-and-white Warbler	0.18%
Blackburnian Warbler	0.18%
Blue-headed Vireo	0.18%
Brewer's Blackbird	0.18%
Carolina Chickadee	0.18%
Common Pauraque	0.18%
Double-crested Cormorant	0.18%
Eastern Phoebe	0.18%
Eastern Screech Owl	0.18%

Species	Frequency of Occurrence
Grasshopper Sparrow	0.18%
Great-horned Owl	0.18%
Green Heron	0.18%
Green-winged Teal	0.18%
Inca Dove	0.18%
Loggerhead Shrike	0.18%
Nashville Warbler	0.18%
Northern Flicker	0.18%
Northern Harrier	0.18%
Red-bellied Woodpecker	0.18%
Red-eyed Vireo	0.18%
Red-shouldered Hawk	0.18%
Snowy Egret	0.18%
Tennessee Warbler	0.18%
Unidentified Flycatcher	0.18%
Unidentified Swallow	0.18%
Unidentified Wren	0.18%
Yellow-bellied Sapsucker	0.18%

Appendix B-2
Avian Percent Composition

Species	Total #	% Composition
Unidentified Blackbird	400	17.88%
White-winged Dove	252	11.27%
Northern Cardinal	232	10.37%
Chipping Sparrow	127	5.68%
Great-tailed Grackle	124	5.54%
Mourning Dove	93	4.16%
Northern Mockingbird	82	3.67%
Brown-headed Cowbird	74	3.31%
European Starling	73	3.26%
Red-winged Blackbird	70	3.13%
Cattle Egret	68	3.04%
Unidentified Sparrow	48	2.15%
House Finch	46	2.06%
White-crowned Sparrow	39	1.74%
Rock Pigeon	35	1.56%
Common Ground-dove	30	1.34%
Savannah Sparrow	29	1.30%
Black Vulture	22	0.98%
Unidentified Warbler	21	0.94%
Lark Sparrow	20	0.89%
Ruby-crowned Kinglet	20	0.89%
Black-crested Titmouse	18	0.80%
Turkey Vulture	17	0.76%
Brewer's Blackbird	15	0.67%
Common Grackle	15	0.67%
Barn Swallow	13	0.58%
Field Sparrow	13	0.58%
Pyrrhuloxia	13	0.58%
Unidentified Meadowlark	13	0.58%
Golden-fronted Woodpecker	12	0.54%
Ladder-backed Woodpecker	12	0.54%
Great Egret	11	0.49%
Black-bellied Whistling Duck	9	0.40%
Cave Swallow	9	0.40%
Couch's Kingbird	8	0.36%
Long-billed Thrasher	8	0.36%
Carolina Wren	7	0.31%
Eastern Bluebird	7	0.31%

Species	Total #	% Composition
Painted Bunting	7	0.31%
Blue-gray Gnatcatcher	6	0.27%
Crested Caracara	6	0.27%
Orange-crowned Warbler	6	0.27%
Cassin's Sparrow	5	0.22%
House Sparrow	5	0.22%
White-eyed Vireo	5	0.22%
American Robin	4	0.18%
Chimney Swift	4	0.18%
Green-winged Teal	4	0.18%
Nashville Warbler	4	0.18%
Bewick's Wren	3	0.13%
Bullock's Oriole	3	0.13%
Cactus Wren	3	0.13%
Cooper's Hawk	3	0.13%
Curve-billed Thrasher	3	0.13%
Hermit Thrush	3	0.13%
Scissor-tailed Flycatcher	3	0.13%
Ash-throated Flycatcher	2	0.09%
Blackbird	2	0.09%
Black-throated Sparrow	2	0.09%
Greater Roadrunner	2	0.09%
Killdeer	2	0.09%
Lincoln's Sparrow	2	0.09%
Northern Bobwhite	2	0.09%
Red-bellied Woodpecker	2	0.09%
Red-tailed Hawk	2	0.09%
Sharp-shinned Hawk	2	0.09%
Wild Turkey	2	0.09%
Yellow-breasted Chat	2	0.09%
Yellow-rumped Warbler	2	0.09%
American Crow	1	0.04%
American Kestrel	1	0.04%
American Pipit	1	0.04%
American Redstart	1	0.04%
Barred Owl	1	0.04%
Black-and-white Warbler	1	0.04%
Blackburnian Warbler	1	0.04%
Blue-headed Vireo	1	0.04%
Carolina Chickadee	1	0.04%

Species	Total #	% Composition
Common Pauraque	1	0.04%
Double-crested Cormorant	1	0.04%
Eastern Phoebe	1	0.04%
Eastern Screech Owl	1	0.04%
Flycatcher	1	0.04%
Grasshopper Sparrow	1	0.04%
Great-horned Owl	1	0.04%
Green Heron	1	0.04%
Inca Dove	1	0.04%
Kingbird	1	0.04%
Loggerhead Shrike	1	0.04%
Northern Flicker	1	0.04%
Northern Harrier	1	0.04%
Red-eyed Vireo	1	0.04%
Red-shouldered Hawk	1	0.04%
Snowy Egret	1	0.04%
Swallow	1	0.04%
Tennessee Warbler	1	0.04%
Unidentified Wren	1	0.04%
Yellow-bellied Sapsucker	1	0.04%

Appendix B-3
Herpetofauna Cover Station Observations

Herpetofauna Station Species for LTA

Herpetofauna Station	Date 1	Observations	Date 2	Observations	Date 3	Observations	Date 4	Observations
1	3/28/2011		3/30/2011		4/23/2011		4/28/2011	
2	3/28/2011		3/30/2011		4/23/2011		4/28/2011	
3	3/26/2011		3/30/2011		4/23/2011		4/28/2011	
4	3/26/2011		3/30/2011		4/23/2011	Schott's Whipsnake	4/28/2011	Schott's Whipsnake
5	3/26/2011		3/29/2011		4/23/2011		4/28/2011	
6	3/26/2011		3/29/2011		4/21/2011	Texas Fence Lizard	4/29/2011	
7	3/26/2011		3/29/2011	Green Anole	4/21/2011		4/29/2011	
8	3/26/2011		3/29/2011		4/21/2011	Unidentified Lizard	4/29/2011	
9	3/26/2011		3/29/2011		4/21/2011		4/29/2011	Ground Skink
10	3/26/2011		3/29/2011		4/21/2011		4/29/2011	
11	3/26/2011		3/29/2011		4/21/2011		4/29/2011	
12	3/27/2011		3/29/2011		4/21/2011		4/29/2011	
13	3/27/2011		3/29/2011		4/21/2011		4/29/2011	
14	3/25/2011		3/30/2011		4/21/2011		4/29/2011	
15	3/25/2011		3/30/2011		4/21/2011		4/29/2011	
16	3/26/2011	Texas Patchnose Snake	3/30/2011		4/23/2011		4/28/2011	
17	3/26/2011		3/30/2011		4/23/2011		4/28/2011	
18	3/26/2011		3/30/2011		4/23/2011		4/28/2011	
19	3/26/2011		3/30/2011		4/23/2011		4/28/2011	
20	3/25/2011		3/30/2011		4/23/2011		4/28/2011	Texas Spiny Lizard
21	3/26/2011		3/30/2011		4/23/2011		4/28/2011	
22	3/26/2011	Texas Spiny Lizard	3/29/2011		4/23/2011		4/29/2011	
23	3/25/2011		3/29/2011		4/21/2011		4/29/2011	
24	3/25/2011	Southern Plains Woodrat	3/29/2011	Southern Plains Woodrat	4/21/2011	Western Diamondback Rattlesnake	4/29/2011	
25	3/25/2011		3/29/2011		4/21/2011		4/29/2011	
26	3/26/2011	Northern Pygmy Mice, Southern Plains Woodrat	3/30/2011		4/23/2011	Northern Pygmy Mice, Southern Plains Woodrat	4/28/2011	Southern Plains Woodrat
27	3/26/2011	Texas Patchnose Snake	3/30/2011		4/23/2011	Northern Pygmy Mouse, White-ankled Mouse	4/28/2011	

Appendix B-4
Mammal Scent Station Observations

Mammal Scent Station Observations for LTA

Mammal Station	White-tailed Deer	Feral Pig	Javelina	Coyote	Common Gray Fox	Eastern Cottontail	Eastern Fox Squirrel	Common Raccoon	Striped Skunk	Virginia Opossum	Nine-banded Armadillo	No Observations
1	X		X	X	X					X		
2				X								
3				X	X	X		X				
4						X		X				
5	X			X								
6	X	X	X			X			X			
7	X			X								
8		X		X		X					X	
9		X	X					X				
10	X					X						
11		X				X		X				
12				X	X	X						
13		X		X								
14							X					
15	X			X		X						
16												X
17	X		X	X								
18		X										
19				X						X		
20	X											
21			X			X		X			X	
22												X
23		X						X		X		
24												X
25		X										

Appendix B-5
Mammal Survey Route Parameters

North Route			
Mile		Left (yards)	Right (yards)
0.0		50	10
0.1		40	10
0.2		30	15
0.3		15	10
0.4		5	10
0.5		50	15
0.6		20	30
0.7		20	30
0.8		20	30
0.9		35	10
1.0		15	10
1.1		10	15
1.2		5	35
1.3		30	30
1.4		125	20
1.5		15	30
1.6		20	5
1.7		10	10
1.8		20	20
1.9		15	15
2.0		15	10
2.1		10	20
2.2		20	20
2.3		20	25
2.4		15	10
2.5		30	35
2.6		35	200
2.7		15	20
2.8		50	20
2.9		20	30
3.0		35	50
3.1		10	15
3.2		70	5
3.3		85	40
3.4		15	15
3.5		15	10
3.6		15	5
3.7		100	10
3.8		10	50
3.9		10	10
4.0		10	15
4.1		60	20
4.2		5	15
Yards	7392.0	28.4	23.5
Feet	22176.0	85.2	70.5

North Route	
Transect Length (feet)	**Average Width of Transect (feet)**
22176.0	155.7
Area (Length x Width)	
3452803.2 square feet	
79.5 acres	

Central Route			
Mile		**Left (yards)**	**Right (yards)**
0.0		15	75
0.1		10	30
0.2		15	120
0.3		10	20
0.4		15	15
0.5		20	15
0.6		20	10
0.7		25	40
0.8		50	30
0.9		75	10
1.0		10	15
1.1		10	20
1.2		15	20
1.3		45	10
1.4		5	15
1.5		10	10
1.6		30	10
1.7		15	10
1.8		5	10
1.9		15	10
2.0		20	20
2.1		10	45
2.2		10	10
2.3		20	20
2.4		15	20
2.5		30	25
2.6		30	20
2.7		40	15
2.8		20	25
2.9		20	25
3.0		150	35
3.1		10	30
Yards	5456.0	24.7	24.5
Feet	16368.0	74.1	73.5
Transect Length (feet)		**Average Width of Transect (feet)**	
16368.0		147.6	
Area (Length x Width)			
2415916.8 square feet			
55.5 acres			

South Route			
Mile		Left (yards)	Right (yards)
0.0		100	100
0.1		5	10
0.2		10	5
0.3		50	75
0.4		10	5
0.5		70	200
0.6		10	15
0.7		5	5
0.8		5	5
0.9		10	5
1.0		15	5
1.1		10	10
1.2		5	5
1.3		20	20
1.4		60	15
1.5		5	10
1.6		5	10
1.7		5	15
1.8		10	10
1.9		5	10
2.0		15	20
2.1		10	15
2.2		10	10
2.3		20	5
2.4		10	5
2.5		10	10
2.6		10	10
2.7		5	10
2.8		10	15
2.9		15	10
3.0		15	20
3.1		10	200
3.2		10	200
3.3		5	30
Yards	5808.0	16.8	32.2
Feet	17424.0	50.4	96.6
Transect Length (feet)		Average Width of Transect (feet)	
17424.0		147.0	
Area (Length x Width)			
2561328 square feet			
55.8 acres			

Large Mammal Survey Observation

Route	Date	Period	Feral Hog	Javelina	Deer	Acres Surveyed
North	3/3/2011	AM	2	4	3	79.5
Central	3/4/2011	AM	4	11	5	55.5
Central	3/26/2011	AM	0	3	7	55.5
Central	3/28/2011	AM	0	0	1	55.5
South	3/26/2011	AM	7	0	2	55.8
South	3/28/2011	AM	0	0	0	55.8
North	3/26/2011	AM	5	0	0	79.5
North	3/27/2011	AM	0	0	0	79.5
North	3/28/2011	AM	0	2	0	79.5
Subtotals			**18**	**20**	**18**	**596.1**

APPENDIX C
DATA SHEETS

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Appendix C-1
Avian Point Count Data Sheets

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Lackland Air Force Base Avian Survey Project

Avian Observation Data Sheet (Fixed Point Count)

Date (mmddyyyy) 1/16/11 Observer (init.) _____ Start Time 8:37 End Time _____ **Obs Pt.** 12

Visibility: goof, fair, (poor) Precipitation: none (fog) light rain rain snow sleet hail other Page 1 of _____

Wind: Direction from: N NE E SE S SW W NW (n/a) Speed: Low Med High (or kph/mph)

Obs #	Species Code	# of individuals.	Activity	Aud?	Habitat Type (circle 1st type, check others)	Notes
1	WCSP	4	(PE) FL (FE) NB MD OT		RI (GR) SH MP HW ST DI MA UR OT	
2	GTGR	7	PE (FL) FE NB MD OT		RI GR SH (MP) HW ST DI MA UR OT	
3	NOCA	2	PE (FL) FE NB MD OT		RI GR SH (MP) HW ST DI MA UR OT	
4	NOMO	1	(PE) FL FE NB MD OT		RI GR SH (MP) HW ST DI MA UR OT	
5	HOFI	25	PE (FL) FE NB MD OT	✓	RI GR SH (MP) HW ST (DI) MA UR OT	
6	CHSP	1	(PE) FL FE NB MD OT		RI (GR) SH MP HW ST (DI) MA UR OT	
7	NOCA	2	(PE) FL FE NB MD OT		RI (GR) SH MP HW ST (DI) MA UR OT	
8	NOCA	1	(PE) FL FE NB MD OT		RI GR SH (MP) HW ST DI MA UR OT	
9	WWDO	2	PE (FL) FE NB MD OT		RI GR SH (MP) HW ST (DI) MA UR OT	
10			PE FL FE NB MD OT		RI GR SH MP HW ST DI MA UR OT	
11			PE FL FE NB MD OT		RI GR SH MP HW ST DI MA UR OT	
12			PE FL FE NB MD OT		RI GR SH MP HW ST DI MA UR OT	
13			PE FL FE NB MD OT		RI GR SH MP HW ST DI MA UR OT	
14			PE FL FE NB MD OT		RI GR SH MP HW ST DI MA UR OT	
15			PE FL FE NB MD OT		RI GR SH MP HW ST DI MA UR OT	✓
16			PE FL FE NB MD OT		RI GR SH MP HW ST DI MA UR OT	
17			PE FL FE NB MD OT		RI GR SH MP HW ST DI MA UR OT	
18			PE FL FE NB MD OT		RI GR SH MP HW ST DI MA UR OT	
19			PE FL FE NB MD OT		RI GR SH MP HW ST DI MA UR OT	
20			PE FL FE NB MD OT		RI GR SH MP HW ST DI MA UR OT	

HABITAT: RI-riparian, GR-grassland, SH-shrubland, MP-mesquite parks, HW-hardwoods, ST-stock tank, DI-disturbed, MA-maintained, UR-urban, OT-other.
ACTIVITY: PE-perched, FL- flight, FE-feeding, NB-nest building, MD-mating display, OT-other.

Lackland Air Force Base Avian Survey Project

Avian Observation Data Sheet (Fixed Point Count)

Date (mmddyyyy) 1/16/11 Observer (init.) CJ Start Time 9:06 End Time _____ **Obs Pt.** 13

Visibility: goof, fair, poor Precipitation: none fog light rain rain snow sleet hail other Page 1 of _____

Wind: Direction from: N NE E SE S SW W NW n/a Speed: Low Med High (or kph/mph)

Obs #	Species Code	# of individuals.	Activity	Aud?	Habitat Type (circle 1st type, check others)	Notes
1	MODO	1	(PE) FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
2	CGDO	6	(PE) FL (FE) / NB MD OT		RI GR (SH) MP HW / ST DI (MA) UR OT	
3	NOCA	2	(PE) FL (FE) / NB MD OT		RI GR (SH) MP HW / ST DI (MA) UR OT	
4	NOCA	1	(PE) FL FE / NB MD OT	✓	RI GR (SH) MP HW / ST DI MA UR OT	
5	NOMO	1	(PE) FL FE / NB MD OT	✓	RI GR (SH) MP HW / ST DI MA UR OT	
6	LBTH	1	(PE) FL FE / NB MD OT	✓	RI GR (SH) MP HW / ST DI MA UR OT	
7	NOMO	1	(PE) (FL) FE / NB (MD) OT		RI GR (SH) (MP) HW / ST DI MA (UR) OT	
8	GTGR	30	PE (FL) FE / NB MD OT		RI GR (SH) (MP) HW / ST DI MA (UR) OT	
9	OCWA	1	(PE) FL FE / NB MD OT		RI GR (SH) MP HW / ST DI MA UR OT	
10	MODO	1	(PE) FL FE / NB MD OT	✓	RI GR (SH) MP HW / ST DI MA UR OT	
11			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
12			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
13			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
14			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
15			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
16			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	✓
17			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
18			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
19			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
20			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	

HABITAT: RI-riparian, GR-grassland, SH-shrubland, MP-mesquite parks, HW-hardwoods, ST-stock tank, DI-disturbed, MA-maintained, UR-urban, OT-other.
ACTIVITY: PE-perched, FL- flight, FE-feeding, NB-nest building, MD-mating display, OT-other.

Lackland Air Force Base Avian Survey Project

Avian Observation Data Sheet (Fixed Point Count)

Date (mmddyyyy) 1/16/11 Observer (init.) CT Start Time 9:21 End Time _____ Obs Pt. 14

Visibility: goof, fair, (poor) Precipitation: none (fog) light rain rain snow sleet hail other Page 1 of _____

Wind: Direction from: N NE E SE S SW W NW (n/a) Speed: Low Med High (or kph/mph)

Obs #	Species Code	# of individuals.	Activity	Aud?	Habitat Type (circle 1st type, check others)	Notes
1	CHSP	3	(PE) FL (FE) / NB MD OT		RI GR SH (MP) HW / ST DI (MA) UR OT	
2	CGDO	2	(PE) (FL) (FE) / NB MD OT		RI GR SH (MP) HW / ST DI (MA) UR OT	
3	NOCA	6	PE FL (FE) / NB (MD) OT		RI GR SH (MP) HW / ST DI (MA) UR OT	
4	MODO	1	(PE) FL (FE) / NB MD OT		RI GR SH (MP) HW / ST DI (MA) UR OT	
5	NOCA	3	(PE) FL (FE) / NB MD OT		RI GR SH (MP) HW / ST DI (MA) UR OT	
6	NOMO	1	(PE) FL FE / NB MD OT	✓	RI GR SH (MP) HW / ST DI MA UR OT	
7	AMPI	1	(PE) FL FE / NB MD OT	✓	RI GR SH (MP) HW / ST DI MA UR OT	
8	NOCA	4	(PE) FL FE / NB MD OT	✓	RI GR SH (MP) HW / ST DI MA UR OT	
9	Sparrows	1	PE (FL) FE / NB MD OT		RI GR SH (MP) HW / ST DI MA UR OT	
10	NOCA	2	(PE) (FL) FE / NB MD OT		RI GR SH (MP) HW / ST DI MA UR OT	
11	NOCA	1	(PE) FL FE / NB MD OT	✓	RI GR SH (MP) HW / ST DI MA UR OT	
12			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
13			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
14			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
15			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
16			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
17			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
18			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
19			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
20			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	

HABITAT: RI-riparian, GR-grassland, SH-shrubland, MP-mesquite parks, HW-hardwoods, ST-stock tank, DI-disturbed, MA-maintained, UR-urban, OT-other.
ACTIVITY: PE-perched, FL- flight, FE-feeding, NB-nest building, MD-mating display, OT-other.

✓

Lackland Air Force Base Avian Survey Project

Avian Observation Data Sheet (Fixed Point Count)

Date (mmddyyyy) 1/16/11 Observer (init.) CT Start Time 9:44 End Time _____ **Obs Pt.** 15

Visibility: goof, fair, (poor) Precipitation: none (fog) light rain rain snow sleet hail other Page 1 of _____

Wind: Direction from: N NE E SE S SW W NW (n/a) Speed: Low Med High (or kph/mph)

Obs #	Species Code	# of individuals.	Activity	Aud?	Habitat Type (circle 1st type, check others)	Notes
1	LBTH	1	(PE) FL FE / NB MD OT	✓	RI GR (SH) MP HW / ST DI MA UR OT	
2	WWDO	2	PE (FL) FE / NB MD OT		RI (GR) (SH) MP HW / ST DI MA UR OT	
3	WWDO	1	PE (FL) FE / NB MD OT		RI (GR) SH (MP) HW / ST DI MA UR OT	
4	LBTH	1	(PE) FL FE / NB MD OT	✓	RI GR SH (MP) HW / ST DI MA UR OT	
5	NOCA	1	(PE) FL FE / NB MD OT		RI GR SH (MP) HW / ST DI MA UR OT	
6	NOCA	2	(PE) FL FE / NB MD OT		RI GR SH (MP) HW / ST DI MA UR OT	
7	NOCA	1	(PE) FL FE / NB MD OT	✓	RI GR (SH) (MP) HW / ST DI MA UR OT	
8	WCSP.	7	PE (FL) FE / NB MD OT		RI (GR) (SH) MP HW / ST DI MA UR OT	
9	LBTH	1	(PE) FL FE / NB MD OT	✓	RI (GR) SH (MP) HW / ST DI MA UR OT	
10			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
11			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
12			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
13			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
14			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	✓
15			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
16			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
17			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
18			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
19			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
20			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	

HABITAT: RI-riparian, GR-grassland, SH-shrubland, MP-mesquite parks, HW-hardwoods, ST-stock tank, DI-disturbed, MA-maintained, UR-urban, OT-other.
ACTIVITY: PE-perched, FL- flight, FE-feeding, NB-nest building, MD-mating display, OT-other.

Lackland Air Force Base Avian Survey Project

Avian Observation Data Sheet (Fixed Point Count)

Date (mmddyyyy) 1/16/11 Observer (init.) JT Start Time 1003 End Time ____ Obs Pt. 16

Visibility: goof, fair, (poor) Precipitation: none (fog) light rain rain snow sleet hail other Page 1 of ____

Wind: Direction from: N NE E SE S SW W NW (n/a) Speed: Low Med High (or kph/mph)

Obs #	Species Code	# of individuals.	Activity	Aud?	Habitat Type (circle 1st type, check others)	Notes
1	GHOW	1	(PE) FL FE / NB MD OT		(RI) GR SH MP HW / ST DI MA UR OT	Flushed from tree as driving up to point
2	OCWA	1	(PE) FL FE / NB MD OT	✓	(RI) GR SH MP HW / ST DI MA UR OT	
3	NOCA	4	(PE) FL FE / NB MD OT	✓	(RI) GR SH MP HW / ST DI MA UR OT	
4	FISP	2	(PE) FL FE / NB MD OT		(RI) GR SH MP HW / ST DI MA UR OT	
5	NOCA	6	(PE) FL FE / NB MD OT	✓	(RI) GR SH MP HW / ST DI MA UR OT	
6	YRWA	1	(PE) FL FE / NB MD OT		(RI) GR SH MP HW / ST DI MA UR OT	
7	NOMO	1	(PE) FL FE / NB MD OT	✓	(RI) GR SH MP HW / ST DI MA UR OT	
8	HOFI	15	PE (FL) FE / NB MD OT		(RI) GR SH MP HW / ST DI MA UR OT	
9			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
10			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
11			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
12			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
13			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	✓
14			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
15			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
16			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
17			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
18			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
19			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
20			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	

HABITAT: RI-riparian, GR-grassland, SH-shrubland, MP-mesquite parks, HW-hardwoods, ST-stock tank, DI-disturbed, MA-maintained, UR-urban, OT-other.
ACTIVITY: PE-perched, FL- flight, FE-feeding, NB-nest building, MD-mating display, OT-other.

Lackland Air Force Base Avian Survey Project

Avian Observation Data Sheet (Fixed Point Count)

Date (mmddyyyy) 1/16/11 Observer (init.) CT Start Time 1023 End Time _____ **Obs Pt.** 17

Visibility: good, fair, poor | Precipitation: none (fog) light rain rain snow sleet hail other | Page 1 of _____

Wind: Direction from: N NE E SE S SW W NW (n/a) | Speed: Low Med High (or kph/mph)

Obs #	Species Code	# of individuals.	Activity	Aud?	Habitat Type (circle 1st type, check others)	Notes
1	MODO	1	PE (FL) FE / NB MD OT		(RI) GR SH MP HW / ST DI MA UR OT	
2	NOCA	2	(PE) FL FE / NB MD OT		RI GR SH (MP) HW / ST DI MA UR OT	
3	GTGR	1	PE (FD) FE / NB MD OT		(RI) GR SH MP HW / ST DI MA UR OT	
4	NOMO	1	(PE) FL FE / NB MD OT	✓	RI GR (SH) MP HW / ST DI MA UR OT	
5	NOCA	2	(PE) FL FE / NB MD OT	✓	RI GR SH (MP) HW / ST DI MA UR OT	
6			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
7			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
8			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
9			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
10			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	✓
11			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
12			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
13			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
14			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
15			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
16			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
17			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
18			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
19			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
20			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	

HABITAT: RI-riparian, GR-grassland, SH-shrubland, MP-mesquite parks, HW-hardwoods, ST-stock tank, DI-disturbed, MA-maintained, UR-urban, OT-other.
ACTIVITY: PE-perched, FL- flight, FE-feeding, NB-nest building, MD-mating display, OT-other.

Lackland Air Force Base Avian Survey Project

Avian Observation Data Sheet (Fixed Point Count)

Date (mmddyyyy) 1/16/11 Observer (init.) CL Start Time 10:44 End Time ____ Obs Pt. 18

Visibility: goof, (fair) poor Precipitation: (none) fog light rain rain snow sleet hail other Page 1 of ____

Wind: Direction from: N NE E SE S SW W NW (n/a) Speed: Low Med High (or kph/mph)

Obs #	Species Code	# of individuals.	Activity	Aud?	Habitat Type (circle 1st type, check others)	Notes
1	NOCA	3	(PE) FL FE / NB MD OT	✓	(RI) GR SH MP HW / ST DI MA UR OT	
2	COHA	1	PE (FL) FE / NB MD OT		(RI) GR SH MP HW / ST DI MA UR OT	
3	BGGN	1	(PE) FL FE / NB MD OT		(RI) GR SH MP HW / ST DI MA UR OT	
4	GREG	1	(PE) FL FE / NB MD OT		(RI) GR SH MP HW / ST DI MA UR (OT)	by creek
5	RCKI	1	(PE) FL FE / NB MD OT	✓	(RI) GR SH MP HW / ST DI MA UR OT	
6	NOCA	1	(PE) FL FE / NB MD OT	✓	(RI) GR SH MP HW / ST DI MA UR OT	
7	RCKI	1	(PE) FL FE / NB MD OT	✓	(RI) GR SH MP HW / ST DI MA UR OT	
8			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
9			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
10			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
11			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
12			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
13			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
14			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
15			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
16			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
17			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	✓
18			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
19			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
20			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	

HABITAT: RI-riparian, GR-grassland, SH-shrubland, MP-mesquite parks, HW-hardwoods, ST-stock tank, DI-disturbed, MA-maintained, UR-urban, OT-other.
ACTIVITY: PE-perched, FL- flight, FE-feeding, NB-nest building, MD-mating display, OT-other.

Lackland Air Force Base Avian Survey Project

Avian Observation Data Sheet (Fixed Point Count)

Date (mmddyyyy) 1/16/11 Observer (init.) CT Start Time 1104 End Time ____ Obs Pt. 19

Visibility: good (fair) poor Precipitation: (none) fog light rain rain snow sleet hail other Page 1 of ____

Wind: Direction from: N NE E SE S SW W (NW) n/a Speed: (Low) Med High (or kph/mph)

Obs #	Species Code	# of individuals.	Activity	Aud?	Habitat Type (circle 1st type, check others)	Notes
1	AMKE	1	(PE) FL FE / NB MD OT		RI (GR) (SH) MP HW / ST DI MA UR OT	
2	MEAD	4	(PE) FL FE / NB MD OT		RI GR SH MP HW / ST DI (MA) UR (OT)	fence
3	NOMO	1	(PE) FL FE / NB MD OT	✓	RI GR (SH) MP HW / ST DI MA UR OT	
4	NOMO	1	(PE) FL FE / NB MD OT		RI (GR) (SH) MP HW / ST DI MA UR OT	
5	NOCA	1	(PE) (FL) FE / NB MD OT		RI (GR) (SH) MP HW / ST DI MA UR OT	
6	EABI	1	(PE) FL FE / NB MD OT		RI GR SH MP HW / ST DI (MA) UR (OT)	fence
7			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
8			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
9			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
10			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
11			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
12			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
13			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	✓
14			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
15			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
16			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
17			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
18			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
19			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
20			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	

HABITAT: RI-riparian, GR-grassland, SH-shrubland, MP-mesquite parks, HW-hardwoods, ST-stock tank, DI-disturbed, MA-maintained, UR-urban, OT-other.
ACTIVITY: PE-perched, FL- flight, FE-feeding, NB-nest building, MD-mating display, OT-other.

Lackland Air Force Base Avian Survey Project

Avian Observation Data Sheet (Fixed Point Count)

Date (mmddyyyy) 1/16/11 Observer (init.) CT Start Time 8:19 End Time ____ Obs Pt. 20

Visibility: goof, fair, (poor) Precipitation: none (fog) light rain rain snow sleet hail other Page 1 of ____

Wind: Direction from: N NE E SE S SW W NW (n/a) Speed: Low Med High (or kph/mph) heavy fog

Obs #	Species Code	# of individuals.	Activity	Aud?	Habitat Type (circle 1st type, check others)	Notes
1	WWDO	1	PE (FL) FE / NB MD OT		RI GR (SH) MP HW / ST DI (MA) UR OT	
2	CGDO	2	(PE) (FL) (FE) / NB MD OT		RI GR (SH) MP HW / ST DI (MA) UR OT	
3	NOCA	1	(PE) FL FE / NB MD OT		RI GR (SH) MP HW / ST DI (MA) UR OT	
4	NOCA	1	PE (FL) FE / NB MD OT		RI GR (SH) MP HW / ST DI MA UR OT	
5	NOMO	1	(PE) FL FE / NB MD OT	✓	RI GR (SH) MP HW / ST DI MA UR OT	
6	NOCA	2	PE (FL) (FE) / NB MD OT		RI GR (SH) MP HW / ST DI (MA) UR OT	
7	NOCA	2	PE (FL) (FE) / NB MD OT		RI GR (SH) MP HW / ST DI (MA) UR OT	
8			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
9			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
10			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
11			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
12			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
13			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
14			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
15			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
16			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
17			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
18			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	✓
19			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
20			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	

HABITAT: RI-riparian, GR-grassland, SH-shrubland, MP-mesquite parks, HW-hardwoods, ST-stock tank, DI-disturbed, MA-maintained, UR-urban, OT-other.
ACTIVITY: PE-perched, FL- flight, FE-feeding, NB-nest building, MD-mating display, OT-other.

Lackland Air Force Base Avian Survey Project

Avian Observation Data Sheet (Fixed Point Count)

Date (mmddyyyy) 1/13/11 Observer (init.) CT Start Time 7:50 End Time ____ Obs Pt. 12

Visibility: goof, fair, (poor) Precipitation: none (fog) light rain rain snow sleet hail other Page ____ of ____

Wind: Direction from: N (NE) E SE S SW W NW n/a Speed: (Low) Med High (or kph/mph)

Obs #	Species Code	# of individuals.	Activity	Aud?	Habitat Type (circle 1st type, check others)	Notes
1	NOMO	1	(PE) FL FE / NB MD OT	✓	RI GR SH (MP) HW / ST (DI) MA (UR) OT	
2	NOCA	1	(PE) FL FE / NB MD OT	✓	RI GR SH (MP) HW / ST DI MA UR OT	
3	RWBL	11	PE (FL) FE / NB MD OT		RI GR SH (MP) HW / ST (DI) MA UR OT	
4	SASP	3	(PE) FL (FE) / NB MD OT		RI (GR) SH MP HW / ST (DI) MA UR OT	
5	BHCO	1	(PE) FL FE / NB MD OT	✓	RI GR SH MP HW / ST (DI) MA UR OT	
6			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
7			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
8			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
9			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
10			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
11			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
12			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
13			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
14			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
15			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	✓
16			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
17			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
18			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
19			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
20			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	* 13 feral hogs

HABITAT: RI-riparian, GR-grassland, SH-shrubland, MP-mesquite parks, HW-hardwoods, ST-stock tank, DI-disturbed, MA-maintained, UR-urban, OT-other.
ACTIVITY: PE-perched, FL- flight, FE-feeding, NB-nest building, MD-mating display, OT-other.

Lackland Air Force Base Avian Survey Project

Avian Observation Data Sheet (Fixed Point Count)

Date (mmddyyyy) 1/15/11 Observer (init.) _____ Start Time 8:10 End Time _____ **Obs Pt.** 13

Visibility: goof, fair, poor | Precipitation: none fog light rain rain snow sleet hail other | Page _____ of _____

Wind: Direction from: N NE E SE S SW W NW n/a | Speed: Low Med High (or kph/mph)

Obs #	Species Code	# of individuals.	Activity	Aud?	Habitat Type (circle 1st type, check others)	Notes
1	NOCA	1	(PE) (FL) FE / NB MD OT	✓	RI GR (SH) (MP) HW / ST DI MA UR OT	
2	NOCA	1	PE (FL) FE / NB MD OT	✓	RI GR (SH) MP HW / ST DI MA UR OT	
3	NOCA	1	PE (FL) FE / NB MD OT		RI GR (SH) MP HW / ST DI MA UR OT	
4	NOMO	1	PE (FL) FE / NB MD OT	✓	RI GR (SH) MP HW / ST DI MA UR OT	
5	PYRR	2	PE (FL) FE / NB MD OT		RI GR (SH) MP HW / ST DI MA UR OT	
6	BEWR	1	PE (FL) FE / NB MD OT	✓	RI GR (SH) (MP) HW / ST DI MA UR OT	
7	OCWA	1	(PE) FL FE / NB MD OT		RI GR (SH) MP HW / ST DI MA UR OT	
8	RCKI	1	(PE) (FL) FE / NB MD OT	✓	RI GR (SH) (MP) HW / ST DI MA UR OT	
9	RCKI	1	PE (FL) FE / NB MD OT		RI GR (SH) (MP) HW / ST DI MA UR OT	
10	BLVU	16	PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR (OT)	transmission Tower
11	CBTH	1	(PE) (FL) FE / NB MD OT		RI GR (SH) (MP) HW / ST DI MA UR OT	
12	BTSP	1	(PE) FL FE / NB MD OT	✓	RI GR (SH) MP HW / ST DI MA UR OT	
13			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
14			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
15			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
16			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	✓
17			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
18			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
19			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
20			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	

HABITAT: RI-riparian, GR-grassland, SH-shrubland, MP-mesquite parks, HW-hardwoods, ST-stock tank, DI-disturbed, MA-maintained, UR-urban, OT-other.
ACTIVITY: PE-perched, FL- flight, FE-feeding, NB-nest building, MD-mating display, OT-other.

Lackland Air Force Base Avian Survey Project

Avian Observation Data Sheet (Fixed Point Count)

Date (mmddyyyy) 1/15/11 Observer (init.) _____ Start Time 8:38 End Time _____ **Obs Pt.** 14

Visibility: goof, (fair) poor | Precipitation: none (fog) light rain rain snow sleet hail other | Page 1 of _____

Wind: Direction from: N NE E SE S SW W NW (n/a) | Speed: Low Med High (or kph/mph)

Obs #	Species Code	# of individuals.	Activity	Aud?	Habitat Type (circle 1st type, check others)	Notes
1	RBWO	1	(PE) FL (FE) / NB MD OT	✓	RI GR SH (MP) HW / ST DI MA UR OT	
2	CGDO	2	PE FL (FE) / NB MD OT		RI GR SH (MP) HW / ST DI (MA) UR OT	
3	NOMO	1	(PE) FL FE / NB MD OT	✓	RI GR SH (MP) HW / ST DI MA UR OT	
4	NOCA	1	(PE) FL FE / NB MD OT		RI GR SH (MP) HW / ST DI MA UR OT	
5	NOCA	1	(PE) FL FE / NB MD OT	✓	RI GR SH (MP) HW / ST DI MA UR OT	
6	MODO	3	(PE) FL FE / NB MD OT	✓	RI GR SH (MP) HW / ST DI MA UR OT	
7	RCKI	1	(PE) FL FE / NB MD OT	✓	RI GR (SH) MP HW / ST DI MA UR OT	
8	Sparrow	6	PE (FL) FE / NB MD OT		RI GR SH (MP) HW / ST DI MA UR OT	
9	RBWO	1	(PE) FL FE / NB MD OT	✓	RI GR SH (MP) HW / ST DI MA UR OT	
10	SSHA	1	PE (FL) FE / NB MD OT		RI GR SH (MP) HW / ST DI MA UR OT	
11			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
12			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
13			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
14			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
15			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
16			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	✓
17			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
18			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
19			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
20			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	

HABITAT: RI-riparian, GR-grassland, SH-shrubland, MP-mesquite parks, HW-hardwoods, ST-stock tank, DI-disturbed, MA-maintained, UR-urban, OT-other.
ACTIVITY: PE-perched, FL- flight, FE-feeding, NB-nest building, MD-mating display, OT-other.

Lackland Air Force Base Avian Survey Project

Avian Observation Data Sheet (Fixed Point Count)

Date (mmddyyyy) 1/15/11 Observer (init.) LT Start Time 9:08 End Time ____ Obs Pt. 15

Visibility: goof, (fair), poor Precipitation: none (fog) light rain rain snow sleet hail other Page 1 of ____

Wind: Direction from: N (NE) E SE S SW W NW n/a Speed: (Low) Med High (or kph/mph)

Obs #	Species Code	# of individuals.	Activity	Aud?	Habitat Type (circle 1st type, check others)	Notes
1	EUST	1	(PE) FL FE / NB MD OT		RI GR (SH) (MP) HW / ST DI MA UR OT	
2	RWBL	3	PE (FL) FE / NB MD OT		RI GR SH (MP) HW / ST DI MA UR OT	
3	NOCA	1	(PE) FL FE / NB MD OT	✓	RI GR SH (MP) HW / ST DI MA UR OT	
4	NOMO	1	(PE) FL FE / (NB) MD OT	✓	RI GR SH (MP) HW / ST DI MA UR OT	
5	LBTH	1	(PE) FL FE / NB MD OT	✓	RI GR (SH) (MP) HW / ST DI (MA) UR OT	
6	NOCA	1	PE FL (FE) / NB MD OT	✓	RI GR SH MP HW / ST DI (MA) UR OT	
7	LBTH	1	(PE) FL FE / NB MD OT	✓	RI GR (SH) (MP) HW / ST DI MA UR OT	
8	MODO	1	PE (FL) FE / NB MD OT		RI GR SH (MP) HW / ST DI MA UR OT	
9	WREN	1	PE (FL) FE / NB MD OT		RI GR SH (MP) HW / ST (DI) MA UR (OT)	
10	CHSP	1	(PE) FL (FE) / NB MD OT	✓	RI (GR) SH MP HW / ST (DI) MA UR OT	
11	EUST	25	PE (FL) FE / NB MD OT		RI (GR) SH MP HW / ST (DI) MA UR OT	landfill area
12			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
13			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
14			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
15			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
16			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	✓
17			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
18			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
19			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
20			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	

HABITAT: RI-riparian, GR-grassland, SH-shrubland, MP-mesquite parks, HW-hardwoods, ST-stock tank, DI-disturbed, MA-maintained, UR-urban, OT-other.
ACTIVITY: PE-perched, FL- flight, FE-feeding, NB-nest building, MD-mating display, OT-other.

Lackland Air Force Base Avian Survey Project

Avian Observation Data Sheet (Fixed Point Count)

Date (mmddyyyy) 1/15/11 Observer (init.) CT Start Time 10:03 End Time _____ Obs Pt. 17

Visibility: goof, fair, poor Precipitation: none fog light rain rain snow sleet hail other Page _____ of _____

Wind: Direction from: N NE E SE S SW W NW n/a Speed: Low Med High (or kph/mph)

Obs #	Species Code	# of individuals.	Activity	Aud?	Habitat Type (circle 1st type, check others)	Notes
1	GRAO	1	(PE) FL FE / NB MD (OT)		RI GR (SH) MP HW / ST DI MA UR OT	
2	NOMO	1	(PE) (FL) FE / NB MD OT	✓	RI GR (SH) MP HW / ST DI MA UR OT	
3	NOMO	1	(PE) FL FE / NB MD OT	✓	RI GR SH (MP) HW / ST DI MA UR OT	
4	PYRR	1	(PE) (FL) FE / NB MD OT		RI GR (SH) (MP) HW / ST DI MA UR OT	
5	CGDO	2	PE (FL) (FE) / NB MD OT		RI GR (SH) MP HW / ST DI (MA) UR OT	
6	NOMO	1	(PE) FL FE / NB MD OT	✓	RI GR (SH) MP HW / ST DI MA UR OT	
7	NOCA	4	PE FL (FE) / NB MD OT		RI GR SH (MP) HW / ST DI (MA) UR OT	
8	NOMO	1	(PE) FL FE / NB MD OT	✓	RI GR (SH) MP HW / ST DI MA UR OT	
9	WCSP	2	(PE) FL FE / (NB) MD OT		RI GR (SH) MP HW / ST DI MA UR OT	
10	NOCA	2	(PE) (FL) (FE) / NB MD OT		RI GR (SH) (MP) HW / ST DI (MA) UR OT	
11			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
12			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
13			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
14			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
15			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
16			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
17			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
18			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
19			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
20			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	

HABITAT: RI-riparian, GR-grassland, SH-shrubland, MP-mesquite parks, HW-hardwoods, ST-stock tank, DI-disturbed, MA-maintained, UR-urban, OT-other.
ACTIVITY: PE-perched, FL- flight, FE-feeding, NB-nest building, MD-mating display, OT-other.

Lackland Air Force Base Avian Survey Project

Avian Observation Data Sheet (Fixed Point Count)

Date (mmddyyyy) 1/15/11 Observer (init.) CT Start Time 10:06 End Time _____ Obs Pt. 18

Visibility: goof, (fair), poor Precipitation: none (fog) (light rain) rain snow sleet hail other Page 1 of _____

Wind: Direction from: N NE E SE S SW W NW (n/a) Speed: Low Med High (or kph/mph)

Obs #	Species Code	# of individuals.	Activity	Aud?	Habitat Type (circle 1st type, check others)	Notes
1	WCSP	11	(PE) FL (FE) / NB MD OT	✓	(RI) GR SH MP HW / ST DI (MA) UR OT	feeding in road
2	NOCA	2	PE (FL) FE / NB MD OT		(RI) GR SH MP HW / ST DI MA UR OT	
3			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
4			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
5			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
6			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
7			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
8			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
9			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
10			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
11			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
12			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
13			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
14			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
15			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
16			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
17			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
18			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
19			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
20			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	

HABITAT: RI-riparian, GR-grassland, SH-shrubland, MP-mesquite parks, HW-hardwoods, ST-stock tank, DI-disturbed, MA-maintained, UR-urban, OT-other.
ACTIVITY: PE-perched, FL- flight, FE-feeding, NB-nest building, MD-mating display, OT-other.

Lackland Air Force Base Avian Survey Project

Avian Observation Data Sheet (Fixed Point Count)

Date (mmddyyyy) 1/15/11 Observer (init.) CT Start Time 11:00 End Time ____ **Obs Pt.** 19

Visibility: goof, (fair), poor Precipitation: none fog (light rain) rain snow sleet hail other Page 1 of ____

Wind: Direction from: N NE E SE S SW W NW (n/a) Speed: Low Med High (or kph/mph)

Obs #	Species Code	# of individuals.	Activity	Aud?	Habitat Type (circle 1st type, check others)	Notes
1	MEAD	6	(PE) FL FE / NB MD OT		RI GR SH MP HW / ST DI (MA) UR OT	
2	LOSH	1	(PE) FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR (OT)	fence
3	EUST	3	(PE) FL FE / NB MD OT		RI GR SH MP HW / ST DI (MA) UR (OT)	fence
4	HOFI	1	PE (FL) FE / NB MD OT		RI GR (SH) MP HW / ST DI (MA) UR OT	
5			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
6			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
7			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
8			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
9			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
10			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
11			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
12			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
13			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
14			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
15			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
16			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	✓
17			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
18			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
19			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
20			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	

HABITAT: RI-riparian, GR-grassland, SH-shrubland, MP-mesquite parks, HW-hardwoods, ST-stock tank, DI-disturbed, MA-maintained, UR-urban, OT-other.
ACTIVITY: PE-perched, FL- flight, FE-feeding, NB-nest building, MD-mating display, OT-other.

Lackland Air Force Base Avian Survey Project

Avian Observation Data Sheet (Fixed Point Count)

Date (mmddyyyy) 1/15/11 Observer (init.) CT Start Time 11:34 End Time ____ Obs Pt. 20

Visibility: goof, fair, poor | Precipitation: none (fog) light rain rain snow sleet hail other | Page 1 of ____

Wind: Direction from: N (NE) E SE S SW W NW n/a | Speed: (Low) Med High (or kph/mph)

Obs #	Species Code	# of individuals.	Activity	Aud?	Habitat Type (circle 1st type, check others)	Notes
1	MEAD	3	(PE) FL (FE) / NB MD OT		RI (GR) SH MP HW / ST DI (MA) UR OT	
2	KILL	1	(PE) FL FE / NB MD OT		RI GR SH MP HW / ST DI (MA) UR OT	
3	NOMO	1	(PE) FL FE / NB MD OT		RI GR SH (MP) HW / ST DI MA UR OT	
4	NOMO	1	(PE) FL FE / NB MD OT		RI GR (SH) (MP) HW / ST DI MA UR OT	
5	EABL	2	(PE) (FL) FE / NB MD OT		RI GR SH MP HW / ST DI (MA) UR (OT)	Fence
6			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
7			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
8			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
9			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
10			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	✓
11			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
12			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
13			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
14			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
15			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
16			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
17			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
18			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
19			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
20			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	

HABITAT: RI-riparian, GR-grassland, SH-shrubland, MP-mesquite parks, HW-hardwoods, ST-stock tank, DI-disturbed, MA-maintained, UR-urban, OT-other.
ACTIVITY: PE-perched, FL- flight, FE-feeding, NB-nest building, MD-mating display, OT-other.

Lackland Air Force Base Avian Survey Project

Avian Observation Data Sheet (Fixed Point Count)

Date (mmddyyyy) 1/13/2011 Observer (init.) CT Start Time 9:19 End Time ____ **Obs Pt.** 1

Visibility: good, (fair), poor | Precipitation: (none) fog light rain rain snow sleet hail other | Page 1 of 1

Wind: Direction from: N NE E SE S (SW) W NW n/a | Speed: (Low) Med High (or kph/mph)

Obs #	Species Code	# of individuals.	Activity	Aud?	Habitat Type (circle 1st type, check others)	Notes
1	NOCA	1	(PE) FL FE / NB MD OT	✓	RI GR (SH) MP HW / ST DI MA UR OT	
2	NOMO	2	(PE) FL FE / NB MD OT	✓	RI GR (SH) MP HW / ST DI MA UR OT	
3	RCKI	1	(PE) (FL) FE / NB MD OT	✓	RI GR SH MP HW / ST DI (MA) UR OT	
4			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
5			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
6			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
7			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
8			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
9			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
10			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
11			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
12			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
13			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
14			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
15			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
16			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
17			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
18			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
19			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
20			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	

HABITAT: RI-riparian, GR-grassland, SH-shrubland, MP-mesquite parks, HW-hardwoods, ST-stock tank, DI-disturbed, MA-maintained, UR-urban, OT-other.
ACTIVITY: PE-perched, FL- flight, FE-feeding, NB-nest building, MD-mating display, OT-other.

Lackland Air Force Base Avian Survey Project

Avian Observation Data Sheet (Fixed Point Count)

Date (mmddyyyy) 1/13/11 Observer (Init.) CT Start Time 8:42 End Time ____ **Obs Pt.** 2

Visibility: goof, (fair), poor | **Precipitation :** (none) fog light rain rain snow sleet hail other | Page ____ of ____

Wind: Direction from: N NE E SE (S) SW W NW n/a | Speed: (Low) Med High (or kph/mph)

Obs #	Species Code	# of individuals.	Activity	Aud?	Habitat Type (circle 1st type, check others)	Notes
1	Sparrow	1	PE (FL) FE / NB MD OT		RI GR (SH) (MP) HW / (ST) DI MA UR OT	
2	INDO	1	PE (FL) FE / NB MD OT		RI GR (SH) MP HW / ST DI MA UR OT	
3	NOMO	1	(PE) FL FE / NB MD OT		RI GR (SH) MP HW / ST DI MA UR OT	
4	RWBL	4	PE (FL) FE / NB MD OT	✓	RI GR SH MP HW / (ST) DI MA UR OT	
5			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
6			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
7			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
8			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
9			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
10			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
11			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
12			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
13			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
14			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
15			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
16			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
17			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
18			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
19			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
20			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	

HABITAT: RI-riparian, GR-grassland, SH-shrubland, MP-mesquite parks, HW-hardwoods, ST-stock tank, DI-disturbed, MA-maintained, UR-urban, OT-other.
ACTIVITY: PE-perched, FL- flight, FE-feeding, NB-nest building, MD-mating display, OT-other.

Lackland Air Force Base Avian Survey Project

Avian Observation Data Sheet (Fixed Point Count)

Date (mmddyyyy) 1/13/11 Observer (init.) CT Start Time 8:15 End Time ____ **Obs Pt.** 3

Visibility: goof, fair, (poor) Precipitation: (none) fog light rain rain snow sleet hail other Page 1 of 1

Wind: Direction from: N NE E SE (S) SW W NW n/a Speed: (Low) Med High (or kph/mph)

Obs #	Species Code	# of individuals.	Activity	Aud?	Habitat Type (circle 1st type, check others)	Notes
1	BHCO	20	PE (FL) FE / NB MD OT	✓	RI GR SH (MP) HW / ST DI (MA) UR OT	
2	NOMO	1	(PE) FL FE / NB MD OT	✓	RI GR (SH) (MP) HW / ST DI MA UR OT	
3	NOCA	1	(PE) FL FE / NB MD OT	✓	RI GR (SH) (MP) HW / ST DI MA UR OT	
4	Sparrow	1	PE (FL) FE / NB MD OT		RI GR (SH) (MP) HW / ST DI MA UR OT	
5	RCKI	1	(PE) FL FE / NB MD OT		RI GR SH (MP) HW / ST DI MA UR (OT)	Fenceline
6	NOCA	1	(PE) (FL) FE / NB MD OT	✓	RI GR (SH) (MP) HW / ST DI MA UR OT	
7	HETH	1	(PE) FL FE / NB MD OT		RI GR (SH) (MP) HW / ST DI MA UR OT	water puddle
8			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
9			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
10			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
11			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
12			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
13			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
14			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
15			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	✓
16			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
17			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
18			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
19			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
20			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	

HABITAT: RI-riparian, GR-grassland, SH-shrubland, MP-mesquite parks, HW-hardwoods, ST-stock tank, DI-disturbed, MA-maintained, UR-urban, OT-other.
ACTIVITY: PE-perched, FL- flight, FE-feeding, NB-nest building, MD-mating display, OT-other.

Lackland Air Force Base Avian Survey Project

Avian Observation Data Sheet (Fixed Point Count)

Date (mmddyyyy) 1/13/2016 Observer (init.) CAT Start Time 7:53 End Time 8:08 **Obs Pt.** 4

Visibility: goof (fair) poor | Precipitation: (none) fog light rain rain snow sleet hail other | Page 1 of 1

Wind: Direction from: N NE E SE S (SW) W NW n/a | Speed: (Low) Med High (or kph/mph)

Obs #	Species Code	# of individuals.	Activity	Aud?	Habitat Type (circle 1st type, check others)	Notes
1	NOCA	1	(PE) (FL) FE / NB MD OT		RI GR SH (MP) HW / ST DI MA UR OT	
2	NOCA	1	PE FL FE / NB MD OT	✓	RI GR SH (MP) HW / ST DI MA UR OT	
3	GTGR	4	(PE) FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR (OT)	T-pole
4	MODO	1	(PE) FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	"
5	EUST	6	(PE) FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR (OT)	"
6	Sparrow	9	PE (FL) FE / NB MD OT		RI GR SH (MP) HW / ST (DI) MA UR OT	
7	NOCA	1	PE (FL) FE / NB MD OT	✓	RI GR SH (MP) HW / ST DI MA UR OT	
8	LBWO	1	(PE) (FL) FE / NB MD OT	✓	RI GR SH (MP) HW / ST DI MA UR OT	
9	NOCA	1	(PE) FL FE / NB MD OT		RI GR SH (MP) HW / ST DI MA UR OT	
10	SASP	5	(PE) (FL) (FE) / NB MD OT	✓	RI GR SH MP HW / ST (DI) MA UR (OT)	T-pole, road
11			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
12			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
13			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
14			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
15			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
16			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
17			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
18			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	✓
19			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
20			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	

HABITAT: RI-riparian, GR-grassland, SH-shrubland, MP-mesquite parks, HW-hardwoods, ST-stock tank, DI-disturbed, MA-maintained, UR-urban, OT-other.
ACTIVITY: PE-perched, FL- flight, FE-feeding, NB-nest building, MD-mating display, OT-other.

Lackland Air Force Base Avian Survey Project

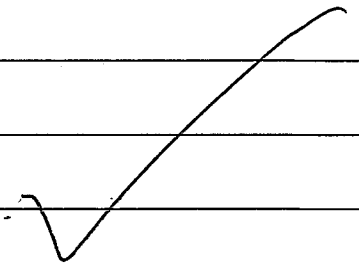
Avian Observation Data Sheet (Fixed Point Count)

Date (mmddyyyy) 1/13/2010 Observer (init.) CAT Start Time 7:30 End Time ____ **Obs Pt.** 5

Visibility: goof, (fair) poor | Precipitation : (none) fog light rain rain snow sleet hail other | Page 1 of 1

Wind: Direction from: N NE E SE (S) SW W NW n/a | Speed: (Low) Med High (or kph/mph)

Obs #	Species Code	# of individuals.	Activity	Aud?	Habitat Type (circle 1st type, check others)	Notes
1	NOCA	1	(PE) FL FE / NB MD OT	✓	(RI) GR SH MP HW / ST DI MA UR OT	
2	YBSA	1	(PE) FL FE / NB MD OT	✓	RI GR SH MP (HW) / ST DI MA UR OT	
3	NOCA	1	(PE) FL FE / NB MD OT	✓	RI GR SH MP (HW) / ST DI MA UR OT	
4	Sparrow	2	PE (FL) FE / NB MD OT		RI GR SH MP (HW) / ST DI MA UR OT	
5			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
6			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
7			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
8			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
9			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
10			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
11			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
12			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
13			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
14			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
15			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
16			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
17			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
18			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
19			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
20			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	



HABITAT: RI-riparian, GR-grassland, SH-shrubland, MP-mesquite parks, HW-hardwoods, ST-stock tank, DI-disturbed, MA-maintained, UR-urban, OT-other.
ACTIVITY: PE-perched, FL- flight, FE-feeding, NB-nest building, MD-mating display, OT-other.

Lackland Air Force Base Avian Survey Project

Avian Observation Data Sheet (Fixed Point Count)

Date (mmddyyyy) 1/13/11 Observer (init.) CT Start Time 9:40 End Time 9:55 **Obs Pt.** G

Visibility: good, fair, poor | Precipitation: none, fog, light rain, rain, snow, sleet, hail, other | Page 1 of 1

Wind: Direction from: N, NE, E, SE, S, SW, W, NW, n/a | Speed: Low, Med, High (or kph/mph)

Obs #	Species Code	# of individuals.	Activity	Aud?	Habitat Type (circle 1st type, check others)	Notes
1			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	No avian observations.
2			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
3			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
4			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
5			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
6			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
7			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
8			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
9			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
10			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
11			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
12			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
13			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
14			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
15			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
16			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
17			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
18			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	✓
19			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
20			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	

HABITAT: RI-riparian, GR-grassland, SH-shrubland, MP-mesquite parks, HW-hardwoods, ST-stock tank, DI-disturbed, MA-maintained, UR-urban, OT-other.
ACTIVITY: PE-perched, FL- flight, FE-feeding, NB-nest building, MD-mating display, OT-other.

Lackland Air Force Base Avian Survey Project

Avian Observation Data Sheet (Fixed Point Count)

Date (mmddyyyy) 1/13/2011 Observer (init.) CT Start Time 1043 End Time ____ Obs Pt. 7

Visibility: (good) fair, poor Precipitation: (none) fog light rain rain snow sleet hail other Page 1 of ____

Wind: Direction from: (N) NE E SE S SW W NW n/a Speed: (Low) Med High (or kph/mph)

Obs #	Species Code	# of individuals.	Activity	Aud?	Habitat Type (circle 1st type, check others)	Notes
1	FISP	1	(PE) FL FE / NB MD OT		RI GR (SH) MP HW / ST DI MA UR OT	
2	GFWO	1	PE (FL) FE / NB MD OT		RI GR (SH) (MP) HW / ST DI MA UR OT	
3	NOMO	1	(PE) FL FE / NB MD OT	✓	RI GR SH (MP) HW / ST DI MA UR OT	
4	Sparrow	1	PE (FL) FE / NB MD OT		RI GR (SH) MP HW / ST DI MA UR OT	
5	RCKI	1	(PE) (FL) FE / NB MD OT		RI GR (SH) (MP) HW / ST DI MA UR OT	
6	RCKI	1	(PE) FL FE / NB MD OT		RI GR SH (MP) HW / ST DI MA UR OT	
7	BCTI	2	(PE) (FL) FE / NB MD OT		RI GR SH (MP) HW / ST DI MA UR OT	
8			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
9			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
10			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
11			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
12			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
13			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
14			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
15			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	✓
16			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
17			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
18			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
19			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
20			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	

HABITAT: RI-riparian, GR-grassland, SH-shrubland, MP-mesquite parks, HW-hardwoods, ST-stock tank, DI-disturbed, MA-maintained, UR-urban, OT-other.
ACTIVITY: PE-perched, FL- flight, FE-feeding, NB-nest building, MD-mating display, OT-other.

Lackland Air Force Base Avian Survey Project

Avian Observation Data Sheet (Fixed Point Count)

Date (mmddyyyy) 1/13/11 Observer (init.) CT Start Time 16:04 End Time ____ **Obs Pt.** 8

Visibility: (goof) fair, poor | Precipitation: (none) fog light rain rain snow sleet hail other | Page ____ of ____

Wind: Direction from: (N) NE E SE S SW W NW n/a | Speed: (Low) Med High (or kph/mph)

Obs #	Species Code	# of individuals.	Activity	Aud?	Habitat Type (circle 1st type, check others)	Notes
1	RWBL	2	(PE) FL FE / NB MD OT	✓	RI GR SH MP HW / ST (DI) MA UR OT	T-pole
2	RWBL	1	(PE) (FL) FE / NB MD OT	✓	RI GR SH MP HW / ST (DI) MA UR OT	
3	NOMO	1	(PE) (FL) FE / NB MD OT		RI GR SH MP HW / ST (DI) MA UR OT	
4	NOMO	1	(PE) FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR (OT)	T-pole
5	RTHA	1	PE (FL) FE / NB MD OT		RI GR (SH) (MP) HW / ST DI MA UR OT	
6	NOCA	1	(PE) FL FE / NB MD OT	✓	RI GR (SH) MP HW / ST DI MA UR OT	
7	NOMO	1	(PE) FL FE / NB MD OT	✓	RI GR (SH) MP HW / ST DI MA UR OT	
8	PYRR	1	(PE) FL FE / NB MD OT		RI GR SH MP HW / ST (DI) MA UR OT	
9			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
10			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
11			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
12			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
13			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
14			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	✓
15			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
16			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
17			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
18			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
19			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
20			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	

HABITAT: RI-riparian, GR-grassland, SH-shrubland, MP-mesquite parks, HW-hardwoods, ST-stock tank, DI-disturbed, MA-maintained, UR-urban, OT-other.
ACTIVITY: PE-perched, FL- flight, FE-feeding, NB-nest building, MD-mating display, OT-other.

Lackland Air Force Base Avian Survey Project

Avian Observation Data Sheet (Fixed Point Count)

Date (mmddyyyy) 1/13/11 Observer (init.) CT Start Time 13:53 End Time ____ Obs Pt. 9

Visibility: (good) fair, poor Precipitation: (none) fog light rain rain snow sleet hail other Page 1 of ____

Wind: Direction from: (N) NE E SE S SW W NW n/a Speed: (Low) Med High (or kph/mph)

Obs #	Species Code	# of individuals.	Activity	Aud?	Habitat Type (circle 1st type, check others)	Notes
1	BLVU	1	PE (FL) FE / NB MD OT		(RI) GR SH MP HW / ST DI MA UR OT	
2	NOMO	1	(PE) FL FE / NB MD OT		RI GR (SH) MP HW / ST DI MA UR OT	
3	BHVI	1	(PE) FL FE / NB MD OT		RI GR (SH) MP HW / ST DI MA UR OT	
4	OCWA	2	(PE) (FL) FE / NB MD OT		RI GR (SH) MP HW / ST DI MA UR OT	
5	COHA	1	(PE) FL FE / NB MD OT		RI GR SH (MP) HW / ST DI MA UR OT	
6			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
7			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
8			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
9			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
10			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
11			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
12			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
13			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
14			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
15			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
16			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
17			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
18			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
19			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
20			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	

HABITAT: RI-riparian, GR-grassland, SH-shrubland, MP-mesquite parks, HW-hardwoods, ST-stock tank, DI-disturbed, MA-maintained, UR-urban, OT-other.
ACTIVITY: PE-perched, FL- flight, FE-feeding, NB-nest building, MD-mating display, OT-other.

Lackland Air Force Base Avian Survey Project

Avian Observation Data Sheet (Fixed Point Count)

Date (mmddyyyy) 1/13/11 Observer (init.) CT Start Time 1:05 End Time ____ **Obs Pt.** 10

Visibility: (good) fair, poor Precipitation: (none) fog light rain rain snow sleet hail other Page 1 of ____

Wind: Direction from: (N) NE E SE S SW W NW n/a Speed: (Low) Med High (or kph/mph)

Obs #	Species Code	# of individuals.	Activity	Aud?	Habitat Type (circle 1st type, check others)	Notes
1	RCKI	1	(PE) FL FE / NB MD OT	✓	(RI) GR SH MP (HW) / ST DI MA UR OT	
2	YRWA	1	(PE) FL FE / NB MD OT	✓	(RI) GR SH MP (HW) / ST DI MA UR OT	
3	BCTT	1	(PE) FL FE / NB MD OT	✓	(RI) GR SH MP (HW) / ST DI MA UR OT	
4	Warblers	6	PE (FL) FE / NB MD OT		(RI) GR SH MP (HW) / ST DI MA UR OT	
5	RCKI	1	(PE) FL FE / NB MD OT	✓	(RI) GR SH MP (HW) / ST DI MA UR OT	
6	NOCA	1	(PE) FL FE / NB MD OT	✓	(RI) GR SH MP (HW) / ST DI MA UR OT	
7	BCTI	1	(PE) (FL) FE / NB MD OT	✓	(RI) GR SH MP (HW) / ST DI MA UR OT	
8			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
9			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
10			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
11			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
12			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
13			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
14			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
15			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
16			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
17			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
18			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	✓
19			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
20			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	

HABITAT: RI-riparian, GR-grassland, SH-shrubland, MP-mesquite parks, HW-hardwoods, ST-stock tank, DI-disturbed, MA-maintained, UR-urban, OT-other.
ACTIVITY: PE-perched, FL- flight, FE-feeding, NB-nest building, MD-mating display, OT-other.

Lackland Air Force Base Avian Survey Project

Avian Observation Data Sheet (Fixed Point Count)

Date (mmddyyyy) 1/13/11 Observer (init.) CT Start Time 10:40 End Time 10:55 Obs Pt. 11

Visibility: goof, (fair) poor | Precipitation: (none) fog light rain rain snow sleet hail other | Page 1 of _____

Wind: Direction from: N (NE) E SE S SW W NW n/a | Speed: (Low) Med High (or kph/mph)

Obs #	Species Code	# of individuals.	Activity	Aud?	Habitat Type (circle 1st type, check others)	Notes
1	WWDO	5	(PE) FL FE / NB MD OT		RI GR SH MP HW / ST DI (MA) (UR) OT	
2	MODO	2	(PE) FL FE / NB MD OT		RI GR SH MP HW / ST DI (MA) (UR) OT	
3	HOSP	3	(PE) (FL) FE / NB MD OT		RI GR SH MP HW / ST DI (MA) (UR) OT	
4	NOFL	1	(PE) (FL) FE / NB MD OT		RI GR SH MP HW / ST DI (MA) (UR) OT	
5			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
6			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
7			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
8			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
9			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
10			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
11			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
12			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
13			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
14			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
15			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
16			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
17			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
18			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
19			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
20			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	

HABITAT: RI-riparian, GR-grassland, SH-shrubland, MP-mesquite parks, HW-hardwoods, ST-stock tank, DI-disturbed, MA-maintained, UR-urban, OT-other.
ACTIVITY: PE-perched, FL- flight, FE-feeding, NB-nest building, MD-mating display, OT-other.

Lackland Air Force Base Avian Survey Project

Avian Observation Data Sheet (Fixed Point Count)

Date (mmddyyyy) 1/14/11 Observer (init.) CT Start Time 8:35 End Time ____ Obs Pt. 1

Visibility: good fair poor Precipitation: none fog light rain rain snow sleet hail other Page ____ of ____

Wind: Direction from: N NE E SE S SW W NW n/a Speed: Low Med High (or kph/mph)

Obs #	Species Code	# of individuals.	Activity	Aud?	Habitat Type (circle 1st type, check others)	Notes
1	RCKI	1	(PE) FL FE / NB MD OT	✓	RI GR SH MP HW / ST DI (MA) UR OT	
2	NOMO	1	(PE) FL FE / NB MD OT	✓	RI GR SH (MP) HW / ST DI MA UR OT	
3	RCKI	1	(PE) FL FE / NB MD OT	✓	RI GR (SH) MP HW / ST DI MA UR OT	
4	RCKI	1	(PE) FL FE / NB MD OT	✓	RI GR (SH) MP HW / ST DI MA UR OT	
5	NOCA	1	PE (FL) FE / NB MD OT		RI GR (SH) (MP) HW / ST DI MA UR OT	
6	BCTI	1	(PE) FL FE / NB MD OT	✓	RI GR (SH) MP HW / ST DI MA UR OT	
7			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
8			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
9			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
10			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
11			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
12			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	✓
13			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
14			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
15			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
16			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
17			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
18			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
19			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
20			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	

HABITAT: RI-riparian, GR-grassland, SH-shrubland, MP-mesquite parks, HW-hardwoods, ST-stock tank, DI-disturbed, MA-maintained, UR-urban, OT-other.
ACTIVITY: PE-perched, FL- flight, FE-feeding, NB-nest building, MD-mating display, OT-other.

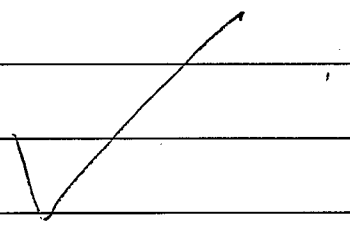
Lackland Air Force Base Avian Survey Project

Avian Observation Data Sheet (Fixed Point Count)

Date (mmddyyyy) 1/14/11 Observer (init.) CT Start Time 1043 End Time ____ **Obs Pt.** 2

Visibility: goof, (fair), poor | Precipitation: none (fog) light rain rain snow sleet hail other | Page ____ of ____

Wind: Direction from: N NE E SE S SW W NW (n/a) | Speed: Low Med High (or kph/mph)

Obs #	Species Code	# of individuals.	Activity	Aud?	Habitat Type (circle 1st type, check others)	Notes
1	NOMO	1	(PE) FL FE / NB MD OT		RI GR SH (MP) HW / ST DI MA UR OT	
2	MODO	2	(PE) FL FE / NB MD OT		RI GR SH (MP) HW / ST DI MA UR OT	
3	GWTE	4	(PE) FL FE / NB MD OT		RI GR SH MP HW / (ST) DI MA UR OT	
4			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
5			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
6			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
7			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
8			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
9			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
10			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
11			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
12			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
13			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
14			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
15			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
16			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
17			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
18			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
19			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
20			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	

HABITAT: RI-riparian, GR-grassland, SH-shrubland, MP-mesquite parks, HW-hardwoods, ST-stock tank, DI-disturbed, MA-maintained, UR-urban, OT-other.
ACTIVITY: PE-perched, FL- flight, FE-feeding, NB-nest building, MD-mating display, OT-other.

Lackland Air Force Base Avian Survey Project

Avian Observation Data Sheet (Fixed Point Count)

Date (mmddyyyy) 1/14/11 Observer (init.) CT Start Time 9:53 End Time ____ Obs Pt. 3

Visibility: goof, fair, (poor) Precipitation: none (fog) light rain rain snow sleet hail other Page 1 of 1

Wind: Direction from: N NE E (SE) S SW W NW n/a Speed: (Low) Med High (or kph/mph)

Obs #	Species Code	# of individuals.	Activity	Aud?	Habitat Type (circle 1st type, check others)	Notes
1	PYRR	2	(PE) (FL) FE / NB MD OT		RI GR SH (MP) HW / ST DI MA UR OT	
2	NOCA	1	(PE) (FL) (FE) / NB MD OT		RI GR SH (MP) HW / ST (DI) MA UR OT	
3			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	✓
4			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
5			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
6			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
7			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
8			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
9			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
10			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
11			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
12			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
13			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
14			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
15			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
16			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
17			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
18			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
19			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
20			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	

HABITAT: RI-riparian, GR-grassland, SH-shrubland, MP-mesquite parks, HW-hardwoods, ST-stock tank, DI-disturbed, MA-maintained, UR-urban, OT-other.
ACTIVITY: PE-perched, FL- flight, FE-feeding, NB-nest building, MD-mating display, OT-other.

Lackland Air Force Base Avian Survey Project

Avian Observation Data Sheet (Fixed Point Count)

Date (mmddyyyy) 1/14/11 Observer (init.) CT Start Time 9:23 End Time ____ Obs Pt. 4

Visibility: (good) fair, poor Precipitation: none (fog) light rain rain snow sleet hail other Page 1 of ____

Wind: Direction from: N NE E SE S SW W NW (n/a) Speed: Low Med High (or kph/mph)

Obs #	Species Code	# of individuals.	Activity	Aud?	Habitat Type (circle 1st type, check others)	Notes
1	EAPH	1	(PE) FL FE / NB MD OT		RI GR SH (MP) HW / ST DI MA UR OT	
2	RCKI	2	(PE) (FL) FE / NB MD OT		RI GR SH (MP) HW / ST DI MA UR OT	
3	BCTI	1	(PE) FL FE / NB MD OT	✓	RI GR SH (MP) HW / ST DI MA UR OT	
4	EUST	25	(PE) (FL) FE / NB MD OT		RI GR SH MP HW / ST DI (MA) UR (OT)	T-poles
5	HETH	1	(PE) FL FE / NB MD OT		RI GR SH (MP) HW / ST DI MA UR OT	
6	NOCA	1	PE FL (FE) / NB MD OT		RI GR SH MP HW / ST DI MA UR (OT)	road
7	SASP	3	(PE) FL FE / NB MD OT		RI (GR) SH MP HW / ST (DI) MA UR (OT)	puddle in road
8	NOCA	1	(PE) FL FE / NB MD OT		RI GR SH (MP) HW / ST DI MA UR OT	
9	NOMO	1	(PE) FL FE / NB MD OT	✓	RI GR SH (MP) HW / ST DI MA UR OT	
10	FISP	10	(PE) FL FE / NB MD OT		RI (GR) SH MP HW / ST (DI) MA UR OT	
11	SASP	12	(PE) (FL) FE / NB MD OT		RI (GR) SH MP HW / ST (DI) MA UR OT	
12	PYRR	1	(PE) FL FE / NB MD OT		RI GR SH (MP) HW / ST DI MA UR OT	
13			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	✓
14			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
15			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
16			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
17			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
18			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
19			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
20			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	

HABITAT: RI-riparian, GR-grassland, SH-shrubland, MP-mesquite parks, HW-hardwoods, ST-stock tank, DI-disturbed, MA-maintained, UR-urban, OT-other.
ACTIVITY: PE-perched, FL- flight, FE-feeding, NB-nest building, MD-mating display, OT-other.

Lackland Air Force Base Avian Survey Project

Avian Observation Data Sheet (Fixed Point Count)

Date (mmddyyyy) 1/14/11 Observer (init.) CT Start Time 7:04 End Time ____ **Obs Pt.** 5

Visibility: goof, (fair) poor | Precipitation: (none) fog light rain rain snow sleet hail other | Page 1 of ____

Wind: Direction from: N NE E (SE) S SW W NW n/a | Speed: (Low) Med High (or kph/mph)

Obs #	Species Code	# of individuals.	Activity	Aud?	Habitat Type (circle 1st type, check others)	Notes
1	NOMO	1	(PE) FL FE / NB MD OT	✓	RI GR SH MP (HW) / ST DI MA UR OT	live oak
2	HETH	1	(PE) FL FE / NB MD OT	✓	RI GR SH MP (HW) / ST DI MA UR OT	
3	NOCA	1	(PE) FL FE / NB MD OT	✓	RI GR SH (MP) HW / ST DI MA UR OT	
4	BCTI	2	(PE) FL FE / NB MD OT	✓	RI GR SH MP (HW) / ST DI MA UR OT	live oak
5			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
6			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
7			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
8			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
9			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
10			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
11			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	✓
12			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
13			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
14			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
15			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
16			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
17			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
18			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
19			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
20			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	

HABITAT: RI-riparian, GR-grassland, SH-shrubland, MP-mesquite parks, HW-hardwoods, ST-stock tank, DI-disturbed, MA-maintained, UR-urban, OT-other.
ACTIVITY: PE-perched, FL- flight, FE-feeding, NB-nest building, MD-mating display, OT-other.

Lackland Air Force Base Avian Survey Project

Avian Observation Data Sheet (Fixed Point Count)

Date (mmddyyyy) 1/4/11 Observer (init.) CT Start Time 8:11 End Time ____ Obs Pt. 6

Visibility: good (fair) poor Precipitation: (none) fog light rain rain snow sleet hail other Page 1 of ____

Wind: Direction from: (N) NE E SE S SW W NW n/a Speed: (Low) Med High (or kph/mph)

Obs #	Species Code	# of individuals.	Activity	Aud?	Habitat Type (circle 1st type, check others)	Notes
1	RCKI	1	(PE) FL FE / NB MD OT		RI GR SH (MP) HW / ST DI MA UR OT	
2	NOCA	1	(PE) FL FE / NB MD OT	✓	RI GR SH (MP) HW / ST DI MA UR OT	
3	NOCA	1	(PE) FL (FE) / NB MD OT		RI GR SH (MP) HW / ST DI (MA) UR OT	
4	WWDO	3	PE (FL) FE / NB MD OT		RI GR SH (MP) HW / ST DI MA UR OT	
5	NOMO	1	(PE) FL FE / NB MD OT	✓	RI GR SH (MP) HW / ST DI MA UR OT	
6	GTGR	2	PE (FL) FE / NB MD OT		RI GR SH (MP) HW / ST DI MA UR OT	
7	WCSP	7	PE (FL) FE / NB MD OT		RI GR SH (MP) HW / ST DI MA (UR) OT	
8			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
9			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
10			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	✓
11			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
12			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
13			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
14			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
15			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
16			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
17			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
18			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
19			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
20			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	

HABITAT: RI-riparian, GR-grassland, SH-shrubland, MP-mesquite parks, HW-hardwoods, ST-stock tank, DI-disturbed, MA-maintained, UR-urban, OT-other.
ACTIVITY: PE-perched, FL- flight, FE-feeding, NB-nest building, MD-mating display, OT-other.

Lackland Air Force Base Avian Survey Project

Avian Observation Data Sheet (Fixed Point Count)

Date (mmddyyyy) 1/19/11 Observer (init.) _____ Start Time 1037 End Time _____ **Obs Pt.** 7

Visibility: goof, fair, (poor) Precipitation: none (fog) light rain rain snow sleet hail other Page 1 of _____

Wind: Direction from: N NE E SE S SW W NW (n/a) Speed: Low Med High (or kph/mph)

Obs #	Species Code	# of individuals.	Activity	Aud?	Habitat Type (circle 1st type, check others)	Notes
1	NOMO	1	(PE) FL FE / NB MD OT		RI GR (SH) MP HW / ST DI (MA) UR OT	
2	NOMO	1	(PE) FL FE / NB MD OT		RI GR (SH) (MP) HW / ST DI MA UR OT	
3	EGDO	1	(PE) FL (FE) / NB MD OT		RI GR (SH) MP HW / ST DI (MA) UR OT	
4			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
5			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	✓
6			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
7			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
8			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
9			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
10			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
11			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
12			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
13			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
14			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
15			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
16			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
17			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
18			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
19			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
20			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	

HABITAT: RI-riparian, GR-grassland, SH-shrubland, MP-mesquite parks, HW-hardwoods, ST-stock tank, DI-disturbed, MA-maintained, UR-urban, OT-other.
ACTIVITY: PE-perched, FL- flight, FE-feeding, NB-nest building, MD-mating display, OT-other.

Lackland Air Force Base Avian Survey Project

Avian Observation Data Sheet (Fixed Point Count)

Date (mmddyyyy) 1/24/11 Observer (init.) CT Start Time 7:50 End Time _____ Obs Pt. 8

Visibility: goof, fair (poor) Precipitation: none (fog) light rain rain snow sleet hail other Page _____ of _____

Wind: Direction from: (N) NE E SE S SW W NW n/a Speed: (Low) Med High (or kph/mph)

Obs #	Species Code	# of individuals.	Activity	Aud?	Habitat Type (circle 1st type, check others)	Notes
1	NOCA	1	(PE) FL FE / NB MD OT	✓	RI GR SH MP HW / ST (DI) MA UR OT	
2	NOCA	1	(PE) FL FE / NB MD OT	✓	RI GR (SH) MP HW / ST DI MA UR OT	
3	NOMO	2	(PE) (FL) FE / NB MD OT	✓	RI GR (SH) MP HW / ST (DI) MA UR OT	
4	Sparrow	1	(PE) FL FE / NB MD OT		RI GR SH MP HW / ST (DI) MA UR OT	
5	NOCA	1	PE (FL) FE / NB MD OT		RI GR (SH) MP HW / ST (DI) MA UR OT	
6	NOMO	1	(PE) FL FE / NB MD OT		RI GR SH (MP) HW / ST DI MA UR OT	
7	RWBL	2	(PE) (FL) FE / NB MD OT	✓	RI GR SH MP HW / ST (DI) MA UR OT	
8	RWBL	6	(PE) (FL) FE / NB MD OT	✓	RI GR SH MP HW / ST DI MA UR OT	
9	RWBL	20	PE (FL) FE / NB MD OT	✓	RI GR SH (MP) HW / ST (DI) MA UR OT	
10	CAWR	1	(PE) FL FE / NB MD OT	✓	RI GR SH (MP) HW / ST DI MA (UR) OT	
11	Blackbirds	400	PE (FL) FE / NB MD OT		RI GR SH (MP) HW / ST DI MA UR OT	in distance ✓
12	RWBL	18	PE (FL) FE / NB MD OT		RI GR SH MP HW / ST (DI) MA UR OT	
13			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
14			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
15			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
16			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
17			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
18			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
19			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
20			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	

HABITAT: RI-riparian, GR-grassland, SH-shrubland, MP-mesquite parks, HW-hardwoods, ST-stock tank, DI-disturbed, MA-maintained, UR-urban, OT-other.
ACTIVITY: PE-perched, FL- flight, FE-feeding, NB-nest building, MD-mating display, OT-other.

Lackland Air Force Base Avian Survey Project

Avian Observation Data Sheet (Fixed Point Count)

Date (mmddyyyy) 1/19/11 Observer (init.) CJ Start Time 1339 End Time ____ **Obs Pt.** 9

Visibility: goof, fair, (poor) Precipitation: none (fog) ligh rain rain snow sleet hail other Page 1 of ____

Wind: Direction from: N (NE) E SE S SW W NW n/a Speed: (Low) Med High (or kph/mph)

Obs #	Species Code	# of individuals.	Activity	Aud?	Habitat Type (circle 1st type, check others)	Notes
1	NOMO	1	PE (FL) FE / NB MD OT		(RI) GR SH MP HW / ST DI MA UR OT	
2	BEWR	1	(PE) (FL) FE / NB MD OT		(RI) GR SH MP HW / ST DI MA UR OT	
3	NOMO	2	(PE) (FL) FE / NB MD (OT)	✓	RI GR (SH) MP HW / ST DI MA UR OT	
4			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
5			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
6			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
7			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
8			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
9			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
10			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
11			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
12			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
13			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
14			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	✓
15			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
16			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
17			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
18			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
19			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
20			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	

HABITAT: RI-riparian, GR-grassland, SH-shrubland, MP-mesquite parks, HW-hardwoods, ST-stock tank, DI-disturbed, MA-maintained, UR-urban, OT-other.
ACTIVITY: PE-perched, FL- flight, FE-feeding, NB-nest building, MD-mating display, OT-other.

Lackland Air Force Base Avian Survey Project

Avian Observation Data Sheet (Fixed Point Count)

Date (mmddyyyy) 1414K Observer (init.) CT Start Time 1950 End Time ____ Obs Pt. 10

Visibility: goof, fair, (poor) Precipitation: none (fog) light rain rain snow sleet hail other Page 1 of ____

Wind: Direction from: N (NE) E SE S SW W NW n/a Speed: (Low) Med High (or kph/mph)

Obs #	Species Code	# of individuals.	Activity	Aud?	Habitat Type (circle 1st type, check others)	Notes
1	COHA	1	PE (FL) FE / NB MD OT		(RI) GR SH MP HW / ST DI MA UR OT	
2	LBWO	1	(PE) FL (FE) / NB MD OT	✓	(RI) GR SH MP (HW) / ST DI MA UR OT	
3			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
4			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
5			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
6			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
7			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
8			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
9			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
10			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
11			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
12			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
13			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	✓
14			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
15			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
16			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
17			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
18			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
19			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
20			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	

HABITAT: RI-riparian, GR-grassland, SH-shrubland, MP-mesquite parks, HW-hardwoods, ST-stock tank, DI-disturbed, MA-maintained, UR-urban, OT-other.
ACTIVITY: PE-perched, FL- flight, FE-feeding, NB-nest building, MD-mating display, OT-other.

Lackland Air Force Base Avian Survey Project

Avian Observation Data Sheet (Fixed Point Count)

Date (mmddyyyy) 1/14/11 Observer (init.) CT Start Time 7:35 End Time 7:40 **Obs Pt.** 11

Visibility: goof, (fair), poor | Precipitation: (none), fog, light rain, rain, snow, sleet, hail, other | Page 1 of _____

Wind: Direction from: (N), NE, E, SE, S, SW, W, NW, n/a | Speed: (Low), Med, High (or kph/mph)

Obs #	Species Code	# of individuals.	Activity	Aud?	Habitat Type (circle 1st type, check others)	Notes
1	AMRO	4	(PE) FL FE / NB MD OT		RI GR SH MP HW / ST DI MA (UR) OT	
2	MODO	2	(PE) FL FE / NB MD OT		RI GR SH MP HW / ST DI MA (UR) OT	
3	WWDO	6	(PE) FL FE / NB MD OT		RI GR SH MP HW / ST DI MA (UR) OT	
4	GTGR	15	(PE) FL FE / NB MD OT		RI GR SH MP HW / ST DI MA (UR) OT	
5			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
6			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
7			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
8			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
9			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
10			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	✓
11			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
12			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
13			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
14			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
15			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
16			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
17			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
18			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
19			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
20			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	* Fox Squierrel

HABITAT: RI-riparian, GR-grassland, SH-shrubland, MP-mesquite parks, HW-hardwoods, ST-stock tank, DI-disturbed, MA-maintained, UR-urban, OT-other.
ACTIVITY: PE-perched, FL- flight, FE-feeding, NB-nest building, MD-mating display, OT-other.

Lackland Air Force Base
(Avian Point Count Data Sheet)

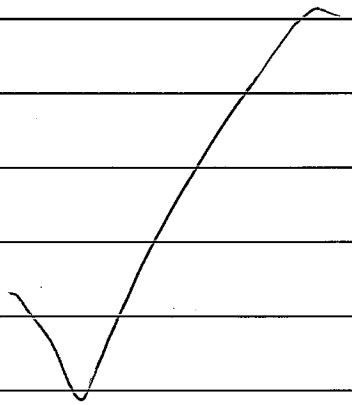
Avian Observation Data Sheet (Fixed Point Count)

Date (mmddyyyy) 4/14/2011 Observer (init.) CT Start Time 6:48 End Time ____ Obs Pt. 10

Visibility (good) fair poor Precipitation (none) fog light rain rain snow sleet hail other Page ____ of ____

Wind Direction from: N NE E SE (S) SW W NW n/a Speed: (Low) Med High (or kph/mph)

Obs #	Species Code	# of individuals.	Activity	Aud?	Habitat Type (circle 1st type, check others)	Notes
1	NOMO	1	(PE) FL FE / NB MD OT	✓	GL (SL) BL PL RI / Other:	
2	NOMO	1	(PE) FL FE / NB MD OT	✓	GL SL (BL) PL RI / Other:	
3	LASP	1	(PE) FL FE / NB MD OT	✓	GL SL (BL) PL RI / Other:	
4	MODO	1	(PE) FL FE / NB MD OT	✓	GL SL BL (PL) RI / Other:	
5	WITU	1	(PE) FL FE / NB MD OT	✓	GL SL BL (PL) RI / Other:	
6	GFWO	1	(PE) FL FE / NB MD OT	✓	GL SL BL (PL) RI / Other:	
7	CAEG	15	PE (FL) FE / NB MD OT		GL SL BL PL RI / Other: Mowing	
8	NOCA	1	(PE) FL FE / NB MD OT	✓	GL SL (BL) (PL) RI / Other:	
9	EUST	1	PE (FL) FE / NB MD OT		GL SL BL (PL) RI / Other:	
10	GRSP	1	(PE) FL FE / NB MD OT	✓	(GL) SL BL PL RI / Other:	
11	MODO	1	PE (FL) FE / NB MD OT		GL SL (BL) (PL) RI / Other:	
12			PE FL FE / NB MD OT		GL SL BL PL RI / Other:	
13			PE FL FE / NB MD OT		GL SL BL PL RI / Other:	
14			PE FL FE / NB MD OT		GL SL BL PL RI / Other:	
15			PE FL FE / NB MD OT		GL SL BL PL RI / Other:	
16			PE FL FE / NB MD OT		GL SL BL PL RI / Other:	
17			PE FL FE / NB MD OT		GL SL BL PL RI / Other:	
18			PE FL FE / NB MD OT		GL SL BL PL RI / Other:	
19			PE FL FE / NB MD OT		GL SL BL PL RI / Other:	
20			PE FL FE / NB MD OT		GL SL BL PL RI / Other:	



HABITAT: GL- grassland, SL- shrubland, BL- brushland, PL- parkland, RI- riparian.
ACTIVITY: PE-perched, FL- flight, FE-feeding, NB-nest building, MD-mating display, OT-other.

Lackland Air Force Base
(Avian Point Count Data Sheet)

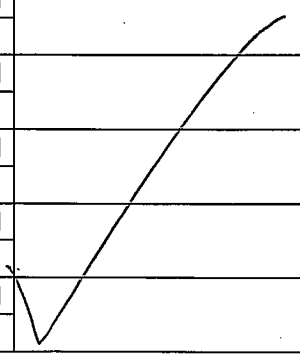
Avian Observation Data Sheet (Fixed Point Count)

Date (mmddyyyy) 4/26/2011 Observer (init.) CT Start Time 0702 0745 End Time _____ Obs Pt. 2

Visibility (good) fair poor | Precipitation (none) fog light rain rain snow sleet hail other | Page 1 of 1

Wind: Direction from (N) NE E SE S SW W NW n/a | Speed: (Low) Med High (or kph/mph)

Obs #	Species Code	# of individuals.	Activity	Aud?	Habitat Type (circle 1st type, check others)	Notes
1	BARR	1	(PE) FL FE / NB MD OT	✓	GL SL BL PL (RI) / Other:	
2	GREG	1	PE (FL) FE / NB MD OT		GL SL BL PL (RI) / Other:	
3	NOCA	1	(PE) FL FE / NB MD OT	✓	GL SL BL PL (RI) / Other:	
4	NOCA	1	(PE) FL FE / NB MD OT	✓	GL SL BL PL (RI) / Other:	
5	NOCA	1	(PE) FL FE / NB MD OT	✓	GL SL (BL) PL RI / Other:	
6	WCSP	1	(PE) FL FE / NB MD OT	✓	GL SL BL PL RI / Other: dog Train	
7	NOMO	1	(PE) FL FE / NB MD OT	✓	GL SL BL (PL) RI / Other:	
8	BGGN	1	(PE) FL FE / NB MD OT	✓	GL SL BL PL (RI) / Other:	
9	YBCH	1	(PE) FL FE / NB MD OT	✓	GL SL BL PL (RI) / Other:	
10	BHCO	2	(PE) FL FE / NB MD OT	✓	GL SL BL PL (RI) / Other:	
11	NOCA	1	PE (FL) FE / NB MD OT		GL SL BL PL (RI) / Other:	
12	CARW	1	(PE) FL FE / NB MD OT	✓	GL SL BL PL (RI) / Other:	
13	COGR	1	PE (FL) FE / NB MD OT		GL SL BL PL (RI) / Other:	
14	NOMO	1	(PE) FL FE / NB MD OT	✓	GL SL BL (PL) RI / Other:	
15			PE FL FE / NB MD OT		GL SL BL PL RI / Other:	
16			PE FL FE / NB MD OT		GL SL BL PL RI / Other:	
17			PE FL FE / NB MD OT		GL SL BL PL RI / Other:	
18			PE FL FE / NB MD OT		GL SL BL PL RI / Other:	
19			PE FL FE / NB MD OT		GL SL BL PL RI / Other:	
20			PE FL FE / NB MD OT		GL SL BL PL RI / Other:	



HABITAT: GL- grassland, SL- shrubland, BL- brushland, PL- parkland, RI- riparian.
ACTIVITY: PE-perched, FL- flight, FE-feeding, NB-nest building, MD-mating display, OT-other.

Lackland Air Force Base
(Avian Point Count Data Sheet)

Avian Observation Data Sheet (Fixed Point Count)

Date (mmddyyyy) 7/21/11 Observer (init) CT Start Time 7:09 End Time _____ Obs Pt. 10

Visibility (good, fair, poor) Precipitation (none, fog, light rain, rain, snow, sleet, hail, other) Page 1 of 1

Wind: Direction from: N NE E SE S SW W NW (n/a) Speed: Low Med High (or kph/mph)

Obs #	Species Code	# of individuals.	Activity	Aud?	Habitat Type (circle 1st type, check others)	Notes
1	MODO	1	PE (FL) FE NB MD OT		GL SL BL PL (RI) Other:	
2	CARW	1	(PE) FL FE NB MD OT	✓	GL SL BL PL (R) Other:	
3	NOCA	1	(PE) FL FE NB MD OT	✓	GL SL BL PL (RI) Other:	
4	NOCA	1	(PE) FL FE NB (MD) OT	✓	GL SL BL PL (RI) Other:	
5	CAEG	25	PE (FL) FE NB MD OT		GL SL BL PL (RI) Other:	
6	HOFI	2	PE (FL) FE NB MD OT		GL SL BL PL (RI) Other:	
7	ROPI	2	PE (FL) FE NB MD OT		GL SL BL PL (RI) Other:	
8	CASW	1	PE (FL) FE NB MD OT		GL SL BL PL (RI) Other:	
9	BCTT	1	(PE) FL FE NB MD OT	✓	GL SL BL PL (RI) Other:	
10	CHSW	2	PE (FL) FE NB MD OT		GL SL BL PL (RI) Other:	
11	COGR	1	PE (FL) FE NB MD OT		GL SL BL PL (RI) Other:	
12	WCSP	1	(PE FL) FE NB MD OT	✓	GL SL BL PL (RI) Other:	
13	NOCA	2	(PE) FL FE NB MD OT	✓	GL SL BL PL (RI) Other:	
14	BCTI	3	(PE FL) FE NB (MD) OT	✓	GL SL BL PL (RI) Other:	
15	GTGR	6	PE (FL) FE NB MD OT		GL SL BL PL (RI) Other:	
16	RWBL	1	PE (FL) FE NB MD OT		GL SL BL PL (RI) Other:	
17	LBTH	1	(PE) FL FE NB MD OT	✓	GL SL BL (PL) (RI) Other:	✓
18	NOMO	1	(PE) FL FE NB MD OT	✓	GL SL BL PL (RI) Other:	
19			PE FL FE NB MD OT		GL SL BL PL RI Other:	
20			PE FL FE NB MD OT		GL SL BL PL RI Other:	

HABITAT: GL- grassland, SL- shrubland, BL- brushland, PL- parkland, RI- riparian.
ACTIVITY: PE-perched, FL- flight, FE-feeding, NB-nest building, MD-mating display, OT-other.

Hard to hear over dogs barking

Lackland Air Force Base
(Avian Point Count Data Sheet)

Avian Observation Data Sheet (Fixed Point Count)

Date (mmddyyyy) 7/22/2011 Observer (init.) CZ Start Time 7:37 End Time _____ Obs Pt. 9

Visibility (good) fair, poor Precipitation (none) fog light rain rain snow sleet hail other Page 1 of 1

Wind: Direction from: N NE E SE S SW W NW (n/a) Speed: Low, Med High (or kph/mph)

Obs #	Species Code	# of individuals.	Activity	Aud?	Habitat Type (circle 1st type, check others)	Notes
1	COGR	4	PE (FL) FE NB MD OT	✓	GL SL BL (PL) RI Other: P-pole	
2	WWDO	9	PE (FL) FE NB MD OT	✓	GL SL BL (PL) RI Other: P-pole	
3	EUST	1	(PE) FL FE NB MD OT		GL SL BL (PL) RI Other: P-pole	
4	NOMO	3	(PE) FL FE NB (MD) OT	✓	GL SL BL (PL) RI Other: P-pole	
5	NoCA	7	(PE FL FE) NB (MD) OT	✓	GL SL BL (PL) RI Other: P-pole	
6	GTGR	4	PE (FL) FE NB MD OT		GL SL BL (PL) RI Other:	
7	BHCO	1	(PE) FL FE NB MD OT	✓	GL SL BL (PL) RI Other:	
8	BCTI	2	(PE) FL FE NB MD OT	✓	GL SL BL (PL) RI Other:	
9	GFWO	1	(PE) FL FE NB MD OT	✓	GL SL BL (PL) RI Other: P-pole	
10	CBTH	1	(PE) FL FE NB MD OT	✓	GL SL (BL) (PL) RI Other:	
11	NOCA	2	(PE) FL FE NB MD OT	✓	GL SL BL PL RI Other: P-pole	
12	HOFI	1	(PE) FL FE NB MD OT		GL SL BL PL RI Other: P-pole	
13	CACW	1	(PE) FL FE NB MD OT		GL SL (BL) PL RI Other:	
14	CHSW	2	PE (FL) FE NB MD OT		GL SL BL (PL) RI Other:	✓
15	BHCO	1	PE (FL) FE NB MD OT		GL SL BL (PL) RI Other:	
16	MODO	3	(PE) FL FE NB MD OT	✓	GL SL BL (PL) RI Other: P-pole	
17	LASP	1	(PE) FL FE NB MD OT		GL SL BL (PL) RI Other: P-pole	
18	Sparrow	3	PE (FL) FE NB MD OT		GL SL BL (PL) RI Other:	
19	GREG	2	PE (FL) FE NB MD OT		GL SL BL (PL) RI Other:	
20			PE FL FE NB MD OT		GL SL BL PL RI Other:	

HABITAT: GL- grassland, SL- shrubland, BL- brushland, PL- parkland, RI- riparian.
ACTIVITY: PE-perched, FL- flight, FE-feeding, NB-nest building, MD-mating display, OT-other.

Lackland Air Force Base
(Avian Point Count Data Sheet)

Avian Observation Data Sheet (Fixed Point Count)

Date (mmddyyyy) 4/22/11 Observer (init.) CT Start Time 8:09 End Time _____ Obs Pt. 6

Visibility (good) fair poor Precipitation (none) fog light rain rain snow sleet hail other Page 1 of 1

Wind Direction from: N NE E SE S SW W NW n/a Speed: Low Med High (or kph/mph)

Obs #	Species Code	# of individuals	Activity	Aud?	Habitat Type (circle 1st type, check others)	Notes
1	NOCA	2	(PE) FL FE / NB MD OT	✓	GL SL (BL) (PL) RI / Other:	
2	MODO	2	PE (FL) FE / NB MD OT	✓	GL SL (BL) (PL) RI / Other:	
3	NOMO	1	(PE) FL FE / NB MD OT	✓	GL SL (BL) PL RI / Other:	
4	GREG	1	PE (FL) FE / NB MD OT		GL SL (BL) PL RI / Other:	
5	ROPI	1	PE (FL) FE / NB MD OT		GL SL BL (PL) RI / Other:	
6	COGR	5	PE (FL) FE / NB MD OT		GL SL (BL) PL RI / Other:	
7	TEWA	1	(PE) FL FE / NB MD OT	✓	GL SL (BL) PL RI / Other:	
8	BHCO	3	(PE) FL FE / NB MD OT	✓	GL SL BL (PL) RI / Other:	
9	BCTI	2	(PE) FL FE / NB MD OT	✓	GL SL (BL) PL RI / Other:	
10	CAEG	3	PE (FL) FE / NB MD OT		GL SL BL (PL) RI / Other:	
11	BASW	1	PE (FL) FE / NB MD OT		GL SL (BL) PL RI / Other:	
12			PE FL FE / NB MD OT		GL SL BL PL RI / Other:	
13			PE FL FE / NB MD OT		GL SL BL PL RI / Other:	
14			PE FL FE / NB MD OT		GL SL BL PL RI / Other:	
15			PE FL FE / NB MD OT		GL SL BL PL RI / Other:	
16			PE FL FE / NB MD OT		GL SL BL PL RI / Other:	
17			PE FL FE / NB MD OT		GL SL BL PL RI / Other:	
18			PE FL FE / NB MD OT		GL SL BL PL RI / Other:	
19			PE FL FE / NB MD OT		GL SL BL PL RI / Other:	
20			PE FL FE / NB MD OT		GL SL BL PL RI / Other:	

HABITAT: GL- grassland, SL- shrubland, BL- brushland, PL- parkland, RI- riparian.
ACTIVITY: PE-perched, FL- flight, FE-feeding, NB-nest building, MD-mating display, OT-other.

Lackland Air Force Base
(Avian Point Count Data Sheet)

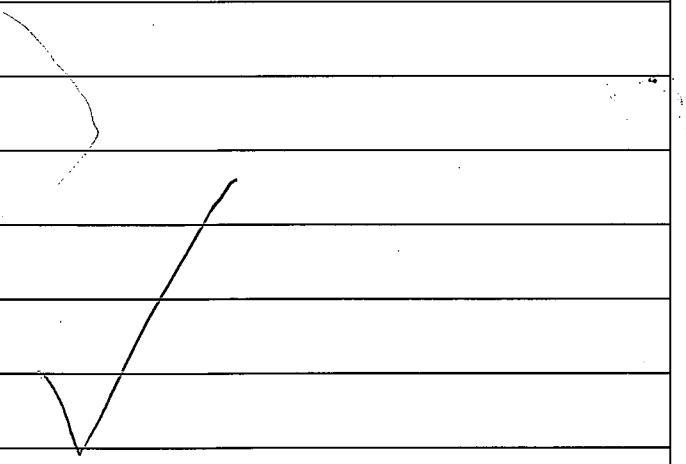
Avian Observation Data Sheet (Fixed Point Count)

Date (mmddyyyy) 4/22/2011 Observer (init.) CT Start Time 8:32 End Time ____ Obs Pt. 8 1

Visibility (good) fair poor Precipitation (none) fog light rain rain snow sleet hail other Page 1 of 1

Wind: Direction from: N NE E SE S (SW) W NW n/a Speed: (Low) Med High (or kph/mph)

Obs #	Species Code	# of individuals	Activity	Aud?	Habitat Type (circle 1st type, check others)	Notes
1	NOCA	1	(PE) FL FE / NB MD OT	✓	GL SL (BL) (PL) RI / Other:	
2	NOCA	1	(PE) FL FE / NB MD OT	✓	GL SL (BL) (PL) RI / Other:	
3	NOCA	1	(PE) FL FE / NB MD OT	✓	GL SL (BL) (PL) RI / Other:	
4	NOCA	1	(PE) FL FE / NB MD OT	✓	GL SL (BL) (PL) RI / Other:	
5	EUST	1	PE FL FE / (NB) MD OT		(GL) SL BL PL RI / Other: dog Train	
6	LISP	1	(PE) FL FE / NB MD OT	✓	(GL) SL BL PL RI / Other: dog Train	
7	Warblers	15	PE (FL) FE / NB MD OT		GL SL (BL) (PL) RI / Other:	
8	MODO	1	PE (FL) FE / NB (MD) OT		GL SL (BL) (PL) RI / Other:	
9	WCSP	2	(PE) (FL) FE / NB MD OT	✓	GL SL (BL) (PL) RI / Other:	
10	NOMO	2	(PE) FL FE / NB MD OT	✓	GL SL (BL) (PL) RI / Other:	
11			PE FL FE / NB MD OT		GL SL BL PL RI / Other:	
12			PE FL FE / NB MD OT		GL SL BL PL RI / Other:	
13			PE FL FE / NB MD OT		GL SL BL PL RI / Other:	
14			PE FL FE / NB MD OT		GL SL BL PL RI / Other:	
15			PE FL FE / NB MD OT		GL SL BL PL RI / Other:	
16			PE FL FE / NB MD OT		GL SL BL PL RI / Other:	
17			PE FL FE / NB MD OT		GL SL BL PL RI / Other:	
18			PE FL FE / NB MD OT		GL SL BL PL RI / Other:	
19			PE FL FE / NB MD OT		GL SL BL PL RI / Other:	
20			PE FL FE / NB MD OT		GL SL BL PL RI / Other:	



HABITAT: GL- grassland, SL- shrubland, BL- brushland, PL- parkland, RI- riparian.
ACTIVITY: PE-perched, FL- flight, FE-feeding, NB-nest building, MD-mating display, OT-other.

Lackland Air Force Base
(Avian Point Count Data Sheet)

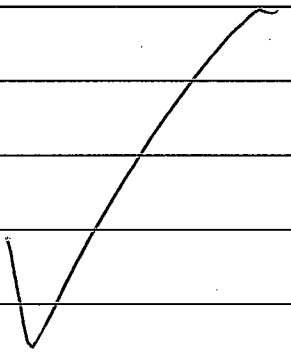
Avian Observation Data Sheet (Fixed Point Count)

Date (mmddyyyy) 4/22/11 Observer (init.) CT Start Time 8:05 End Time _____ Obs Pt. 2

Visibility: good/fair/poor Precipitation: none fog light rain rain snow sleet hail other Page 1 of 1

Wind Direction from: N NE E SE S SW W NW n/a Speed: Low Med High (or kph/mph)

Obs #	Species Code	# of individuals.	Activity	Aud?	Habitat Type (circle 1st type, check others)	Notes
1	NOCA	4	PE FL FE / NB MD OT	✓	GL SL BL PL RI / Other:	
2	CASP	1	PE FL FE / NB MD OT	✓	GL SL BL PL RI / Other:	
3	Sparrow	7	PE FL FE / NB MD OT		GL SL BL PL RI / Other:	
4	MODO	2	PE FL FE / NB MD OT		GL SL BL PL RI / Other:	
5	LASP	1	PE FL FE / NB MD OT		GL SL BL PL RI / Other:	
6	TUVU	1	PE FL FE / NB MD OT		GL SL BL PL RI / Other:	
7	WWDO	4	PE FL FE / NB MD OT		GL SL BL PL RI / Other: stock tank	
8	PABU	2	PE FL FE / NB MD OT		GL SL BL PL RI / Other:	
9	CASW	2	PE FL FE / NB MD OT		GL SL BL PL RI / Other:	
10	EUST	2	PE FL FE / NB MD OT		GL SL BL PL RI / Other: stock tank	
11	GRRO	1	PE FL FE / NB MD OT	✓	GL SL BL PL RI / Other:	
12	WEVI	1	PE FL FE / NB MD OT	✓	GL SL BL PL RI / Other:	
13	MODO	2	PE FL FE / NB MD OT	✓	GL SL BL PL RI / Other:	
14	Sparrow	1	PE FL FE / NB MD OT		GL SL BL PL RI / Other:	
15	CAEG	1	PE FL FE / NB MD OT		GL SL BL PL RI / Other:	
16	BBWD	2	PE FL FE / NB MD OT		GL SL BL PL RI / Other: stock tank	
17			PE FL FE / NB MD OT		GL SL BL PL RI / Other:	
18			PE FL FE / NB MD OT		GL SL BL PL RI / Other:	
19			PE FL FE / NB MD OT		GL SL BL PL RI / Other:	
20			PE FL FE / NB MD OT		GL SL BL PL RI / Other:	



HABITAT: GL- grassland, SL- shrubland, BL- brushland, PL- parkland, RI- riparian.
ACTIVITY: PE-perched, FL- flight, FE-feeding, NB-nest building, MD-mating display, OT-other.

Lackland Air Force Base
(Avian Point Count Data Sheet)

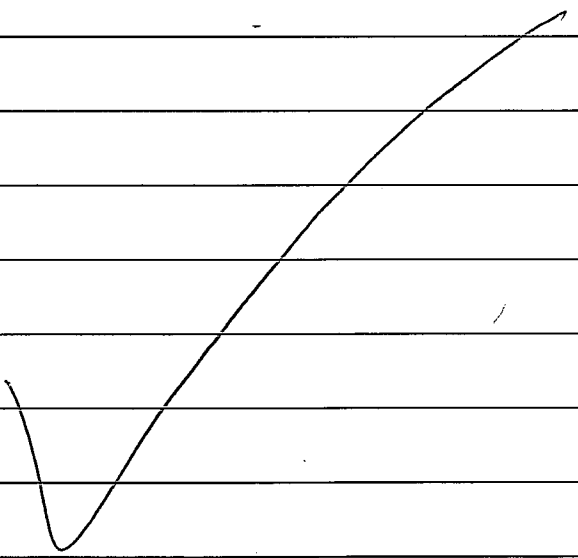
Avian Observation Data Sheet (Fixed Point Count)

Date (mmddyyyy) 7/22/11 Observer (init.) CT Start Time 7:17 End Time _____ Obs Pt. 3

Visibility (good) fair poor Precipitation (none) fog light rain rain snow sleet hail other Page 1 of 1

Wind: Direction from: N NE E SE (S) SW W NW n/a Speed (Low) Med High (or kph/mph)

Obs #	Species Code	# of individuals.	Activity	Aud?	Habitat Type (circle 1st type, check others)	Notes
1	WEVI	1	(PE) FL FE NB MD OT	✓	GL SL BL (PL) RI Other:	
2	CASP	2	(PE) FL FE NB MD OT	✓	(GL) SL BL PL RI Other: mixed	
3	MOCA	2	(PE) FL FE NB MD OT	✓	GL SL (BL) (PL) RI Other:	
4	REWR	1	(PE) FL FE NB MD OT	✓	GL SL (BL) (PL) RI Other:	
5	SSHA	1	PE FL FE NB MD (OT)		GL SL (BL) (PL) RI Other:	
6	WWDO	1	PE (FL) FE NB MD OT		GL SL (BL) (PL) RI Other:	
7	GTWO	1	(PE) FL FE NB MD OT	✓	GL SL (BL) (PL) RI Other:	
8	BLVU	1	PE (FL) FE NB MD OT		GL SL (BL) (PL) RI Other:	
9	RTHA	1	PE (FL) FE NB MD OT		GL SL (BL) (PL) RI Other:	
10	NOMO	1	(PE) FL FE NB MD OT	✓	GL SL (BL) (PL) RI Other:	
11	TUVU	2	PE (FL) FE NB MD OT		GL SL (BL) (PL) RI Other:	
12			PE FL FE NB MD OT		GL SL BL PL RI Other:	
13			PE FL FE NB MD OT		GL SL BL PL RI Other:	
14			PE FL FE NB MD OT		GL SL BL PL RI Other:	
15			PE FL FE NB MD OT		GL SL BL PL RI Other:	
16			PE FL FE NB MD OT		GL SL BL PL RI Other:	
17			PE FL FE NB MD OT		GL SL BL PL RI Other:	
18			PE FL FE NB MD OT		GL SL BL PL RI Other:	
19			PE FL FE NB MD OT		GL SL BL PL RI Other:	
20			PE FL FE NB MD OT		GL SL BL PL RI Other:	



HABITAT: GL- grassland, SL- shrubland, BL- brushland, PL- parkland, RI- riparian.
ACTIVITY: PE-perched, FL- flight, FE-feeding, NB-nest building, MD-mating display, OT-other.

Lackland Air Force Base
(Avian Point Count Data Sheet)

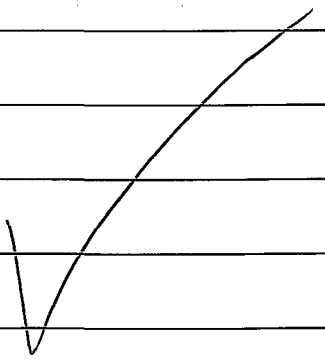
Avian Observation Data Sheet (Fixed Point Count)

Date (mmddyyyy) 4/02/11 Observer (init.) CT Start Time 9:24 End Time ____ Obs Pt. 4

Visibility: (good) fair poor Precipitation: (none) fog light rain rain snow sleet hail other Page 1 of 1

Wind: Direction from: N NE E SE (S) SW W NW n/a Speed: (Low) Med High (or kph/mph)

Obs #	Species Code	# of individuals	Activity	Aud?	Habitat Type (circle 1st type, check others)	Notes
1	WCSP	2	PE FL (FE) / NB MD OT	✓	GL SL BL PL RI / Other: road	
2	NOCA	3	(PE) (FL) (FE) / NB MD OT	✓	(GL) SL BL (PL) RI / Other:	
3	GFVO	1	(PE) FL FE / NB MD OT	✓	GL SL BL (PL) RI / Other:	
4	MODO	2	PE (FL) FE / NB MD OT		GL SL BL (PL) RI / Other:	
5	NOCA	1	PE (FL) FE / NB MD OT		GL SL BL (PL) RI / Other:	
6	SASP	4	PE FL (FE) / NB MD OT		(GL) SL BL PL RI / Other: road	
7	EUST	1	PE (FL) FE / NB MD OT		GL SL BL (PL) RI / Other:	
8	MODO	1	(PE) FL FE / NB MD OT	✓	(GL) SL BL PL RI / Other: P-pole	
9	NOCA	2	(PE) FL FE / NB MD OT		(GL) SL BL PL RI / Other: P-pole	
10	STFL	1	PE (FL) FE / NB MD OT		(GL) SL BL PL RI / Other:	
11	COKI	2	(PE) FL FE / NB MD OT		(GL) SL BL PL RI / Other: P-pole	
12	LASP	1	(PE) (FL) (FE) / NB MD OT		(GL) SL BL PL RI / Other: soil	
13	WWDO	2	(PE) (FL) (FE) / NB MD OT	✓	GL SL (BL) (PL) RI / Other:	
14			PE FL FE / NB MD OT		GL SL BL PL RI / Other:	
15			PE FL FE / NB MD OT		GL SL BL PL RI / Other:	
16			PE FL FE / NB MD OT		GL SL BL PL RI / Other:	
17			PE FL FE / NB MD OT		GL SL BL PL RI / Other:	
18			PE FL FE / NB MD OT		GL SL BL PL RI / Other:	
19			PE FL FE / NB MD OT		GL SL BL PL RI / Other:	
20			PE FL FE / NB MD OT		GL SL BL PL RI / Other:	



HABITAT: GL- grassland, SL- shrubland, BL- brushland, PL- parkland, RI- riparian.
ACTIVITY: PE-perched, FL- flight, FE-feeding, NB-nest building, MD-mating display, OT-other.

Lackland Air Force Base
(Avian Point Count Data Sheet)

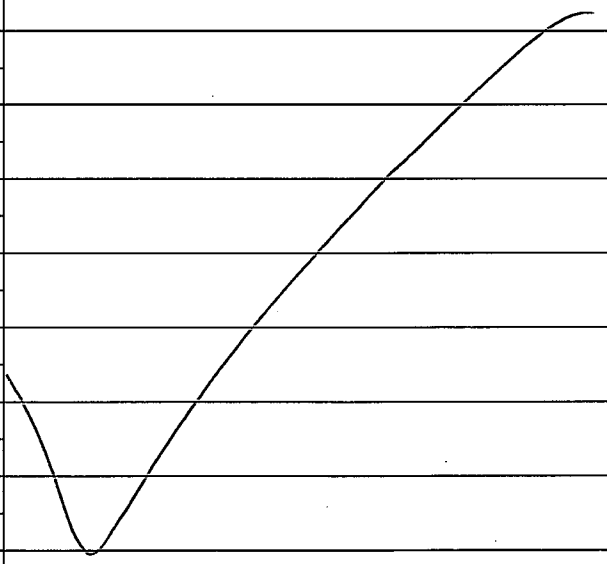
Avian Observation Data Sheet (Fixed Point Count)

Date (mmddyyyy) 4/22/11 Observer (init.) CT Start Time 7:56 End Time _____ Obs Pt. S

Visibility (good) fair poor Precipitation (none) fog light rain rain snow sleet hail other Page 1 of 1

Wind: Direction from: N NE E SE (S) SW W NW n/a Speed: (Low) Med High (or kph/mph)

Obs #	Species Code	# of individuals	Activity	Aud?	Habitat Type (circle 1st type, check others)	Notes
1	TUVU	1	PE (FL) FE / NB MD OT		GL SL BL (PL) RI / Other:	
2	CRCA	4	PE (FL) FE / NB MD OT	✓	GL SL (BL) (PL) RI / Other:	
3	BLVU	1	PE (FL) FE / NB MD OT		GL SL BL (PL) RI / Other:	
4	NOCA	2	(PE) FL FE / NB MD OT	✓	GL SL BL (PL) RI / Other:	
5	MODO	1	PE (FL) FE / NB MD OT		GL SL BL (PL) RI / Other:	
6	LBWO	1	(PE FL FE) / NB MD OT	✓	GL SL BL (PL) RI / Other:	
7			PE FL FE / NB MD OT		GL SL BL PL RI / Other:	
8			PE FL FE / NB MD OT		GL SL BL PL RI / Other:	
9			PE FL FE / NB MD OT		GL SL BL PL RI / Other:	
10			PE FL FE / NB MD OT		GL SL BL PL RI / Other:	
11			PE FL FE / NB MD OT		GL SL BL PL RI / Other:	
12			PE FL FE / NB MD OT		GL SL BL PL RI / Other:	
13			PE FL FE / NB MD OT		GL SL BL PL RI / Other:	
14			PE FL FE / NB MD OT		GL SL BL PL RI / Other:	
15			PE FL FE / NB MD OT		GL SL BL PL RI / Other:	
16			PE FL FE / NB MD OT		GL SL BL PL RI / Other:	
17			PE FL FE / NB MD OT		GL SL BL PL RI / Other:	
18			PE FL FE / NB MD OT		GL SL BL PL RI / Other:	
19			PE FL FE / NB MD OT		GL SL BL PL RI / Other:	
20			PE FL FE / NB MD OT		GL SL BL PL RI / Other:	



HABITAT: GL- grassland, SL- shrubland, BL- brushland, PL- parkland, RI- riparian.
ACTIVITY: PE-perched, FL- flight, FE-feeding, NB-nest building, MD-mating display, OT-other.

Lackland Air Force Base
(Avian Point Count Data Sheet)

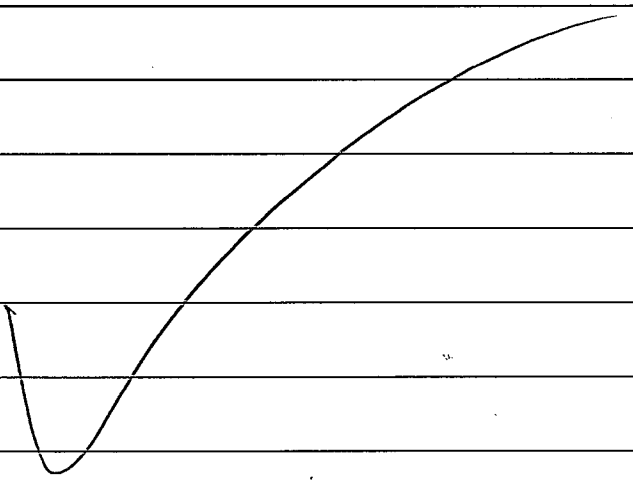
Avian Observation Data Sheet (Fixed Point Count)

Date (mmddyyyy) 4/28/11 Observer (init.) CT Start Time 10:30 End Time _____ Obs Pt. 7

Visibility: (good) fair poor Precipitation: (none) fog light rain rain snow sleet hail other Page _____ of _____

Wind: Direction from: N NE E SE (S) SW W NW n/a Speed: Low (Med) High (or kph/mph)

Obs #	Species Code	# of individuals.	Activity	Aud?	Habitat Type (circle 1st type, check others)	Notes
1	ROPI	13	PE (FL) FE NB MD OT		GL SL BL (PL) RI Other:	
2	ROPI	11	PE (FL) FE NB MD OT		GL SL BL (PL) RI Other:	
3	NOCA	2	(PE) (FL) FE NB MD OT	✓	GL SL (BL) (PL) RI Other:	
4	WWDO	4	PE (FL) FE NB MD OT		GL SL (BL) PL RI Other:	
5	COKT	1	(PE) FL FE NB MD OT	✓	GL SL (BL) PL RI Other:	
6	NOMO	1	(PE) FL FE NB MD OT	✓	GL SL (BL) PL RI Other:	
7	NOCA	1	(PE) FL FE NB MD OT	✓	GL SL (BL) PL RI Other:	
8	WWDO	5	PE (FL) FE NB MD OT		GL SL (BL) PL RI Other:	
9	CFWO	1	(PE) FL FE NB MD OT	✓	GL SL (BL) (PL) RI Other:	
10	CASW	4	PE (FL) FE NB MD OT		GL SL BL (PL) RI Other:	
11	ATFL	1	(PE) FL (FE) NB MD OT		GL SL BL (PL) RI Other:	
12	WWDO	7	PE (FL) FE NB MD OT		GL SL (BL) (PL) RI Other:	
13	NOHA	1	PE (FL) FE NB MD OT		GL SL (BL) (PL) RI Other: maintained	
14	WWDO	11	PE (FL) FE NB MD OT		GL SL (BL) (PL) RI Other:	
15	NOMO	1	(PE) FL FE NB MD OT		GL SL (BL) (PL) RI Other:	
16	WWDO	4	PE (FL) FE NB MD OT		GL SL (BL) (PL) RI Other:	
17	MODO	1	PE (FL) FE NB MD OT		GL SL (BL) (PL) RI Other:	
18	WWDO	9	PE (FL) FE NB MD OT		GL SL (BL) (PL) RI Other:	
19	GREG	1	PE (FL) FE NB MD OT		GL SL (BL) (PL) RI Other:	
20			PE FL FE NB MD OT		GL SL BL PL RI Other:	



HABITAT: GL- grassland, SL- shrubland, BL- brushland, PL- parkland, RI- riparian.
ACTIVITY: PE-perched, FL- flight, FE-feeding, NB-nest building, MD-mating display, OT-other.

Lackland Air Force Base
(Avian Point Count Data Sheet)

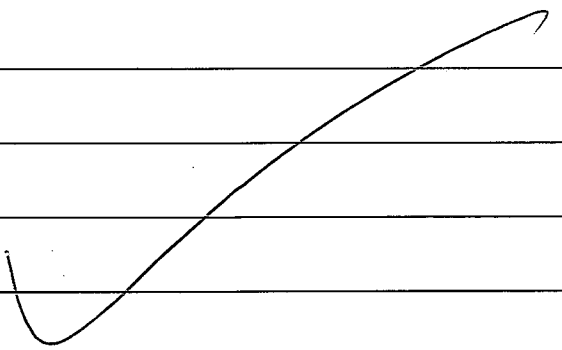
Avian Observation Data Sheet (Fixed Point Count)

Date (mmddyyyy) 7/22/11 Observer (init.) CT Start Time 11:10 End Time _____ Obs Pt. 11

Visibility (good) fair poor Precipitation (none) fog light rain rain snow sleet hail other Page 1 of 1

Wind Direction from: N NE E SE (S) SW W NW n/a Speed Low Med (High) (or kph/mph)

Obs #	Species Code	# of individuals	Activity	Aud?	Habitat Type (circle 1st type, check others)	Notes
1	NOMO	1	(PE) FL (FE) / NB MD OT	✓	GL SL BL PL RI / Other: Urban	
2	WWDO	3	PE (FL) FE / NB MD OT	✓	GL SL BL PL RI / Other: Urban	
3	MODO	1	PE (FL) FE / NB MD OT		GL SL BL PL RI / Other: Urban	
4	EUST	2	(PE) (FL) FE / NB MD OT		GL SL BL PL RI / Other: Urban	
5	GFWO	1	(PE) FL FE / NB MD OT	✓	GL SL BL PL RI / Other: Urban	
6	HOFI	1	(PE) FL FE / NB MD OT		GL SL BL PL RI / Other: Urban	
7	HOSP	2	(PE) FL (FE) / NB MD OT	✓	GL SL BL PL RI / Other: Urban	
8	GTGR	3	PE (FL) FE / NB MD OT		GL SL BL PL RI / Other: Urban	
9	MODO	2	PE (FL) FE / NB MD OT		GL SL BL PL RI / Other: Urban	
10	EUST	1	(PE) (FL) FE / NB MD OT	✓	GL SL BL PL RI / Other: Urban	
11	BHCO	1	(PE) (FL) FE / NB MD OT		GL SL BL PL RI / Other: Urban	
12	STFL	1	(PE) (FL) (FE) / NB MD OT		GL SL BL PL RI / Other: Urban	
13	KILL	1	(PE) FL FE / NB MD OT	✓	GL SL BL PL RI / Other: Urban	
14	COKI	1	(PE) (FL) (FE) / NB MD OT		GL SL BL PL RI / Other: Urban	
15			PE FL FE / NB MD OT		GL SL BL PL RI / Other:	
16			PE FL FE / NB MD OT		GL SL BL PL RI / Other:	
17			PE FL FE / NB MD OT		GL SL BL PL RI / Other:	
18			PE FL FE / NB MD OT		GL SL BL PL RI / Other:	
19			PE FL FE / NB MD OT		GL SL BL PL RI / Other:	
20			PE FL FE / NB MD OT		GL SL BL PL RI / Other:	



HABITAT: GL- grassland, SL- shrubland, BL- brushland, PL- parkland, RI- riparian.
ACTIVITY: PE-perched, FL- flight, FE-feeding, NB-nest building, MD-mating display, OT-other.

Lackland Air Force Base
(Avian Point Count Data Sheet)

Avian Observation Data Sheet (Fixed Point Count)

Date (mmddyyyy) 4[illegible]11 Observer (init.) CT Start Time 6:41 End Time 6:51 Obs Pt. 30

Visibility: good fair poor Precipitation none fog light rain rain snow sleet hail other Page 1 of 1

Wind Direction from: N NE E SE S SW W NW n/a Speed: Low Med High (or kph/mph)

Obs #	Species Code	# of individuals.	Activity	Aud?	Habitat Type (circle 1st type, check others)	Notes
1	COPA	1	PE FL FE / NB MD OT	✓	GL SL BL PL RI / Other:	
2	NOCA	1	PE FL FE / NB MD OT	✓	GL SL BL PL RI / Other:	
3	NOMO	1	PE FL FE / NB MD OT	✓	GL SL BL PL RI / Other:	
4	NOCA	2	PE FL FE / NB MD OT	✓	GL SL BL PL RI / Other:	
5	NOCA	1	PE FL FE / NB MD OT	✓	GL SL BL PL RI / Other:	
6			PE FL FE / NB MD OT		GL SL BL PL RI / Other:	
7			PE FL FE / NB MD OT		GL SL BL PL RI / Other:	
8			PE FL FE / NB MD OT		GL SL BL PL RI / Other:	
9			PE FL FE / NB MD OT		GL SL BL PL RI / Other:	
10			PE FL FE / NB MD OT		GL SL BL PL RI / Other:	
11			PE FL FE / NB MD OT		GL SL BL PL RI / Other:	
12			PE FL FE / NB MD OT		GL SL BL PL RI / Other:	
13			PE FL FE / NB MD OT		GL SL BL PL RI / Other:	
14			PE FL FE / NB MD OT		GL SL BL PL RI / Other:	
15			PE FL FE / NB MD OT		GL SL BL PL RI / Other:	
16			PE FL FE / NB MD OT		GL SL BL PL RI / Other:	
17			PE FL FE / NB MD OT		GL SL BL PL RI / Other:	
18			PE FL FE / NB MD OT		GL SL BL PL RI / Other:	
19			PE FL FE / NB MD OT		GL SL BL PL RI / Other:	
20			PE FL FE / NB MD OT		GL SL BL PL RI / Other:	

HABITAT: GL- grassland, SL- shrubland, BL- brushland, PL- parkland, RI- riparian.
ACTIVITY: PE-perched, FL- flight, FE-feeding, NB-nest building, MD-mating display, OT-other.

Lackland Air Force Base
(Avian Point Count Data Sheet)

Avian Observation Data Sheet (Fixed Point Count)

Date (mmddyyyy) 4/28/2011 Observer (init.) _____ Start Time 7:01 End Time 7:16 Obs Pt. 15

Visibility: good fair poor Precipitation: none fog light rain rain snow sleet hail other Page 1 of 1

Wind: Direction from: N NE E SE S SW W NW n/a Speed: Low Med High (or kph/mph)

Obs #	Species Code	# of individuals.	Activity	Aud?	Habitat Type (circle 1st type, check others)	Notes
1	TUVU	1	PE (FL) FE NB MD OT		GL SL (BL) (PL) RI Other:	
2	WCSP	1	(PE) FL FE NB MD OT	✓	GL SL (BL) (PL) RI Other:	
3	NOCA	1	(PE) FL FE NB MD OT	✓	GL SL (BL) (PL) RI Other:	
4	RCKI	1	(PE) FL FE NB MD OT	✓	GL SL (BL) (PL) RI Other:	
5	Sparrow	2	PE (FL) FE NB MD OT		GL SL (BL) (PL) RI Other:	
6	EASO	1	PE FL FE NB MD (OT)	✓	GL SL (BL) (PL) RI Other:	
7	BGGN	1	PE FL FE NB MD (OT)	✓	GL SL (BL) (PL) RI Other:	
8	MODO	3	PE (FL) FE NB MD OT		GL SL (BL) (PL) RI Other:	
9	NOCK	1	PE (FL) FE NB MD OT		GL SL (BL) (PL) RI Other:	
10	CAEG	11	PE (FL) FE NB MD OT	✓	GL SL (BL) (PL) RI Other:	
11	CAEG	2	PE (FL) FE NB MD OT		GL SL (BL) (PL) RI Other:	
12	HOFI	1	PE (FL) FE NB MD OT		GL SL (BL) (PL) RI Other:	
13	LASP	3	(PE) FL FE NB MD OT	✓	GL SL (BL) (PL) RI Other:	
14	MODO	4	PE (FL) FE NB MD OT		GL SL (BL) (PL) RI Other:	
15	LASP	1	(PE) FL FE NB MD OT	✓	GL SL (BL) (PL) RI Other:	
16			PE FL FE NB MD OT		GL SL BL PL RI Other:	
17			PE FL FE NB MD OT		GL SL BL PL RI Other:	
18			PE FL FE NB MD OT		GL SL BL PL RI Other:	
19			PE FL FE NB MD OT		GL SL BL PL RI Other:	
20			PE FL FE NB MD OT		GL SL BL PL RI Other:	



HABITAT: GL- grassland, SL- shrubland, BL- brushland, PL- parkland, RI- riparian.
ACTIVITY: PE-perched, FL- flight, FE-feeding, NB-nest building, MD-mating display, OT-other.

Lackland Air Force Base
(Avian Point Count Data Sheet)

Avian Observation Data Sheet (Fixed Point Count)

Date (mmddyyyy) 7/23/2011 Observer (init.) CT Start Time 7:32 End Time 7:54 Obs Pt. 1L

Visibility: goof/fair/poor Precipitation: none/fog/light rain/rain/snow/sleet/hail/other Page 1 of 1

Wind: Direction from: N NE E SE S SW W NW n/a Speed: Low/Med/High (or kph/mph)

Obs #	Species Code	# of individuals	Activity	Aud?	Habitat Type (circle 1st type, check others)	Notes
1	BHCO	5	PE FL FE / NB MD OT		GL SL BL PL RI / Other:	
2	NOMO	1	PE FL FE / NB MD OT	✓	GL SL BL PL RI / Other:	
3	NOMO	1	PE FL FE / NB MD OT	✓	GL SL BL PL RI / Other:	
4	NOCA	1	PE FL FE / NB MD OT	✓	GL SL BL PL RI / Other:	
5	TUVU	1	PE FL FE / NB MD OT		GL SL BL PL RI / Other:	
6	WWDO	1	PE FL FE / NB MD OT	✓	GL SL BL PL RI / Other:	
7	CASP	1	PE FL FE / NB MD OT	✓	GL SL BL PL RI / Other:	
8	EGDO	1	PE FL FE / NB MD OT		GL SL BL PL RI / Other: road	
9	LASP	1	PE FL FE / NB MD OT	✓	GL SL BL PL RI / Other:	
10	LASP	1	PE FL FE / NB MD OT	✓	GL SL BL PL RI / Other:	
11	BHCO	1	PE FL FE / NB MD OT		GL SL BL PL RI / Other:	
12	CAEG	4	PE FL FE / NB MD OT		GL SL BL PL RI / Other:	
13	ROPI	1	PE FL FE / NB MD OT		GL SL BL PL RI / Other:	
14	WWDO	2	PE FL FE / NB MD OT	✓	GL SL BL PL RI / Other:	
15	BASW	1	PE FL FE / NB MD OT		GL SL BL PL RI / Other:	old building
16	WWDO	7	PE FL FE / NB MD OT		GL SL BL PL RI / Other:	
17	NOBO	1	PE FL FE / NB MD OT	✓	GL SL BL PL RI / Other:	
18	BHCO	1	PE FL FE / NB MD OT		GL SL BL PL RI / Other:	
19			PE FL FE / NB MD OT		GL SL BL PL RI / Other:	
20			PE FL FE / NB MD OT		GL SL BL PL RI / Other:	

HABITAT: GL- grassland, SL- shrubland, BL- brushland, PL- parkland, RI- riparian.
ACTIVITY: PE-perched, FL- flight, FE-feeding, NB-nest building, MD-mating display, OT-other.

Lackland Air Force Base
(Avian Point Count Data Sheet)

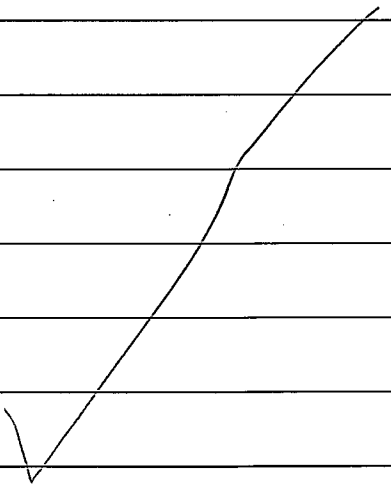
Avian Observation Data Sheet (Fixed Point Count)

Date (mmddyyyy) 4/23/11 Observer (init.) CT Start Time 7:17 End Time _____ Obs Pt. 14

Visibility (good, fair, poor) Precipitation (none) fog light rain rain snow sleet hail other Page 1 of 1

Wind Direction from: N NE E SE (S) SW W NW n/a Speed: (Low) Med High (or kph/mph)

Obs #	Species Code	# of individuals.	Activity	Aud?	Habitat Type (circle 1st type, check others)	Notes
1	MODO	13	(PE) FL FE / NB MD OT	✓	GL SL BL (PL) RI / Other: mud flat	
2	CGDO	2	(PE) FL (FE) / NB MD OT	✓	GL SL BL (PL) RI / Other:	
3	NOCA	4	(PE) FL FE / NB MD OT	✓	GL SL BL (PL) RI / Other:	
4	WWDO	5	PE (FL) FE / NB MD OT		GL SL BL (PL) RI / Other:	
5	CGDO	2	(PE) FL (FE) / NB MD OT		GL SL BL (PL) RI / Other:	
6	LB (WO)	1	(PE) (FL) FE / NB MD OT		GL SL BL (PL) RI / Other:	
7	GREG	2	PE (FL) FE / NB MD OT		GL SL BL (PL) RI / Other:	
8	LASP	1	(PE) FL FE / NB MD OT	✓	GL SL BL (PL) RI / Other:	
9	LBTH	1	(PE) FL FE / NB MD OT	✓	GL SL BL (PL) RI / Other:	
10	BHCO	1	(PE) FL FE / NB MD OT	✓	GL SL BL (PL) RI / Other:	
11	CAEG	2	PE (FL) FE / NB MD OT		GL SL BL (PL) RI / Other:	
12	BHCO	3	PE (FL) FE / NB MD OT	✓	GL SL BL (PL) RI / Other:	
13	BBWD	5	PE (FL) FE / NB MD OT	✓	GL SL BL (PL) RI / Other:	
14	CACW	1	(PE) FL FE / NB MD OT	✓	GL SL BL (PL) RI / Other:	
15	BVOR	1	(PE) FL (FE) / NB MD OT	✓	GL SL BL (PL) RI / Other:	
16			PE FL FE / NB MD OT		GL SL BL PL RI / Other:	
17			PE FL FE / NB MD OT		GL SL BL PL RI / Other:	
18			PE FL FE / NB MD OT		GL SL BL PL RI / Other:	
19			PE FL FE / NB MD OT		GL SL BL PL RI / Other:	
20			PE FL FE / NB MD OT		GL SL BL PL RI / Other:	



HABITAT: GL- grassland, SL- shrubland, BL- brushland, PL- parkland, RI- riparian.
ACTIVITY: PE-perched, FL- flight, FE-feeding, NB-nest building, MD-mating display, OT-other.

Lackland Air Force Base
(Avian Point Count Data Sheet)

Avian Observation Data Sheet (Fixed Point Count)

Date (mmddyyyy) 4/23/11 Observer (init.) CT Start Time 1108 End Time _____ Obs Pt. 15

Visibility (good) fair poor Precipitation (none) fog light rain rain snow sleet hail other Page 1 of 1

Wind: Direction from: N NE E SE (S) SW W NW n/a Speed (Low) Med High (or kph/mph)

Obs #	Species Code	# of individuals.	Activity	Aud?	Habitat Type (circle 1st type, check others)	Notes
1	NOCA	4	(PE) FL FE / NB MD OT	✓	GL (SL) (BL) (PL) RI / Other:	
2	PYRR	1	PE (FL) FE / NB MD OT		GL SL (BL) (PL) RI / Other:	
3	BASW	1	PE (FL) FE / NB MD OT		GL SL (BL) PL RI / Other:	
4	TUVU	1	PE (FL) FE / NB MD OT		GL SL BL PL RI / Other:	landfill
5	NOMO	1	PE FL FE / NB MD OT	✓	GL SL (BL) (PL) RI / Other:	
6	LASP	2	PE (FL) FE / NB MD OT	✓	GL (SL) BL PL RI / Other:	
7	LBTH	1	(PE) FL FE / NB MD OT	✓	GL SL (BL) (PL) RI / Other:	
8	MODO	8	PE (FL) FE / NB MD OT		GL SL (BL) (PL) RI / Other:	
9	CGDO	2	(PE) FL (FE) / NB MD OT		GL SL (BL) (PL) RI / Other: road	
10	BHCO	2	PE (FL) FE / NB MD OT	✓	GL SL (BL) (PL) RI / Other:	
11	MODO	1	PE (FL) FE / NB MD OT		GL SL (BL) (PL) RI / Other:	
12			PE FL FE / NB MD OT		GL SL BL PL RI / Other:	
13			PE FL FE / NB MD OT		GL SL BL PL RI / Other:	
14			PE FL FE / NB MD OT		GL SL BL PL RI / Other:	
15			PE FL FE / NB MD OT		GL SL BL PL RI / Other:	
16			PE FL FE / NB MD OT		GL SL BL PL RI / Other:	
17			PE FL FE / NB MD OT		GL SL BL PL RI / Other:	
18			PE FL FE / NB MD OT		GL SL BL PL RI / Other:	
19			PE FL FE / NB MD OT		GL SL BL PL RI / Other:	
20			PE FL FE / NB MD OT		GL SL BL PL RI / Other:	

HABITAT: GL- grassland, SL- shrubland, BL- brushland, PL- parkland, RI- riparian.
ACTIVITY: PE-perched, FL- flight, FE-feeding, NB-nest building, MD-mating display, OT-other.

Lackland Air Force Base
(Avian Point Count Data Sheet)

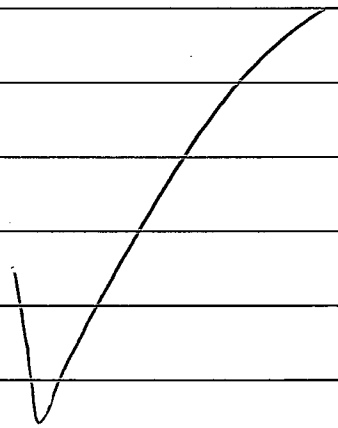
Avian Observation Data Sheet (Fixed Point Count)

Date (mmddyyyy) 4/23/11 Observer (init.) CT Start Time 9:21 End Time _____ Obs Pt. 1/6

Visibility (good) fair poor | Precipitation: (none) fog light rain rain snow sleet hail other | Page _____ of _____

Wind: Direction from: N NE E SE (S) SW W NW n/a | Speed: (Low) Med High (or kph/mph)

Obs #	Species Code	# of individuals.	Activity	Aud?	Habitat Type (circle 1st type, check others)	Notes
1	NOCA	1	(PE) FL FE / NB MD OT	✓	GL SL BL PL (RI) / Other:	
2	NOCA	1	(PE) FL FE / NB MD OT	✓	GL SL BL PL (RI) / Other:	
3	WWDO	1	PE (FL) FE / NB MD OT		GL SL BL PL (RI) / Other:	
4	WITU	1	PE FL FE / NB (MD) OT	✓	GL SL BL PL (RI) / Other:	
5	TUVU	1	PE (FL) FE / NB MD OT		GL SL BL PL (RI) / Other:	
6	CARW	1	(PE) FL FE / NB MD OT	✓	GL SL BL PL (RI) / Other:	
7	BGGN	1	(PE) FL FE / NB MD OT	✓	GL SL BL PL (RI) / Other:	
8	NOMU	1	(PE) FL FE / NB MD OT	✓	GL SL BL PL (RI) / Other:	
9	BCTI	1	(PE) FL FE / NB MD OT	✓	GL SL BL PL (RI) / Other:	
10			PE FL FE / NB MD OT		GL SL BL PL RI / Other:	
11			PE FL FE / NB MD OT		GL SL BL PL RI / Other:	
12			PE FL FE / NB MD OT		GL SL BL PL RI / Other:	
13			PE FL FE / NB MD OT		GL SL BL PL RI / Other:	
14			PE FL FE / NB MD OT		GL SL BL PL RI / Other:	
15			PE FL FE / NB MD OT		GL SL BL PL RI / Other:	
16			PE FL FE / NB MD OT		GL SL BL PL RI / Other:	
17			PE FL FE / NB MD OT		GL SL BL PL RI / Other:	
18			PE FL FE / NB MD OT		GL SL BL PL RI / Other:	
19			PE FL FE / NB MD OT		GL SL BL PL RI / Other:	
20			PE FL FE / NB MD OT		GL SL BL PL RI / Other:	



HABITAT: GL- grassland, SL- shrubland, BL- brushland, PL- parkland, RI- riparian.
ACTIVITY: PE-perched, FL- flight, FE-feeding, NB-nest building, MD-mating display, OT-other.

Lackland Air Force Base
(Avian Point Count Data Sheet)

Avian Observation Data Sheet (Fixed Point Count)

Date (mmddyyyy) 4/23/2011 Observer (init.) C D Start Time 0616 End Time _____ Obs Pt 12

Visibility: (good) fair, poor Precipitation: (none) fog light rain rain snow sleet hail other Page 1 of 1

Wind: Direction from: N NE E SE (S) SW W NW n/a Speed: Low (Med) High (or kph/mph)

Obs #	Species Code	# of individuals.	Activity	Aud?	Habitat Type (circle 1st type, check others)	Notes
1	CBTH	1	(PE) FL FE / NB MD OT	✓	GL SL BL (PL) RI / Other:	
2	YBCH	1	(PE) FL FE / NB MD OT	✓	GL SL BL (PL) RI / Other:	
3	LASP	1	(PE) FL FE / NB MD OT	✓	GL SL (BL) (PL) RI / Other:	
4	NOCA	3	(PE) FL FE / NB MD OT	✓	GL SL (BL) (PL) RI / Other:	
5	MODO	3	PE (FL) FE / NB MD OT	✓	GL SL BL (PL) RI / Other:	
6	BUOR	1	(PE) FL FE / NB MD OT	✓	GL SL BL (PL) RI / Other:	
7	CO-DO	2	(PE FL FE) / NB MD OT	✓	GL SL BL (PL) RI / Other:	
8	LASP	1	(PE) FL FE / NB MD OT	✓	GL SL (BL) (PL) RI / Other:	
9	WWDO	5	PE (FL) FE / NB MD OT		GL SL BL (PL) RI / Other:	
10	WWDO	12	PE (FL) FE / NB MD OT		GL SL BL (PL) RI / Other:	
11	PYRR	1	(PE) FL FE / NB MD OT	✓	GL SL BL (PL) RI / Other:	
12	NOMO	1	(PE) FL FE / NB MD OT	✓	GL SL BL (PL) RI / Other:	
13	WWDO	1	PE (FL) FE / NB MD OT		GL SL BL (PL) RI / Other:	
14			PE FL FE / NB MD OT		GL SL BL PL RI / Other:	✓
15			PE FL FE / NB MD OT		GL SL BL PL RI / Other:	
16			PE FL FE / NB MD OT		GL SL BL PL RI / Other:	
17			PE FL FE / NB MD OT		GL SL BL PL RI / Other:	
18			PE FL FE / NB MD OT		GL SL BL PL RI / Other:	
19			PE FL FE / NB MD OT		GL SL BL PL RI / Other:	
20			PE FL FE / NB MD OT		GL SL BL PL RI / Other:	

HABITAT: GL- grassland, SL- shrubland, BL- brushland, PL- parkland, RI- riparian.
ACTIVITY: PE-perched, FL- flight, FE-feeding, NB-nest building, MD-mating display, OT-other.

Lackland Air Force Base
(Avian Point Count Data Sheet)

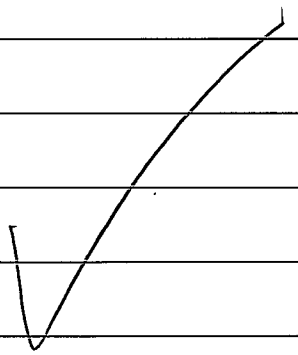
Avian Observation Data Sheet (Fixed Point Count)

Date (mmddyyyy) 7/13/2011 Observer (init.) CT Start Time 1058 End Time ____ Obs Pt. 18

Visibility (good, fair, poor) Precipitation (none, fog, light rain, rain, snow, sleet, hail, other) Page 1 of 1

Wind: Direction from: N NE E SE (S) SW W NW n/a Speed: Low (Med) High (or kph/mph)

Obs #	Species Code	# of individuals.	Activity	Aud?	Habitat Type (circle 1st type, check others)	Notes
1	GFWO	1	(PE) FL FE / NB MD OT	✓	GL SL BL PL (RI) / Other:	
2	GRHE	1	(PE) FL FE / NB MD OT		GL SL BL PL (RI) / Other:	
3	NOCA	1	(PE) FL FE / NB MD OT	✓	GL SL BL PL (RI) / Other:	
4	NOCA	1	(PE) FL FE / NB MD OT	✓	GL SL BL PL (RI) / Other:	
5	NOMO	1	(PE) FL FE / NB MD OT	✓	GL SL BL PL (RI) / Other:	
6	CARW	1	(PE) FL FE / NB MD OT	✓	GL SL BL PL (RI) / Other:	
7	GREG	1	PE (FL) FE / NB MD OT		GL SL BL PL (RI) / Other:	
8	TUVU	2	PE (FL) FE / NB MD OT		GL SL BL (PL) (RI) / Other:	
9			PE FL FE / NB MD OT		GL SL BL PL RI / Other:	
10			PE FL FE / NB MD OT		GL SL BL PL RI / Other:	
11			PE FL FE / NB MD OT		GL SL BL PL RI / Other:	
12			PE FL FE / NB MD OT		GL SL BL PL RI / Other:	
13			PE FL FE / NB MD OT		GL SL BL PL RI / Other:	
14			PE FL FE / NB MD OT		GL SL BL PL RI / Other:	
15			PE FL FE / NB MD OT		GL SL BL PL RI / Other:	
16			PE FL FE / NB MD OT		GL SL BL PL RI / Other:	
17			PE FL FE / NB MD OT		GL SL BL PL RI / Other:	
18			PE FL FE / NB MD OT		GL SL BL PL RI / Other:	
19			PE FL FE / NB MD OT		GL SL BL PL RI / Other:	
20			PE FL FE / NB MD OT		GL SL BL PL RI / Other:	Long-eared sunfish in creek.



HABITAT: GL- grassland, SL- shrubland, BL- brushland, PL- parkland, RI- riparian.
ACTIVITY: PE-perched, FL- flight, FE-feeding, NB-nest building, MD-mating display, OT-other.

Lackland Air Force Base
(Avian Point Count Data Sheet)

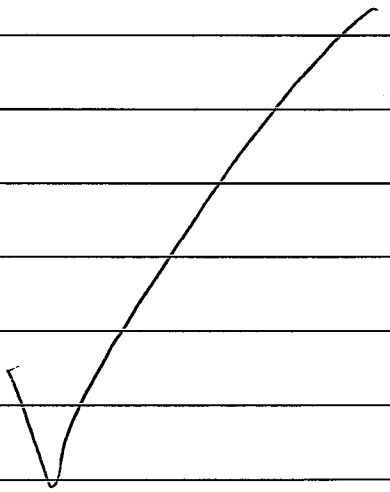
Avian Observation Data Sheet (Fixed Point Count)

Date (mmddyyyy) 9/28/2011 Observer (init.) CT Start Time 11:25 End Time ____ Obs Pt. 12

Visibility (good, fair, poor) Precipitation (none, fog, light rain, rain, snow, sleet, hail, other) Page 1 of 1

Wind: Direction from: N NE E SE S SW W NW n/a Speed: Low Med High (or kph/mph)

Obs #	Species Code	# of individuals.	Activity	Aud?	Habitat Type (circle 1st type, check others)	Notes
1	WWDO	2	PE (FL) FE / NB MD OT		GL SL BL (PL) RI / Other:	
2	COKT	3	(PE) FL (FE) / NB MD OT		(GL) SL BL PL RI / Other: Maint mod	
3	LASP	1	(PE) FL FE / NB MD OT	✓	(GL) SL BL (PL) RI / Other:	
4	NOMO	1	(PE) FL FE / NB MD OT	✓	GL SL (BL) (PL) RI / Other:	
5	NOMO	1	(PE) FL FE / NB MD OT	✓	GL SL (BL) (PL) RI / Other:	
6	NOCA	1	(PE) FL FE / NB MD OT	✓	GL SL (BL) (PL) RI / Other:	
7	SASP	1	(PE) FL FE / NB MD OT		(GL) SL BL PL RI / Other:	
8	EUST	1	PE (FL) FE / (NB) MD OT		GL SL (BL) PL RI / Other:	
9			PE FL FE / NB MD OT		GL SL BL PL RI / Other:	
10			PE FL FE / NB MD OT		GL SL BL PL RI / Other:	
11			PE FL FE / NB MD OT		GL SL BL PL RI / Other:	
12			PE FL FE / NB MD OT		GL SL BL PL RI / Other:	
13			PE FL FE / NB MD OT		GL SL BL PL RI / Other:	
14			PE FL FE / NB MD OT		GL SL BL PL RI / Other:	
15			PE FL FE / NB MD OT		GL SL BL PL RI / Other:	
16			PE FL FE / NB MD OT		GL SL BL PL RI / Other:	
17			PE FL FE / NB MD OT		GL SL BL PL RI / Other:	
18			PE FL FE / NB MD OT		GL SL BL PL RI / Other:	
19			PE FL FE / NB MD OT		GL SL BL PL RI / Other:	
20			PE FL FE / NB MD OT		GL SL BL PL RI / Other:	



HABITAT: GL- grassland, SL- shrubland, BL- brushland, PL- parkland, RI- riparian.
ACTIVITY: PE-perched, FL- flight, FE-feeding, NB-nest building, MD-mating display, OT-other.

Lackland Air Force Base
(Avian Point Count Data Sheet)

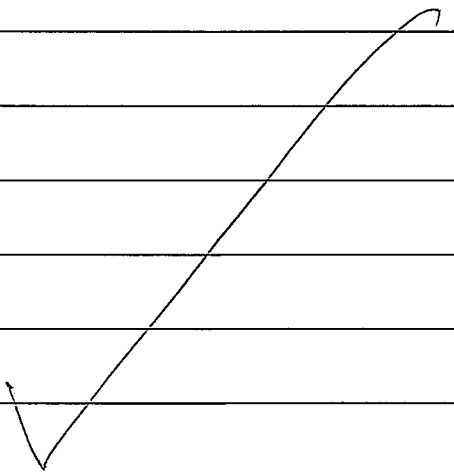
Avian Observation Data Sheet (Fixed Point Count)

Date (mmddyyyy) 4/24/2016 Observer (init.) CT Start Time 7:13 End Time _____ Obs Pt. 18

Visibility: good (fair) poor Precipitation: (none) fog light rain rain snow sleet hail other Page 1 of 1

Wind: Direction from: N NE E (SE) S SW W NW n/a Speed: Low (Med) High (or kph/mph)

Obs #	Species Code	# of individuals.	Activity	Aud?	Habitat Type (circle 1st type, check others)	Notes
1	MODO	1	(PE) FL FE / NB MD OT		GL SL BL PL (RI) / Other:	
2	LISP	1	(PE) FL FE / NB MD OT	✓	GL SL BL PL (RI) / Other:	
3	NOCA	1	(PE) FL FE / NB MD OT	✓	GL SL BL PL (RI) / Other:	
4	NOCA	1	(PE) FL FE / NB MD OT	✓	GL SL BL PL (RI) / Other:	
5	NAWA	4	(PE) FL FE / NB MD OT	✓	GL SL BL PL (RI) / Other:	
6	Swallow	1	PE (FL) FE / NB MD OT		GL SL BL PL (RI) / Other:	
7	DCCO	1	PE (FL) FE / NB MD OT		GL SL (BL) PL RI / Other:	
8	GTGR	1	PE (FL) FE / NB MD OT		GL SL BL PL (RI) / Other:	
9	GTGR	1	PE (FL) FE / NB MD OT		GL SL BL PL (RI) / Other:	
10	BASW	1	PE (FL) FE / NB MD OT		GL SL BL PL (RI) / Other:	
11			PE FL FE / NB MD OT		GL SL BL PL RI / Other:	
12			PE FL FE / NB MD OT		GL SL BL PL RI / Other:	
13			PE FL FE / NB MD OT		GL SL BL PL RI / Other:	
14			PE FL FE / NB MD OT		GL SL BL PL RI / Other:	
15			PE FL FE / NB MD OT		GL SL BL PL RI / Other:	
16			PE FL FE / NB MD OT		GL SL BL PL RI / Other:	
17			PE FL FE / NB MD OT		GL SL BL PL RI / Other:	
18			PE FL FE / NB MD OT		GL SL BL PL RI / Other:	
19			PE FL FE / NB MD OT		GL SL BL PL RI / Other:	
20			PE FL FE / NB MD OT		GL SL BL PL RI / Other:	



HABITAT: GL- grassland, SL- shrubland, BL- brushland, PL- parkland, RI- riparian.
ACTIVITY: PE-perched, FL- flight, FE-feeding, NB-nest building, MD-mating display, OT-other.

Lackland Air Force Base
(Avian Point Count Data Sheet)

Avian Observation Data Sheet (Fixed Point Count)

Date (mmddyyyy): 4/27/2011 Observer (init.) CT Start Time 733 End Time _____ Obs Pt. 17

Visibility: good (fair) poor Precipitation: (none) fog light rain rain snow sleet hail other Page 1 of 1

Wind: Direction from: N NE E (SE) S SW W NW n/a Speed: Low (Med) High (or kph/mph)

Obs #	Species Code	# of individuals	Activity	Aud?	Habitat Type (circle 1st type, check others)	Notes
1	NOCA	6	(PE) FL FE / NB MD OT		GL SL (BL) (PL) RI / Other:	
2	MODO	[illegible]	PE (FL) FE / NB MD OT		GL SL (BL) (PL) RI / Other:	
3	CGDO	1	PE FL FE / NB MD OT		GL SL (BL) (PL) RI / Other:	
4	NOCA	2	PE (FL) FE / NB MD OT		GL SL (BL) (PL) RI / Other:	
5	NOMO	1	PE (FL) FE / NB MD OT		GL SL (BL) PL RI / Other:	
6	BHCO	1	PE (FL) FE / NB MD OT	✓	GL SL (BL) (PL) RI / Other:	
7	BHCO	6	(PE) (FL) FE / NB MD OT		GL SL (BL) (PL) RI / Other:	
8			PE FL FE / NB MD OT		GL SL BL PL RI / Other:	
9			PE FL FE / NB MD OT		GL SL BL PL RI / Other:	
10			PE FL FE / NB MD OT		GL SL BL PL RI / Other:	
11			PE FL FE / NB MD OT		GL SL BL PL RI / Other:	
12			PE FL FE / NB MD OT		GL SL BL PL RI / Other:	
13			PE FL FE / NB MD OT		GL SL BL PL RI / Other:	
14			PE FL FE / NB MD OT		GL SL BL PL RI / Other:	
15			PE FL FE / NB MD OT		GL SL BL PL RI / Other:	
16			PE FL FE / NB MD OT		GL SL BL PL RI / Other:	
17			PE FL FE / NB MD OT		GL SL BL PL RI / Other:	
18			PE FL FE / NB MD OT		GL SL BL PL RI / Other:	
19			PE FL FE / NB MD OT		GL SL BL PL RI / Other:	
20			PE FL FE / NB MD OT		GL SL BL PL RI / Other:	

HABITAT: GL- grassland, SL- shrubland, BL- brushland, PL- parkland, RI- riparian.
ACTIVITY: PE-perched, FL- flight, FE-feeding, NB-nest building, MD-mating display, OT-other.

Lackland Air Force Base
(Avian Point Count Data Sheet)

Avian Observation Data Sheet (Fixed Point Count)

Date (mmddyyyy): 4/24/2011 Observer (init.): _____ Start Time: 7:54 End Time: _____ Obs Pt.: 16

Visibility: good (fair) poor Precipitation: (none) fog light rain rain snow sleet hail other Page: 1 of 1

Wind: Direction from: N NE E (SE) S SW W NW n/a Speed: Low (Med) High (or kph/mph)

Obs #	Species Code	# of individuals.	Activity	Aud?	Habitat Type (circle 1st type, check others)	Notes
1	NOCA	1	(PE) FL FE NB MD OT	✓	GL SL BL PL (RI) Other:	
2	NOCA	1	(PE) FL FE NB MD OT	✓	GL SL BL PL (RI) Other:	
3	NOCA	2	(PE) FL FE NB MD OT		GL SL BL PL (RI) Other:	
4	MODO	1	(PE) FL FE NB MD OT	✓	GL SL BL PL (RI) Other:	
5	GFWO	1	(PE) FL FE NB MD OT	✓	GL SL BL PL (RI) Other:	
6	NOMO	1	PE (FL) FE NB MD OT	✓	GL SL BL PL (RI) Other:	
7	MODO	1	(PE) FL FE NB MD OT	✓	GL SL BL PL (RI) Other:	
8	GRFG	1	PE (FL) FE NB MD OT		GL SL BL PL (RI) Other:	
9	BHCO	1	(PE) FL FE NB MD OT	✓	GL SL BL PL (RI) Other:	
10	CACH	1	(PE) FL FE NB MD OT	✓	GL SL BL PL (RI) Other:	
11	GTGR	1	PE (FL) FE NB MD OT		GL SL BL PL (RI) Other:	
12			PE FL FE NB MD OT		GL SL BL PL RI Other:	
13			PE FL FE NB MD OT		GL SL BL PL RI Other:	
14			PE FL FE NB MD OT		GL SL BL PL RI Other:	
15			PE FL FE NB MD OT		GL SL BL PL RI Other:	
16			PE FL FE NB MD OT		GL SL BL PL RI Other:	
17			PE FL FE NB MD OT		GL SL BL PL RI Other:	
18			PE FL FE NB MD OT		GL SL BL PL RI Other:	
19			PE FL FE NB MD OT		GL SL BL PL RI Other:	
20			PE FL FE NB MD OT		GL SL BL PL RI Other:	

HABITAT: GL- grassland, SL- shrubland, BL- brushland, PL- parkland, RI- riparian.
ACTIVITY: PE-perched, FL- flight, FE-feeding, NB-nest building, MD-mating display, OT-other.

Lackland Air Force Base
(Avian Point Count Data Sheet)

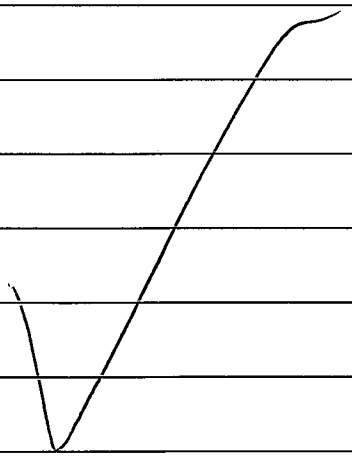
Avian Observation Data Sheet (Fixed Point Count)

Date (mmddyyyy) 5/24/2011 Observer (init.) CT Start Time 9:13 End Time _____ Obs Pt. 15

Visibility good (fair) poor Precipitation (none) fog light rain rain snow sleet hail other Page _____ of _____

Wind Direction from: N NE E (SE) S SW W NW n/a Speed: Low (Med) High (or kph/mph)

Obs #	Species Code	# of individuals.	Activity	Aud?	Habitat Type (circle 1st type, check others)	Notes
1	NOCA	7	(PE) FL FE / NB MD OT	✓	GL SL (BL) (PL) RI / Other:	
2	NOMO	1	(PE) FL FE / NB MD OT	✓	GL SL (BL) (PL) RI / Other:	
3	PYRR	1	(PE) (FL) FE / NB MD OT		GL SL (BL) (PL) RI / Other:	
4	CGDO	2	(PE) FL (FE) / NB MD OT	✓	GL SL (BL) (PL) RI / Other:	
5	LASP	1	(PE) FL FE / NB MD OT	✓	GL SL (BL) (PL) RI / Other:	
6	BHCO	2	PE (FL) FE / NB MD OT	✓	GL SL (BL) (PL) RI / Other:	
7	NOCA	1	(PE) FL FE / NB MD OT	✓	GL SL (BL) (PL) RI / Other:	
8	NOCA	1	(PE) FL FE / NB MD OT	✓	GL SL (BL) (PL) RI / Other:	
9	WWDO	5	(PE) (FL) (FE) / NB MD OT	✓	GL SL (BL) (PL) RI / Other:	feeding at hng feeder
10	CASW	2	PE FL FE / NB MD OT		GL SL (BL) (PL) RI / Other:	
11	COGR	1	PE (FL) FE / NB MD OT		GL SL (BL) (PL) RI / Other:	
12	ATFL	1	(PE) FL (FE) / NB MD OT		GL SL (BL) (PL) RI / Other:	
13	MODO	2	PE FL (FE) / NB MD OT		GL SL BL PL RI / Other: roof	
14	GTGR	2	PE (FL) FE / NB MD OT	✓	GL SL (BL) (PL) RI / Other:	
15	CRCA	1	PE (FL) FE / NB MD OT		GL SL (BL) (PL) RI / Other:	
16	BWWL	1	(PE) FL (FE) / NB MD OT	✓	GL SL (BL) (PL) (RI) / Other:	
17	BASW	1	PE (FL) FE / NB MD OT		GL (SL) (BL) (PL) RI / Other:	
18	WWDO	9	PE (FL) FE / NB MD OT		GL SL (BL) (PL) RI / Other:	
19	CRCA	2	PE (FL) FE / NB MD OT		GL SL (BL) (PL) RI / Other:	
20	TUVU	1	PE (FL) FE / NB MD OT		GL SL (BL) (PL) RI / Other:	



HABITAT: GL- grassland, SL- shrubland, BL- brushland, PL- parkland, RI- riparian.
ACTIVITY: PE-perched, FL- flight, FE-feeding, NB-nest building, MD-mating display, OT-other.

Lackland Air Force Base
(Avian Point Count Data Sheet)

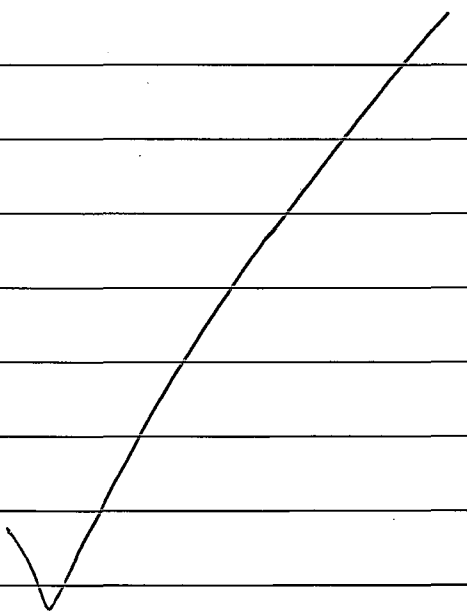
Avian Observation Data Sheet (Fixed Point Count)

Date (mmddyyyy): 7/24/2011 Observer (init.): CT Start Time: 8:28 End Time: _____ Obs Pt.: 14

Visibility: good (fair) poor Precipitation: (none) fog light rain rain snow sleet hail other Page _____ of _____

Wind: Direction from: N NE E (SE) S SW W NW n/a Speed: Low (Med) High (or kph/mph)

Obs #	Species Code	# of individuals	Activity	Aud?	Habitat Type (circle 1st type, check others)	Notes
1	WWDO	1	(PE) FL FE / NB MD OT		GL SL BL (PL) RI / Other: road	
2	NOCA	1	(PE) FL FE / NB MD OT	✓	GL SL (BL) PL RI / Other:	
3	MODO	1	(PE) FL (FE) / NB MD OT	✓	GL SL (BL) PL RI / Other:	
4	NOCA	1	(PE) FL FE / NB MD OT	✓	GL SL (BL) PL RI / Other:	
5	WWDO	7	PE FL FE / NB MD OT		GL SL (BL) PL RI / Other:	
6	GRFG	1	PE (FL) FE / NB MD OT		GL SL (BL) PL RI / Other:	
7	PYRR	2	(PE) FL (FE) / NB MD OT		GL SL (BL) PL RI / Other:	
8	BRBL	15	PE (FL) FE / NB MD OT		GL SL (BL) PL RI / Other:	
9	NOCA	2	(PE) FL FE / NB MD OT	✓	GL SL (BL) PL RI / Other:	
10	NOCA	1	(PE) FL (FE) / NB MD OT	✓	GL SL (BL) PL RI / Other:	
11	BHCO	1	PE (FL) FE / NB MD OT	✓	GL SL (BL) PL RI / Other:	
12	AMCR	1	PE (FL) FE / NB MD OT	✓	GL SL BL (PL) RI / Other:	
13	MODO	1	(PE) FL FE / NB MD OT	✓	GL SL (BL) PL RI / Other:	
14	TUVU	1	(PE) (FL) FE / NB MD OT		GL SL (BL) PL RI / Other:	
15	WWDO	3	PE (FL) FE / NB MD OT		GL SL (BL) PL RI / Other:	
16	LBWO	2	(PE) FL (FE) / NB MD OT		GL SL (BL) PL RI / Other: snag	
17	NOCA	3	(PE) FL (FE) / NB MD OT		GL SL (BL) (PL) RI / Other:	
18			PE FL FE / NB MD OT		GL SL BL PL RI / Other:	
19			PE FL FE / NB MD OT		GL SL BL PL RI / Other:	
20			PE FL FE / NB MD OT		GL SL BL PL RI / Other:	



HABITAT: GL- grassland, SL- shrubland, BL- brushland, PL- parkland, RI- riparian.
ACTIVITY: PE-perched, FL- flight, FE-feeding, NB-nest building, MD-mating display, OT-other.

Lackland Air Force Base
(Avian Point Count Data Sheet)

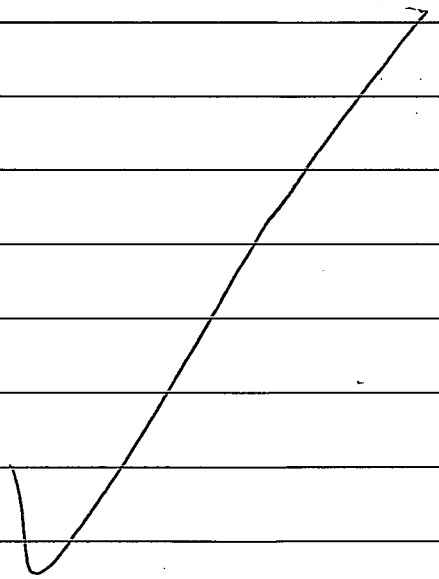
Avian Observation Data Sheet (Fixed Point Count)

Date (mmddyyyy) 7/24/2011 Observer (init.) CT Start Time 8:55 End Time ____ Obs Pt. 12

Visibility: good / fair / poor Precipitation: none / fog / light rain / rain / snow / sleet / hail / other Page 1 of 1

Wind: Direction from: N / NE / E / SE / S / SW / W / NW / n/a Speed: Low / Med / High (or kph/mph)

Obs #	Species Code	# of individuals.	Activity	Aud?	Habitat Type (circle 1st type, check others)	Notes
1	BHCO	2	(PE) FL FE / NB MD OT	✓	GL SL BL (PL) RI / Other:	
2	SASP	1	(PE) (FL) FE / NB MD OT	✓	GL SL BL (PL) RI / Other:	
3	NOMO	1	PE FL FE / NB MD OT	✓	GL SL BL (PL) RI / Other:	
4	WWDO	1	PE FL FE / NB MD OT	✓	GL SL BL (PL) RI / Other:	
5	NOCA	1	PE FL FE / NB MD OT	✓	GL SL BL (PL) RI / Other:	
6	BHCO	2	(PE) FL FE / NB MD OT	✓	GL SL BL (PL) RI / Other:	
7	BLVU	3	PE (FL) FE / NB MD OT		GL SL (BL) (PL) RI / Other:	
8	NOBO	1	PE FL FE / NB MD OT	✓	GL SL BL (PL) RI / Other:	
9	LASP	1	(PE) FL FE / NB MD OT	✓	GL SL BL (PL) RI / Other:	
10	WWDO	2	(PE) (FL) FE / NB MD OT		GL SL BL (PL) RI / Other:	
11			PE FL FE / NB MD OT		GL SL BL PL RI / Other:	
12			PE FL FE / NB MD OT		GL SL BL PL RI / Other:	
13			PE FL FE / NB MD OT		GL SL BL PL RI / Other:	
14			PE FL FE / NB MD OT		GL SL BL PL RI / Other:	
15			PE FL FE / NB MD OT		GL SL BL PL RI / Other:	
16			PE FL FE / NB MD OT		GL SL BL PL RI / Other:	
17			PE FL FE / NB MD OT		GL SL BL PL RI / Other:	
18			PE FL FE / NB MD OT		GL SL BL PL RI / Other:	
19			PE FL FE / NB MD OT		GL SL BL PL RI / Other:	
20			PE FL FE / NB MD OT		GL SL BL PL RI / Other:	



HABITAT: GL- grassland, SL- shrubland, BL- brushland, PL- parkland, RI- riparian.
ACTIVITY: PE-perched, FL- flight, FE-feeding, NB-nest building, MD-mating display, OT-other.

Lackland Air Force Base
(Avian Point Count Data Sheet)

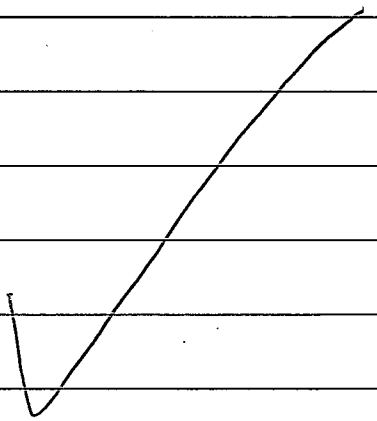
Avian Observation Data Sheet (Fixed Point Count)

Date (mmddyyyy) 4/27/2011 Observer (init.) _____ Start Time 9:15 End Time _____ Obs Pt. 10

Visibility: goor, fair, poor Precipitation: (none) fog light rain rain snow sleet hail other Page 1 of 1

Wind: Direction from: N NE E (SE) S SW W NW n/a Speed: Low (Med) High (or kph/mph)

Obs #	Species Code	# of individuals	Activity	Aud?	Habitat Type (circle 1st type, check others)	Notes
1	BHCO	1	(PE) FL FE / NB MD OT	✓	GL SL (BL) (PL) RI / Other:	
2	LASP	1	(PE) FL FE / NB MD OT	✓	GL SL (BL) (PL) RI / Other:	
3	MODO	2	PE (FL) FE / NB MD OT		GL SL (BL) (PL) RI / Other:	
4	Bluebird	2	PE (FL) FE / NB MD OT		GL SL (BL) (PL) RI / Other:	
5	MODO	1	(PE) FL FE / NB MD OT	✓	GL SL (BL) (PL) RI / Other:	
6	NOCA	2	(PE) FL FE / NB MD OT	✓	GL SL (BL) (PL) RI / Other:	
7	NOMO	1	(PE) FL FE / NB MD OT	✓	GL SL (BL) (PL) RI / Other:	
8	WWDO	13	PE FL FE / NB MD OT		GL SL (BL) (PL) RI / Other:	
9	WWDO	4	PE (FL) FE / NB MD OT		GL SL (BL) (PL) RI / Other:	
10	BCTI	1	(PE) (FL) FE / NB MD OT	✓	GL SL (BL) (PL) RI / Other:	
11	BASW	1	PE (FL) FE / NB MD OT		GL SL (BL) (PL) RI / Other:	
12	WWDO	2	PE (FL) FE / NB MD OT		GL SL (BL) (PL) RI / Other:	
13	NOCA	1	PE (FL) FE / NB MD OT		GL SL (BL) (PL) RI / Other:	
14	BGGN	1	(PE) FL FE / NB MD OT	✓	GL SL (BL) (PL) RI / Other:	
15	TUVU	1	PE (FL) FE / NB MD OT		GL SL BL PL RI / Other: Migrant	
16	REVI	1	(PE) (FL) (FE) / NB MD OT	✓	GL SL (BL) (PL) (RI) / Other:	
17	EABL	1	(PE) FL FE / NB MD OT		(GL) SL BL PL RI / Other: fence	
18			PE FL FE / NB MD OT		GL SL BL PL RI / Other:	
19			PE FL FE / NB MD OT		GL SL BL PL RI / Other:	
20			PE FL FE / NB MD OT		GL SL BL PL RI / Other:	



HABITAT: GL- grassland, SL- shrubland, BL- brushland, PL- parkland, RI- riparian.
ACTIVITY: PE-perched, FL- flight, FE-feeding, NB-nest building, MD-mating display, OT-other.

Lackland Air Force Base
(Avian Point Count Data Sheet)

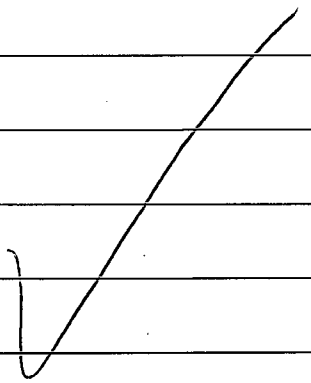
Avian Observation Data Sheet (Fixed Point Count)

Date (mmddyyyy): 4/29/2011 Observer (init.) CT Start Time 9:36 End Time _____ Obs Pt. 13

Visibility: good (fair) poor Precipitation: (none) fog light rain rain snow sleet hail other Page 1 of 1

Wind: Direction from: N NE E (SE) S SW W NW n/a Speed: Low (Med) High (or kph/mph)

Obs #	Species Code	# of individuals.	Activity	Aud?	Habitat Type (circle 1st type, check others)	Notes
1	NOCA	1	(PE) FL FE / NB MD OT	✓	GL SL (BL) (PL) RI / Other:	
2	NOCA	1	(PE) FL FE / NB MD OT	✓	GL SL (BL) (PL) RI / Other:	
3	LBTH	1	(PE) FL FE / NB MD OT	✓	GL SL (BL) (PL) RI / Other:	
4	EUST	1	(PE) FL FE / NB MD OT	✓	GL SL (BL) (PL) RI / Other:	
5	WEVI	1	(PE) FL FE / NB MD OT	✓	GL SL (BL) (PL) RI / Other:	
6	WVDO	10	PE (FL) FE / NB MD OT		GL SL (BL) (PL) RI / Other:	
7	NOCA	2	(PE) (FL) (FE) / NB MD OT		GL SL (BL) (PL) RI / Other:	
8	WEVI	1	(PE) FL FE / NB MD OT	✓	GL SL (BL) (PL) RI / Other:	
9			PE FL FE / NB MD OT		GL SL BL PL RI / Other:	
10			PE FL FE / NB MD OT		GL SL BL PL RI / Other:	
11			PE FL FE / NB MD OT		GL SL BL PL RI / Other:	
12			PE FL FE / NB MD OT		GL SL BL PL RI / Other:	
13			PE FL FE / NB MD OT		GL SL BL PL RI / Other:	
14			PE FL FE / NB MD OT		GL SL BL PL RI / Other:	
15			PE FL FE / NB MD OT		GL SL BL PL RI / Other:	
16			PE FL FE / NB MD OT		GL SL BL PL RI / Other:	
17			PE FL FE / NB MD OT		GL SL BL PL RI / Other:	
18			PE FL FE / NB MD OT		GL SL BL PL RI / Other:	
19			PE FL FE / NB MD OT		GL SL BL PL RI / Other:	
20			PE FL FE / NB MD OT		GL SL BL PL RI / Other:	



HABITAT: GL- grassland, SL- shrubland, BL- brushland, PL- parkland, RI- riparian.
ACTIVITY: PE-perched, FL- flight, FE-feeding, NB-nest building, MD-mating display, OT-other.

Lackland Air Force Base
(Avian Point Count Data Sheet)

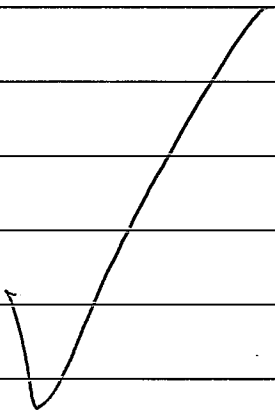
Avian Observation Data Sheet (Fixed Point Count)

Date (mmddyyyy) 7/25/11 Observer (init.) CT Start Time 6:45 End Time _____ Obs Pt. 7

Visibility goof fair (poor) Precipitation (none) fog light rain rain snow sleet hail other Page 1 of _____

Wind Direction from: N NE E (SE) S SW W NW n/a Speed: Low (Med) High (or kph/mph)

Obs #	Species Code	# of individuals	Activity	Aud?	Habitat Type (circle 1st type, check others)	Notes
1	NOCA	1	(PE) FL FE / NB MD OT	✓	GL SL (BL) (PL) RI / Other:	
2	NOCA	1	(PE) FL FE / NB MD OT	✓	GL SL (BL) (PL) RI / Other:	
3	NOCA	1	(PE) FL FE / NB MD OT	✓	GL SL (BL) (PL) RI / Other:	
4	NOCA	1	(PE) FL FE / NB MD OT	✓	GL SL (BL) (PL) RI / Other:	
5	WCSP	1	(PE) FL FE / NB MD OT	✓	GL SL (BL) (PL) RI / Other:	
6	NOMO	1	(PE) FL FE / NB MD OT	✓	GL SL (BL) (PL) RI / Other:	
7	MODO	1	(PE) FL FE / NB MD OT	✓	GL SL (BL) (PL) RI / Other:	
8	Sparrow	1	PE (FL) FE / NB MD OT		GL SL (BL) (PL) RI / Other: maintained	
9	NOMO	1	(PE) FL FE / NB MD OT	✓	GL SL (BL) (PL) RI / Other:	
10	MODO	1	PE (FL) FE / NB MD OT		GL SL BL (PL) RI / Other: maintained	
11	Sparrow	1	PE (FL) FE / NB MD OT		GL SL BL PL (RI) / Other: maintained	
12			PE FL FE / NB MD OT		GL SL BL PL RI / Other:	
13			PE FL FE / NB MD OT		GL SL BL PL RI / Other:	
14			PE FL FE / NB MD OT		GL SL BL PL RI / Other:	
15			PE FL FE / NB MD OT		GL SL BL PL RI / Other:	
16			PE FL FE / NB MD OT		GL SL BL PL RI / Other:	
17			PE FL FE / NB MD OT		GL SL BL PL RI / Other:	
18			PE FL FE / NB MD OT		GL SL BL PL RI / Other:	
19			PE FL FE / NB MD OT		GL SL BL PL RI / Other:	
20			PE FL FE / NB MD OT		GL SL BL PL RI / Other:	



HABITAT: GL- grassland, SL- shrubland, BL- brushland, PL- parkland, RI- riparian.
ACTIVITY: PE-perched, FL- flight, FE-feeding, NB-nest building, MD-mating display, OT-other.

Lackland Air Force Base
(Avian Point Count Data Sheet)

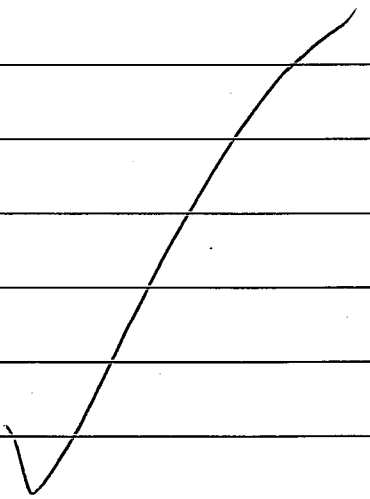
Avian Observation Data Sheet (Fixed Point Count)

Date (mmddyyyy) 4/25/11 Observer (init.) CT Start Time 7:04 End Time _____ Obs Pt: C

Visibility: good, fair, (poor) Precipitation: (none), fog, light rain, rain, snow, sleet, hail, other Page 1 of 1

Wind: Direction from: N, NE, E, SE, (S), SW, W, NW, n/a Speed: Low, (Med), High (or kph/mph)

Obs #	Species Code	# of individuals	Activity	Aud?	Habitat Type (circle 1st type, check others)	Notes
1	BHCO	1	(PE) FL FE / NB MD OT	✓	GL SL (BL) (PL) RI / Other:	
2	GTGR	2	PE (FL) FE / NB MD OT		GL SL (BL) (PL) RI / Other:	
3	NOCA	1	(PE) FL FE / NB MD OT	✓	GL SL (BL) (PL) RI / Other:	
4	NOCA	1	(PE) FL FE / NB MD OT	✓	GL SL (BL) (PL) RI / Other:	
5	NOCA	3	PE (FL) FE / NB MD OT		GL SL (BL) (PL) RI / Other:	
6	BHCO	6	PE (FL) FE / NB MD OT		GL SL (BL) (PL) RI / Other:	
7	GTGR	1	PE (FL) FE / NB MD OT		GL SL (BL) (PL) RI / Other:	
8	STFL	1	PE (FL) FE / NB MD OT		GL SL (BL) (PL) RI / Other:	
9	WWDO	2	PE (FL) FE / NB MD OT		GL SL (BL) (PL) RI / Other:	
10	CAEG	1	PE (FL) FE / NB MD OT		GL SL (BL) (PL) RI / Other:	
11	MODO	1	PE (FL) FE / NB MD OT		GL SL (BL) (PL) RI / Other:	
12	LASP	1	(PE) FL FE / NB MD OT	✓	GL SL (BL) (PL) RI / Other:	
13	BASW	1	PE (FL) FE / NB MD OT		GL SL (BL) (PL) RI / Other:	
14	BHCO	3	PE (FL) FE / NB MD OT		GL SL (BL) (PL) RI / Other:	
15	CAEG	1	PE (FL) FE / NB MD OT		GL SL (BL) (PL) RI / Other:	
16			PE FL FE / NB MD OT		GL SL BL PL RI / Other:	
17			PE FL FE / NB MD OT		GL SL BL PL RI / Other:	
18			PE FL FE / NB MD OT		GL SL BL PL RI / Other:	
19			PE FL FE / NB MD OT		GL SL BL PL RI / Other:	
20			PE FL FE / NB MD OT		GL SL BL PL RI / Other:	



HABITAT: GL- grassland, SL- shrubland, BL- brushland, PL- parkland, RI- riparian.
ACTIVITY: PE-perched, FL- flight, FE-feeding, NB-nest building, MD-mating display, OT-other.

Lackland Air Force Base
(Avian Point Count Data Sheet)

Avian Observation Data Sheet (Fixed Point Count)

Date (mmddyyyy) 4/22/2011 Observer (init.) CT Start Time 7:15 End Time _____ Obs Pt 9

Visibility: good (fair) poor Precipitation: (none) fog light rain rain snow sleet hail other Page _____ of _____

Wind: Direction from: N NE E (SE) S SW W NW n/a Speed: Low (Med) High (or kph/mph)

Obs #	Species Code	# of individuals.	Activity	Aud?	Habitat Type (circle 1st type, check others)	Notes
1	WWDO	1	(PE) FL FE / NB MD OT	✓	GL SL (BL) (PL) RI / Other:	
2	COGR	1	(PE) FL FE / NB MD OT	✓	GL SL (BL) (PL) RI / Other:	
3	NOCA	1	(PE) FL FE / NB MD OT	✓	GL SL (BL) (PL) RI / Other:	
4	NOMO	1	(PE) FL FE / NB MD OT	✓	GL SL (BL) (PL) RI / Other:	
5	MODO	1	(PE) FL FE / NB MD OT	✓	GL SL (BL) (PL) RI / Other:	
6	NOMO	1	(PE) FL FE / NB MD OT	✓	GL SL (BL) (PL) RI / Other:	
7	CHSP	7	PE (FL) FE / NB MD OT		GL SL (BL) (PL) RI / Other:	
8	Flycatcher	1	(PE FL FE) / NB MD OT		GL SL (BL) (PL) RI / Other:	
9	BANS	6	PE (FL) FE / NB MD OT		GL SL (BL) (PL) RI / Other:	
10	CACW	1	(PE) FL FE / NB MD OT	✓	GL SL (BL) (PL) RI / Other:	
11	EUST	2	PE (FL) FE / NB MD OT		GL SL (BL) (PL) RI / Other:	
12	GTGR	2	PE (FL) FE / NB MD OT		GL SL (BL) (PL) RI / Other:	
13	GTGR	2	PE (FL) FE / NB MD OT		GL SL (BL) (PL) RI / Other:	
14	NOCA	3	(PE) (FL) FE / NB MD OT		GL SL (BL) (PL) RI / Other:	
15			PE FL FE / NB MD OT		GL SL BL PL RI / Other:	
16			PE FL FE / NB MD OT		GL SL BL PL RI / Other:	
17			PE FL FE / NB MD OT		GL SL BL PL RI / Other:	
18			PE FL FE / NB MD OT		GL SL BL PL RI / Other:	
19			PE FL FE / NB MD OT		GL SL BL PL RI / Other:	
20			PE FL FE / NB MD OT		GL SL BL PL RI / Other:	

HABITAT: GL- grassland, SL- shrubland, BL- brushland, PL- parkland, RI- riparian.
ACTIVITY: PE-perched, FL- flight, FE-feeding, NB-nest building, MD-mating display, OT-other.

Lackland Air Force Base
(Avian Point Count Data Sheet)

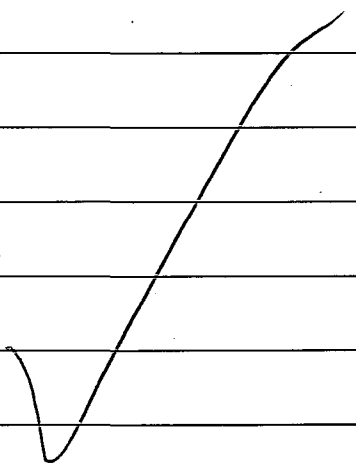
Avian Observation Data Sheet (Fixed Point Count)

Date (mmddyyyy) 9/25/11 Observer (init.) CT Start Time 7:50 End Time _____ Obs Pt. 2

Visibility: good (fair) poor Precipitation: (none) fog light rain rain snow sleet hail other Page 1 of 1

Wind: Direction from: N NE E (SE) S SW W NW n/a Speed Low (Med) High (or kph/mph)

Obs #	Species Code	# of individuals.	Activity	Aud?	Habitat Type (circle 1st type, check others)	Notes
1	MODO	1	(PE) FL FE / NB MD OT	✓	GL SL (BL) (PL) RI / Other:	
2	NOMO	1	(PE) FL FE / NB MD OT	✓	GL SL (BL) PL RI / Other:	
3	NOMO	1	(PE) FL FE / NB MD OT	✓	GL SL (BL) PL RI / Other:	
4	LBWO	2	(PE) (FL) FE / NB MD OT	✓	GL SL BL (PL) RI / Other:	
5	SNEG	1	(PE) FL (FE) / NB MD OT		GL SL BL PL RI / Other: stock tank	
6	NOCA	1	(PE) FL FE / NB MD OT	✓	GL SL (BL) (PL) RI / Other:	
7	CASP	1	(PE) FL FE / NB MD OT	✓	(GL) (SL) BL PL RI / Other:	
8	NOCA	1	(PE) FL FE / NB MD OT	✓	GL SL BL (PL) RI / Other:	
9	PABU	1	PE (FL) FE / NB MD OT	✓	GL SL (BL) PL RI / Other:	
10	LBWO	1	(PE) (FL) FE / NB MD OT	✓	GL SL (BL) (PL) RI / Other:	
11	BHCO	2	(PE) (FL) FE / NB MD OT	✓	GL SL (BL) (PL) RI / Other:	
12	WWDO	7	PE (FL) FE / NB MD OT		GL SL (BL) (PL) RI / Other:	
13	CAEG	2	PE (FL) FE / NB MD OT		GL SL (BL) (PL) RI / Other:	
14	BUOR	1	(PE) FL FE / NB MD OT	✓	GL SL (BL) (PL) RI / Other:	
15	MODO	1	(PE) FL FE / NB MD OT	✓	GL SL (BL) (PL) RI / Other:	
16	GTGR	3	PE (FL) FE / NB MD OT		GL SL (BL) (PL) RI / Other:	
17			PE FL FE / NB MD OT		GL SL BL PL RI / Other:	
18			PE FL FE / NB MD OT		GL SL BL PL RI / Other:	
19			PE FL FE / NB MD OT		GL SL BL PL RI / Other:	
20			PE FL FE / NB MD OT		GL SL BL PL RI / Other:	



HABITAT: GL- grassland, SL- shrubland, BL- brushland, PL- parkland, RI- riparian.
ACTIVITY: PE-perched, FL- flight, FE-feeding, NB-nest building, MD-mating display, OT-other.

Lackland Air Force Base
(Avian Point Count Data Sheet)

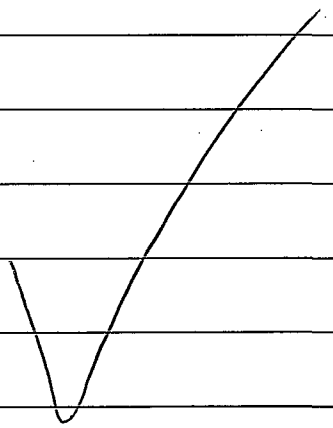
Avian Observation Data Sheet (Fixed Point Count)

Date (mmddyyyy) 4/23/2011 Observer (init.) CT Start Time 8:05 End Time _____ Obs Pt. 3

Visibility: (good) fair poor | Precipitation: (none) fog light rain rain snow sleet hail other | Page 1 of 1

Wind Direction from: N NE E (SE) S SW W NW n/a | Speed: Low (Med) High (or kph/mph)

Obs #	Species Code	# of individuals.	Activity	Aud?	Habitat Type (circle 1st type, check others)	Notes
1	NOCA	1	(PE) FL FE / NB MD OT	✓	GL SL (BL) PL RI / Other:	
2	NOCA	1	(PE) FL FE / NB MD OT	✓	GL SL (BL) PL RI / Other:	
3	PABU	1	(PE) (FL) FE / NB MD OT	✓	GL SL (BL) PL RI / Other:	
4	NOMO	1	(PE) FL FE / NB MD OT	✓	GL SL (BL) PL RI / Other:	
5	MODO	1	(PE) FL FE / NB MD OT	✓	GL SL (BL) PL RI / Other:	
6	PABU	2	(PE) FL FE / NB MD OT	✓	GL SL (BL) PL RI / Other:	
7	PABU	1	(PE) FL FE / NB MD OT	✓	GL SL (BL) PL RI / Other:	
8	CRCA	1	PE (FL) FE / NB MD OT		GL SL (BL) PL RI / Other:	
9	BTSP	1	(PE) FL FE / NB MD OT		GL SL (BL) PL RI / Other:	
10	MODO	1	PE (FL) FE / NB MD OT		GL SL (BL) PL RI / Other:	
11			PE FL FE / NB MD OT		GL SL BL PL RI / Other:	
12			PE FL FE / NB MD OT		GL SL BL PL RI / Other:	
13			PE FL FE / NB MD OT		GL SL BL PL RI / Other:	
14			PE FL FE / NB MD OT		GL SL BL PL RI / Other:	
15			PE FL FE / NB MD OT		GL SL BL PL RI / Other:	
16			PE FL FE / NB MD OT		GL SL BL PL RI / Other:	
17			PE FL FE / NB MD OT		GL SL BL PL RI / Other:	
18			PE FL FE / NB MD OT		GL SL BL PL RI / Other:	
19			PE FL FE / NB MD OT		GL SL BL PL RI / Other:	
20			PE FL FE / NB MD OT		GL SL BL PL RI / Other:	



HABITAT: GL- grassland, SL- shrubland, BL- brushland, PL- parkland, RI- riparian.
ACTIVITY: PE-perched, FL- flight, FE-feeding, NB-nest building, MD-mating display, OT-other.

Lackland Air Force Base
(Avian Point Count Data Sheet)

Avian Observation Data Sheet (Fixed Point Count)

Date (mmddyyyy) 6/25/2011 Observer (init.) CT Start Time 8:19 End Time _____ Obs Pt. 4

Visibility (good) fair, poor | Precipitation (none) fog light rain rain snow sleet hail other | Page 1 of 1

Wind: Direction from: N NE E (SE) S SW W NW n/a | Speed: (Low) Med High (or kph/mph)

Obs #	Species Code	# of individuals.	Activity	Aud?	Habitat Type (circle 1st type, check others)	Notes
1	LBWO	1	(PE) FL FE / NB MD OT	✓	GL SL (BL) PL RI / Other:	
2	MODO	1	PE (FL) FE / NB MD OT		GL SL (BL) PL RI / Other:	
3	BHCO	2	(PE) FL FE / NB MD OT		GL SL (BL) PL RI / Other:	
4	NOCA	1	(PE) FL FE / NB MD OT		GL SL (BL) PL RI / Other:	
5	NOCA	5	(PE) (FL) (FE) / NB MD OT		GL SL (BL) PL RI / Other:	
6	NOMO	1	(PE) FL FE / NB MD OT	✓	GL SL BL (PL) RI / Other:	
7	COKI	1	(PE) FL FE / NB MD OT	✓	(GL) SL (BL) PL RI / Other: mustard	
8	CGDO	2	PE (FL) FE / NB MD OT		GL SL (BL) PL RI / Other:	
9	LBWO	1	(PE) (FL) FE / NB MD OT	✓	GL SL (BL) (PL) RI / Other:	
10	RWBL	2	(PE) FL FE / NB MD OT	✓	GL SL BL (PL) RI / Other:	
11	BHCO	1	(PE) (FL) FE / NB MD OT	✓	GL SL (BL) (PL) RI / Other:	
12	Sparrow	15	PE (FL) FE / NB MD OT		(GL) SL (BL) PL RI / Other:	too far to ID
13	PYRR	1	(PE) (FL) FE / NB MD OT		GL SL (BL) (PL) RI / Other:	
14	BBWD	2	PE (FL) FE / NB MD OT		GL SL (BL) PL RI / Other:	
15	GWDO	1	PE (FL) FE / NB MD OT		GL SL (BL) (PL) RI / Other:	
16	WVDO	7	PE (FL) FE / NB MD OT		GL SL (BL) (PL) RI / Other:	
17	CGDO	1	PE FL (FE) / NB MD OT		GL SL BL PL RI / Other: road	
18			PE FL FE / NB MD OT		GL SL BL PL RI / Other:	
19			PE FL FE / NB MD OT		GL SL BL PL RI / Other:	
20			PE FL FE / NB MD OT		GL SL BL PL RI / Other:	

HABITAT: GL- grassland, SL- shrubland, BL- brushland, PL- parkland, RI- riparian.
ACTIVITY: PE-perched, FL- flight, FE-feeding, NB-nest building, MD-mating display, OT-other.

Lackland Air Force Base
(Avian Point Count Data Sheet)

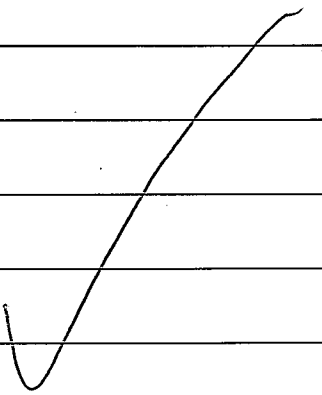
Avian Observation Data Sheet (Fixed Point Count)

Date (mmddyyyy) 5/25/11 Observer (init.) _____ Start Time 5:45 End Time _____ Obs Pt. 5

Visibility: (good) fair poor Precipitation (none) fog light rain rain snow sleet hail other Page 1 of 1

Wind: Direction from N NE E SE S SW W NW (n/a) Speed: Low Med High (or kph/mph)

Obs #	Species Code	# of individuals	Activity	Aud?	Habitat Type (circle 1st type, check others)	Notes
1	NOCA	2	(PE) FL FE / NB MD OT	✓	GL SL BL (PL) RI / Other:	
2	CAEG	1	PE (FL) FE / NB MD OT		GL SL BL (PL) RI / Other:	
3	MODO	2	PE (FL) FE / NB MD OT		GL SL BL (PL) RI / Other:	
4	WEVI	1	(PE) FL FE / NB MD OT	✓	GL SL BL (PL) RI / Other:	
5	NOCA	1	(PE) FL FE / NB MD OT	✓	GL SL BL (PL) RI / Other:	
6			PE FL FE / NB MD OT		GL SL BL PL RI / Other:	
7			PE FL FE / NB MD OT		GL SL BL PL RI / Other:	
8			PE FL FE / NB MD OT		GL SL BL PL RI / Other:	
9			PE FL FE / NB MD OT		GL SL BL PL RI / Other:	
10			PE FL FE / NB MD OT		GL SL BL PL RI / Other:	
11			PE FL FE / NB MD OT		GL SL BL PL RI / Other:	
12			PE FL FE / NB MD OT		GL SL BL PL RI / Other:	
13			PE FL FE / NB MD OT		GL SL BL PL RI / Other:	
14			PE FL FE / NB MD OT		GL SL BL PL RI / Other:	
15			PE FL FE / NB MD OT		GL SL BL PL RI / Other:	
16			PE FL FE / NB MD OT		GL SL BL PL RI / Other:	
17			PE FL FE / NB MD OT		GL SL BL PL RI / Other:	
18			PE FL FE / NB MD OT		GL SL BL PL RI / Other:	
19			PE FL FE / NB MD OT		GL SL BL PL RI / Other:	
20			PE FL FE / NB MD OT		GL SL BL PL RI / Other:	



HABITAT: GL- grassland, SL- shrubland, BL- brushland, PL- parkland, RI- riparian.
ACTIVITY: PE-perched, FL- flight, FE-feeding, NB-nest building, MD-mating display, OT-other.

Lackland Air Force Base
(Avian Point Count Data Sheet)

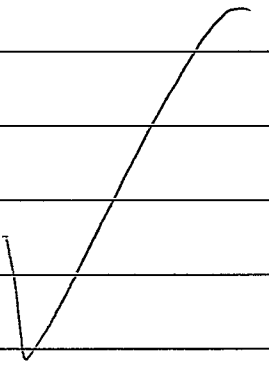
Avian Observation Data Sheet (Fixed Point Count)

Date (mmddyyyy) 4/25/2011 Observer (init.) CT Start Time 9:13 End Time _____ Obs Pt. 8

Visibility: good (fair) poor Precipitation (none) fog light rain rain snow sleet hail other Page 1 of 1

Wind: Direction from: N NE E SE S SW (W) NW n/a Speed: (Low) Med High (or kph/mph)

Obs #	Species Code	# of individuals.	Activity	Aud?	Habitat Type (circle 1st type, check others)	Notes
1	EABL	1	(PE) FL FE NB MD OT	✓	GL SL BL (PL) RI Other: p-pole	
2	EABL	1	(PE) FL FE NB MD OT	✓	GL SL BL (PL) RI Other: p-pole	
3	WWDO	23	(PE) (FL) FE NB MD OT	✓	GL SL BL (PL) RI Other: p-pole	
4	KingbA	1	(PE) (FL) FE NB MD OT		GL SL BL (PL) RI Other: p-pole	
5	NOCA	3	(PE) FL FE NB MD OT	✓	GL SL BL (PL) RI Other: p-pole	
6	GFWO	1	(PE) FL FE NB MD OT	✓	GL SL BL (PL) RI Other: p-pole	
7	NOMO	2	(PE) (FL) FE NB MD OT	✓	GL SL BL (PL) RI Other: p-pole	
8	NOCA	4	(PE) (FL) FE NB MD OT	✓	GL SL BL (PL) RI Other: p-pole	
9	BHCO	1	(PE) FL FE NB MD OT	✓	GL SL BL (PL) RI Other: p-pole	
10	EABL	1	(PE) FL FE NB MD OT		GL SL BL (PL) RI Other: p-pole	
11	COGR	2	(PE) FL FE NB MD OT		GL SL BL (PL) RI Other:	
12			PE FL FE NB MD OT		GL SL BL PL RI Other:	
13			PE FL FE NB MD OT		GL SL BL PL RI Other:	
14			PE FL FE NB MD OT		GL SL BL PL RI Other:	
15			PE FL FE NB MD OT		GL SL BL PL RI Other:	
16			PE FL FE NB MD OT		GL SL BL PL RI Other:	
17			PE FL FE NB MD OT		GL SL BL PL RI Other:	
18			PE FL FE NB MD OT		GL SL BL PL RI Other:	
19			PE FL FE NB MD OT		GL SL BL PL RI Other:	
20			PE FL FE NB MD OT		GL SL BL PL RI Other:	



HABITAT: GL- grassland, SL- shrubland, BL- brushland, PL- parkland, RI- riparian.
ACTIVITY: PE-perched, FL- flight, FE-feeding, NB-nest building, MD-mating display, OT-other.

Lackland Air Force Base
(Avian Point Count Data Sheet)

Avian Observation Data Sheet (Fixed Point Count)

Date (mmddyyyy): 4/22/2021 Observer (init.): _____ Start Time: 9:24 End Time: 9:39 Obs Pt: 9

Visibility: good / fair / poor Precipitation: none / fog / light rain / rain / snow / sleet / hail / other Page _____ of _____

Wind: Direction from: N NE E SE S SW W NW n/a Speed: Low / Med / High (or kph/mph)

Obs #	Species Code	# of individuals	Activity	Aud?	Habitat Type (circle 1st type, check others)	Notes
1	CHSP	75	PE FL FE / NB MD OT	✓	GL SL BL PL RI / Other:	
2	NOCA	1	PE FL FE / NB MD OT	✓	GL SL BL PL RI / Other:	
3	NOCA	1	PE FL FE / NB MD OT	✓	GL SL BL PL RI / Other:	
4	NOCA	1	PE FL FE / NB MD OT	✓	GL SL BL PL RI / Other:	
5	NOMO	1	PE FL FE / NB MD OT	✓	GL SL BL PL RI / Other:	
6	RSHA	1	PE FL FE / NB MD OT		GL SL BL PL RI / Other:	
7	NOMO	1	PE FL FE / NB MD OT		GL SL BL PL RI / Other:	
8	CAWR	1	PE FL FE / NB MD OT	✓	GL SL BL PL RI / Other:	
9	GFWO	1	PE FL FE / NB MD OT	✓	GL SL BL PL RI / Other:	
10	WWDO	15	PE FL FE / NB MD OT		GL SL BL PL RI / Other:	
11			PE FL FE / NB MD OT		GL SL BL PL RI / Other:	
12			PE FL FE / NB MD OT		GL SL BL PL RI / Other:	
13			PE FL FE / NB MD OT		GL SL BL PL RI / Other:	
14			PE FL FE / NB MD OT		GL SL BL PL RI / Other:	
15			PE FL FE / NB MD OT		GL SL BL PL RI / Other:	
16			PE FL FE / NB MD OT		GL SL BL PL RI / Other:	
17			PE FL FE / NB MD OT		GL SL BL PL RI / Other:	
18			PE FL FE / NB MD OT		GL SL BL PL RI / Other:	
19			PE FL FE / NB MD OT		GL SL BL PL RI / Other:	
20			PE FL FE / NB MD OT		GL SL BL PL RI / Other:	

HABITAT: GL- grassland, SL- shrubland, BL- brushland, PL- parkland, RI- riparian.
ACTIVITY: PE-perched, FL- flight, FE-feeding, NB-nest building, MD-mating display, OT-other.

Lackland Air Force Base
(Avian Point Count Data Sheet)

Avian Observation Data Sheet (Fixed Point Count)

Date (mmddyyyy) 6/25/2011 Observer (init.) _____ Start Time 9:16 End Time 10:01 Obs Pt. 10

Visibility: good (fair) poor Precipitation: (none) fog light rain rain snow sleet hail other Page _____ of _____

Wind: Direction from: N NE E SE S SW (W) NW n/a Speed: (Low) Med High (or kph/mph)

Obs #	Species Code	# of Individuals.	Activity	Aud?	Habitat Type (circle 1st type, check others)	Notes
1	NOCA	1	(PE) FL FE / NB MD OT	✓	GL SL BL PL (RI) / Other:	
2	CAWR	1	(PE) FL FE / NB MD OT	✓	GL SL BL PL (RI) / Other:	
3	ARST	1	(PE) (FL) FE / NB MD OT		GL SL BL PL (RI) / Other:	American Redstart AMRE?
4	BLWA	1	(PE) (FL) FE / NB MD OT		GL SL BL PL (RI) / Other:	
5	GTGR	10	PE (FL) FE / NB MD OT		GL SL BL PL (RI) / Other:	
6	TUVU	3	PE (FL) FE / NB MD OT		GL SL BL PL (RI) / Other:	
7	CHSP	25	(PE) (FL) (FE) / NB MD OT	✓	GL SL BL PL (RI) / Other:	
8	NOCA	1	(PE) FL FE / NB MD OT	✓	GL SL BL PL (RI) / Other:	
9	BGGN	1	(PE) (FL) FE / NB MD OT	✓	GL SL BL PL (RI) / Other:	
10	NOMO	1	(PE) FL FE / NB MD OT	✓	GL SL BL PL (RI) / Other:	
11	NOCA	1	(PE) FL FE / NB MD OT	✓	GL SL BL PL (RI) / Other:	
12			PE FL FE / NB MD OT		GL SL BL PL RI / Other:	
13			PE FL FE / NB MD OT		GL SL BL PL RI / Other:	
14			PE FL FE / NB MD OT		GL SL BL PL RI / Other:	
15			PE FL FE / NB MD OT		GL SL BL PL RI / Other:	
16			PE FL FE / NB MD OT		GL SL BL PL RI / Other:	
17			PE FL FE / NB MD OT		GL SL BL PL RI / Other:	
18			PE FL FE / NB MD OT		GL SL BL PL RI / Other:	
19			PE FL FE / NB MD OT		GL SL BL PL RI / Other:	
20			PE FL FE / NB MD OT		GL SL BL PL RI / Other:	



HABITAT: GL- grassland, SL- shrubland, BL- brushland, PL- parkland, RI- riparian.
ACTIVITY: PE-perched, FL- flight, FE-feeding, NB-nest building, MD-mating display, OT-other.

Lackland Air Force Base
(Avian Point Count Data Sheet)

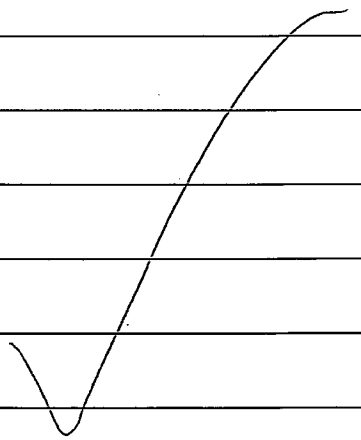
Avian Observation Data Sheet (Fixed Point Count)

Date (mmddyyyy) 4/25/2011 Observer (init.) _____ Start Time 1018 End Time 1038 Obs Pt. 16

Visibility: good (fair) poor Precipitation: (none) fog light rain rain snow sleet hail other Page _____ of _____

Wind: Direction from: N NE E SE S SW (W) NW n/a Speed: (Low) Med High (or kph/mph)

Obs #	Species Code	# of individuals.	Activity	Aud?	Habitat Type (circle 1st type, check others)	Notes
1	GTGR	8	PE (FL) FE NB MD OT		GL SL BL PL RI Other: UR	
2	WWDO	4	(PE) (FL) FE NB MD OT	✓	GL SL BL PL RI Other: UR	
3	MODO	2	(PE) FL FE NB MD OT		GL SL BL PL RI Other: UR	
4	GTGR	15	(PE) (FL) FE NB MD OT	✓	GL SL BL PL RI Other: UR	
5	TUVU	1	PE (FL) FE NB MD OT		GL SL BL PL RI Other: UR	
6	GFWO	1	(PE) FL FE NB MD OT	✓	GL SL BL PL RI Other: UR	
7	Sparrow	10	PE (FL) FE NB MD OT		GL SL BL PL RI Other: UR	
8	GTGR	4	PE (FL) FE NB MD OT		GL SL BL PL RI Other: UR	
9	WWDO	5	PE (FL) FE NB MD OT		GL SL BL PL RI Other: UR	
10	WWDO	5	PE (FL) FE NB MD OT		GL SL BL PL RI Other: UR	
11	ROPI	7	PE (FL) FE NB MD OT		GL SL BL PL RI Other: UR	
12			PE FL FE NB MD OT		GL SL BL PL RI Other:	
13			PE FL FE NB MD OT		GL SL BL PL RI Other:	
14			PE FL FE NB MD OT		GL SL BL PL RI Other:	
15			PE FL FE NB MD OT		GL SL BL PL RI Other:	
16			PE FL FE NB MD OT		GL SL BL PL RI Other:	
17			PE FL FE NB MD OT		GL SL BL PL RI Other:	
18			PE FL FE NB MD OT		GL SL BL PL RI Other:	
19			PE FL FE NB MD OT		GL SL BL PL RI Other:	
20			PE FL FE NB MD OT		GL SL BL PL RI Other:	



HABITAT: GL- grassland, SL- shrubland, BL- brushland, PL- parkland, RI- riparian.
ACTIVITY: PE-perched, FL- flight, FE-feeding, NB-nest building, MD-mating display, OT-other.

Appendix C-2
In-transit and Incidental Data Sheets

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LAFB INTRANSIT AND INCIDENTAL DATA FORM

DATE 1/12/2010 OBSERVERS CAT START TIME 07:30 ENDTIME

Obs #	Species Code	# of individuals.	Activity	Coordinates	Habitat Type (circle 1st type, check others)	Notes
1	NOCA	1	(PE) (FL) FE NB MD OT	7:44	RI GR SH (MP) HW ST DI (MA) UR OT	
2	TUVU	2	PE (FL) FE NB MD OT	8:07	RI GR (SH) (MP) HW ST DI MA UR OT	
3	SASP	1	PE (FL) FE NB MD OT	9:06	RI (GR) SH MP HW ST DI MA UR OT	
4	MODO	15	(PE) (FL) (FE) NB MD OT	9:10	RI GR (SH) MP HW ST DI MA UR OT	
5	PYRR	1	(PE) (FL) FE NB MD OT	9:14	(RI) GR SH MP HW ST DI MA UR OT	
6	AMWI	6	(PE) FL FE NB MD OT	9:17	RI GR SH MP HW (ST) DI MA UR OT	
7	NOMO	2	(PE) (FL) FE NB MD OT	9:18	(RI) GR SH MP HW (ST) DI MA UR OT	
8	WCSP	6	(PE) (FL) (FE) NB MD OT	9:21	(RI) (GR) SH MP HW ST DI MA UR OT	
9	GADW	9	(PE) (FL) FE NB MD OT	9:30	RI GR SH MP HW (ST) DI MA UR OT	
10	AMKE	1	(PE) FL (FE) NB MD OT	9:47	RI GR SH MP HW ST DI (MA) UR (OT)	power pole ✓
11	BLVU	7	PE (FL) FE NB MD OT	10:18	RI GR (SH) MP HW ST DI (MA) UR OT	
12	OSPR	1	PE (FL) FE NB MD OT	11:17	RI GR (SH) (MP) HW ST DI MA UR OT	
13	RWBL	5	(PE) FL FE NB MD OT	11:30	(RI) GR SH MP HW ST DI MA UR OT	
14	RTHA	1	PE (FL) FE NB MD OT	11:34	(RI) GR (SH) (MP) HW ST DI MA (UR) OT	
15	CHSP	22	(PE) FL (FE) NB MD OT	14:31	(RI) GR SH MP HW ST DI MA UR OT	
16	WWDO	50	(PE) FL FE NB MD OT	15:54	RI GR SH MP HW ST DI MA (UR) OT	
17	NOFL	1	PE (FL) FE NB MD OT	16:04	RI GR SH MP HW ST DI MA (UR) OT	
18	GFWO	1	(PE) FL FE NB MD OT	17:03	RI GR SH (MP) HW ST DI MA UR OT	
19	RWBL	200	PE (FL) FE NB MD OT	17:29	RI GR SH (MP) HW ST DI MA UR OT	
20	CRCA	1	(PE) FL FE NB MD OT	17:42	RI GR SH (MP) HW ST DI MA UR OT	

HABITAT: RI-riparian, GR-grassland, SH-shrubland, MP-mesquite parks, HW-hardwoods, ST-stock tank, DI-disturbed, MA-maintained, UR-urban, OT-other.
ACTIVITY: PE-perched, FL- flight, FE-feeding, NB-nest building, MD-mating display, OT-other.

LAFB INTRANSIT AND INCIDENTAL DATA FORM

DATE 1/13/11 OBSERVERS CAT START TIME 7:30 ENDTIME _____

Obs #	Species Code	# of individuals.	Activity	Coordinates	Habitat Type (circle 1st type, check others)	Notes
1	RWBL	6	(PE) FL FE NB MD OT	9:10	RI GR SH MP HW (ST) DI MA UR OT	
2	GWTE	11	(PE) FL FE NB MD OT		RI GR SH MP HW (ST) DI MA UR OT	
3	NOCA	3	PE FL FE NB MD OT		RI GR SH MP HW (ST) DI MA UR OT	Around NW Stocktank
4	LEGO	1	(PE) (FL) FE NB MD OT		RI GR SH MP HW (ST) DI MA UR OT	
5	HOFI	2	(PE) (FL) FE NB MD OT		RI GR SH MP HW (ST) DI MA UR OT	
6	AMWI	2	(PE) FL FE NB MD OT	↓	RI GR SH MP HW (ST) DI MA UR OT	
7	HOLA	8	(PE) (FL) FE NB MD OT	10:36	RI GR SH MP HW ST DI (MA) UR (OT)	road
8	AMPI	30	PE FL (FE) NB MD OT	12:28	RI GR SH MP HW ST DI (MA) UR OT	
9	EARH	1	(PE) FL FE NB MD OT	14:25	RI GR SH MP HW ST DI (MA) UR OT	
10	GADW	4	(PE) FL FE NB MD OT	15:02	RI GR SH MP HW (ST) DI MA UR OT	
11			PE FL FE NB MD OT		RI GR SH MP HW ST DI MA UR OT	✓
12			PE FL FE NB MD OT		RI GR SH MP HW ST DI MA UR OT	
13			PE FL FE NB MD OT		RI GR SH MP HW ST DI MA UR OT	
14			PE FL FE NB MD OT		RI GR SH MP HW ST DI MA UR OT	
15			PE FL FE NB MD OT		RI GR SH MP HW ST DI MA UR OT	
16			PE FL FE NB MD OT		RI GR SH MP HW ST DI MA UR OT	
17			PE FL FE NB MD OT		RI GR SH MP HW ST DI MA UR OT	
18			PE FL FE NB MD OT		RI GR SH MP HW ST DI MA UR OT	
19			PE FL FE NB MD OT		RI GR SH MP HW ST DI MA UR OT	
20			PE FL FE NB MD OT		RI GR SH MP HW ST DI MA UR OT	

HABITAT: RI-riparian, GR-grassland, SH-shrubland, MP-mesquite parks, HW-hardwoods, ST-stock tank, DI-disturbed, MA-maintained, UR-urban, OT-other.
ACTIVITY: PE-perched, FL- flight, FE-feeding, NB-nest building, MD-mating display, OT-other.

LAFB INTRANSIT AND INCIDENTAL DATA FORM

DATE 1/14/11 OBSERVERS CT START TIME 7:30 ENDTIME _____

Obs #	Species Code	# of individuals.	Activity	Coordinates	Habitat Type (circle 1st type, check others)	Notes
1	OCWA	2	(PE) FL FE / NB MD OT	8:59	RI GR (SH) (MP) HW / ST DI MA UR OT	
2	GBHE	1	(PE) FL FE / NB MD OT	8:30	RI GR SH MP HW / (ST) DI MA UR OT	
3	RSHA	1	(PE) FL FE / NB MD OT	11:04	(RI) GR SH MP (HW) / ST DI MA UR OT	
4	MEAD	18	(PE) FL (FE) / NB MD OT	14:18	RI GR SH MP HW / ST DI (MA) UR OT	
5			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
6			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
7			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
8			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
9			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
10			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
11			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	✓
12			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
13			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
14			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
15			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
16			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
17			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
18			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
19			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	
20			PE FL FE / NB MD OT		RI GR SH MP HW / ST DI MA UR OT	

HABITAT: RI-riparian, GR-grassland, SH-shrubland, MP-mesquite parks, HW-hardwoods, ST-stock tank, DI-disturbed, MA-maintained, UR-urban, OT-other.
ACTIVITY: PE-perched, FL- flight, FE-feeding, NB-nest building, MD-mating display, OT-other.

LAFB INTRANSIT AND INCIDENTAL DATA FORM

DATE 1/15/11 OBSERVERS CT START TIME 7:45 ENDTIME _____

Obs #	Species Code	# of individuals.	Activity	Coordinates	Habitat Type (circle 1st type, check others)	Notes
1	GHOW	1	(PE) FL FE NB MD OT	9:58	(RI) GR SH MP (HW) ST DI MA UR OT	live oak
2	hogs	12	PE FL FE NB MD OT	10:43	RI GR SH MP HW ST DI MA UR OT	1
3			PE FL FE NB MD OT		RI GR SH MP HW ST DI MA UR OT	
4			PE FL FE NB MD OT		RI GR SH MP HW ST DI MA UR OT	
5			PE FL FE NB MD OT		RI GR SH MP HW ST DI MA UR OT	
6			PE FL FE NB MD OT		RI GR SH MP HW ST DI MA UR OT	
7			PE FL FE NB MD OT		RI GR SH MP HW ST DI MA UR OT	
8			PE FL FE NB MD OT		RI GR SH MP HW ST DI MA UR OT	
9			PE FL FE NB MD OT		RI GR SH MP HW ST DI MA UR OT	✓
10			PE FL FE NB MD OT		RI GR SH MP HW ST DI MA UR OT	
11			PE FL FE NB MD OT		RI GR SH MP HW ST DI MA UR OT	
12			PE FL FE NB MD OT		RI GR SH MP HW ST DI MA UR OT	
13			PE FL FE NB MD OT		RI GR SH MP HW ST DI MA UR OT	
14			PE FL FE NB MD OT		RI GR SH MP HW ST DI MA UR OT	
15			PE FL FE NB MD OT		RI GR SH MP HW ST DI MA UR OT	
16			PE FL FE NB MD OT		RI GR SH MP HW ST DI MA UR OT	
17			PE FL FE NB MD OT		RI GR SH MP HW ST DI MA UR OT	
18			PE FL FE NB MD OT		RI GR SH MP HW ST DI MA UR OT	
19			PE FL FE NB MD OT		RI GR SH MP HW ST DI MA UR OT	
20			PE FL FE NB MD OT		RI GR SH MP HW ST DI MA UR OT	

HABITAT: RI-riparian, GR-grassland, SH-shrubland, MP-mesquite parks, HW-hardwoods, ST-stock tank, DI-disturbed, MA-maintained, UR-urban, OT-other.
ACTIVITY: PE-perched, FL- flight, FE-feeding, NB-nest building, MD-mating display, OT-other.

LAFB INTRANSIT AND INCIDENTAL DATA FORM

DATE 1/16/11 OBSERVERS CT START TIME 7:45 ENDTIME _____

Obs #	Species Code	# of individuals.	Activity	Coordinates	Habitat Type (circle 1st type, check others)	Notes
1			PE FL FE NB MD OT		RI GR SH MP HW ST DI MA UR OT	No new species observed.
2			PE FL FE NB MD OT		RI GR SH MP HW ST DI MA UR OT	
3			PE FL FE NB MD OT		RI GR SH MP HW ST DI MA UR OT	
4			PE FL FE NB MD OT		RI GR SH MP HW ST DI MA UR OT	
5			PE FL FE NB MD OT		RI GR SH MP HW ST DI MA UR OT	
6			PE FL FE NB MD OT		RI GR SH MP HW ST DI MA UR OT	
7			PE FL FE NB MD OT		RI GR SH MP HW ST DI MA UR OT	
8			PE FL FE NB MD OT		RI GR SH MP HW ST DI MA UR OT	
9			PE FL FE NB MD OT		RI GR SH MP HW ST DI MA UR OT	✓
10			PE FL FE NB MD OT		RI GR SH MP HW ST DI MA UR OT	
11			PE FL FE NB MD OT		RI GR SH MP HW ST DI MA UR OT	
12			PE FL FE NB MD OT		RI GR SH MP HW ST DI MA UR OT	
13			PE FL FE NB MD OT		RI GR SH MP HW ST DI MA UR OT	
14			PE FL FE NB MD OT		RI GR SH MP HW ST DI MA UR OT	
15			PE FL FE NB MD OT		RI GR SH MP HW ST DI MA UR OT	
16			PE FL FE NB MD OT		RI GR SH MP HW ST DI MA UR OT	
17			PE FL FE NB MD OT		RI GR SH MP HW ST DI MA UR OT	
18			PE FL FE NB MD OT		RI GR SH MP HW ST DI MA UR OT	
19			PE FL FE NB MD OT		RI GR SH MP HW ST DI MA UR OT	
20			PE FL FE NB MD OT		RI GR SH MP HW ST DI MA UR OT	

HABITAT: RI-riparian, GR-grassland, SH-shrubland, MP-mesquite parks, HW-hardwoods, ST-stock tank, DI-disturbed, MA-maintained, UR-urban, OT-other.
ACTIVITY: PE-perched, FL- flight, FE-feeding, NB-nest building, MD-mating display, OT-other.

LAFB INTRANSIT AND INCIDENTAL AVIAN DATA FORM

DATE 4/21/2011 OBSERVERS CT START TIME 09:30 ENDTIME _____

Obs #	Species Code	# of individuals	Activity	Nearest Point	Habitat Type (circle 1st type, check others)	Notes
1	NOCA	1	(PE) FL FE / NB MD OT	5	GL SL BL PL RI / Other: maintained	Range control
2	EABL	2	(PE) FL FE / NB MD OT	5	GL SL BL PL RI / Other: maintained	"
3	WEKI	1	(PE) FL FE / NB MD OT	5	GL SL BL PL RI / Other: maintained	"
4	NOMO	1	(PE) FL FE / NB MD OT	5	GL SL BL (PL) RI / Other:	"
5	BGGN	1	PE (FL) FE / NB MD OT	4	GL SL BL (PL) RI / Other:	
6	PYRR	1	PE (FL) FE / NB MD OT	4	GL SL BL (PL) RI / Other:	
7	LASP	2	PE FL (FE) / NB MD OT	4	(GL) SL BL (PL) RI / Other: Road	
8	RCSP	1	PE FL (FE) / NB MD OT	4	(GL) SL BL (PL) RI / Other: Road	
9	WCSP	6	PE FL (FE) / NB MD OT	4	(GL) SL BL (PL) RI / Other: Road	
10	BHCO	3	(PE) FL FE / NB MD OT	3	(GL) SL BL PL RI / Other:	
11	CGDO	2	(PE) FL (FE) / NB MD OT	7	GL SL BL PL RI / Other: maintained	
12	BRWD	7	(PE) FL FE / NB MD OT	2	GL SL BL PL RI / Other: Stock Tank	
13	WWDO	10	(PE) FL FE / NB MD OT	2	GL SL BL (PL) RI / Other: Power Pole	
14	TUVU	5	PE (FL) FE / NB MD OT	4	GL SL BL (PL) RI / Other:	
15	EUST	1	(PE) FL FE / NB MD OT	4	GL SL BL (PL) RI / Other: power pole	
16	MODO	2	PE (FL) FE / NB MD OT	1	GL SL BL (PL) RI / Other:	
17	GFWO	1	(PE) FL FE / NB MD OT	4	GL SL BL PL RI / Other: power pole	
18	BASW	4	PE (FL) FE / NB MD OT	11	GL SL BL PL RI / Other: Urban	
19	STFL	2	(PE) FL FE / NB MD OT	11	GL SL BL PL RI / Other: Urban	
20	HAHA	≥	PE (FL) FE / NB MD OT	6	GL SL BL (PL) RI / Other:	

HABITAT: GL- grassland, SL- shrubland, BL- brushland, PL- parkland, RI- riparian.
ACTIVITY: PE-perched, FL- flight, FE-feeding, NB-nest building, MD-mating display, OT-other.

LAFB INTRANSIT AND INCIDENTAL AVIAN DATA FORM

DATE 4/21/2016 OBSERVERS CT START TIME Page ENDTIME

Obs #	Species Code	# of individuals	Activity	Nearest Point	Habitat Type (circle 1st type, check others)	Notes
1	PABU	4	PE FL FE / NB MD OT	2	GL SL BL PL RI / Other:	photo
2	CARW	2	PE FL FE / NB MD OT	9	GL SL BL PL RI / Other:	
3	CHSP	3	PE FL FE / NB MD OT	9	GL SL BL PL RI / Other:	
4	HOFI	2	PE FL FE / NB MD OT	9	GL SL BL PL RI / Other:	
5	CAJP	1	PE FL FE / NB MD OT	3	GL SL BL PL RI / Other:	
6	SWHA	6	PE FL FE / NB MD OT	3	GL SL BL PL RI / Other: mainline	
7	HOSP	1	PE FL FE / NB MD OT	6	GL SL BL PL RI / Other:	
8	GRHE	1	PE FL FE / NB MD OT	2	GL SL BL PL RI / Other: Stock Tank	
9	Hmm	1	PE FL FE / NB MD OT	3	GL SL BL PL RI / Other:	photo
10			PE FL FE / NB MD OT		GL SL BL PL RI / Other:	
11			PE FL FE / NB MD OT		GL SL BL PL RI / Other:	
12			PE FL FE / NB MD OT		GL SL BL PL RI / Other:	
13			PE FL FE / NB MD OT		GL SL BL PL RI / Other:	
14			PE FL FE / NB MD OT		GL SL BL PL RI / Other:	
15			PE FL FE / NB MD OT		GL SL BL PL RI / Other:	
16			PE FL FE / NB MD OT		GL SL BL PL RI / Other:	
17			PE FL FE / NB MD OT		GL SL BL PL RI / Other:	
18			PE FL FE / NB MD OT		GL SL BL PL RI / Other:	
19			PE FL FE / NB MD OT		GL SL BL PL RI / Other:	
20			PE FL FE / NB MD OT		GL SL BL PL RI / Other:	

HABITAT: GL- grassland, SL- shrubland, BL- brushland, PL- parkland, RI- riparian.
ACTIVITY: PE-perched, FL- flight, FE-feeding, NB-nest building, MD-mating display, OT-other.

LAFB INTRANSIT AND INCIDENTAL AVIAN DATA FORM

DATE 4/25/2011 OBSERVERS CT START TIME 6:45 ENDTIME _____

Obs #	Species Code	# of individuals	Activity	Nearest Point	Habitat Type (circle 1st type, check others)	Notes
1	INBU	1	PE (FL) FE NB MD OT	1	GL SL (BL) (PL) RI Other:	
2	CHSP	4	(PE) FL (FE) NB MD OT	1	GL SL (BL) (PL) RI Other: road	
3			PE FL FE NB MD OT		GL SL BL PL RI Other:	
4			PE FL FE NB MD OT		GL SL BL PL RI Other:	
5			PE FL FE NB MD OT		GL SL BL PL RI Other:	
6			PE FL FE NB MD OT		GL SL BL PL RI Other:	
7			PE FL FE NB MD OT		GL SL BL PL RI Other:	
8			PE FL FE NB MD OT		GL SL BL PL RI Other:	
9			PE FL FE NB MD OT		GL SL BL PL RI Other:	
10			PE FL FE NB MD OT		GL SL BL PL RI Other:	
11			PE FL FE NB MD OT		GL SL BL PL RI Other:	
12			PE FL FE NB MD OT		GL SL BL PL RI Other:	
13			PE FL FE NB MD OT		GL SL BL PL RI Other:	
14			PE FL FE NB MD OT		GL SL BL PL RI Other:	
15			PE FL FE NB MD OT		GL SL BL PL RI Other:	
16			PE FL FE NB MD OT		GL SL BL PL RI Other:	
17			PE FL FE NB MD OT		GL SL BL PL RI Other:	
18			PE FL FE NB MD OT		GL SL BL PL RI Other:	
19			PE FL FE NB MD OT		GL SL BL PL RI Other:	
20			PE FL FE NB MD OT		GL SL BL PL RI Other:	

HABITAT: GL- grassland, SL- shrubland, BL- brushland, PL- parkland, RI- riparian.
ACTIVITY: PE-perched, FL- flight, FE-feeding, NB-nest building, MD-mating display, OT-other.

LAFB INTRANSIT AND INCIDENTAL AVIAN DATA FORM

DATE 4/29/11 OBSERVERS CT START TIME 7:00 ENDTIME _____

Obs #	Species Code	# of individuals	Activity	Nearest Point	Habitat Type (circle 1st type, check others)	Notes
1	YBCO	1	(PE) FL FE NB MD OT	3	GL SL (BL) (PL) RI Other:	
2	VEFL	1	(PE) FL FE NB MD OT	2	GL SL (BL) (PL) RI Other: Stock Tank	
3	SUTA	1	(PE) FL FE NB MD OT	5	GL SL BL (PL) RI Other:	
4	BAOR	1	(PE) FL FE NB MD OT	5	GL SL BL (PL) RI Other:	
5			PE FL FE NB MD OT		GL SL BL PL RI Other:	
6			PE FL FE NB MD OT		GL SL BL PL RI Other:	
7			PE FL FE NB MD OT		GL SL BL PL RI Other:	
8			PE FL FE NB MD OT		GL SL BL PL RI Other:	
9			PE FL FE NB MD OT		GL SL BL PL RI Other:	
10			PE FL FE NB MD OT		GL SL BL PL RI Other:	
11			PE FL FE NB MD OT		GL SL BL PL RI Other:	
12			PE FL FE NB MD OT		GL SL BL PL RI Other:	
13			PE FL FE NB MD OT		GL SL BL PL RI Other:	
14			PE FL FE NB MD OT		GL SL BL PL RI Other:	
15			PE FL FE NB MD OT		GL SL BL PL RI Other:	
16			PE FL FE NB MD OT		GL SL BL PL RI Other:	
17			PE FL FE NB MD OT		GL SL BL PL RI Other:	
18			PE FL FE NB MD OT		GL SL BL PL RI Other:	
19			PE FL FE NB MD OT		GL SL BL PL RI Other:	
20			PE FL FE NB MD OT		GL SL BL PL RI Other:	

HABITAT: GL- grassland, SL- shrubland, BL- brushland, PL- parkland, RI- riparian.
ACTIVITY: PE-perched, FL- flight, FE-feeding, NB-nest building, MD-mating display, OT-other.

Appendix C-3
Reptile Observation Data Sheets

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Lackland AFB Survey
Reptile Observation Data Sheet (Driving Survey)

Date 3/25/11 Observers CT Start Time 12:30 End Time 20:15

Obs #	Time	Species	Activity	Temp	Cloud Cover	Precip	Road Type	Surrounding Habitat (check all)	Coordinates	
									Easting	Northing
1	12:30	six-lined racerunner	BA (TR) RK Other:	92	70%	none	P	GL SL BL PL RI Other: Parking lot	29.38517500	98.66396525
2	2:45	Texas spiny	BA (TR) RK Other:	88	80%	none	P	GL SL (BL) (PL) RI Other:	29.38894224	98.66745180
3	17:37	ground skink	BA (TR) RK Other:	83	100%	none	G	GL SL BL PL (RI) Other:	29.38633911	98.66398449
4	17:39	Green Anole	BA (TR) RK Other:	83	100%	none	G	GL SL BL PL (RI) Other:	29 38797367	98.66161998
5	17:40	Red-eared slider	(BA) (TR) RK Other:	83	100%	none	—	GL SL BL PL (RI) Other: Malia Creek	"	"
			BA TR RK Other:					GL SL BL PL RI Other:		
			BA TR RK Other:					GL SL BL PL RI Other:		
			BA TR RK Other:					GL SL BL PL RI Other:		
			BA TR RK Other:					GL SL BL PL RI Other:		
			BA TR RK Other:					GL SL BL PL RI Other:		

HABITAT: GL- grassland, SL- shrubland, BL- brushland, PL- parkland, RI- riparian.
ACTIVITY: BA- basking, TR- traveling, RK- road kill.

OBS. #	ADDITIONAL NOTES
3	have photo

Lackland AFB Survey
Reptile Observation Data Sheet (Driving Survey)

Date 3/26/11 Observers CT Start Time 5:00 End Time 20:00

Obs #	Time	Species	Activity	Temp	Cloud Cover	Precip	Road Type	Surrounding Habitat (check all)	Coordinates	
									Easting	Northing
1	17:02	six-lined racerunner	BA (TR) RK Other:	88	80%	—	G	GL SL (BL) (PL) RI Other:	29.3869, 655	98.9623, 9181
1	18:51	western diamond back	BA (TR) RK Other:	84	80%	—	D	GL SL (BL) PL RI Other:	29.352800	98.656724
			BA TR RK Other:					GL SL BL PL RI Other:		
			BA TR RK Other:					GL SL BL PL RI Other:		
			BA TR RK Other:					GL SL BL PL RI Other:		
			BA TR RK Other:					GL SL BL PL RI Other:		
			BA TR RK Other:					GL SL BL PL RI Other:		
			BA TR RK Other:					GL SL BL PL RI Other:		
			BA TR RK Other:					GL SL BL PL RI Other:		
			BA TR RK Other:					GL SL BL PL RI Other:		

HABITAT: GL- grassland, SL- shrubland, BL- brushland, PL- parkland, RI- riparian.
ACTIVITY: BA- basking, TR- traveling, RK- road kill.

OBS. #	ADDITIONAL NOTES

Lackland AFB Survey
Reptile Observation Data Sheet (Driving Survey)

Date 3/27/2016 Observers CT Start Time 5:45 End Time 19:00

Obs #	Time	Species	Activity	Temp	Cloud Cover	Precip	Road Type	Surrounding Habitat (check all)	Coordinates	
									Easting	Northing
1	17:36	Texas Spiny	(BA) TR RK Other:	83	100%	—	\	GL SL BL (PL) RI Other:	98.648057	29.4826685
2	18:02	Texas Coral Snake	BA (TR) RK Other:	82	100%	—	D	GL SL BL (PL) (RI) Other:	29.368 5559	98.6577867
			BA TR RK Other:					GL SL BL PL RI Other:		
			BA TR RK Other:					GL SL BL PL RI Other:		
			BA TR RK Other:					GL SL BL PL RI Other:		
			BA TR RK Other:					GL SL BL PL RI Other:		
			BA TR RK Other:					GL SL BL PL RI Other:		
			BA TR RK Other:					GL SL BL PL RI Other:		
			BA TR RK Other:					GL SL BL PL RI Other:		
			BA TR RK Other:					GL SL BL PL RI Other:		

HABITAT: GL- grassland, SL- shrubland, BL- brushland, PL- parkland, RI- riparian.
ACTIVITY: BA- basking, TR- traveling, RK- road kill.

OBS. #	ADDITIONAL NOTES

Lackland AFB Survey
Reptile Observation Data Sheet (Driving Survey)

Date 3/28/2011 Observers CT Start Time 5:00 End Time 19:00

Obs #	Time	Species	Activity	Temp	Cloud Cover	Precip	Road Type	Surrounding Habitat (check all)	Coordinates	
									Easting	Northing
			BA TR RK Other:					GL SL BL PL RI Other:		
			BA TR RK Other:					GL SL BL PL RI Other:		
			BA TR RK Other:					GL SL BL PL RI Other:		
			BA TR RK Other:					GL SL BL PL RI Other:		
			BA TR RK Other:					GL SL BL PL RI Other:		
			BA TR RK Other:					GL SL BL PL RI Other:		
			BA TR RK Other:					GL SL BL PL RI Other:		
			BA TR RK Other:					GL SL BL PL RI Other:		
			BA TR RK Other:					GL SL BL PL RI Other:		
			BA TR RK Other:					GL SL BL PL RI Other:		

HABITAT: GL- grassland, SL- shrubland, BL- brushland, PL- parkland, RI- riparian.
ACTIVITY: BA- basking, TR- traveling, RK- road kill.

OBS. #	ADDITIONAL NOTES
	No observations. Temps were cool all day. Mostly cloudy

Lackland AFB Survey
Reptile Observation Data Sheet (Driving Survey)

Date 3/29/2011 Observers CAT Start Time 5:00 End Time 17:00

Obs #	Time	Species	Activity	Temp	Cloud Cover	Precip	Road Type	Surrounding Habitat (check all)	Coordinates	
									Easting	Northing
			BA TR RK Other:					GL SL BL PL RI Other:		
			BA TR RK Other:					GL SL BL PL RI Other:		
			BA TR RK Other:					GL SL BL PL RI Other:		
			BA TR RK Other:					GL SL BL PL RI Other:		
			BA TR RK Other:					GL SL BL PL RI Other:		
			BA TR RK Other:					GL SL BL PL RI Other:		
			BA TR RK Other:					GL SL BL PL RI Other:		
			BA TR RK Other:					GL SL BL PL RI Other:		
			BA TR RK Other:					GL SL BL PL RI Other:		
			BA TR RK Other:					GL SL BL PL RI Other:		

HABITAT: GL- grassland, SL- shrubland, BL- brushland, PL- parkland, RI- riparian.
ACTIVITY: BA- basking, TR- traveling, RK- road kill.

OBS. #	ADDITIONAL NOTES
	No observations.

Lackland AFB Survey
Reptile Observation Data Sheet (Driving Survey)

Date 4/21/2011 Observers CT Start Time 09:20 End Time 1930

Obs #	Time	Species	Activity	Temp	Cloud Cover	Precip	Road Type	Surrounding Habitat (check all)	Coordinates	
									Easting	Northing
	11:19	Six-lined racerunner	(BA) TR RK Other:	83	100	—	gravel	GL SL (BL) PL RI Other:	1368217406	2068974.03
			BA TR RK Other:					GL SL BL PL RI Other:		
			BA TR RK Other:					GL SL BL PL RI Other:		
			BA TR RK Other:					GL SL BL PL RI Other:		
			BA TR RK Other:					GL SL BL PL RI Other:		
			BA TR RK Other:					GL SL BL PL RI Other:		
			BA TR RK Other:					GL SL BL PL RI Other:		
			BA TR RK Other:					GL SL BL PL RI Other:		
			BA TR RK Other:					GL SL BL PL RI Other:		
			BA TR RK Other:					GL SL BL PL RI Other:		

HABITAT: GL- grassland, SL- shrubland, BL- brushland, PL- parkland, RI- riparian.
ACTIVITY: BA- basking, TR- traveling, RK- road kill.

OBS. #	ADDITIONAL NOTES

Lackland AFB Survey
Reptile Observation Data Sheet (Driving Survey)

Date 4/22/11 Observers CT Start Time 06:45 End Time 12:30

Obs #	Time	Species	Activity	Temp	Cloud Cover	Precip	Road Type	Surrounding Habitat (check all)	Coordinates	
									Easting	Northing
	10:17	Texas Patchnose	(BA) TR RK Other:	76	60	—	dirt	GL SL (BL) (PL) RI Other:	1368426944	2070298.08
			BA TR RK Other:					GL SL BL PL RI Other:		
			BA TR RK Other:					GL SL BL PL RI Other:		
			BA TR RK Other:					GL SL BL PL RI Other:		
			BA TR RK Other:					GL SL BL PL RI Other:		
			BA TR RK Other:					GL SL BL PL RI Other:		
			BA TR RK Other:					GL SL BL PL RI Other:		
			BA TR RK Other:					GL SL BL PL RI Other:		
			BA TR RK Other:					GL SL BL PL RI Other:		

HABITAT: GL- grassland, SL- shrubland, BL- brushland, PL- parkland, RI- riparian.
ACTIVITY: BA- basking, TR- traveling, RK- road kill.

OBS. #	ADDITIONAL NOTES

Lackland AFB Survey
Reptile Observation Data Sheet (Driving Survey)

Date 4/23/15 Observers CT Start Time 6:30 End Time 12:30

Obs #	Time	Species	Activity	Temp	Cloud Cover	Precip	Road Type	Surrounding Habitat (check all)	Coordinates	
									Easting	Northing
			BA TR RK Other:					GL SL BL PL RI Other:		
			BA TR RK Other:					GL SL BL PL RI Other:		
			BA TR RK Other:					GL SL BL PL RI Other:		
			BA TR RK Other:					GL SL BL PL RI Other:		
			BA TR RK Other:					GL SL BL PL RI Other:		
			BA TR RK Other:					GL SL BL PL RI Other:		
			BA TR RK Other:					GL SL BL PL RI Other:		
			BA TR RK Other:					GL SL BL PL RI Other:		
			BA TR RK Other:					GL SL BL PL RI Other:		
			BA TR RK Other:					GL SL BL PL RI Other:		

HABITAT: GL- grassland, SL- shrubland, BL- brushland, PL- parkland, RI- riparian.
ACTIVITY: BA- basking, TR- traveling, RK- road kill.

OBS. #	ADDITIONAL NOTES
	No observations.

Lackland AFB Survey
Reptile Observation Data Sheet (Driving Survey)

Date 4/24/11 Observers CT Start Time 6:45 End Time 12:40

Obs #	Time	Species	Activity	Temp	Cloud Cover	Precip	Road Type	Surrounding Habitat (check all)	Coordinates	
									Easting	Northing
			BA TR RK Other:					GL SL BL PL RI Other:		
			BA TR RK Other:					GL SL BL PL RI Other:		
			BA TR RK Other:					GL SL BL PL RI Other:		
			BA TR RK Other:					GL SL BL PL RI Other:		
			BA TR RK Other:					GL SL BL PL RI Other:		
			BA TR RK Other:					GL SL BL PL RI Other:		
			BA TR RK Other:					GL SL BL PL RI Other:		
			BA TR RK Other:					GL SL BL PL RI Other:		
			BA TR RK Other:					GL SL BL PL RI Other:		
			BA TR RK Other:					GL SL BL PL RI Other:		

HABITAT: GL- grassland, SL- shrubland, BL- brushland, PL- parkland, RI- riparian.
ACTIVITY: BA- basking, TR- traveling, RK- road kill.

OBS. #	ADDITIONAL NOTES
	No observation

Lackland AFB Survey
Reptile Observation Data Sheet (Driving Survey)

Date 4/25/11 Observers CT Start Time 6:40 End Time 10:30

Obs #	Time	Species	Activity	Temp	Cloud Cover	Precip	Road Type	Surrounding Habitat (check all)	Coordinates	
									Easting	Northing
			BA TR RK Other:					GL SL BL PL RI Other:		
			BA TR RK Other:					GL SL BL PL RI Other:		
			BA TR RK Other:					GL SL BL PL RI Other:		
			BA TR RK Other:					GL SL BL PL RI Other:		
			BA TR RK Other:					GL SL BL PL RI Other:		
			BA TR RK Other:					GL SL BL PL RI Other:		
			BA TR RK Other:					GL SL BL PL RI Other:		
			BA TR RK Other:					GL SL BL PL RI Other:		
			BA TR RK Other:					GL SL BL PL RI Other:		
			BA TR RK Other:					GL SL BL PL RI Other:		

HABITAT: GL- grassland, SL- shrubland, BL- brushland, PL- parkland, RI- riparian.
ACTIVITY: BA- basking, TR- traveling, RK- road kill.

OBS. #	ADDITIONAL NOTES
	No observations.

Lackland AFB Survey
Reptile Observation Data Sheet (Driving Survey)

Date 4/26/2011 Observers CT Start Time 10:30 End Time [redacted] 13:10

Obs #	Time	Species	Activity	Temp	Cloud Cover	Precip	Road Type	Surrounding Habitat (check all)	Coordinates	
									Easting	Northing
	10:44	Texas Rat Snake	BA (TR) RK	84	75%	—	gravel	GL SL (BL) (PL) RI	1368523133	2069403.78
	11:15	Western Coachwhip	BA (TR) RK	84	50%	—	gravel	GL SL BL (PL) RI	1368649.38	2071187.33
	21:05	Blanchard's Cricket Frog	BA TR RK Other: call	82	—	—	—	GL SL BL PL RI Other: stock tank	Call Location 1	
	21:39	" "	BA TR RK Other: call	81	—	—	—	GL SL BL PL RI Other: stock tank	Call Location 2	
	22:02	Plains Narrowmouth	BA TR RK Other: call	80	—	—	—	GL SL BL PL RI Other: stock Tank	Call Location 3	
	22:44	Blanchard's Cricket Frog	BA TR RK Other: call	78	—	—	—	GL SL BL PL RI Other: Medio Creek	Call Location 4	
			BA TR RK Other:		✓			GL SL BL PL RI Other:		
			BA TR RK Other:					GL SL BL PL RI Other:		
			BA TR RK Other:					GL SL BL PL RI Other:		
			BA TR RK Other:					GL SL BL PL RI Other:		

HABITAT: GL- grassland, SL- shrubland, BL- brushland, PL- parkland, RI- riparian.
ACTIVITY: BA- basking, TR- traveling, RK- road kill.

OBS. #	ADDITIONAL NOTES

Lackland AFB Survey
Reptile Observation Data Sheet (Driving Survey)

Date 4/27/16 Observers CT Start Time 6:30 End Time 14:00

Obs #	Time	Species	Activity	Temp	Cloud Cover	Precip	Road Type	Surrounding Habitat (check all)	Coordinates Lat / Long (Easting / Northing)
1	13:05	Rio Grande Leopard Frog	(BA) TR RK Other:	78	0	—	—	GL SL BL PL RI Other: stock tank	Stock Tank by gravel p.t.
2	14:07	Red-spotted frog	BA TR RK Other: under log	82	0	—	—	GL SL BL (PL) RI Other: under log	29°22'48" N 98°40'44" W
			BA TR RK Other:					GL SL BL PL RI Other:	
			BA TR RK Other:					GL SL BL PL RI Other:	
			BA TR RK Other:					GL SL BL PL RI Other:	
			BA TR RK Other:					GL SL BL PL RI Other:	
			BA TR RK Other:					GL SL BL PL RI Other:	
			BA TR RK Other:					GL SL BL PL RI Other:	
			BA TR RK Other:					GL SL BL PL RI Other:	

HABITAT: GL- grassland, SL- shrubland, BL- brushland, PL- parkland, RI- riparian.
ACTIVITY: BA- basking, TR- traveling, RK- road kill.

OBS. #	ADDITIONAL NOTES
2	forgot to get coordinates, so went on ArcGIS

Lackland AFB Survey
Reptile Observation Data Sheet (Driving Survey)

Date 4/28/2011 Observers CT Start Time 6:45 End Time 15:30

Obs #	Time	Species	Activity	Temp	Cloud Cover	Precip	Road Type	Surrounding Habitat (check all)	Coordinates	
									Easting	Northing
	9:06	Western Diamondback	BA TR RK Other: drowned in creek	63	0	—	—	GL SL BL PL (RI) Other:	1368021.32	2078964.96
			BA TR RK Other:					GL SL BL PL RI Other:		
			BA TR RK Other:					GL SL BL PL RI Other:		
			BA TR RK Other:					GL SL BL PL RI Other:		
			BA TR RK Other:					GL SL BL PL RI Other:		
			BA TR RK Other:					GL SL BL PL RI Other:		
			BA TR RK Other:					GL SL BL PL RI Other:		
			BA TR RK Other:					GL SL BL PL RI Other:		
			BA TR RK Other:					GL SL BL PL RI Other:		

HABITAT: GL- grassland, SL- shrubland, BL- brushland, PL- parkland, RI- riparian.
ACTIVITY: BA- basking, TR- traveling, RK- road kill.

OBS. #	ADDITIONAL NOTES

Lackland AFB Survey
Reptile Observation Data Sheet (Driving Survey)

Date 10/29/11 Observers CT Start Time 6:30 End Time 10:00 ,, 22:00

Obs #	Time	Species	Activity	Temp	Cloud Cover	Precip	Road Type	Surrounding Habitat (check all)	Coordinates	
									Easting	Northing
	15:20	(7) red-eared sliders	(BA) TR RK	92	0	–	–	GL SL BL PL (RI)	bridge near dog	training
	17:35	(1) red-eared slider	(BA) TR RK	90	0	–	–	GL SL BL PL (RI)	lagoon	
	20:20	Mediterranean Gecko	(BA) TR RK	82	0	–	–	GL SL (BL) (PL) RI	CB 23	
			BA TR RK					GL SL BL PL RI		
			BA TR RK					GL SL BL PL RI		
			BA TR RK					GL SL BL PL RI		
			BA TR RK					GL SL BL PL RI		
			BA TR RK					GL SL BL PL RI		
			BA TR RK					GL SL BL PL RI		
			BA TR RK					GL SL BL PL RI		

Other: (old building)

HABITAT: GL- grassland, SL- shrubland, BL- brushland, PL- parkland, RI- riparian.
ACTIVITY: BA- basking, TR- traveling, RK- road kill.

OBS. #	ADDITIONAL NOTES

Appendix C-4
Herpetofauna Station Survey Data Sheets

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Lackland AFB Herp Station Surveys

Survey Period: March OBSERVERS CAT

Herp Station	Date	Time	Species	Temperature	Precipitation	Board Pile: Two Board	Board Pile: Three Boards	Cloud Cover	Round 2	Date	Time	NOTES
1	3/28	16:42							no obs.	3/30	3:02	
2	3/28	16:37							no obs.	3/30	3:18	
3	3/26	18:30							no obs.	3/30	3:57	
4	3/26	18:57							no obs.	3/30	4:25	
5	3/26	19:07							no obs.	3/30	4:40	
6	3/26	8:34							no obs	3/29	15:47	75° None No Obs.
7	3/26	8:45							no obs	3/29	15:04	72° Drizzle No Obs.
8	3/26	8:22							no obs.	3/29	15:39	74° None Green Anole
9	3/26	8:58							no obs.	3/29	15:13	73° Drizzle No Obs
10	3/26	9:09							no obs.	3/29	14:41	73° None No Obs
11	3/26	9:16							no obs.	3/29	14:30	72° No No Obs
12	3/27	7:49							no obs.	3/29	14:49	72° No No Obs
13	3/27	8:00							no obs.	3/29	14:58	72° Drizzle No Obs
14	3/25	14:47							no obs.	3/29	16:01	75° None No Obs
15	3/25	15:20							no obs.	3/29	16:34	74° None No Obs
16	3/26	18:18	Texas Patchnose	88	—	—	✓	60%		3/30	3:38	
17	3/26	19:14							no obs	3/30	5:06	
18	3/26	19:23							no obs	3/30	4:56	
19	3/26	19:30							no obs	3/30	5:33	
20	3/25	17:33							no obs.	3/30	4:39	

COMMENTS

21	3/26	18:55								3/30	4:29	
22	3/26	7:55	Texas Spiny	74°	—	—	—	100%	old shed	3/29	15:53	75° None No Obs
23	3/25	13:04	Plains Woodrat							3/29	15:17	73° None No Obs.
24	3/25	12:30								3/29	15:26	73° None Plains Woodrat
25	3/25	14:01								3/29	16:14	75° None No Obs
26	3/26	18:40	Pygmy/Mice, Plains Woodrat							3/30	4:08	

Lackland AFB Herp Station Surveys

Survey Period: April OBSERVERS CT

Herp Station	Date	Time	Species	Temperature	Precipitation	Board Pile		Cloud Cover	NOTES
						Two Board	Three Boards		
1	4/23/11	8:11							
2	4/23/11	8:54							
3	4/23/11	8:45							
4	4/23/11	9:54	Schott's Whipsnake	76	—		✓	60%	
5	4/23/11	10:37							
6	4/21	14:57	Texas fence Lizard	84	—		✓	75%	
7	4/21	12:13							
8	4/21	13:35	Sceloporis spp.	83	—		✓	90%	Photo Taken
9	4/21	12:27							
10	4/21	11:29							
11	4/21	11:10							
12	4/21	15:45							
13	4/21	16:00							
14	4/21	15:37							
15	4/21	15:55							
16	4/23/11	7:35							
17	4/23/11	10:43							
18	4/23/11	10:54							
19	4/23/11	11:20							
20	4/23/11	10:08							
21	4/23	10:00							
22	4/23	15:12							
23	4/21	12:38							

COMMENTS

24	4/21	14:40	Western Diamondback	82	—		✓	90%	
25	4/21	15:24							
26	4/23	8:53	Pygmy Mouse, Western						
27	4/23	9:24	Pygmy Mouse, Peromyscus w/ scantily haired tail and chevron color						

Lackland AFB Herp Station Surveys

Survey Period: April (2) OBSERVERS CT

Herp Station	Date	Time	Species	Temperature	Precipitation	Board Pile		Cloud Cover	NOTES
						Two Board	Three Boards		
1	4/28	8:39							
2	4/28	8:50							
3	4/28	8:02							
4	4/28	7:31	Schott's Whipsnake	67	—		✓	0%	photo
5	4/28	7:16							
6	4/29	6:59							
7	4/29	7:44							
8	4/29	7:11							
9	4/29	7:07	ground skink	62	—		✓	0%	
10	4/29	7:21							
11	4/29	7:25							
12	4/29	7:32							
13	4/29	7:39							
14	4/29	6:40							
15	4/29	6:31							
16	4/28	8:12							
17	4/28	7:03							
18	4/28	7:08							
19	4/28	6:52							
20	4/28	7:44	Texas Spiny Lizard	68	—		✓	0%	photo
21	4/28	7:34							
22	4/29	6:53							
23	4/29	7:50							
24	4/29	7:14							
25	4/29	6:49							
26	4/28	7:55	Woodrat	72	—	—	—	0%	
27	4/28	8:29							

COMMENTS

Appendix C-5
Nocturnal Large Mammal Survey Data Sheets

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LAFB LARGE MAMMAL NIGHT SURVEYS DATA FORM

Route	Method	Date	Period	Feral Hog	Javelina	Deer	Coyote	Bobcat
North	Sunset	2/28	PM	7	2	3		
North	Spotlight	3/2	PM			1		
North	Thermal	3/3	AM	2	4	6		1
Central	Spotlight	3/4	PM	3	1	2		
Central	Sunset	3/4	PM	9		1	2	
Central	Thermal	3/4	AM	4	9	5		
Central	"	3/26	AM		3	7		
South	"	3/26	AM	7		2		
North	"	3/26	AM	5				
North	"	3/27	"					
Central	"	3/28	"			1		
South	"	3/28	"					
North	"	3/28	"		2			

NOTES

Appendix C

2008 Lackland Air Force Base Jurisdictional Determination Report

Executive Summary

This proposed jurisdiction determination assess land located within Lackland Air Force Main Base and Lackland Annex Areas located in Bexar County, Texas. A routine delineation with an on-site inspection was conducted between February 25, 2008 and March 25, 2008. The main base encompasses approximately 2,752 acres of land, and the annex areas include approximately 3,972 acres of land. There were 2 relatively permanent perennial waters (Leon Creek & Medio Creek), and one relatively permanent seasonal water (Long Hollow), and 42 wetland features identified within Lackland Main base and Annex boundaries.

Leon Creek is a relatively permanent water that is perennial and it runs through the main base, Medio Creek is a relatively permanent water that is perennial and it runs through the eastern portions of the Annex, and Long Hollow is a relatively permanent water that is seasonal and it runs through the western portions of the annex and all three of these water features merge into the Medina River that connects to the San Antonio River which is a traditional navigable water of the U.S. This hydrologic connection causes these three streams to be waters of the U.S. Wetland features M2, M3, M8, M9, M10, M11, M18, M19, and A4, are all associated with the Leon Creek. Water features A12, A13, A14, A15, A16, A17, A18, A19, A20, and A21 are all associated with Medio Creek. Water features A1, A2, A8, and A9 are all associated with Long Hollow. These water features all exhibit hydrologic connections to waters of the U.S. and are therefore are waters of the U.S. All of these features total approximately 18.43 acres. Water features A10 and A11 are very stable isolated seasonal wetland ponds that cover approximately 1.65 acres.

Water features M13, A7, and M21 are isolated water-filled depressions created in dry land incidental to construction/training activities. A3 is a barrow pit that was dug by Corps of Engineer Contractors during the construction activities of building Annex training facilities. This feature filled with water shortly after being dug, and there is evidence that wetland species were dominant around it at one time, but the pond is located in an upland area and is almost dried up. Water features M1, M4, M5, M6, M7, M12, M14, M15, M16, M17, M20, A5, and A6 are all man-made drainage ditches and swales constructed in uplands to carry water away from constructed buildings and facilities. None of the water features mentioned in the above sentence have any surface tributary connection to navigable waters of the U.S.; are not adjacent to waters of the U.S.; and are not used for, never were in the past, and likely never would be used for interstate commerce; and are not intrastate waters. Therefore, these water features are not waters of the U.S. These identified features total approximately 7.37 acres. Four erosion features were identified (E1, E2, E3 & E4). These features did not have water in them at the time of the site visit, and there was no hydrophytic vegetation present at any of them. Soil plots were dug beside them and the soils showed no hydric indicators. It is likely that these features are natural depressions that have over time eroded from overland flows.

A similar study was done in February 2001 by Versar Inc., but a request for a formal JD was never submitted to USACE Regulatory. In permit number 199300269 the USACE Regulatory did issue a formal JD, and in that JD they took jurisdiction of water features A10 and A11. Water features A10 and A11 historically were gravel pits, but they have developed into very stable diversified wetlands over the years. These water features cover approximately 1.12 acres.

Water fowl and wading birds are observed feeding and resting on a regular basis which under old regulations and policies would have been enough to call jurisdiction over these waters. Under today's current regulations and policies these waters are considered isolated waters and further coordination with USACE HQ and EPA must be done in order for jurisdiction to be asserted for this category of water features.

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1.0 INTRODUCTION

1.1 Background and Objective

The Lackland Air Force Main Base and Lackland Air Force Annex collectively occupy approximately 6,725 acres in Bexar County, Texas. The main base is comprised of approximately 2,753 acres and consists of buildings, roads, parking facilities, and recreation facilities such as parks and a golf course. The main base areas have primarily urban land uses. The annex is comprised of approximately 3,972 acres and consists of buildings, parking areas, a weapon storage area, firing ranges, and several acres of deciduous forest, shrub-land, and mesquite thicket and grassland areas used for various training activities. The Lackland Main Base and the Lackland Annex are located in the southern fringes of the city of San Antonio, both are bound on the north by U.S. Highway 90 and they are separated by Loop 410. The location of the project area is shown on figure 1 in appendix A.

Department of Defense (DOD) natural resources policy states that wetlands will be protected to the extent possible. The U.S. Army Corps of Engineers (USACE) permits are required under Section 10 of the Rivers and Harbors Act of 1899 prior to commencing any work or building any structures in a navigable water of the United States. Also, USACE permits are required under Section 404 of the Clean Water Act for the discharge of dredge or fill material into waters of the United States, including wetlands. The regulations established at Title 33 of the *Code of Federal Regulations* (CFR), Parts 320–330, prescribe the statutory authorities and general and special policies and procedures applicable to the review of applications for USACE permits. Before commencing any new work in waters of the United States, the USACE must be contacted and a permit obtained, as appropriate (Headquarters, Department of the Army [HQDA] 1995).

Executive Order 11990 requires that federal agencies minimize any significant action that contributes to the loss or degradation of wetlands and that action be initiated to enhance their natural value. The U.S. Air Force is taking a progressive approach toward protecting existing wetlands, rehabilitating degraded wetlands, restoring former wetlands, and creating wetlands in an effort to increase the quality and quantity of the Nation's wetland resources.

Wetlands are of critical importance to the protection and maintenance of living resources because they provide essential breeding, spawning, nesting, and wintering habitats for many fish and wildlife species. Wetlands also enhance the quality of surface waters by impeding the erosive forces of moving water, trapping waterborne sediment and associated pollutants, maintaining base flow to surface waters through the gradual release of stored floodwaters and groundwater, and providing a natural means of flood control and storm damage protection through the absorption and storage of water during high-runoff periods. The objective of this study is to provide a complete and accurate survey of the lands within the Lackland Main Base and Lackland Annex for water features and provide a determination of whether or not the identified features are waters of the U.S. Currently Lackaland Air Force Base is in the planning process of site selections for mission critical infrastructure and this delineation will assist Lackland in avoiding impacts to waters of the U.S.

1.2 Clean Water Act

The objective of the Clean Water Act is to maintain and restore the chemical, physical, and biological integrity of the waters of the U.S. Section 404 of the Clean Water Act authorizes the Secretary of the Army, acting through the Chief of Engineers, to issue permits for the discharge of dredged or fill material into waters of the U.S., including deepwater habitats, special aquatic sites, and wetlands. The USACE has the authority to make decisions regarding the jurisdictional status of waters of the U.S. Therefore, the USACE should be contacted prior to disturbance of any area investigated during this delineation effort. Areas of the subject property which are determined to be waters of the U.S. or which meet the wetland criteria outlined in the 1987 USACE Wetlands Delineation Manual (Environmental Laboratory 1987) should hereafter be considered waters of the U.S. until verified by the USACE Regulatory.

2.0 Methods

Waters of the U.S. were delineated utilizing the three-parameter approach for a routine on-site determination as defined by the USACE (Environmental Laboratory 1987). The USACE manual defines wetlands as:

"Those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions."

In order for an area to be considered jurisdictional by the USACE, it must have evidence of hydrophytic vegetation, hydric soils, and wetland hydrology. Under normal circumstances the absence of any one of these three parameters results in a non jurisdictional determination. If disturbed conditions are present, then consideration must be given to what conditions would have been present had the disturbance not occurred.

A routine delineation with on an on-site inspection was conducted between February 25 and March 25, 2008, by Kathy Mitchell of the USACE Environmental Resources Branch. Copies of the approved jurisdictional forms along with site photos are included as Appendix B. Plant communities and the dominant plant species were identified to determine the presence of hydrophytic vegetation. The National List of Plant Species that Occur in Wetlands (Reed 1988) was used to determine the indicator status of dominant plant species. Hydrophytic vegetation is prevalent in an area when the dominant species comprising the plant community or communities are typically adapted for life in saturated soil conditions (Environmental Laboratory 1987).

Wetland hydrology was determined by on-site visual observation of geomorphic and hydrologic characteristics including inundation, saturation in the upper 12 inches, water marks, and drift lines. Additionally soil pits were dug to a minimum of 16 inches to determine if hydrology indicators were present in non-inundated areas. Soil profiles were examined to determine if hydric soil indicators were present. Additional soils information was obtained from the Soil Survey of Bexar County, Texas (U.S. Department of Agriculture 1991).

Wetlands were delineated using the 1987 Wetland Delineation Manual (Environmental Laboratory 1987) and the limits of the streams and ponds were delineated by identifying the Ordinary High Water Marks (OHWM). An OHWM is defined as that line on the shore established by the fluctuations of water and indicated by physical characteristics such as clear,

natural line impressed on the bank, shelving, changes in the character of soil, destruction of terrestrial vegetation, the presence of litter and debris, or other appropriate means that consider the characteristics of the surrounding areas (33 CFR part 328.3e). All of the streams identified in this report contained an OHWM exhibiting a combination of some or all the physical characteristics that define an OHWM. Through examination of topographic quadrangle maps, it determined that all of the streams identified in the project area contain surface connection to navigable waters of the U.S.

Pedestrian surveys were conducted parallel to stream segments to note average width, adjacent vegetation, OHWM, and deposited material. The stream locations were also compared to the U.S. Geological Survey, topographic quadrangles for the presence of mapped streams. Flow regime was determined and based on pedestrian surveys of the streams and classified as follows:

Relatively Permanent Perennial Waters – Stream has a well-defined channel that contains water year round during a year of normal rainfall with the aquatic bed located below the water table for most of the year. Ground water is the primary source of water for a perennial stream, but it also carries storm water runoff. A perennial stream exhibits biological, hydrological, and physical characteristics commonly associated with the continuous conveyance of water.

Relatively Permanent Seasonal Waters – Stream has a well-defined channel that contains water for only part of the year, typically during winter and spring when the aquatic bed is below the water table. The flow may be heavily supplemented by storm water runoff. A seasonal stream may lack the biological and hydrological characteristics commonly associated with the conveyance of water.

Non-Relatively Permanent Waters – Stream may or may not have a well-defined channel, the aquatic bed is always above the water table, and storm water is the primary source of water. This category of streams usually only have water flowing during and shortly after large precipitation events.

3.0 Results

The combination of soils, topography, climate and human activities has produced a diverse mix of vegetation communities or habitats within the boundaries of Lackland Main Base and Annex Areas. The Lackland Main Base and Annex areas are located in a transition area of the Edwards Plateau, the South Texas Plains and the Blackland Prairie regions. The project area is composed primarily of grasslands with scattered wooded areas occurring along drainages and some large forested areas along gentle slopes. Water features within the project area consist of wetlands, two relatively permanent waters that are perennial, and one relatively permanent water that is seasonal. Photos of water features are located in appendix B.

3.1 Vegetation

The well developed areas of the Main Base and some developed areas within the Annex are planted with ornamental trees, shrubs and some type of commercial turf cover such as bermuda grass *(Cynodon dactylon)* or St. Augustine grass *(Stenotaphrum secundatum).*
Grasslands are the most common vegetation community within undeveloped areas of Lackland Main Base and Annex areas. These grasslands contain a variety of perennial herbaceous species

such as Texas wintergrass *(Nassella leucotricha)*, purple threeawn *(Artistida purpurea)*, fescue grass *(Bromus unioloides)*, little blue stem *(Schizachyrium scoparium)*, silver blue stem *(Bothriochloa saccharoides)*, prairie awn *(Aristida oligantha)*, ragweed *(Ambrosia artemisiifolia)*, prairie coneflower, *(Ratibida columnifera)*, coreopsis *(Coreopsis sp.)*, Texas yucca *(Yucca rupicoloa)*, and broomweeds *(Amphiachyris sp.)*.

Deciduous Forest and Shrub Community is also present on Lackland Main Base and Annex. This community is made up of broad-leaf trees and shrubs and is found in lowlands and along gently rolling slopes. Tree species representative of this community include Live Oak (Quercus virginiana), cedar elm (Ulmus crassifolia), honey mesquite (Prosopis glandulosa), sugarberry (Celtis laevigata), Black Willow (Salix nigra), cottonwood (Populus deltoids). Understory species include common buttonbush (Cephalanthus occidentalis), elderberry (*Sambucus conadesi),*coral-berry (*Symphoricarpos orbiculatus),*dwarf palmetto (*Sabal minor),* partridge-berry (*Morus rubra),* saw greenbriar, (*Smilax bona-nox),* Virgina creeper, (*Parthenocissus quinquefolia),* giant ragweed, (*Ambrosia trifida),* little bluestem, (*Schizachyrium scoparium),*Texas wintergrass, *(Nassella leucotricha),* blue grama, *(Bouteloua gracilis),*silver bluestem, (*Bothriochloa saccharoides),* purple threeawn,*(Artisida purpurea),*rescue grass, *(Bromus catharticus),* prairie coneflower, *(Ratibida columnifera)*, and coreopsis *(Coreopsis sp.)*.

3.2 Soils

There are 8 soils or soil associations within the project area (Figure ___, in appendix A). The soil map units and soil descriptions are identified and described in the 1991 United States Department of Agriculture (USDA), Soil Conservation Service (now the Natural Resource Conservation Service) Soil Survey of Bexar County, Texas. Table 1.0 provides a listing of soil map units occurring within the project area.

Table 1.0 Soil Map Units in the Project Areas

Soil Map Unit	Symbol
Houston Black Clay	HsB
Houston Black Clay, terrace, 0 to 1% slopes	HtB
Houston Black Gravelly Clay, 1 to 3% slopes	HuB
Houston Black Gravelly Clay, 3 to 5% slopes	HuC
Houston Black Gravelly Clay, 5 to 8% slopes	HuD
Houston-Sumter Clay, 5 to 10% slopes, very eroded	HoD3
Lewisville Silty Clay, 0 to 1% slopes	LvA
Frio Clay Loam	Fr
Trinity and Frio soils, frequently flooded	Tf
Venus Clay Loam, 1 to 3 percent slopes	VcB
Venus Clay Loam, 3 to 5 percent slopes	VcC

Houston Black Clay, 1 to 3% slopes (HsB)

This soil is known to occur as long smooth gentle slopes. Pockets of Austin silty clay, 1 to 3 percent slopes, Houston Black clay, terrace 1 to 3 percent slopes, and Trinity and Frio soils, frequently flooded are often included in the mapped areas for this soil. Often pebbles can make up to 8 percent of the surface layer in this soil. This soil often contains lime concretions and some fine crystals of gypsum. The erosion factor for this soil is moderate. Water intake of this

soil is slow, and wide cracks form in this soil when it dries. This soil is found on the Lackland Annex along the southern corridors of Long Hollow and Medio Creek.

Houston Black Clay, Terrace, 0 to 1% slopes (HtB)
This soil is known to occur as long, narrow slopes, generally adjacent to the larger drainage ways. The slopes for this soil generally do not exceed 2 percent. Pockets of Lewisville sity clay, 1 to 3 percent slopes, Willacy loam, 1 to 3 percent slopes, and Houston Black clay, 1 to 3 percent slopes are often included in the mapped areas for this soil. The surface layer of this soil is usually around 34 inches thick and has a dark gray color. The erosion factor for this soil is moderate. Rainfall for this soil is rapidly absorbed when the soil is dry and cracked, but practically all of it runs off after the water content of the soil has reached field capacity. This soil is found on the Lackland Annex along Medio Creek corridors.

Houston Black Gavelly Clay, 1 to 3% slopes (HuB)
This soil mostly occurs in uplands as long, smooth, convex slopes, but part of it occurs as shorter undulating slopes along drainage ways. This soil is different from the Houston Black Clay, 1 to 3 percent slopes, because it has more pebbles on the surface and within the profile generally between 8 to 18 percent and in some cases up to 60 percent, it is darker colored, it has less lime, and a stronger thicker structure. Pockets of Houston Black clay, 1 to 3 percent slopes, and Trinity and Frio soils, frequently flooded are often included in the mapped areas for this soil. This soil forms wide cracks when it is dried. Due to the amount of pebbles present in this soil erosion factors are none to slight. This soil is found on the Lackland Main Base in the heavily developed areas. This soil is also found on the Lackland Annex in a long large gently sloping upland area between the Medio Creek and Long Hollow corridors.

Houston Black Gravelly Clay, 3 to 5% slopes (HuC)
This soil is known to occur in narrow, convex ridges and valley walls in an undulating or gently rolling landscape. This soil is different than the Houston Black Gravelly clay, 1 to 3 percent slopes because it has a greater erosion factor of moderate, has more pebbles present through out its profile, has a thinner surface layer and its structure is not as strong. Pockets of Houston clay, 3 to 5 percent slopes, severely eroded, and Trinity and Frio soils, frequently flooded are often included in the mapped areas for this soil. This soil is found on the Lackland Main Base in a developed area north of Medina Base Road. This soil is also found on the Lackland Annex along the western corridor of Long Hollow, and along western corridors of Medio Creek.

Houston Black Gravelly Clay, 5 to 8% slopes (HUD)
This soil is known to occur as concave slopes that parallel the higher narrow ridges or as concave slopes or basins at the head of major drainage ways. This soil is different from the Houston Black gravelly clay, 3 to 5 percent slopes, because it is more sloping , is more susceptible to erosion due to more rapid runoff, and it has a thinner and it has a more gravelly surface layer of up to 20 percent pebbles. Pockets of Houston clay, severely eroded, and Houston Black gravelly clay, 3 to 5 percent slopes are often included in the mapped areas for this soil. This soil is found

on the Lackland Main Base along Leon Creek corridors. This soil is also found on the Lackland Annex Medio Creek, and Long Hollow corridors.

Houston-Sumter Clay, 5 to 10% slopes, very eroded (HoD3)
The Houston soils in this association occur as strongly sloping areas that have been damaged by water erosion. Sumter gravelly clay is very shallow and occurs as strongly sloping to steep, narrow ridges. Houston soils make up about 75 percent of the association and Sumter makes up about 20 percent. Pockets of Tarrant soils, Houston gravelly clay, 5 to 8 percent slopes, and Houston clay, 3 to 5 percent slopes, severely eroded are often included in the mapped areas for this soil. Sheet, rill, and gully erosion are severe in these shallow soils. Gullies formed in these soils are V shaped, 6 to 15 feet wide 1.5 to 6 feet deep, and can be15 to 40 feet apart. Because of the erosion hazard, the steep slopes, and the shallowness of the soils, this association is best suited to native grass or tame pasture. This soil is found in the Lackland Annex training areas where gullies have formed and water rushes through after significant rain events and then ponds in the lowest depressions.

Lewisville Silty Clay, 0 to 1% slopes (LvA)
This soil is known to occur on nearly level, broad terraces along rivers and creeks. Pockets of Venus clay loam, 0 to 1 percent slopes, Houston Black clay, terrace, 0 to 1 percent slopes, and Patrick soils, 0 to 1 percent slopes are often included in the mapped areas for this soil. The surface layer is either silty clay or light clay, and this soil has no hazard of water erosion. This soil is found on the Lackland Annex along the corridors of the Medio Creek.

Frio Clay Loam (Fr)
This soil is known to occur mainly on the flood plains of the Medina River and the San Antonio River and their tributaries, or on low terraces bordering the flood plains. It is flooded occasionally, and the surface is uneven and in a few places is dissected by partly filled old stream channels, in which water stands for short periods after floods. Pockets of Patrick soils, 0 to 3 percent slopes, and Karnes loam, 1 to 3 percent slopes are often included in the mapped areas for this soil. This soil is found on the Lackland Main Base along the flood plains of Leon Creek.

Trinity and Frio Soils, Frequently flooded, (Tf)
These soils are known to occur in long narrow areas on the flood plains of small streams and the larger field drainage ways. These soils are flooded at least once a year, generally after heavy rains. Trinity soils make up about 69 percent of this association. Frio soils make up about 20 percent of this association, and they tend to have more clay and be darker than the Frio soils found along larger streams and rivers. The remaining 20 percent of these areas consist of both Trinity and Frio soils. This association is found on the Lackland Annex along the flood plains of Medio Creek and Long Hollow.

Venus Clay Loam, 1 to 3 percent, slopes, (VcB)
This soil is known to occur as gentle slopes, either between the terraces and the upland soils or between the terraces and the flood plains. Pockets of Patrick soils, 1 to 3 percent slopes, Venus clay loam, 0 to 1 percent slopes, and Lewisville silty clay, 1 to 3 percent slopes are often included in the mapped areas for this soil. A crust readily forms on the surface when soil is dry

and the hazard of sheet and gully erosion is moderate. This soil is found on the Lackland Main Base along the Leon Creek corridors.

Venus Clay Loam, 3 to 5 percent slopes, (VcC)
This soil is known to occur either as side slopes along creeks and along the more deeply entrenched field drainage ways, or as short, steeper slopes between terrace benches. This soil is lighter colored than the other Venus soils, and is more loamy and friable in the surface layer than other Venus soils. Pockets of Karnes loam, 3 to 5 percent slopes, Patrick soils, 3 to 5 percent slopes, and Lewisville silty clay, 1 to 3 percent slopes are often included in the mapped areas for this soil. This soil has a moderate to high water erosion hazard. This soil is found on the Lackland Main Base along the Leon Creek corridors.

3.3 Hydrology
Water features that were assessed within the project area consist of wetlands, two relatively permanent waters that are perennial, and one relatively permanent water that is seasonal. Hydrology observed included inundation, saturation in the upper 12 inches, water marks and drift lines.

3.4 Water Features Assessed
Corps of Engineers Environmental Resources biologists identified and assessed 46 water features in the project area. This includes 3 streams and 42 wetlands that were assessed. Hydrophytic vegetation typically occupied small fringe areas along water courses and within and around wetlands when present. All of the streams surveyed exhibited an OHWM. Through examination of topographic quadrangle maps it was determined that all of the streams in the project area contain a connection to navigable waters of the U.S. All of the streams in the project area flow into the Medina River that connects to the San Antonio River which is a navigable water of the U.S. In wetlands the change from hydrophytic to upland species generally determined the boundary of these areas.

The project areas were surveyed using pedestrian surveys, base maps and other materials such as quadrangle maps. Maps showing water features that were assessed are provided in appendix A. Water features assessed within the project area are described in table 2.0.

The project area contains waters of the U.S. Water features M13, A7, and M21 are isolated water-filled depressions created in dry land incidental to construction/training activities. Water features M1, M4, M5, M6, M7, M12, M14, M15, M16, M17, M20, A5, A6 and A7 are all man-made drainage ditches and swales constructed in uplands to carry water away from constructed buildings and facilities. Water feature A3 was originally a barrow pit dug by Corps of Engineers contractors during construction activities for building training facilities and it filled up with water and caused some wetland plants to grow. This feature is located in an upland area and is almost completely dry. None of the water features mentioned above have any surface tributary connection to navigable waters of the U.S.; are not adjacent to waters of the U.S.; and are not used for, never were in the past, and likely never would be used for interstate commerce; and are not intrastate waters. Therefore, these water features are not waters of the U.S. These identified features total approximately 7.37 acres. Four erosion features were identified and mapped on the Lackland Annex (E1, E2, and E3 & E4). The four erosion features did not have water in them at

the time of the site visit, and there was no hydrophytic vegetation present within any of them. Soil plots were dug beside them and the soils showed no hydric indicators. It is likely that these features are natural depressions that have over time eroded from overland flows.

Isolated waters of the U.S. include water features A10 and A11 that are very stable seasonal wetland ponds that cover approximately 1.12 acres.

All other water features are waters of the U.S. including 18.43 acres of wetlands and 42,432 linear feet (1,522,765 ft^2) of streams.

The functions of these water features are flood conveyance, flood storage, pollutant and nutrient filtration of upland runoff, and habitat for fish, wildlife, and plant species.

Table 2.0 Water Features Assessed in the Project Area

Wetland Water Feature/Map Reference Number	Description of Resources	Area
Leon Creek	Type: Relatively Permanent Water - Perennial (Water of the U.S.) Latitude: 29.387228 ° N Longitude: 89.601210 ° W Community: Deciduous Forest Dominant Vegetation: *Salix nigra, Ulmus crassifolia, Celtis laevigata, Prosopis glandulosa, Ulmus alata, Populus deltoids, Quercus virginiana, Morus rubra, Ttelea trifoliate, Diospyros texana, Salix carolina Michx, Smilax bona-nox, Parthenocissus quinquefolia, Ambrosia trifida, Schizachyrium scoparium, Nassella leucotricha, Bouteloua gracilis, Bothriochloa saccharoides, Artisida purpurea, Bromus catharticus..* Comments: Leon Creek is a perennial stream that flows through the main base. Water was flowing through the main channel during the field visit. OHWM was observed during site visit and presence of blue line on quad. This feature flows to the Medina River.	16,620 linear ft. Average Width 40 ft. Area 664,800 ft^2
Medio Creek	Type: Relatively Permanent Water - Perennial (Water of the U.S.) Latitude: 29.366433 ° N Longitude: 98.656294 ° W Community: Deciduous Forest. Dominant Vegetation: *Celtis laevigata, Fraxinus berlandieri, Fraxinus caroliniana, Fraxinus pennsylvanica, Prosopis glandulosa, Quercus virginiana, Salix nigra, Ulmus crassifolia, Prosopis glandulosa, Salix carolina Michx, Parthenocissus quinquefolia, Smilax bona-nox, Nassella leucotricha, Bouteloua gracilis, Bothriochloa saccharoides, Artisida purpurea, Bromus catharticus, Aristida oligantha, Ambrosia artemisiifolia..* Comments: Medio Creek is a perennial stream that flows through the Lackland Annex area. Water was flowing through the main channel during the field visit. OHWM was observed during site visit and presence of blue line on quad. This feature flows to the Medina River.	16,721 linear ft Average Width 35 ft Area 585,235 ft^2

Long Hollow	Type: Relatively Permanent Water-Seasonal Latitude: 29.35327 °N Longitude: 98.684198 °W Community: Mid-Grass Prairie in upper reaches, Deciduous Forest in lower reaches. Dominant Vegetation: *Prosopis glandulosa, Bothriochloa ischaemum, Schizachyrium scoparium, Sorghum halepense Tripsacum dactyloides, Cephalanthus occidentalis, Ulmus Crassifolia, Celtis laevigata, Prosopis glandulosa, Fraxinus berlandieri, Fraxinus caroliniana, Fraxinus pennsylvanica, Prosopis glandulosa, Quercus virginiana, Salix nigra, Morus rubra, Smilax bona-nox, Parthenocissus quinquefolia, Ambrosia trifida, Schizachyrium scoparium, Nassella leucotricha, Bouteloua gracilis, Bothriochloa saccharoides, Artisida purpurea, Bromus catharticus.* Comments: Long Hollow is an intermittent stream in the western portions of the Annex. This stream has several wetland pockets associated with it and many of them had water fowl present during the site visit. The area was in a drought period at the time of the site visit so this stream only had a slow trickle in the lower reaches.	9091 linear ft Average Width 30 ft Area 272,730 ft^2
M1	Type: Palustrine Emergent Wetland that is not a water of the U.S. Latitude: 29.395692 ° N Longitude: 98.632368 ° W Dominant Vegetation: *Justacia americana, Polygonum punctatum, Helianthus maximiliani, Cynodon dactylon, Sorghum halepense, Schizachyrium scoparium, Sorghum nutans, Bothriochloa ischaemum* Comments: Narrow swale incidental from the construction of Main Base roads. Storm water runoff from road ponds after significant rain events and it flows north off of the Main Base. This feature was dry during the visit. This feature exhibits no hydrologic connection to any waters of the U.S.	0.09 acres
M2	Type: Palustrine Forested / Palustrine Emergent Wetland, waters of the U.S. Latitude: 29.401738 ° N Longitude: 98.612858 ° W Dominant Vegetation: *Salix nigra, Ulmus crassifolia, Celtis laevigata, Salix carolina Michx., Parthenocissus quinquefolia, Polygonum punctatum.* Comments: This feature abuts to a tributary of Leon Creek.	0.04 acres

M3	Type: Palustrine Forested / Palustrine Emergent Wetland, waters of the U.S. Latitude: 29.375836 ° N Longitude: 98.665656 ° W Dominant Vegetation: *Salix nigra, Celtis laevigata, Parthenocissus quinquefolia, Salix Carolina Michx., Polygonum punctatum.* Comments: This water feature is near water feature M2 and is adjacent to the same tributary of Leon Creek.	0.05 acres
M4	Type: Palustrine Emergent Wetland that is not a water of the U.S. Latitude: 29.389808 ° N Longitude: 98.622161 ° W Dominant Vegetation: *Eleocaris sp., Justica Americana, Polygonum punctatum, Schizachyrium scoparium, Spartina sp., Sorghastrum halepense, Sphenopholis obtusata.* No trees present in this area. Comments: This water feature lies within a man-made drainage swale located behind buildings 6149 & 6146.	0.12 acres
M5	Type: Palustrine Emergent Wetland that is not a water of the U.S. Latitude: 29.389256 ° N Longitude: 98.618775 ° W Dominant Vegetation: *Eleocaris sp., Polygonum punctatum, Cynodon dactylon* . No trees or woody vegetation present. Comments: This water feature lies east of Military Drive within a man-made drainage swale.	0.30 acres
M6	Type: Palustrine Emergent Wetland that is not a water of the U.S. Latitude: 29.389801 ° N Longitude: 98.617378 ° W Dominant Vegetation: *Eleocaris sp., Justica Americana, Polygonum punctatum, Digitaria ciliaris, Spartina sp., Cynodon dactylon, Sphenopholis obtusata.* No trees or shrubs present in this area. Comments: This wetland lies north of building 2389 within a man-made drainage swale.	0.06 acres
M7	Type: Palustrine Emergent Wetland that is not a water of the U.S. Latitude: 29.390714 ° N Longitude: 98.615264 ° W Dominant Vegetation: *Eleocaris sp., Justica Americana, Polygonum punctatum, Digitaria ciliaris, Spartina sp., Sorghastrum halepense, Sphenopholis obtusata.* No trees or shrubs present in this area. Comments: This wetland is north of buildings 2449 and 2447 and it lies within a man-made drainage swale.	0.13 acres

M8	Type: Palustrine Forested / Paulistrine Emergent Wetland, waters of the U.S. Latitude: 29.391431 ° N Longitude: 98.614019 ° W Dominant Vegetation: *Salix nigra, Celtis laevigata, Salix Carolina Michx., Cephalanthus occidentalis, Sambucus conadesis, Symphoricarpos orbiculatus, Sabal minor, Justica Americana, Spartina sp., Eleocaris sp.* Comments: This wetland lies east of wetland feature M7, and it abuts to a tributary of Leon Creek that has a well defined channel.	0.03 acres
M9	Type: Palustrine Emergent Wetland, waters of the U.S. Latitude: 29.380875 ° N Longitude: 98.687372 ° W Dominant Vegetation: *Salix Nigra, Celtis laevigta, Ampelopsis arborea, Salix Carolina Michx., Eleocaris sp., Justica Americana, Polygonum punctatum, Cephalanthus occidentalis, Sambucus conadesis, Symphoricarpos orbiculatus.* Comments: This wetland abuts to a tributary of Leon Creek north of the golf driving range. The perennial tributary runs behind the ampitheater and then flows toward M8.	0.10 acres
M10	Type: Palustrine Emergent Wetland, waters of the U.S. Latitude: 29.395001 ° N Longitude: 98.608744 ° W Dominant Vegetation: *Scirpus atrovirens, Eleocharis sp., Polygonum punctatum, Schizachyrium scoparium, Spartina sp., Sorghastrum halepense, Sphenopholis obtusata, Cynodon dactylon.* There were no trees in this area. Comments: This wetland abuts to a tributary of Leon Creek that flows through the golf course.	0.06 acres
M11	Type: Emergent Shrub/Scrub Wetland, waters of the U.S. Latitude: 29.390328 ° N Longitude: 98.607125 ° W Dominant Vegetation: *Salix nigra, Salix Carolina Michx., Cephalanthus occidentalis, Justica Americana, Polygonum punctatum, Ludwigia palustris.* Comments: This wetland is adjacent to the channel of the Leon Creek.	3.50 acres

M12	Type: Palustrine Emergent Wetland that is not a water of the U.S. Latitude: 29.372781 ° N Longitude: 98.629347 ° W Dominant Vegetation: *Typha latifolia, Salix Nigra, Ulmus crassifolia, Poplus deltoids Polygonum punctatum.* Most of the tree species are located at the southern section of the wetland. Comments: This wetland is located west of Buildings 7641, 7549, 7530 and 7562 within a man-made drainage ditch. The ditch exhibits no hydrologic connection to any waters of the U.S.	1.12 acres
M13	Type: Palustrine Emergent Wetland that is not a water of the U.S. Latitude: 29.372222 ° N Longitude: 98.627256 ° W Dominant Vegetation: *Typha latifolia, Polygonum punctatum, Cyperus erythrorhizos, Schizachyrium scoparium, Spartina sp., Digitaria ciliaris, cynodon dactylon, Sphenopholis obtusata.* Comments: This is a shallow swale that exhibits no hydrologic connection to any waters of the U.S.	0.87 acres
M14	Type: Palustrine Emergent Wetland that is not a water of the U.S. Latitude: 29.373152 ° N Longitude: 98.620503 Dominant Vegetation: *Typha latifolia, Polygonum punctatum.* Comments: This wetland is located along a narrow thin man-made grassy swale exhibits no hydrologic connection to any waters of the U.S.	0.07 acres
M15	Type: Palustrine Emergent Wetland that is not a water of the U.S. Latitude: 29.371481 ° N Longitude: 98.620053 ° W Dominant Vegetation: *Typha latifolia, Polygonum punctatum.* Comments: This wetland is separated from M14 by a road and a culvert and is part of the same man-made drainage system as M14.	0.17 acres
M16	Type: Palustrine Emergent Wetland that is not a water of the U.S. Latitude: 29.370553 ° N Longitude: 98.619481 ° W Dominant Vegetation: *Typha latifolia, Polygonum punctatum.* Comments: This wetland is separated from wetland M15 by a break in the swale. This wetland does not exhibit any hydrologic connection to any waters of the U.S.	0.24 acres

M17	Type: Palustrine Emergent Wetland that is not a water of the U.S. Latitude: 29.373675 ° N Longitude: 98.617961 ° W Dominant Vegetation: *Polygonum punctatum.* No woody vegetation is present around this feature. Comments: This is a large steep man-made drainage ditch east of buildings 5398, 5399, 3548, & 3549. This wetland does not exhit any hydrologic connection to any waters of the U.S.	2.13 acres
M18	Type: Emergent Shrub/Scrub Wetland, waters of the U.S. Latitude: 29.375231 ° N Longitude: 98.598939 ° W Dominant Vegetation: *Salix nigra, Ulmus Crassifolia, Salix Carolina Michx., Cephalanthus occidentalis, Justica Americana, Polygonum punctatum, Ludwigia palustris, Ambrosia trifida,Scirpus atrovirens.* Comments: Wetland is adjacent to a tributary of Leon Creek in the southeastern corner of the Main Base.	1.88 acres
M19	Type: Palustrine Emergent Wetland, waters of the U.S. Latitude: 29.381022 ° N Longitude: 98.605700 ° W Dominant Vegetation: *Typha latifolia, Polygonum punctatum.* Comments: This is a small wetland pocket located abutting to a tributary of Leon Creek south of Range Road.	0.07 acres
M20	Type: Palustrine Emergent Wetland that is not a water of the U.S. Latitude: 29.382847 ° N Longitutde: 98.621075 ° W Dominant Vegetation: *Polygonum punctatum, Eleocaris sp.* No woody species present in this area. Comments: This wetland lies within a man-made drainage swale along Patrick Street. This drainage system does not exhibit any hydrologic connection to any waters of the U.S.	0.15 acres
M21	Type: Grassland swale that is not a water of the U.S. Latitude: 29.374708 ° N Longitude: 98.604281 ° W Dominant Vegetation: *Polygonum punctatum, Schizachyrium scoparium..* Comments: This feature is made up of a series of shallow swales that retain water primarily from rain events. These swales were dry during the field visit. These swales do not exhibit any hydrologic connection to any waters of the U.S.	0.26 acres

A1	Type: Palustrine Emergent Wetland, waters of the U.S. Latitude: 29.383686 ° N Longitude: 98.687225 ° W Dominant Vegetation: *Polygonum punctatum, Eleocharis sp., Juncus Canadensis, Ludwigia palustris, Rumex crispus, Justica Americana, Alisma subcordatum, Ambrosia artemisiifolia.* Comments: Wetland abutting Longhollow. Ducks and wading birds were present during the site visit.	1.60 acres
A2	Type: Palustrine Emergent Wetland, waters of the U.S. Latitude: 29.380072 ° N Longitude: 98.685111 ° W Dominant Vegetation: *Polygonum punctatum, Eleocharis sp., Juncus Canadensis, Ludwigia palustris, Rumex crispus, Justica Americana, Alisma subcordatum, Ambrosia artemisiifolia, Iva annua.* Comments: Wetland encompasses two pockets of ponded water that abut to Long Hollow. Ducks were present during the site visit, and several deer and raccoon tracks were along the edges of the water.	3.39 acres
A3	Type: Palustrine Open Water Pond that is not a water of the U.S. Latitude: 29.380628 ° N Longitude: 98.675356 ° W Dominant Vegetation: *Cyunodon dactylon, Sorghum halepense, Schizachyrium scoparium, Bromus uniloides, Grindelia lanceolata, Polygonum punctatum* are all located around the outer edges of the pond. Comments: This wetland was originally a barrow pit dug by Corps of Engineer contractors needing fill for construction projects. This barrow pit fills up with water during the rainy season, but was nearly dry at the time of the site visit. This barrow pit is isolated in an upland and exhibits no hydrologic connection to any waters of the U.S.	.90 acres
A4	Type: Palustrine Emergent Wetland, waters of the U.S. Latitude: 29.385414 ° N Longitude: 98.670169 ° W Dominant Vegetation: *Polygonum punctatum, Eleocharis sp., Juncus sp., Baccharis halimifolia, Ulmus crassifolia, Cephalanthus occidentalis, Ludwigia palustris, Rumex crispus, Justica Americana, Alisma subcordatum, Ambrosia artemisiifolia.* Comments: This wetland abuts to a tributary of Medio Creek. Wading birds were present at the time of the site visit.	0.28 acres

A5	Type: Palustrine Emergent Wetland that is not a water of the U.S. Latitude: 29.387600 ° N Longitude: 98.666558 ° W Dominant Vegetation: *Scirpus atrovirens, Eleocharis sp., Polygonum punctatum, Spartina sp., Sorghastrum halepense, Sphenopholis obtusata, Cynodon dactylon.* Comments: This wetland is located behind building 466 and it is within a man-made swale. This swale was graded to allow water to drain from building 466 and the other buildings within this complex.	0.19 acres
A6	Type: Palustrine Emergent Wetland that is not a water of the U.S. Latitude: 29.387531 ° N Longitude: 98.665747 ° W Dominant Vegetation: *Scirpus atrovirens, Eleocharis sp., Polygonum punctatum, Spartina sp., Sorghastrum halepense, Sphenopholis obtusata, Cynodon dactylon.* Comments: This wetland is located behind building 462 and it is within a man-made swale and it is separated from water feature 5A by a road and a culvert. This swale as graded to allow water to drain from building 462 and the other buildings within this complex.	0.12 acres
A7	Type: Palustrine Emergent Wetland that is not a water of the U.S. Latitude: 29.385228 ° N Longitude: 98.664564 ° W Dominant Vegetation: *Scirpus atrovirens, Eleocharis sp., Polygonum punctatum, Spartina sp., Cynodon dactylon.* Comments: This is a shallow swale that is located in a low area adjacent to building 433 that ponds water after significant rain fall events. There was no water in the swale during the field visit.	0.45 acres
A8	Type: Palustrine Forested / Palustrine Emergent Wetland, waters of the U.S. Latitude: 29.363758 ° N Longitude: 98.679942 ° W Dominant Vegetation: *Salix nigra, Celtis laevigata, Prosopis glandulose, Salix Carolina Michx., Cephalanthus occidentalis, Sambucus conadesis, Symphoricarpos orbiculatus, Sabal minor, Justica Americana, Spartina sp., Eleocaris sp.* Comments: This wetland abuts to Long Hollow and there were wading birds present during the field visit.	0.10 acres

A9	Type: Palustrine Forested / Palustrine Emergent Wetland, waters of the U.S. Latitude: 29.363350 ° N Longitude: 98.680208 ° W Dominant Vegetation: *Salix nigra, Celtis laevigata, Prosopis glandulosa, Salix Carolina Michx., Cephalanthus occidentalis, Sambucus conadesis, Symphoricarpos orbiculatus, Sabal minor, Justica Americana, Spartina sp., Eleocaris sp.* Comments: This wetland abuts to Long Hollow and it is separated from A8 by a culvert and a dirt road.	0.19 acres
A10	Type: Ponded Emergent Wetland, waters of the U.S. Latitude: 29.364667 ° N Longitude: 98.668714 ° W Dominant Vegetation: *Polygonum punctatum, Eleocharis sp., Juncus sp., Baccharis halimifolia, Ulmus crassifolia, Celtis laevigata, Ludwigia palustris, Rumex crispus, Justica Americana, Alisma subcordatum, Ambrosia artemisiifolia.* Comments: This is a small shallow pond that had ducks and wading birds present during the field visit.	0.17 acres
A11	Type: Ponded Emergent Wetland, waters of the U.S. Latitude: 29.363475 ° N Longitude: 98.665103 ° W Dominant Vegetation: *Polygonum punctatum, Eleocharis sp., Juncus sp., Baccharis halimifolia, Ulmus crassifolia, Celtis laevigata, Baccharis halimifolia, Sabal minor, Cephalanthus occidentalis, Ludwigia palustris, Rumex crispus, Justica Americana, Alisma subcordatum, Ambrosia artemisiifolia.* Comments: This is a small isolated wetland pond that seems to be very stable diversified isolated wetland and that may have been a gravel pit at one time. Ducks and wading birds were present during field visit. Several deer tracks were present near the edge of the water.	0.95 acres
A12	Type: Palustrine Forested / Palustrine Emergent Wetland, Waters of the U.S. Latitude: 29.371603 ° N Longitude: 98.659386 ° W Dominant Vegetation: *Celtis laevigata, Baccharis neglecta, Fraxinus berlandieri, Salix nigra, Parkinsonia aculeate, Helianthus maximiliani, Schizachyrium scoparium, Cephalanthus occidentalis Ilex decidua, Eleocharis sp.* Comments: Wetland adjacent to a tributary of Medio Creek.	1.70 acres

A13	Type: Palustrine Forested / Palustrine Emergent Wetland, waters of the U.S. Latitude: 29.369581 ° N Longitude: 98.657369 ° W Dominant Vegetation: *Salix nigra, Celtis laevigata, Salix Carolina Michx., Cephalanthus occidentalis, Sambucus conadesis, Symphoricarpos orbiculatus, Sabal minor, Justica Americana, Spartina sp..* Comments: Wetland adjacent to Medio Creek.	0.11 acres
A14	Type: Palustrine Forested / Palustrine Emergent Wetland, waters of the U.S. Latitude: 29.369011 ° N Longitude: 98.656808 ° W Dominant Vegetation: *Salix nigra, Celtis laevigata, Prosopis glandulose, Salix Carolina Michx., Cephalanthus occidentalis, Sambucus conadesis, Symphoricarpos orbiculatus, Sabal minor, Justica Americana, Spartina sp.* Comments: Wetland adjacent to Medo Creek.	0.02 acres
A15	Type: Palustrine Forested / Palustrine Emergent Wetland, waters of the U.S. Latitude: 29.368978 ° N Longitude: 98.652647 ° W Dominant Vegetation: *Salix nigra, Celtis laevigata, Ulmus crassifolia, Salix Carolina Michx., Cephalanthus occidentalis, Sambucus conadesis, Symphoricarpos orbiculatus, Sabal minor, Justica Americana, Spartina sp.* Comments: Wetland adjacent to an unnamed tributary to Medio Creek.	1.53 acres
A16	Type: Palustrine Forested / Palustrine Emergent Wetland, waters of the U.S. Latitude: 29.364822 ° N Longitude: 98.623100 ° W Dominant Vegetation: *Salix nigra, Celtis laevigata, Ulmus crassifolia, Prosopis glandulosa, Salix Carolina Michx., Cephalanthus occidentalis, Sambucus conadesis, Symphoricarpos orbiculatus, Sabal minor, Justica Americana, Polygonum punctatum, Eleocharis sp.* Comments: Wetland pocket abutting mainstream Medio Creek.	0.25 acres
A17	Type: Palustrine Forested / Palustrine Emergent Wetland, waters of the U.S. Latitude: 29.364561 ° N Longitude: 98.652686 ° W Dominant Vegetation: *Salix nigra, Celtis laevigata, Ulmus crassifolia, Prosopis glandulosa, Salix Carolina Michx., Cephalanthus occidentalis, Sambucus conadesis, Symphoricarpos orbiculatus, Sabal minor, Justica Americana, Polygonum punctatum, Eleocharis sp.* Comments: Wetland pocket abutting Medo Creek. M16 and M17 are separated by a utility bridge on the creek.	037 acres

A18	Type: Palustrine Forested / Palustrine Emergent Wetland, waters of the U.S. Latitude: 29.357719 ° N Longitude: 98.656519 ° W Dominant Vegetation: Salix nigra, Prosopis glandulosa, *Cephalanthus occidentalis, Spartina sp., Polygonum punctatum.* Comments: Large wetland pocket adjacent to Medio Creek.	2.10 acres
A19	Comments: Palustrine Forested / Palustrine Emergent Wetland, waters of the U.S. Latitude: 29.350475 ° N Longitude: 98.646822 ° W Dominant Vegetation: *Salix nigra, Celtis laevigata, Prosopis glanduolosa, Salix Carolina Michx., Cephalanthus occidentalis, Sambucus conadesis, Symphoricarpos orbiculatus, Sabal minor, Justica Americana, Polygonum punctatum, Eleocharis sp.* Comments: Wetland adjacent to Medio Creek in the southern part of Lackland Annex.	0.35 acres
A20	Type: Palustrine Emergent Wetland, waters of the U.S. Latitude: 29.350617 ° N Longitude: 98.673336 ° W Dominant Vegetation: Salix nigra, *Ambrosia trifida, Eleocharis sp., Polygonum punctatum, Alternanthera philoxeroides, Iva annua, Phyla nodiflora, Alisma subcordatum, Rumex crispus.* Comments: Wetland abuts to a tributary of Long Hollow.	0.26 acres
A21	Type: Palustrine Emergent Wetland, waters of the U.S. Latitude: 29.377692 ° N Longitude: 98.654975 ° W Dominant Vegetation: *Justica Americana, Polygonum punctatum, Ilex decidua, Iva annua, juncus sp.* Comments: Small wetland pocket located along a swale that drains into Medio Creek.	0.11 acres
E1	Latitude: 29.375836 ° N Longitude: 98.665656 ° W There was no woody vegetation around this feature. This feature is located along the western side of the weapons storage area in the Lackland Annex. Herbaceous dominant vegetation included *Bromus unioloides, Cynodon dactylon, Digitaria ciliaris, Sorghastrum nutans, Schizachyrium scoparium, Bothriochloa saccharoides, and Aristida sp..* Soil was compared to a Munsell Color chart as 2.5YR 3/1. This soil was very dry dark clay soil. The only hydric soil indicator present was the low chroma color.	

E2	Latitude: 29.372206 ° N Longitude: 98.684425 ° W There was no woody vegetation near this feature. Herbaceous dominant vegetation included *Bromus unioloides, Cynodon dactylon, Digitaria ciliaris, Schizachyrium scoparium, Bothriochloa saccharoides.* This feature was located on the eastern side of the weapons storage area of the Lackland Annex and extends east toward building 375. Soil was compared to a Munsell Color chart as 10YR 3/2. This soil was very dry, rocky clay soil. The only hydric soil indicator present was the low chroma color.	
E3	Latitude: 29.372681 ° N Longitude: 98.677397 ° W There was no woody vegetation near this feature. Herbaceous dominant vegetation included *Bromus unioloides, Cynodon dactylon, Digitaria ciliaris, Schizachyrium scoparium, Bothriochloa saccharoides.* This feature is located on the west of Long Hollow on the Lackland Annex. Soil was compared to a Munsell Color chart as 2.5YR 3/1. This soil was very dry, rocky, dark clay soil. The only hydric soil indicator present was the low chroma color.	
E4	Latitude: 29.375994 ° N Longitude: 98.686564 ° W There was no woody vegetation near this feature. Herbaceous dominant vegetation included *Bromus unioloides, Cynodon dactylon, Digitaria ciliaris, Schizachyrium scoparium, Bothriochloa saccharoides.* This feature is located on the west of Long Hollow and north of E3 on the Lackland Annex. Soil was compared to a Munsell Color chart as 2.5YR 3/2. This soil was very dry, rocky clay soil. The only hydric soil indicator present was the low chroma color.	
TOTAL		**Streams = 42,432 ft** **Streams Area = 1,522,765 ft^2** **Wetland Features = 27.75 Acres**

4.0 Summary

Water features in the project area have been identified and delineated. A routine delineation with an on-site inspection was conducted between February 25 and March 25, 2008. The land area surveyed was approximately 6724 acres and consisted of developed and undeveloped areas among two parcels of land known as Lackland Main Base and Lackland Annex. Corps of Engineers Environmental Resources biologists identified and assessed 45 water features and 4 erosion features in the project area. This included 3 relatively permanent waters and 42 wetlands. (See Table 2.0 for individual descriptions of each feature)

There were 18 Wetland features identified that are not waters of the U.S. within the project areas. See table 3.0 for summary of descriptions.

Table 3.0 Water Features that are <u>not</u> waters of the U.S. identified at Main Base and Annex

Water Feature Type (All Wetlands)	Linear Feet	Area
Isolated grassy swales incidental from construction or training activities (Water features: M13, M21 & A7)	N/A	1.58 acres
Man-made ditches or swales created to drain water away from roads or buildings. (Water features: M1, M4, M5, M6, M7, M12, M14, M15, M16, M17, M20, A5, and A6)	N/A	4.89 acres
Water feature A3 was originally a barrow pit dug by Corps of Engineer contractors during construction activities for building Annex training facilities.	N/A	.90 acres
TOTAL	N/A	**7.37 acres**

There were two isolated water features identified that could be waters of the U.S. within the Annex areas. See table 4.0 for a summary of descriptions.

Table 4.0 Isolated Water Features found within the Annex

Water Feature Type	Linear Feet	Area
Historically these features were gravel pits that have formed into forested emergent wetland ponds that support food and water needs for wading birds, water fowl and other terrestrial species. (Water Features: A10 & A11)	N/A	1.12 acres
TOTAL	**N/A**	**1.12 acres**

There were 23 Wetlands and 3 streams that were identified as waters of the U.S. with the Lackland Main Base and Annex areas. See table 5.0 for a summary of descriptions.

Table 5.0 Waters of the U.S. identified within Lackland Main Base and Annex areas

Water Feature Type	Linear Feet	Area
WETLANDS		
Palustrine Emergent Wetlands (Water features: M9, M10, M19, M20, A1, A2, A4, A5, A20 & A21)	N/A	6.21 acres
Palustrine Emergent/Scrub-Shrub Wetlands (Water Features: M11 & M18)	N/A	5.38 acres
Palustrine Forested / Emergent Wetlands (Water Features: M2, M3, M8, A8, A9, A12, A13, A14, A15, A16, A17, A18, & A19)	N/A	6.84 acres
TOTAL WETLANDS	**N/A**	**18.43 acres**

STREAMS	**Linear Feet**	**Area**
Relatively Permanent Waters Perennial (Leon Creek & Medio Creek)	33,341	1,250,035 ft^2
Relatively Permanent Water Seasonal (Long Hollow)	9091	272,730 ft^2
TOTAL STREAMS	**42,432**	**1,522,765 ft^2**

APPENDIX A

Report Maps

Lackland Wetland Study

Apr 10, 2009

A5

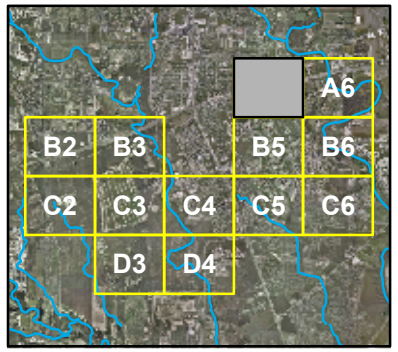


Legend

- Water Features not of US
- Wetlands_FinalReport
- Wetlands Map Series Grid
- Streams

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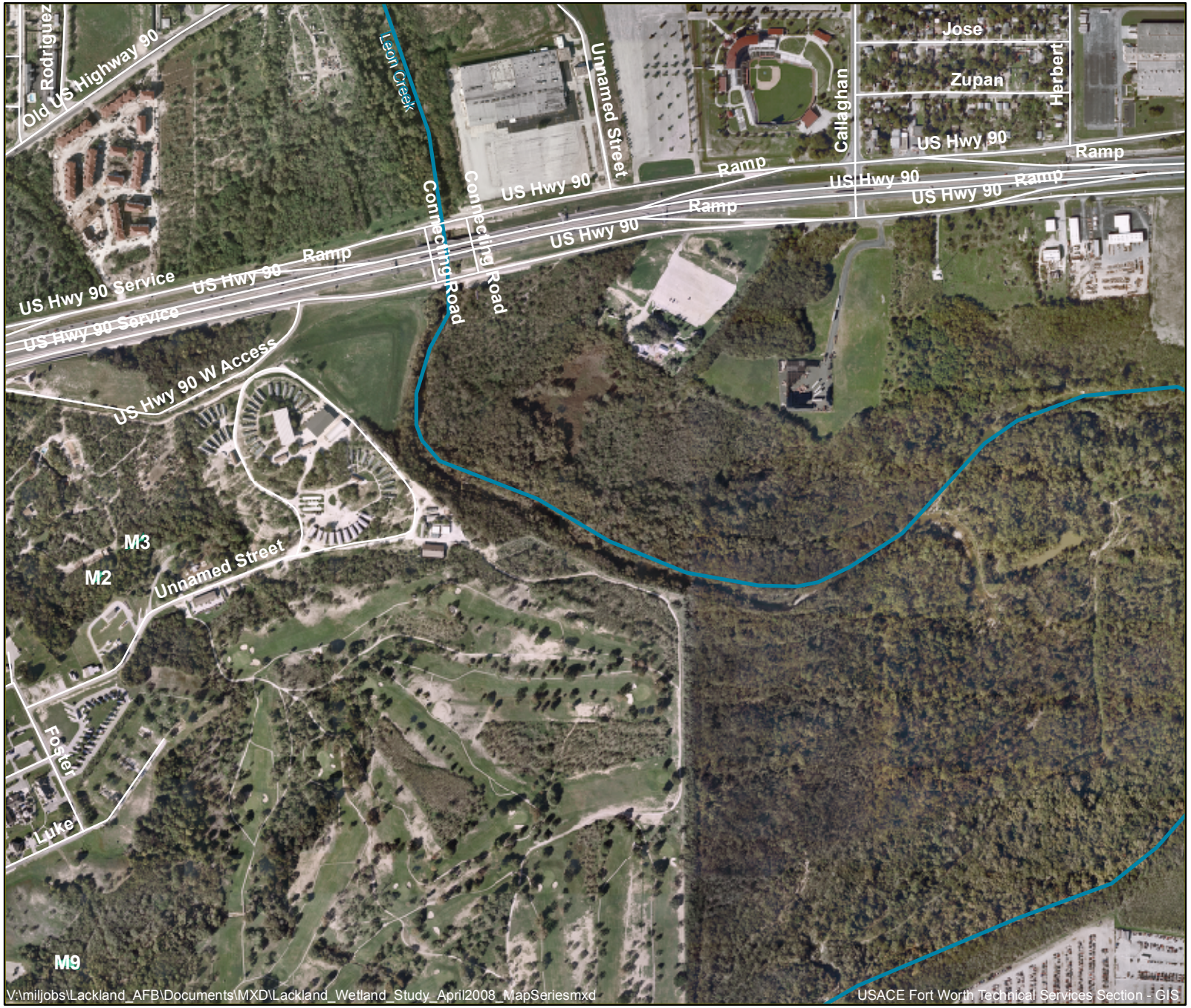
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Lackland Wetland Study

Apr 10, 2009

A6

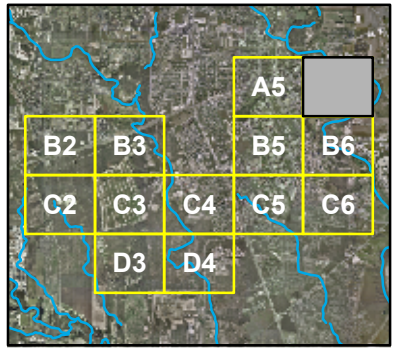


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- Water Features not of US
- Wetlands_FinalReport
- Wetlands Map Series Grid
- Streams

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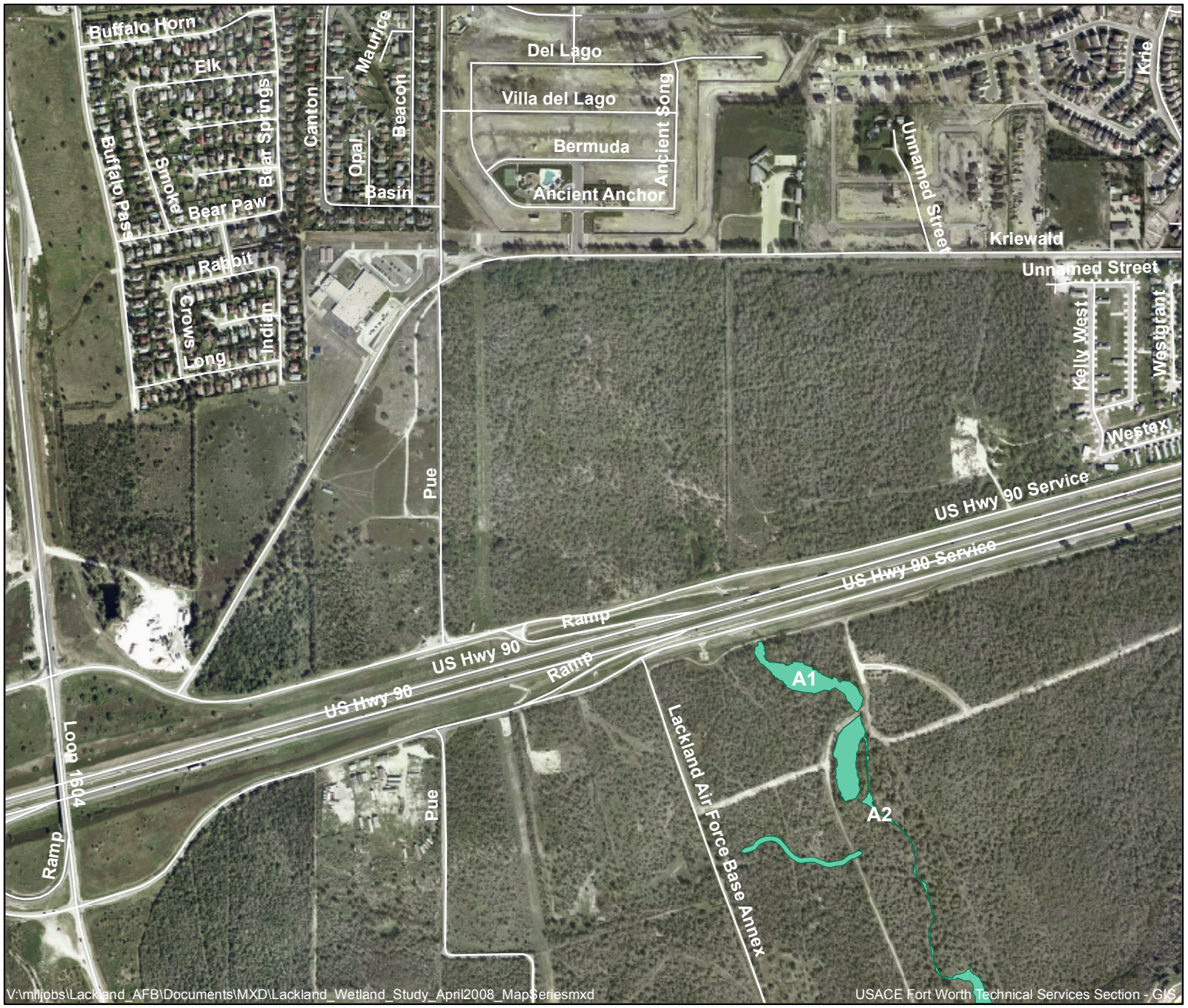
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Lackland Wetland Study

Apr 10, 2009

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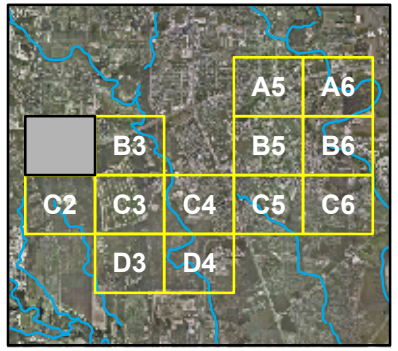


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- Wetlands_FinalReport
- Wetlands Map Series Grid
- Streams

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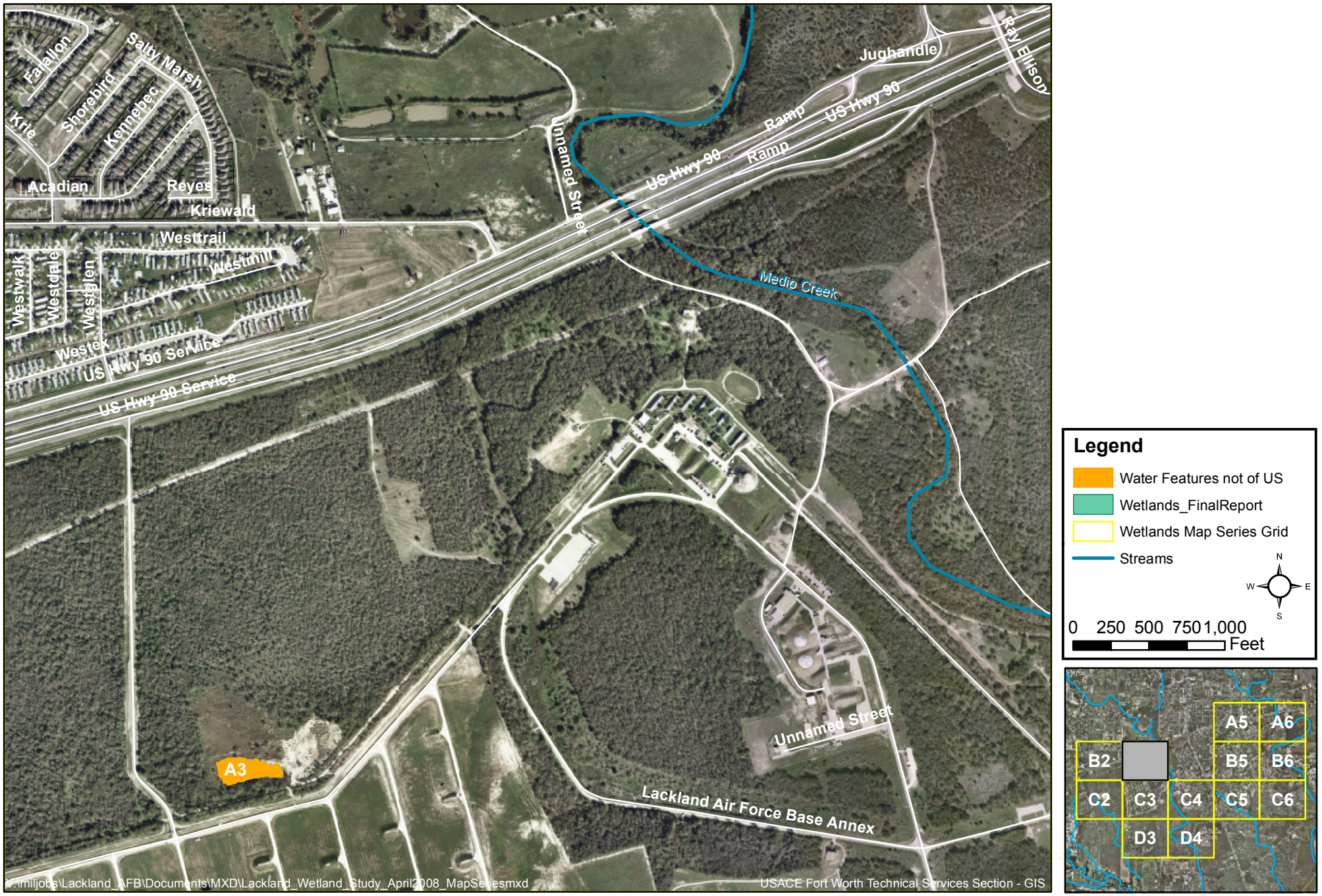
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Lackland Wetland Study

Apr 10, 2009

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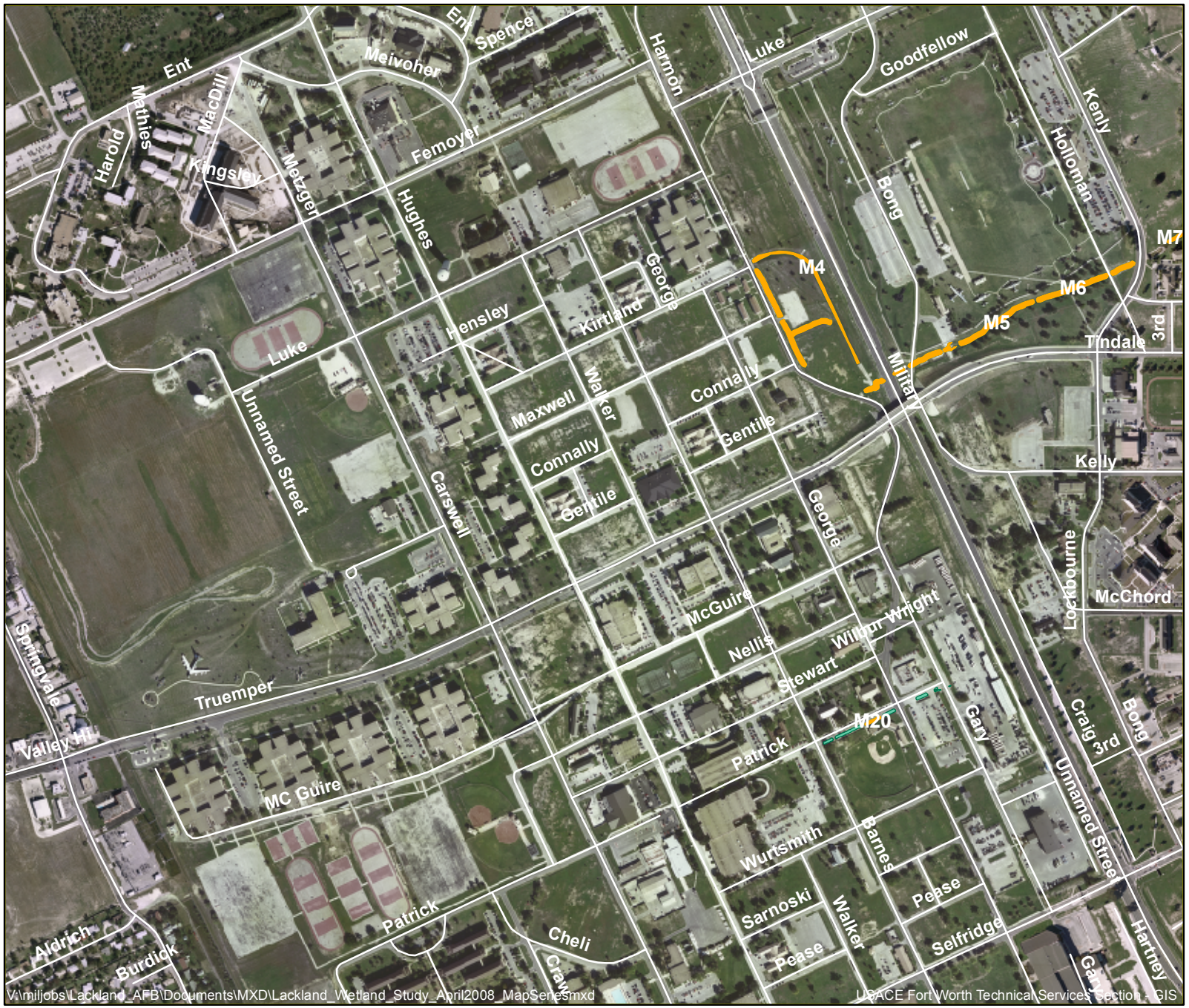
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Lackland Wetland Study

Apr 10, 2009

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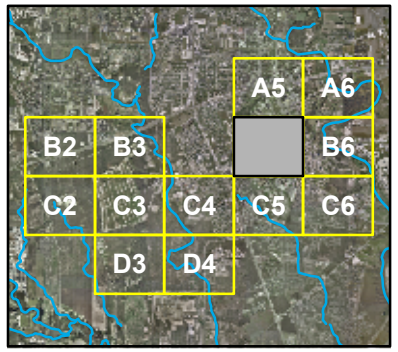


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- Wetlands Map Series Grid
- Streams

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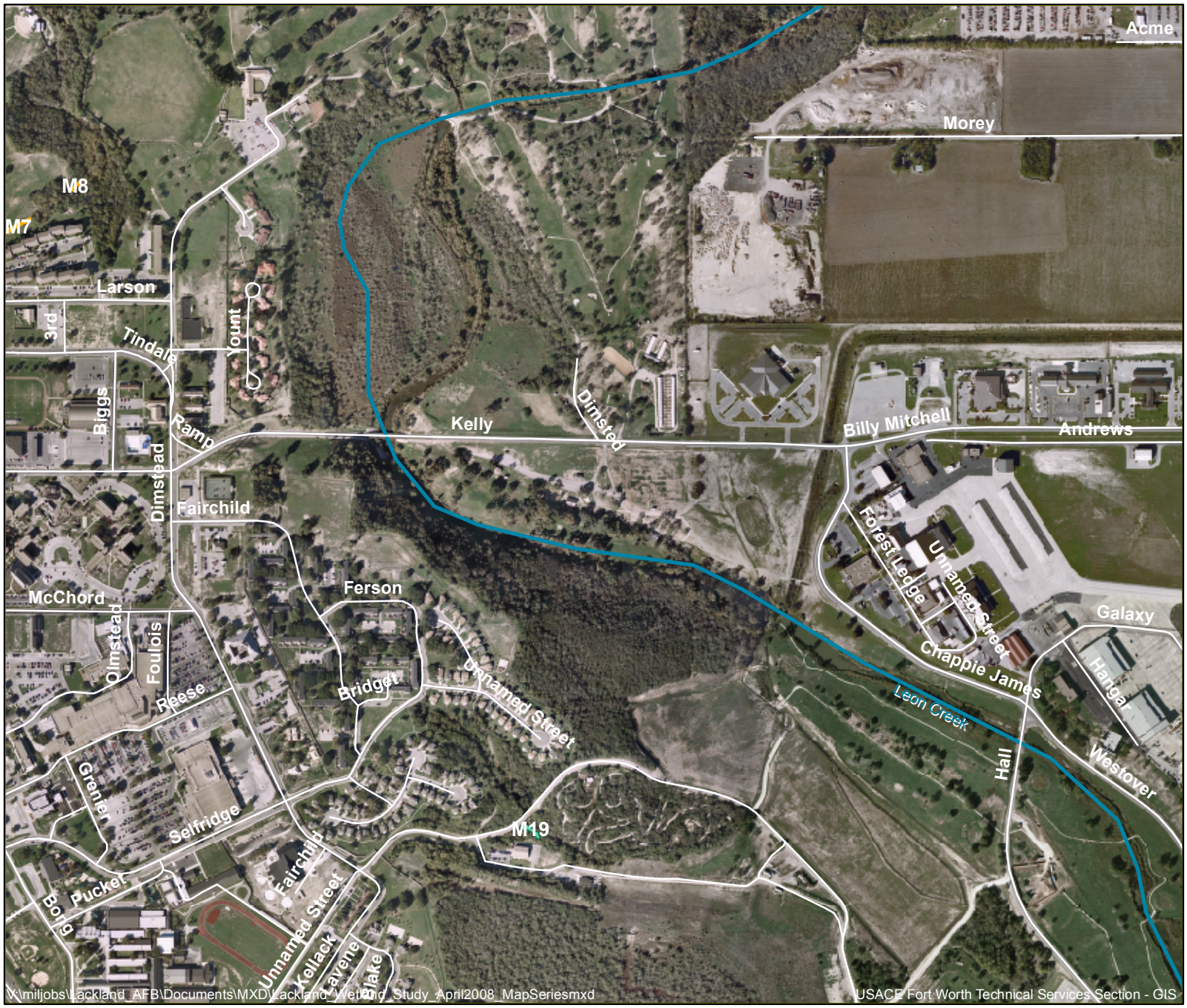
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Lackland Wetland Study

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Lackland Wetland Study

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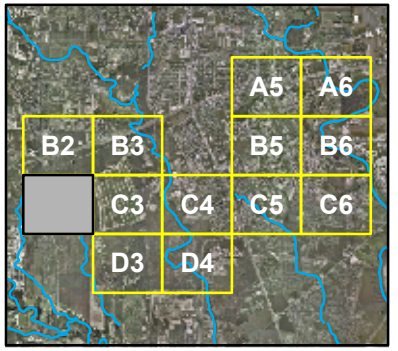


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- Wetlands_FinalReport
- Wetlands Map Series Grid
- Streams

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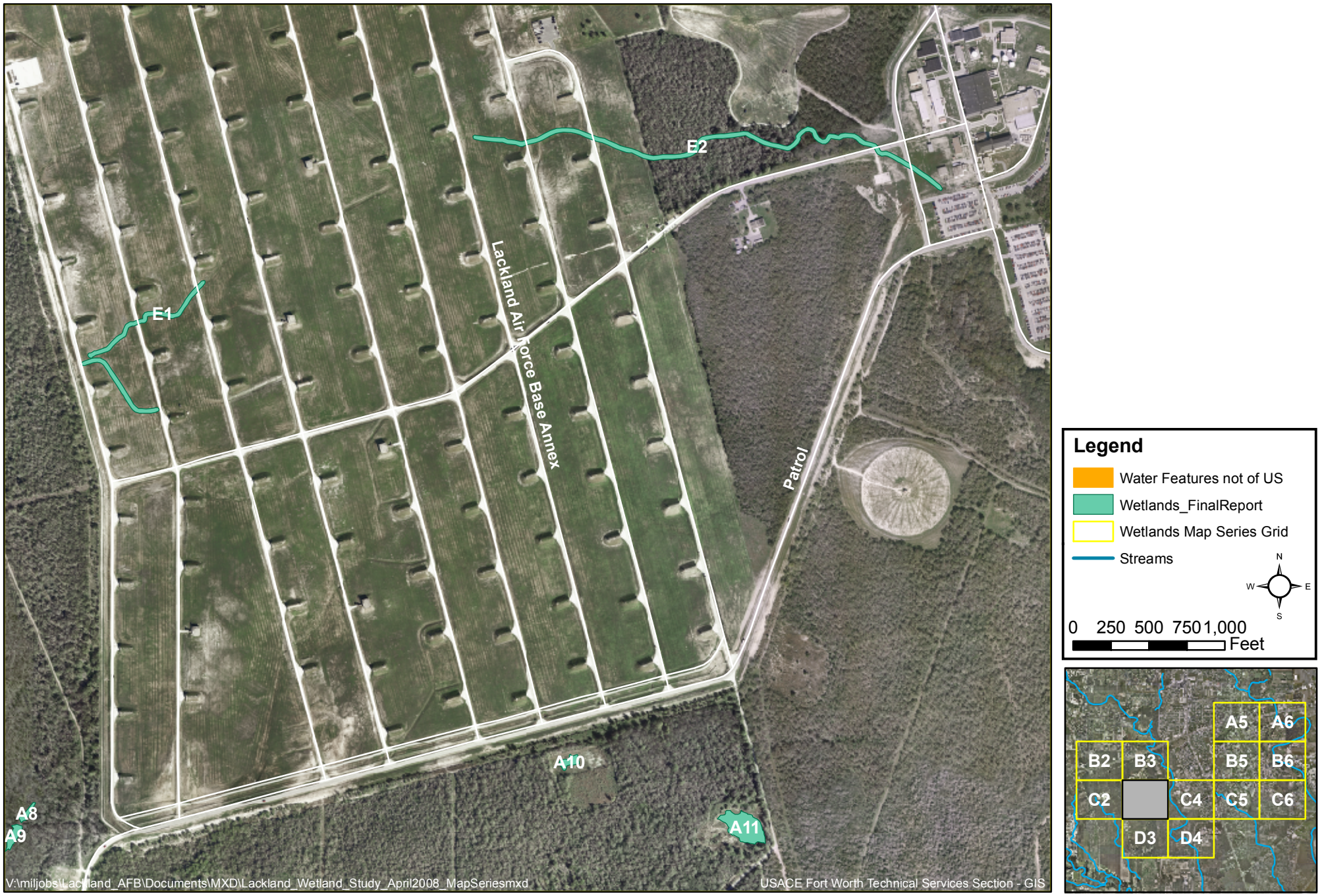
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Lackland Wetland Study

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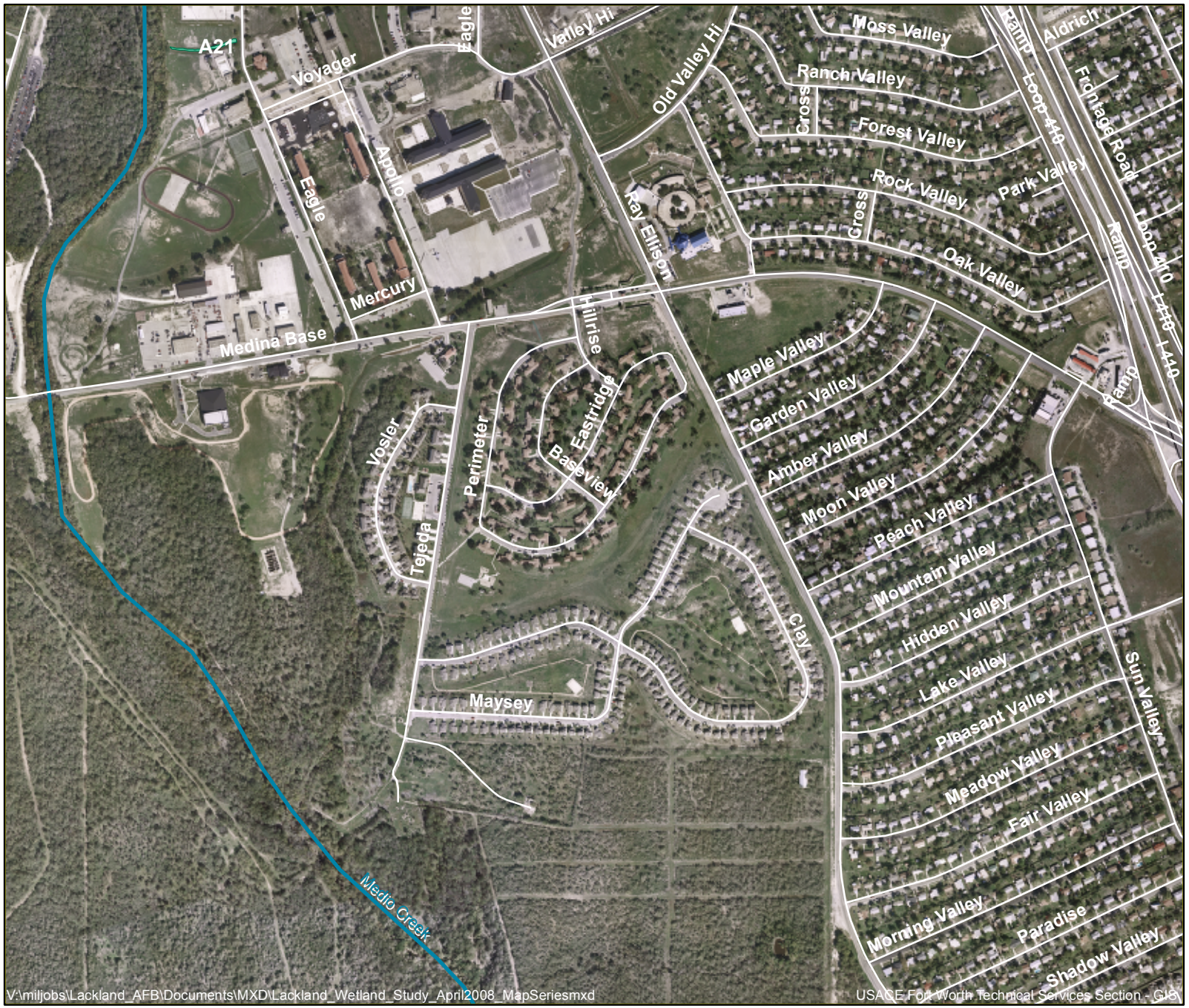
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Lackland Wetland Study

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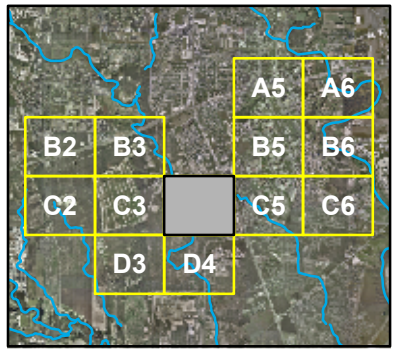


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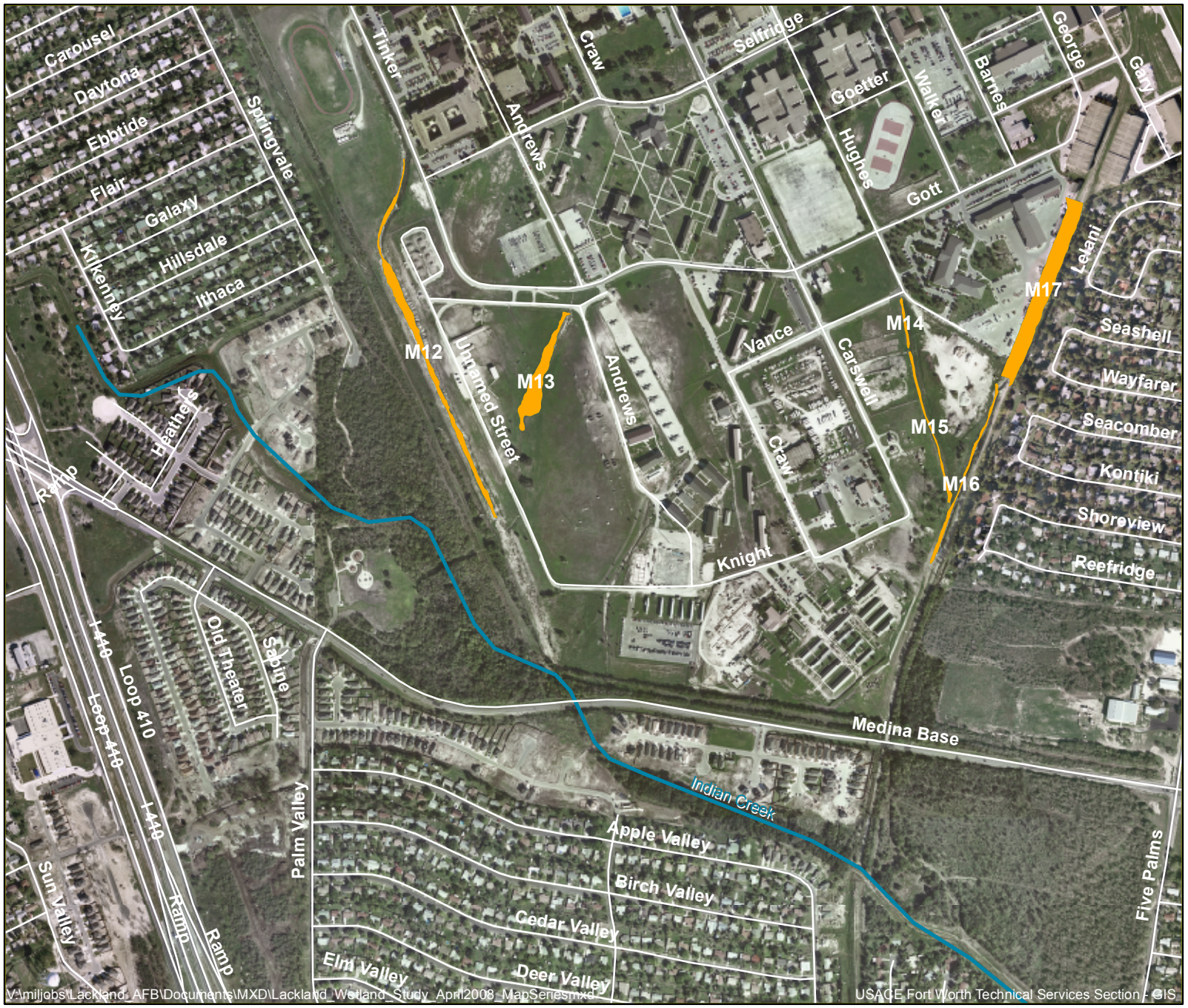
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Lackland Wetland Study

Apr 10, 2009

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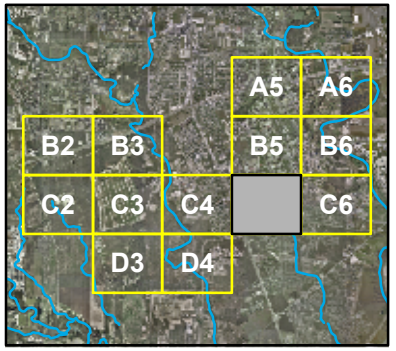


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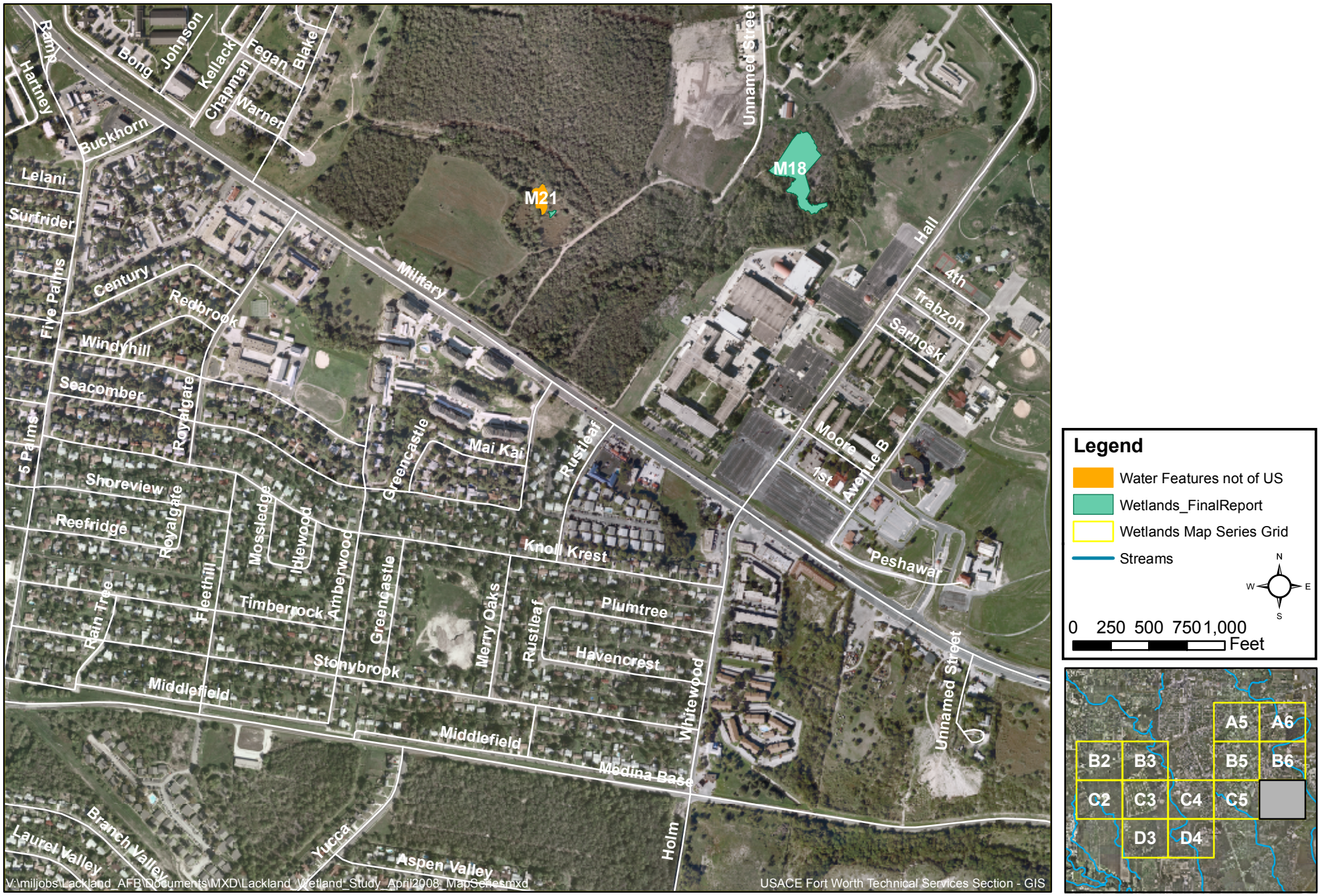
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Lackland Wetland Study

Apr 10, 2009

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Lackland Wetland Study

Apr 10, 2009

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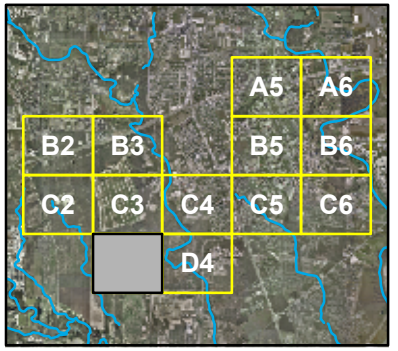


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- Water Features not of US
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Lackland Wetland Study

Apr 10, 2009

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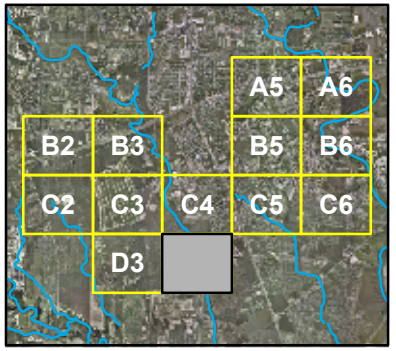


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- Water Features not of US
- Wetlands_FinalReport
- Wetlands Map Series Grid
- Streams

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Appendix D

Air Pollutant Emissions Calculations

Proposed Action - Revitalization of MWD Campus
Joint Base San Antonio-Lackland
Appendix D - Air Emission Calculations

Contents:

Tables

D-1 Summary of Annual Emissions from All Sources
D-2 Summary of LTA MWD Road Construction and Demolition Debris Loading Emissions
D-3 Summary of Annual Construction Equipment Exhaust Emissions
D-4 Building Construction Emission Factors
D-5 Summary of Emissions from Construction POV
D-6 Summary of On-Road Diesel Vehicle Combustion Emissions
D-7 Summary of Fugitive Grading Emissions
D-8 Summary of Fugitive Emissions from Asphalt Paving

Emission Calculations:

Construction/Demolition Equipment Emissions:

Construction EF (lb/1,000 ft^2)= Average Construction Equipment Usage Rate (hr/ 1,000 ft^2) x Equipment EF (lb/hr)

Where,
EF = emission factor

Pollutant Emissions (lbs) = Construction EF (lb/1,000 ft^2) x total square feet of construction or demolition

Grading (Non-Road Construction): Fugitive Dust Emissions:

Annual PM_{10} emissions = 0.032 ton PM_{10}/acre/month x (total acres) x total months of activity

Source: WRAP 2006, Section 3 PM Emissions from construction.

Paving Equipment Equipment Emissions:

Paving EF (lb/1,000 yd^3)= Average Paving Equipment Usage Rate (hr/ 1,000 yd^3) x Equipment EF (lb/hr)

Where,
EF = emission factor

Pollutant Emissions (lbs) = Paving EF (lb/1,000 yd^3) x total ft^3 of asphalt/27 ft^3/yard/1,000

Privately Owned Vehicle (POV) and On-Road Diesel Vehicle Emissions

Pollutant emissions = {Total vehicle miles traveled per year (miles/yr) * Pollutant EF (g/mile)}/453.59 g/lb

Where,
EF = emission factor
453.59 g/lb = conversion factor from grams to pounds

Non-Road Equipment Exhaust Emissions:

Pollutant Emissions = {equipment operation (hr/yr)*EF (g/hp-hr)*load factor (%)*horsepower (hp)}/453.59 g/lb

Where,
EF = emission factor
453.59 g/lb = conversion factor from grams to pounds

Evaporative VOC Emissions from Asphalt Paving:

Annual VOC emissions = Total asphalt applied (tons) * EF (lb VOC/ton asphalt)

Where,
VOC = volatile organic compounds

Proposed Action - Revitalization of MWD Campus
Joint Base San Antonio-Lackland

Road Construction/Demolition Emissions: Equations and Data

Constants, Source Conditions, and Variables

Variable	Description of Variable	Value PM_{10}	Value $PM_{2.5}$	Units	Reference
k	Particle Size Multiplier	0.35	0.11	-	AP-42 Section 13.2.4 Page 3
U	Mean Wind Speed	9.1	9.1	mph	http://lwf.ncdc.noaa.gov/oa/climate/online/ccd/avgwind.htm
M_1	Surface Material Moisture Content (dry)	0.03	0.03	%	AP-42 Table 13.2.2-3
d	Duration of Roadway Construction Activity	12	12	months	Project Dependent
f	Miles to Acres Conversion Factor	12.7	12.7	-	WRAP Fugitive Dust Handbook Table 3-3
M_2	Miles of New Roadway Constructed	2	2	miles	Project Dependent

Loading Demolition Debris Material to Trucks and Truck Dumping[1]

$$E_{PM10/2.5\ (lb/ton)} = (0.0032k)\ \frac{(U/5)^{1.3}}{(M_1/2)^{1.4}}$$ Eq. 2, AP-42 13.2.4

Road Construction[2]

PM_{10} Emissions = (0.11 tons PM10/acre/month)*M_2*f*d WRAP Fugitive Dust Handbook Section 3

$PM_{2.5}$ Emissions = (0.1)(0.11 tons PM10/acre/month)*M_2*f*d WRAP Fugitive Dust Handbook Section 3

Notes:
[1]Emission factors based upon USACE 1995, Sections 13.2.3 (1/95) and 13.2.4 (1/95)
[2]Emission calculation from the Western Regional Air Partnership (WRAP) Fugitive Handbook (9/06) Section 3. Emissions based upon dust control effectiveness of 50% from watering.

Construction Emissions: Calculation Assumptions

General Assumptions

Hours Worked per Day =	8	hr/day	
Days Worked per Year =	250	days/yr (5 days/week x 50 weeks/yr, project duration 1 year)	
Miles of Road Constructed =	2.0	miles (conservatively assumed that 2 miles of roadway construction for LTA MWD)	
Quantity of Debris Removed =	16,021	cubic yard (existing building demolition: 6 ft deep x 72,096 ft^2)*(0.03703704 conversion factor ft^3 to yd^3)	
Density of Debris Removed =	3,915	lb/cubic yard (conservatively assumed buildings concrete block, weight of reinforced concrete = 145 lbs/cubic ft)	
Mass of Debris Removed =	31,362	tons/project (For fugitive dust emissions, conservatively assumed that material removed would act like soil)	

Light Trucks

Number of Trucks =	12	truck	
Hours of Operation per Year =	18,000	hours/yr (assumed in operation 6 hr/day x 250 days/yr)	
Vehicle Mass =	2	ton	
Vehicle Ave.Horsepower =	250	hp	Typical horsepower of light-duty (2 ton) trucks sold in U.S.
Ave. Load Factor =	25	%	Source: USEPA 1991, Off-Highway Trucks

Dump Trucks

Number of Trucks =	10	Dump truck	
Hours of Operation per Year =	15,000	hours/yr (assumed in operation 6 hr/day x 250 days/yr)	
Vehicle Ave.Horsepower =	658	hp	Source: USEPA 1991, Off-Highway Trucks
Ave. Load Factor =	25	%	Source: USEPA 1991, Off-Highway Trucks

Water Trucks

Number of Trucks =	2	Heavy truck	
Hours of Operation per Year =	1,500	hours/yr (assumed in operation 3 hr/day x 250 days/yr)	
Vehicle Ave.Horsepower =	658	hp	Source: USEPA 1991, Off-Highway Trucks
Ave. Load Factor =	25	%	Source: USEPA 1991, Off-Highway Trucks

Proposed Action - Revitalization of MWD Campus
Joint Base San Antonio-Lackland

Road Construction/Demolition Emissions: Calculation Assumptions Continued

Forklift

Number of Forklifts =	1	Forklift	
Hours of Operation per Year =	450	hours/yr	(450 hours per vehicle, Based upon similar road construction projects.)
Vehicle Ave.Horsepower =	150	hp	Typical horsepower.
Ave. Load Factor =	35	%	Source: USEPA 1991, Rough Terrain Forklifts

Scraper

Number of Scrapers =	2	Scraper	
Hours of Operation per Year =	120	hours/yr	(60 hours per vehicle, Based upon similar road construction projects.)
Vehicle Ave.Horsepower =	1200	hp	Typical horsepower.
Ave. Load Factor =	60	%	Source: USEPA 1991, Scrapers

Large Paver

Number of Pavers =	2	Large Paver	
Hours of Operation per Year =	1,500	hours/yr	(assumed in operation 3 hr/day x 250 days/yr)
Vehicle Ave.Horsepower =	400	hp	Typical horsepower.
Ave. Load Factor =	56	%	Source: USEPA 1991, Concrete Pavers

Front-End Loader

Number of Loaders=	2	Front-End Loader	
Hours of Operation per Year =	1,500	hours/yr	(assumed in operation 3 hr/day x 250 days/yr)
Vehicle Ave.Horsepower =	300	hp	Typical horsepower.
Ave. Load Factor =	38	%	Source: USEPA 1991, Loaders

Concrete Mixer

Number of Mixing Trucks =	20	Heavy truck	
Hours of Operation per Year =	180	hours/yr	(9 hours per vehicle, concrete used for sidewalks at LTA MWD)
Vehicle Ave.Horsepower =	300	hp	Typical horsepower.
Ave. Load Factor =	25	%	Source: USEPA 1991, Off-Highway Trucks

Excavator

Number of Excavator =	1	Excavator ("Caterpillar")	
Hours of Operation per Year =	750	hours/yr	(assumed in operation 3 hr/day x 250 days/yr)
Vehicle Ave.Horsepower =	600	hp	
Ave. Load Factor =	59	%	Source: USEPA 1991, Excavator

Backhoe

Number of Backhoes =	3	Backhoe	
Hours of Operation per Year =	1,500	hours/yr	(500 hours per vehicle, Based upon similar road construction projects.)
Vehicle Ave.Horsepower =	200	hp	Typical horsepower.
Ave. Load Factor =	38	%	Source: USEPA 1991, Backhoes

Crane

Number of Cranes =	1	Crane	
Hours of Operation per Year =	300	hours/yr	(300 hours per vehicle, Based upon similar road construction projects.)
Vehicle Ave.Horsepower =	600	hp	Typical horsepower.
Ave. Load Factor =	43	%	Source: USEPA 1991, Off-Highway Trucks

Trackhoe

Number of Trackhoes =	2	Trackhoe	
Hours of Operation per Year =	400	hours/yr	(200 hours per vehicle, Based upon similar road construction projects.)
Vehicle Ave.Horsepower =	200	hp	Typical horsepower.
Ave. Load Factor =	38	%	Source: USEPA 1991, Backhoes

Steam Roller

Number of Steam Rollers =	2	Steam Roller	
Hours of Operation per Year =	200	hours/yr	(100 hours per vehicle, Based upon similar road construction projects.)
Vehicle Ave.Horsepower =	100	hp	Typical horsepower.
Ave. Load Factor =	59	%	Source: USEPA 1991, Rollers

Proposed Action - Revitalization of MWD Campus
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Road Construction/Demolition Emissions: Calculation Assumptions Continued

Gravel Trucks

Number of Trucks =	150	truck	
Hours of Operation per Year =	900	hours/yr	(6 hours per truck , Based upon similar road construction projects.)
Vehicle Ave.Horsepower =	350	hp	Typical horsepower.
Ave. Load Factor =	25	%	Source: USEPA 1991, Off-Highway Trucks

Grader

Number of Graders =	1	Grader	
Hours of Operation per Year =	300	hours/yr	(300 hours per vehicle, Based upon similar road construction projects.)
Vehicle Ave.Horsepower =	300	hp	Typical horsepower.
Ave. Load Factor =	54	%	Source: USEPA 1991, Graders

Bobcat

Number of Bobcats =	1	Bobcat	
Hours of Operation per Year =	200	hours/yr	(200 hours per vehicle, Based upon similar road construction projects.)
Vehicle Ave.Horsepower =	85	hp	Typical horsepower.
Ave. Load Factor =	48	%	Source: USEPA 1991, Skid Steer Loader

Sheep's Foot Compactor

Number of Compactors =	1	Sheep's Foot Compactor	
Hours of Operation per Year =	300	hours/yr	(300 hours per compactor, Based upon similar road construction projects.)
Vehicle Ave.Horsepower =	300	hp	Typical horsepower.
Ave. Load Factor =	53	%	Source: USEPA 1991, Paving Equipment

Table D-1

Summary of Annual Emissions from All Sources[a]
Revitalization of MWD Campus
Joint Base San Antonio-Lackland

Action	Annual Emissions (ton/yr)						
	VOC	CO	NO_x	PM_{10}	$PM_{2.5}$	SO_2	CO_2[b]
Proposed	2.7	21.9	10.9	47.0	5.4	1.4	5,155
No Action	0.0	0.0	0.0	0.0	0.0	0.0	0.0

CO = carbon monoxide

CO_2 = carbon dioxide

NO_x = oxides of nitrogen

$PM_{2.5}$ = particulate matter equal or less than 2.5 micrometers in diameter

PM_{10} = particulate matter equal or less than 10 micrometers in diameter

SO_2 = sulfur dioxide

ton/yr = US (short)tons per year

VOC = volatile organic compounds

Notes:

a It has been assumed that all projects occur during a 1 year duration

b Values shown are in metric tons per year, all other pollutants are US short tons.

Table D-2
Summary of LTA MWD Road Construction and Demolition Debris Loading Emissions
Revitalization of MWD Campus
Joint Base San Antonio-Lackland

Loading Demolition Debris Material to Trucks and Truck Dumping (Existing Building Removal)

Proposed Action	M (moisture content)	U (mean wind speed)	k_{PM10} (particle size multiplier)	$k_{PM2.5}$ (particle size multiplier)	Mass Debris (ton/yr)	Emission Rates PM_{10} (ton/yr)	Emission Rates $PM_{2.5}$ (ton/yr)
Fugitive Dust	0.030	9.1	0.35	0.11	31,362	**0.87**	**0.27**

New LTA MWD Road Construction

Proposed Action	M (miles of new Road)	f (conversion factor)	d (duration of project)	EF (PM_{10}/acre/ month)	EF ($PM_{2.5}$/acre/ month)	Emission Rates PM_{10} (ton/yr)	Emission Rates $PM_{2.5}$ (ton/yr)
Fugitive Dust	2	12.7	6.0	0.11	0.011	**16.8**	**1.7**

New LTA MWD Road Construction and LMB MWD Paving Equipment Operation (Exhaust Emissions)

Type	Hours Operation (hr/yr)	Horsepower (hp)	Load Factor[a] (%)	Emission Factors[b,c,d,e] PM_{10} (g/hp-hr)	$PM_{2.5}$ (g/hp-hr)	NO_x (g/hp-hr)	CO (g/hp-hr)	SO_2 (g/hp-hr)	VOC (g/hp-hr)	CO_2 (g/hp-hr)
Light Truck	18,000	250	25	0.0092	0.0092	0.276	0.075	0.16	0.1314	530.6
Dump Truck	15,000	658	25	0.0092	0.0092	0.276	0.084	0.16	0.1314	530.6
Water Truck	1,500	658	25	0.0092	0.0092	0.276	0.084	0.16	0.1314	530.6
Scraper	120	1200	60	0.069	0.0690	2.392	0.076	0.16	0.1314	530.6
Large Paver	1,500	400	56	0.0092	0.0092	0.276	0.084	0.16	0.1314	530.6
Front-end Loader	1,500	300	38	0.0092	0.0092	0.276	0.075	0.16	0.1314	530.6
Concrete Mixer	180	300	25	0.0092	0.0092	0.276	0.075	0.16	0.1314	530.6
Excavator ("Caterpillar")	750	600	59	0.0092	0.0092	0.276	0.084	0.16	0.1314	530.6
Backhoe	1,500	200	38	0.0092	0.0092	0.276	0.075	0.16	0.1314	530.6
Crane	300	600	43	0.0092	0.0092	0.276	0.084	0.16	0.1314	530.6
Trackhoe	400	100	38	0.0092	0.0092	3.0	0.237	0.18	0.1314	590.0
Steam Roller	200	100	59	0.0092	0.0092	3.0	0.237	0.18	0.1314	590.0
Forklift	450	150	35	0.0092	0.0092	0.276	0.087	0.16	0.1314	530.6
Gravel Trucks	900	350	25	0.0092	0.0092	0.276	0.084	0.16	0.1314	530.6
Grader	300	300	54	0.0092	0.0092	0.276	0.075	0.16	0.1314	530.6
Bobcat	200	85	48	0.0092	0.0092	3.0	0.237	0.18	0.1314	590.0
Sheep's Foot Compactor	300	300	53	0.0092	0.0092	0.276	0.075	0.16	0.1314	530.6

Equipment Operation (Exhaust Emissions Continued)

Type	Emission Rates PM_{10} (ton/yr)	$PM_{2.5}$ (ton/yr)	NO_x (ton/yr)	CO (ton/yr)	SO_2 (ton/yr)	VOC (ton/yr)	CO_2 (ton/yr)
Light Truck	0.011	0.011	0.34	0.093	0.20	0.16	657
Dump Truck	0.025	0.025	0.75	0.23	0.43	0.36	1,442
Water Truck	2.50E-03	2.50E-03	0.075	0.023	0.043	0.036	144
Scraper	6.57E-03	6.57E-03	0.23	7.23E-03	0.015	0.013	50.5
Concrete Paver	3.40E-03	3.40E-03	0.102	0.031	0.059	0.049	196.3
Front-end Loader	1.73E-03	1.73E-03	0.052	0.014	0.030	0.025	99.9
Concrete Mixer	1.37E-04	1.37E-04	0.004	1.12E-03	0.002	1.95E-03	7.9
Bulldozer	2.69E-03	2.69E-03	0.081	0.025	0.047	0.038	155
Backhoe	1.16E-03	1.16E-03	0.035	9.42E-03	0.020	0.016	66.6
Crane	7.84E-04	7.84E-04	0.024	7.16E-03	0.014	0.011	45.2
Trackhoe	1.54E-04	1.54E-04	0.050	3.97E-03	3.01E-03	2.20E-03	9.9
Steam Roller	1.20E-04	1.20E-04	0.039	3.08E-03	2.34E-03	1.71E-03	7.7
Forklift	2.39E-04	2.39E-04	7.18E-03	2.26E-03	4.16E-03	3.42E-03	13.8
Gravel Trucks	7.98E-04	7.98E-04	0.024	7.29E-03	0.014	0.011	46.0
Grader	4.92E-04	4.92E-04	0.015	4.01E-03	8.56E-03	7.03E-03	28.4
Bobcat	8.27E-05	8.27E-05	0.027	2.13E-03	1.62E-03	1.18E-03	5.3
Sheep's Foot Compactor	4.83E-04	4.83E-04	0.014	3.94E-03	8.41E-03	6.90E-03	27.9
Totals	**0.058**	**0.058**	**1.9**	**0.47**	**0.91**	**0.74**	**3,004**

Notes:

a Source: USEPA 1991

b Source: USEPA 2004. Assumed Tier 4 for all equipment.

c CO_2 emission factor source: Table 4.9 of USEPA 2009.

Emission factors given in Table 4.9 are based upon the reference in footnote b above. Assumed Tier 4 for all equipment.

d Assumed $PM_{2.5} = PM_{10}$

e Assumed 500 ppm sulfur content.

Table D-3

Summary of Annual Construction Equipment Exhaust Emissions[a]
New Buildings and Demolition of Existing Buildings
Revitalization of MWD Campus
Joint Base San Antonio-Lackland

Action	Annual Emissions (ton/yr)						
	VOC	CO	NO_x	PM_{10}	$PM_{2.5}$	SO_2	CO_2
Proposed	0.49	2.5	7.3	0.44	0.44	0.47	1,558

CO = carbon monoxide

CO_2 = carbon dioxide

NO_x = oxides of nitrogen

$PM_{2.5}$ = particulate matter equal or less than 2.5 micrometers in diameter

PM_{10} = particulate matter equal or less than 10 micrometers in diameter

SO_2 = sulfur dioxide

ton/yr = US (short)tons per year

VOC = volatile organic compounds

Action =	Proposed	
Total New Building Construction[b] =	144,433	square feet/year
Total Existing Building Demolition[b] =	72,096	square feet/year

Notes:

a It has been assumed that the project has a 1 year duration.

b Construction and demolition equipment totals for LMB MWD and LTA MWD

Table D-4
Building Construction Emission Factors
Revitalization of MWD Campus
Joint Base San Antonio-Lackland

Average Construction Equipment Usage Rates (hours)[a]				Equipment Emission Factors[b,c,d,e]						
	New Construction		Existing							
Construction Equipment	Single Story (per 1,000 ft^2)	Multi-Story (per 1,000 ft^2)	Demolition (per 1,000 ft^2)	VOC (lb/hr)	CO (lb/hr)	NO_X (lb/hr)	PM_{10} (lb/hr)	$PM_{2.5}$ (lb/hr)	SO_2 (lb/hr)	CO_2 (lb/hr)
Backhoe	2.6901	2.1943	-	0.007	0.084	0.107	0.011	0.011	0.006	21.0
Blower	-	-		0.000	0.000	0.000	0.000	0.000	0.000	0.000
Bulldozer	1.1833	1.3866	-	0.077	0.390	1.157	0.069	0.069	0.074	245
Concrete Truck	7.5282	3.7641	-	0.143	0.720	2.138	0.128	0.128	0.137	454
Crane	10.3343	15.5449	3.000	0.034	0.137	0.459	0.028	0.028	0.029	97.5
Dump Truck	4.2281	3.4009	7.960	0.143	0.720	2.138	0.128	0.128	0.137	454
Front-end Loader	2.6800	2.5183	4.000	0.015	0.070	0.202	0.018	0.018	0.013	43.0
18-Wheel Truck	28.0799	30.0545	-	0.143	0.720	2.138	0.128	0.128	0.137	454

Pollutant	Construction Equipment Emission Factors		
	New Construction		Existing
	Single Story (lb/1,000 ft^2)	Multi-Story (lb/1,000 ft^2)	Demolition (lb/1,000 ft^2)
VOC	6.2	6.0	1.3
CO	31.0	29.9	6.4
NO_X	92.1	89.1	19.2
PM_{10}	5.6	5.4	1.2
$PM_{2.5}$	5.6	5.4	1.2
SO_2	5.9	5.7	1.2
CO_2	19,544	18,898	4,076

CO = carbon monoxide
CO_2 = carbon dioxide
g/hp-hr = gram per horsepower - hour
hp = horsepower
lb = pound
lb/hr = pound per hour
NO_x = nitrogen oxides
PM_{10} = particulate matter equal or less than 10 micrometers in diameter
$PM_{2.5}$ = particulate matter equal or less than 2.5 micrometers in diameter
SO_2 = sulfur dioxide
VOC = volatile organic compound
yd^3 = cubic yard

Notes:

a Source: Means 1996

b Source: USEPA 2004. Assumed Tier 3 for all equipment.
The g/hp-hr emission factors converted to lb/hr; using horsepower from USEPA 1991, Table 2-04 and NONROAD2008 load factor.

c CO_2 emission factor source: Table 4.9 of USEPA 2009.
Emission factors given in Table 4.9 are based upon the reference in footnote b above. The g/hp-hr emission factors converted to lb/hr; using horsepower from USEPA 1991, Table 2-04 and NONROAD2008 load factor. Assumed Tier 3 for all equipment.

d Assumed $PM_{2.5} = PM_{10}$

e Assumed 500 ppm sulfur content.

Table D-5

Summary of Emissions from Construction POV[a]

Revitalization of MWD Campus

Joint Base San Antonio-Lackland

Car/Light Truck (Exhaust Emissions)

Action	Days worked	Total Number of Worker Vehicles	Vehicles Miles Traveled (miles/day)	Vehicles Miles Traveled (miles/Action)	Emission Factor (g/mile)						
					CO	NO_X	PM_{10}	$PM_{2.5}$	SO_2	VOC	CO_2
Proposed	250	50	100	1,250,000	13.47	0.81	0.025	0.0115	0.0094	0.919	514.3

Car/Light Truck (Exhaust Emissions Continued)

Action	Annual Emissions (ton/yr)						
	CO	NO_X	PM_{10}	$PM_{2.5}$	SO_2	VOC	CO_2
Proposed	18.6	1.1	0.034	0.016	0.013	1.3	709

CO = carbon monoxide

CO_2 = carbon dioxide

g/mile = gram mile

NO_x = oxides of nitrogen

$PM_{2.5}$ = particulate matter equal or less than 2.5 micrometers in diameter

PM_{10} = particulate matter equal or less than 10 micrometers in diameter

POV = privately owned vehicle

SO_2 = sulfur dioxide

ton/yr = US (short)tons per year

VOC = volatile organic compounds

Notes:

a Construction worker private vehicle travel to the work site. Conservatively assumed every POV would travel 100 miles per day for each day worked.

a Emission Factor Source: USEPA 2003c
(MOBILE6.2, 24-Sep-2003). Assumed all LDGT vehicle class traveling an average speed of 45 mph.

Table D-6
Summary of On-Road Diesel Vehicle Combustion Emissions
Revitalization of MWD Campus
Joint Base San Antonio-Lackland

Action	Annual Emissions (ton/yr)						
	CO	NO_X	PM_{10}	$PM_{2.5}$	SO_2	VOC	CO_2
Proposed Action	0.40	0.56	0.041	0.031	3.52E-03	0.18	376

CO = carbon monoxide

CO_2 = carbon dioxide

g/mile = grams per mile

mph = miles per hour

$PM_{2.5}$ = particulate matter equal or less than 2.5 micrometers in diameter

PM_{10} = particulate matter equal or less than 10 micrometers in diameter

NO_x = oxides of nitrogen

SO_2 = sulfur dioxide

ton/yr = US (short)tons per year

VMT = vehicle miles traveled

VOC = volatile organic compounds

Notes

a Annual emissions = MOBILE6 EF (g/mile) * Annual VMT

MOBILE6 Vehicle Type Category[a]	LDDT[b]	HDDV3[c]	
Roadway Type	Paved[d]	Paved[d]	
Annual Average VOC Emission Factor :	0.336	0.250	g/mile
Annual Average NO_x Emission Factor :	0.597	2.125	g/mile
Annual Average CO Emission Factor :	0.615	0.955	g/mile
Annual Average CO_2 Emission Factor :	598.3	874.8	g/mile
Annual Average SO_2 Emission Factor :	0.0056	0.0082	g/mile
Annual Average PM_{10} Emission Factor :	0.0724	0.0743	g/mile
Annual Average $PM_{2.5}$ Emission Factor :	0.0550	0.0541	g/mile

	Proposed Action		
	LDDT[e]	HDDV3[f]	
Total Annual VMT	375,000	133,803	miles/yr

Notes:

a Emission Factor Source (year 2011): USEPA 2003c (MOBILE6.2).

b LDDT = Light duty diesel powered trucks (i.e., includes diesel pickup trucks, sport utility vehicles and vans with GVWR ≤ 8,500 pounds.)

c HDDV3 = Heavy duty diesel powered vehicles (i.e., includes diesel trucks and buses with GVWR 10,001 - 14,000 pounds.)

d Assumed all vehicles travel average speed of 45 mph.

e LDDT VMT based upon 30 vehicles traveling 50 miles/day for 250 working days.

f HDDV3 VMT based upon 15 loads/day of delivery (250 days/project) and 10 yd^3 haul trucks for transporting excavated existing building debris. Average trip length of 25 miles for all trucks.

Table D-7

Summary of Fugitive Grading Emissions[a]
Revitalization of MWD Campus
Joint Base San Antonio-Lackland

New LTA MWD Area

Proposed Action	A (total acres)	d (duration of project)	EF (PM_{10}/acre/month)	EF ($PM_{2.5}$/acre/month)	Emission Rates	
					PM_{10} (ton/yr)	$PM_{2.5}$ (ton/yr)
Fugitive Dust	75.0	12.0	0.032	0.0032	**28.8**	**2.9**

Equipment Operation (Exhaust Emissions)

Type	Hours Operation (hr/yr)	Horsepower (hp)	Load Factor[b] (%)	Emission Factors[c,d,e,f]						
				PM_{10} (g/hp-hr)	$PM_{2.5}$ (g/hp-hr)	NO_x (g/hp-hr)	CO (g/hp-hr)	SO_2 (g/hp-hr)	VOC (g/hp-hr)	CO_2 (g/hp-hr)
Light Truck	160	250	25	0.0092	0.0092	0.276	0.075	0.16	0.1314	530.6
Dump Truck	160	658	25	0.0092	0.0092	0.276	0.084	0.16	0.1314	530.6
Grader	160	300	54	0.0092	0.0092	0.276	0.075	0.16	0.1314	530.6

Equipment Operation (Exhaust Emissions Continued)

Type	Annual Emissions (tons/yr)						
	PM_{10}	$PM_{2.5}$	NO_x	CO	SO_2	VOC	CO_2
Light Truck	1.01E-04	1.01E-04	3.04E-03	8.26E-04	1.76E-03	1.45E-03	5.8
Dump Truck	2.67E-04	2.67E-04	8.00E-03	2.43E-03	4.64E-03	3.81E-03	15.4
Grader	2.63E-04	2.63E-04	7.88E-03	2.14E-03	4.57E-03	3.75E-03	15.1
Totals	**6.31E-04**	**6.31E-04**	**0.019**	**5.40E-03**	**0.011**	**9.01E-03**	**36.4**

Notes:

a It was conservatively assumed that the entire new LTA MWD area of ~75 acres would require grading. Assumed 8 hrs/day, 5 days/week and 4 weeks for complet Assumed no grading required for LMB MWD area.

b Source: USEPA 1991

c Source: USEPA 2004. Assumed Tier 4 for all equipment.

d CO_2 emission factor source: Table 4.9 of USEPA's Current Methodologies in Preparing Mobile Source Port-Related Emission Inventories, April 2009. Emission factors given in Table 4.9 are based upon the reference in footnote b above. Assumed Tier 4 for all equipment.

e Assumed $PM_{2.5} = PM_{10}$

f Assumed 500 ppm sulfur content.

Table D-8
Fugitive Emissions from Asphalt Paving
Revitalization of MWD Campus
Joint Base San Antonio-Lackland

Action	Total Asphalt[a] (tons)	Emission Factor[b] (lb VOC/ton of asphalt)	Emission Rate (ton/yr)
			VOC
Proposed Action	9,605	0.0014	6.72E-03

lb =pound

ton/yr= tons per year

VOC = volatile organic compound

Density of Asphalt	68.56	lb/ft^3
Proposed Action	9,605	tons/year

Notes:

a Assumed 8" asphalt thickness. Based upon 43,600 and 81,000 ft^2 paved areas for LMB MWD and conservatively assumed 2 miles of roadways around LTA MWD with 12 ft lanes and 2 ft shoulders.

b Source: USEPA 1995, Section 11.1.2.5, (updated 3/2004).