

Final

Environmental Assessment
for the Replacement of the
JP-8 Transfer Pipeline between the
6000 Area and 400 Area

Tyndall Air Force Base
Bay County, Florida

September 2012

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14. ABSTRACT This document supports the Environmental Impact Analysis Process at Tyndall AFB, Florida for the replacement of a fuel transfer pipeline at the base. The proposed action involves replacing the existing 7,500 linear foot underground fuel pipeline connecting the Bulk Fuel Storage Area (6000 Area) and the Refueling Operating Area (400 Area). The existing pipeline consists of single-walled piping that has no leak detection system. This existing pipeline does not comply with the current Florida Department of Environmental Protection (FDEP) regulation (Florida Administrative Code 62-761.511(2)(d)), which requires tank systems to be double-walled construction if underground. To prevent further noncompliance, FDEP and the Air Force entered into a consent order (Office of General Counsel File Number 09-4068) to allow the Defense Logistics Agency (DLA) sufficient time to get projects funded and make the necessary upgrades to the bulk fuel storage tanks and fuel transfer pipeline to bring them into regulatory compliance. The consent order provides a legal mechanism for the base to continue operating the bulk fuel storage tanks and fuel transfer pipeline past the 1 January 2010 regulatory deadline while upgrades are planned and implemented. Moreover, as part of the Air Force's response, DLA proposed a schedule of actions that included a commitment to fund the required upgrades and complete construction by the 2018 deadline established in the consent order. This EA focuses on the replacement of the JP-8 transfer pipeline. Three different pipeline alignments between the 6000 Area and 400 Area are evaluated as part of this EA. The three proposed alignments form the three different action alternatives considered. A no action alternative is also evaluated.					
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**Finding of No Significant Impact (FONSI)
Finding of No Practicable Alternative (FONPA)
for the Replacement of the JP-8 Transfer Pipeline between
the 6000 Area and 400 Area at Tyndall Air Force Base**

AGENCY: Department of the Air Force, Air Education and Training Command, 325th Fighter Wing, Tyndall Air Force Base (AFB), Florida

PROPOSED ACTION AND ALTERNATIVES: The proposed action would involve replacing the existing 7,500 linear foot underground JP-8 pipeline connecting the Bulk Fuel Storage Area (6000 Area) and the Refueling Operating Area (400 Area) at Tyndall AFB. The existing pipeline consists of six-inch diameter, single-walled piping that has no leak detection system. This existing pipeline does not comply with the current Florida Department of Environmental Protection (FDEP) regulation (Florida Administrative Code 62-761.511(2)(d)), which requires tank systems to be double-walled construction if underground. The FDEP and Air Force entered into a consent order (Office of General Counsel File Number 09-4068) in 2010 to allow the Defense Logistics Agency sufficient time to fund and make the necessary upgrades to the fuel transfer pipeline to bring it into regulatory compliance. The consent order provides a legal mechanism for the base to continue operating the fuel transfer pipeline while upgrades are planned and implemented by the 2018 deadline established in the consent order. The proposed action would allow the Air Force to comply with the consent order while upgrading the underground fuel transfer pipeline to meet regulatory requirements for double-walled construction. Three different pipeline alignments between the 6000 Area and 400 Area were evaluated as part of the Environmental Assessment (EA). The three proposed alignments form the three different action alternatives considered. A no action alternative was also evaluated.

Based on the alternatives analysis that was conducted for the EA, the preferred pipeline alignment is action alternative 1. This alignment, which would use existing utility easements along Bayou Road, the west side of Florida Avenue, and the north side of Fuels Avenue, would be the best alternative alignment for the JP-8 fuel transfer pipeline between the 6000 Area to the 400 Area. Selection of action alternative 1 for the proposed action would allow the Air Force to comply with the consent order while upgrading the underground fuel transfer pipeline to meet regulatory requirements for double-walled construction. Additionally, this alignment would have the least impacts on natural resources, wetlands, and the floodplain. The two other pipeline alignments considered, action alternatives 2 and 3, would also allow the Air Force to comply with the consent order, but would have more impacts on natural resources, wetlands, and the floodplain as a result of construction activities associated with installation of the pipeline. Action alternative 2, which would follow the same route as action alternative 1 except it would run on the west side of Florida Avenue, would be constructed within an already crowded utility easement and setback distances required for safe installation of the pipeline would not be met. Action alternative 3, which diverges from the Florida Avenue corridor, would be located within the unpaved road bed along the south side of Expeditionary Road and an unnamed trail to the northwest of the 400 Area. This alignment would cross through an Environmental Restoration Program site and any contaminated soil and groundwater encountered during construction would need to be handled and disposed off-site in accordance with regulatory requirements. Additionally, action alternative 3 would have permanent impacts on natural resources and would require permanent conversion of wetlands. If the no action alternative is selected, the JP-8 transfer pipeline would not be upgraded and the Air Force would need to shut down the existing pipeline and would have to consider other alternatives to meet aircraft fueling needs to support the base's mission. The age and single-walled construction of the pipeline are such that failure to replace it would, over time, result in a pipeline failure and create the potential for significant environmental harm to an ecologically sensitive area. Leaks in the JP-8 transfer pipeline would require

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that the pipeline be taken out of service immediately. Failure to upgrade the transfer pipeline to a double-walled configuration increases the risk of significant impact to Tyndall AFB's mission and increases the potential for environmental harm that might result from a failure of the existing pipeline.

SUMMARY OF FINDINGS: Based on the findings of the EA, action alternative 1 for the proposed action would have no adverse effect on aircraft operations, geology, topography, soils, groundwater, sanitary sewer, potable water, solid waste management, drainage, natural gas, hazardous materials, vegetation, wildlife, threatened and endangered species, historical resources, archeological resources, socioeconomic resources, and land use. Action alternative 1 would have minor impacts on noise, air quality, safety and occupational health, surface water, transportation systems, electricity, hazardous waste, Environmental Restoration Program sites, wetlands, and floodplains during construction/installation of the JP-8 replacement pipeline. These effects would be temporary and would be mitigated through construction methodology, time of day restrictions during construction/installation of the pipeline, erosion prevention, and by restoring areas used during construction to original grade and cover.

For the JP-8 replacement pipeline alignment route, action alternative 1 would be the preferred option because this alignment would follow existing roadways, would be constructed in existing utility easements, and would minimize temporary impacts during construction based on pipeline design and installation techniques. Both the 6000 Area and the 400 Area have Environmental Restoration Program sites where fuel-related contamination of soil and groundwater has been identified. The pipeline would need to be installed above ground in the vicinity of the soil and groundwater contamination areas; based on the design, piping within these areas would be above ground and contaminated areas would be avoided. With the exception of the 6000 Area and 400 Area, there would also be no impacts to or from Environmental Restoration Program sites along the remainder of the action alternative 1 pipeline route. Action alternative 1 also would have the least permanent impact on natural resources, wetlands, and floodplain.

Although action alignment 1 would cross through areas within wetlands and the 100-year floodplain, there are no feasible alignment alternatives that would avoid these areas and action alternative 1 would provide the least overall impacts to resources. Furthermore, impacts along this alignment would be to herbaceous wetlands and stormwater swales. Impacts to the wetland systems would be linear and only constitute a temporary impact since there would be no permanent conversion of wetland vegetation. The ground surface would be restored, using the hydric soils excavated from the site, immediately following pipeline construction. Impacts at the one stream crossing along Florida Avenue could be avoided through the use of directional drilling techniques instead of standard excavated trenching techniques. Directional drilling construction methods would facilitate installing the pipeline beneath the water body without disturbing the vegetation or stream bottom, thus not impacting the wetland habitat. As long as standard excavated trenching techniques are not used at this location, permitting and mitigation measures would not be needed since permanent impacts to wetland resources would not occur.

SUMMARY OF PUBLIC REVIEW AND INTERAGENCY COORDINATION: A 30-day public review period was held from 1 April 2012 to 30 April 2012 to solicit public comments on the Draft EA. No public comments were received. Copies of the Draft EA were also sent to the Florida State Clearinghouse, United States Fish and Wildlife Service (USFWS), National Marine Fisheries Service, and four Native American Tribes/Nations that expressed an interest in Tyndall AFB regarding their ancestral ties, to confirm that these entities concur that the proposed action would not adversely affect resources that are of concern to them. Comments were provided by the Florida State Clearinghouse; these are addressed in the attached EA. No other comments were received from agencies or Native American Tribes/Nations.

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FINDING OF NO PRACTICABLE ALTERNATIVE: Pursuant to Executive Orders 11988 (Floodplain Management) and 11990 (Protection of Wetlands), and considering all supporting information, I find that there is no practicable alternative to the proposed action being sited in areas within the 100-year floodplain and in wetlands, as described in the attached EA. The EA identifies all practicable measures to minimize harm to the existing environment. Action alternative 1, the preferred alternative for the proposed action, would create temporary impacts to the floodplain and wetlands during construction, but these impacts would be minimized and would only occur during construction; no permanent impacts to these resources would occur.

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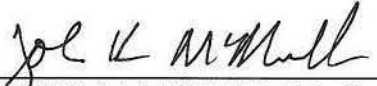
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21 Sep 2012

Date

JAMES E. FITZPATRICK, GS-15, P.E., CFM
Chief, Engineering Division
Headquarters Air Education and Training Command

FINDING OF NO SIGNIFICANT IMPACT: Based on my review of the facts and the analysis presented in the EA incorporated by reference, I conclude that action alternative 1 for the proposed action would not have a significant impact either by itself or considering cumulative impacts. Accordingly, the requirements of the National Environmental Policy Act, the Council on Environmental Quality Regulations and 32 Code of Federal Regulations 989 have been fulfilled, and an Environmental Impact Statement is not required and will not be prepared.


JOHN K. McMULLEN, Brig Gen, USAF
Commander, 325th Fighter Wing
Tyndall AFB FL

17 OCT 12
Date

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COVER SHEET

**FINAL ENVIRONMENTAL ASSESSMENT
FOR THE REPLACEMENT OF THE JP-8 TRANSFER PIPELINE
BETWEEN THE 6000 AREA AND 400 AREA AT
TYNDALL AIR FORCE BASE, BAY COUNTY, FLORIDA**

- a. Responsible Agency: Department of the Air Force, Air Education and Training Command (AETC), 325th Fighter Wing, Tyndall Air Force Base (AFB), Florida
- b. Proposed Action: The 325th Civil Engineer Squadron (CES) proposes to replace the existing 7,500 linear foot, six-inch diameter, single-wall fuel transfer pipeline connecting the 6000 and 400 Fuels Storage Areas at Tyndall AFB with a new eight-inch diameter pipeline that utilizes secondary containment (i.e., double-wall piping), cathodic protection, and a leak detection system.
- c. Inquires regarding this document should be directed to: Mr. Jose J. Cintron, 325 CES/CEAN, 119 Alabama Ave, Stop 42, Tyndall AFB, Florida 32403; Phone number: (850) 283-4341; E-mail: jose.cintron@tyndall.af.mil.
- d. Report Designation: Final Environmental Assessment (EA)
- e. Abstract: This document supports the Environmental Impact Analysis Process at Tyndall AFB, Florida, for the replacement of a fuel transfer pipeline at the base. The proposed action involves replacing the existing 7,500 linear foot underground fuel pipeline connecting the Bulk Fuel Storage Area (6000 Area) and the Refueling Operating Area (400 Area). The existing pipeline consists of single-walled piping that has no leak detection system. This existing pipeline does not comply with the current Florida Department of Environmental Protection (FDEP) regulation (Florida Administrative Code 62-761.511(2)(d)), which requires tank systems to be double-walled construction if underground. To prevent further noncompliance, FDEP and the Air Force entered into a consent order (Office of General Counsel File Number 09-4068) to allow the Defense Logistics Agency (DLA) sufficient time to get projects funded and make the necessary upgrades to the bulk fuel storage tanks and fuel transfer pipeline to bring them into regulatory compliance. The consent order provides a legal mechanism for the base to continue operating the bulk fuel storage tanks and fuel transfer pipeline past the 1 January 2010 regulatory deadline while upgrades are planned and implemented. Moreover, as part of the Air Force's response, DLA proposed a schedule of actions that included a commitment to fund the required upgrades and complete construction by the 2018 deadline established in the consent order. This EA focuses on the replacement of the JP-8 transfer pipeline. Three different pipeline alignments between the 6000 Area and 400 Area are evaluated as part of this EA. The three proposed alignments form the three different action alternatives considered. A no action alternative is also evaluated.

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ACRONYMS AND ABBREVIATIONS

AETC	Air Education and Training Command
AFB	Air Force Base
AFI	Air Force Instruction
APZ	Accident Potential Zone
ARPA	Archaeological Resources Protection Act
bls	Below Land Surface
BOD	Basis of Design
CAA	Clean Air Act
CEQ	Council on Environmental Quality
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
CWA	Clean Water Act
CZMA	Coastal Zone Management Act
DLA	Defense Logistics Agency
DNL	Day-Night Average Sound Level
DoD	Department of Defense
EA	Environmental Assessment
EIAP	Environmental Impact Analysis Process
ESA	Endangered Species Act
F.A.C.	Florida Administrative Code
FCMP	Florida Coastal Management Program
FDACS	Florida Department of Agriculture and Consumer Services
FDEP	Florida Department of Environmental Protection
FLUCCS	Florida Land Use, Cover, and Forms Classification System
FNAI	Florida Natural Areas Inventory
F.S.	Florida Statute
FWC	Florida Fish and Wildlife Conservation Commission
FY	Fiscal Year
GIS	Geographic Information System
GPC	Gulf Power Company
gpm	Gallons per Minute
IICEP	Interagency and Intergovernmental Coordination for Environmental Planning

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kV	Kilovolt
NAAQS	National Ambient Air Quality Standards
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
NOV	Notice of Violation
NRCS	Natural Resources Conservation Service
OGC	Office of General Counsel
POL	Petroleum, Oil, and Lubricant
psig	Pounds per Square Inch Gauge
RCRA	Resource Conservation and Recovery Act
ROI	Region of Influence
ROW	Right of Way
SSURGO	Soil Survey Geographic
U.S.	United States
USACE	United States Army Corps of Engineers
USEPA	United States Environmental Protection Agency
USC	United States Code
USDA	United States Department of Agriculture
USFWS	United States Fish and Wildlife Service
ug/m ³	Micrograms per Cubic Meter

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SECTION 1. PURPOSE AND NEED FOR THE PROPOSED ACTION

This section is divided into six parts: a statement of the purpose and need for the proposed action, a description of the location of the proposed action, a description of the decision to be made and the decision-maker, an overview of the scope of the environmental review, identification of applicable regulatory requirements, and an introduction to the organization of the document. This section explains the purpose and need for action, which is part of the Environmental Impact Analysis Process (EIAP), and is prepared in accordance with the National Environmental Policy Act (NEPA) of 1969 (Public Law 91-190); the President's Council on Environmental Quality (CEQ) regulations (40 Code of Federal Regulations [CFR] 1500-1508); 32 CFR Part 989 of the EIAP, published in the Federal Register on 15 July 1999 and amended in the Federal Register on 28 March 2001; Air Education and Training Command (AETC) Supplement 1 to 32 CFR Part 989, 6 June 2007; and the Air Force EIAP Desk Reference, May 1995.

1.1 PURPOSE AND NEED FOR THE PROPOSED ACTION

The Florida Department of Environmental Protection (FDEP) is the administrative agency having the power and duty to protect Florida's air and water resources and to administer and enforce the provisions of Chapter 376, Pollutant Discharge Prevention and Removal, and Chapter 403, Environmental Control, of the Florida Statutes (F.S.), and the rules promulgated and authorized in Title 62 of the Florida Administrative Code (F.A.C.). The FDEP has jurisdiction over fuel storage and transfer facilities within the State of Florida.

The proposed action involves replacing the existing 7,500 linear foot underground fuel pipeline connecting the Bulk Fuel Storage Area (6000 Area) and the Refueling Operating Area (400 Area). The existing pipeline consists of six-inch diameter, single-walled piping that has no leak detection system. This existing pipeline does not comply with the current FDEP regulation (F.A.C. 62-761.511(2)(d)), which requires tank systems to be double-walled construction if underground. To prevent further noncompliance, FDEP and the Air Force entered into a consent order [Office of General Counsel (OGC) File Number 09-4068, (FDEP, 2010)] to allow the Defense Logistics Agency (DLA) sufficient time to get projects funded and make the necessary upgrades to the bulk fuel storage tanks and fuel transfer pipeline to bring them into regulatory compliance. The consent order provides a legal mechanism for the base to continue operating the bulk fuel storage tanks and fuel transfer pipeline past the 1 January 2010 regulatory deadline while upgrades are planned and implemented. Moreover, as part of the Air Force's response, DLA proposed a schedule of actions that included a commitment to fund the required upgrades and complete construction by the 2018 deadline established in the consent order. This Environmental Assessment (EA) focuses on the replacement of the JP-8 transfer pipeline. Three different pipeline alignments between the 6000 Area and 400 Area are evaluated as part of this EA. The three proposed alignments form the three different action alternatives considered. A no action alternative is also evaluated.

Selection of the proposed action would allow the Air Force to comply with the consent order while upgrading the underground fuel transfer pipeline to meet regulatory requirements for double-walled construction. If the no action alternative is selected, the JP-8 transfer pipeline

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would not be upgraded and the Air Force would need to shut down the existing pipeline and would have to consider other alternatives to meet aircraft fueling needs to support the base's mission. The age and single-walled construction of the pipeline are such that failure to replace it would, over time, result in a pipeline failure and create the potential for significant environmental harm to an ecologically sensitive area. Leaks in the JP-8 transfer pipeline would require that the pipeline be taken out of service immediately. Failure to upgrade the transfer pipeline to a double-walled configuration increase the risk of significant impact to Tyndall AFB's mission and increase the potential for environmental harm that might result from a failure of the existing pipeline.

1.2 LOCATION OF THE PROPOSED ACTION

Tyndall AFB, a military installation, is located southeast of Panama City in Bay County, Florida. The installation is situated on a peninsula that is approximately 18 miles long and three miles wide. The peninsula is bordered by Saint Andrew Bay to the north and west and to the south by the Gulf of Mexico. Tyndall AFB is bisected by United States (U.S.) Highway 98, and comprises approximately 29,000 acres. **Figure 1-1** provides a location map showing Tyndall AFB, the surrounding area, and the project area. **Figure 1-1** is included at the end of Section 1.

The Bulk Fuel Storage Area (6000 Area) for JP-8 fuel is located in the northwestern portion of the flight operations area at Tyndall AFB. Bulk fuels are received from barges that dock in Fred Bayou (also known as Shell Point Bayou) and stored in the 6000 Area. The JP-8 fuel is currently transferred from the 6000 Area to the Refueling Operations Area (400 Area) by a six-inch diameter, single-walled fuel transfer pipeline that runs southwest along Bayou Road, south/southwest along Florida Avenue, and northwest along Fuels Avenue to the 400 Area. The proposed JP-8 replacement pipeline, consisting of an eight-inch diameter, double-walled pipe, would follow this general route, or an alternative route along Expeditionary Road, from the 6000 Area to the 400 Area (see **Figure 2-1**).

1.3 DECISION TO BE MADE AND THE DECISION-MAKER

The primary decision that must be made by the Air Force is whether to replace the existing JP-8 transfer pipeline with a double-walled pipe providing secondary containment (i.e., to proceed with an action alternative) or to take no action (i.e., choose the no action alternative). If the Air Force decides to move forward with the pipeline replacement, an additional decision to be made is to choose one of three alignment alternatives (i.e., action alternatives 1, 2, and 3) for the JP-8 replacement pipeline route. Action alternatives 1, 2, and 3, and the no action alternative are described in detail, assessed against established criteria, and evaluated in this EA document. The scope of the environmental review is described further in the following subsection.

1.4 SCOPE OF THE ENVIRONMENTAL REVIEW

The Air Force planning process includes an analysis of the potential environmental consequences that might be caused by a proposed action. The potential environmental impacts that could result from the implementation of the proposed action and reasonable alternatives, including the no action alternative, are identified, described, and evaluated in this EA. For this

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proposed action and alternatives, the reasonably foreseeable environmental impacts would primarily result from the construction of the JP-8 replacement pipeline. Resource issues discussed in this EA for the proposed action and alternatives include:

- Infrastructure and Utilities – Environmental effects from changes to sanitary sewer, potable water, reclaimed water, solid waste management, drainage, transportation, electricity, and natural gas.
- Hazardous Materials and Hazardous Waste – Potential effects on existing environmental and management practices for hazardous materials and hazardous wastes.
- Biological Resources – Potential effects on endangered species, protected habitats, wetlands, vegetation, and/or wildlife in the proposed project area.
- Cultural Resources – Potential effects on archaeological sites, historic buildings/structures, and/or artifacts located in the proposed project area.
- Land Use – Environmental effects from potential changes to land use or zoning.
- Water Resources – Potential effects on groundwater or surface water quality and quantity in the region.
- Air Quality – Potential effects on visibility, odor, and other factors of general air quality.
- Noise – Potential effects of noise intensity and related impacts.
- Earth Resources – Potential effects on the geology, topography, and/or soils in the proposed project area.
- Socioeconomic Resources – Potential effects on socioeconomic resources in the proposed project area.
- Environmental Justice – Disproportionate adverse effects on minority and low-income populations.

Environmental impacts from the replacement of the JP-8 pipeline are expected to occur within a limited geographical area on and immediately surrounding Tyndall AFB. This geographical area is referred in this EA as the region of influence (ROI). This EA analyzes the impacts associated with the action and no action alternatives.

This EA is issue-driven and concentrates on those resources that may be affected by the proposed action. Resources not expected to be affected by short- or long-term impacts are included in the general discussions. This EA also considers 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." The cumulative impacts of the proposed action and reasonable alternatives and impacts from other actions are considered for the ROI.

The proposed action is primarily a construction project involving installation of an eight-inch diameter, double-walled pipe to replace the current JP-8 transfer pipeline. The replacement

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pipeline would be designed to meet current regulatory requirements, including secondary containment, cathodic protection, and a leak detection system. This EA evaluates the reasonably foreseeable impacts from the construction of the replacement pipeline and the subsequent abandonment of the existing pipeline. Additionally, impacts from not implementing the system improvements (i.e., selection of the no action alternative) are also evaluated. The potential environmental impacts evaluated in this EA are based on information currently available for the proposed action, including the JP-8 replacement pipeline project details described in the consent order (FDEP, 2010), Military Construction Project Data Form (U.S. Air Force, 2010), and the Draft Basis of Design (BOD) Report (Pond & Company, 2011).

1.5 APPLICABLE REGULATORY REQUIREMENTS

Under the NEPA (42 United States Code [USC] 4321 et seq.), federal agencies are required to consider the environmental consequences of their proposed actions by using a systematic, interdisciplinary approach, thereby ensuring well-informed federal decisions. The CEQ was established under NEPA to implement and oversee federal policy in this process. To this end, the CEQ has issued regulations for *Implementing the Procedural Provisions of the National Environmental Policy Act* (40 CFR 1500-1508). The Department of Defense (DoD) also published its DoD Instruction 4715.9, *Environmental Planning and Analysis*, outlining the DoD approach to fulfilling the NEPA and CEQ process requirements.

The NEPA requires federal agencies to consider the environmental effects of their proposed actions and reasonable alternatives, to include the no action alternative, as part of the decision-making process. This EA considers applicable laws and regulations, including, but not limited to, the following:

- § Title 40, CFR, Parts 1500-1508
- § Archaeological Resources Protection Act (ARPA) (16 USC 470aa-470mm)
- § Clean Air Act (CAA) (42 USC 7401-7671q), as amended in 1990 (81 USC 7401 et seq.)
- § Clean Water Act (CWA) (33 USC 1251 et seq.)
- § Coastal Zone Management Act (CZMA) (Title 16, USC 1451 et seq.)
- § Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) (42 USC 9651c)
- § Endangered Species Act (ESA) (16 USC 1531-1544)
- § Fish and Wildlife Coordination Act (16 USC 661-667e)
- § National Historic Preservation Act (NHPA) (16 USC 470 et seq.)
- § Pollution Prevention Act (16 USC 470)
- § Resource Conservation and Recovery Act (RCRA) (42 USC 6901-6992k)
- § Rivers and Harbors Act (33 USC 401)
- § Executive Order 11988, Floodplain Management, 24 May 1977 (42 Federal Register 26951)
- § Executive Order 11990, Protection of Wetlands, 24 May 1977 (3 CFR)
- § Executive Order 12372, Intergovernmental Review of Federal Programs, 1982 (3 CFR)

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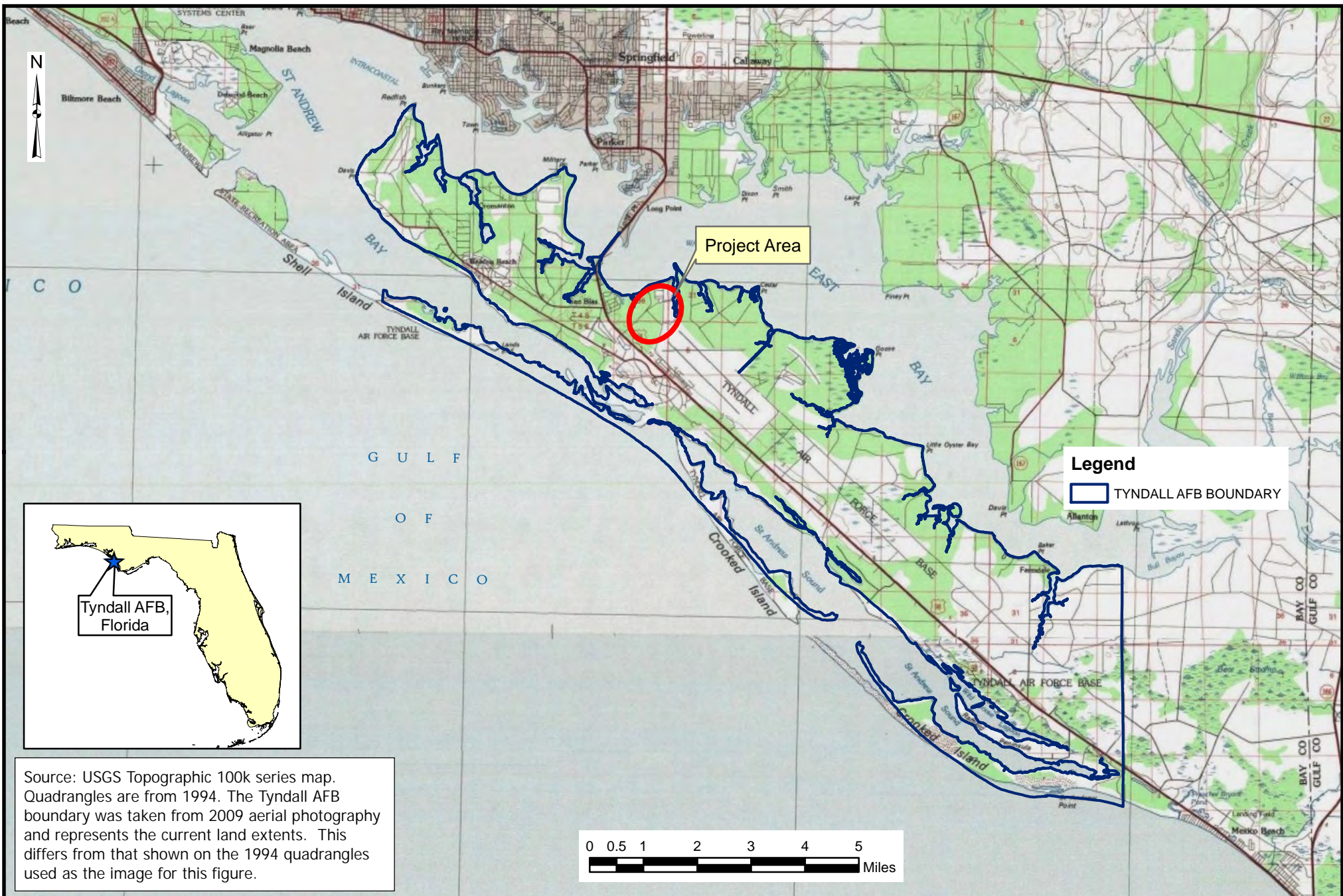
- § Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations, 16 February 1994 (59 Federal Register 7629)
- § Air Force Instruction (AFI) 32-7060, Interagency and Intergovernmental Coordination for Environmental Planning (IICEP)
- § AFI 32-7064, Integrated Natural Resources Management, 17 September 2004
- § AFI 32-7065, Cultural Resources Management Program, 1 June 2004

1.6 INTRODUCTION TO THE ORGANIZATION OF THE DOCUMENT

This EA is organized into six sections: Section 1 focuses on the purpose and need for the proposed action. This includes a description of the purpose and need for the proposed action, the location of the proposed action, decisions to be made and the decision-maker, a summary of the scope of the environmental review, and identification of applicable regulatory requirements. Section 2 of this EA focuses on the proposed action and alternatives. This section includes a brief history of the formulation of alternatives, describes the alternatives eliminated from further consideration, provides a detailed description of the proposed action, describes the no action alternative, describes other action alternatives, identifies the preferred alternative, and addresses avoidance measures and/or mitigation requirements. Section 3 describes the affected environment. Section 4 describes the environmental consequences associated with implementing the proposed action, including a discussion of the three action alternatives. The no action alternative is also discussed. Section 5 lists the individuals who prepared this EA for the Air Force. Section 6 identifies the individuals, organizations, and agencies contacted during preparation of this EA. Section 7 includes a list of references used as resources to develop this EA.

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Final EA
TYNDALL AFB LOCATION MAP

Tyndall Air Force Base (AFB)
 Environmental Assessment (EA) for Replacement of JP-8 Transfer
 Pipeline between 6000 Area and 400 Area

FIGURE 1-1
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SECTION 2. DESCRIPTION OF PROPOSED ACTION AND ALTERNATIVES

This section is comprised of nine parts: an introduction, a brief history of the formulation of the alternatives, identification of alternatives eliminated from further consideration, a detailed description of the proposed action, a description of the no action alternative, other action alternatives within the ROI, comparison of environmental effects of all alternatives, identification of the preferred alternative, and avoidance measures and/or mitigation requirements.

2.1 INTRODUCTION

As part of the fuel storage, transfer, and distribution operations at Tyndall AFB, JP-8 is delivered to the Bulk Fuel Storage Area (6000 Area) predominately by barges that dock in Fred Bayou (also known as Shell Point Bayou). Fuel can also be delivered by truck, but occurs on a more limited basis. The JP-8 is stored in above ground bulk fuel storage tanks in the 6000 Area. The JP-8 is currently transferred from the 6000 Area to the Refueling Operations Area (400 Area) by a six-inch diameter, single-walled fuel transfer pipeline. From the 400 Area, fuel is distributed by truck and other vehicle-based fueling systems. The existing JP-8 transfer pipeline has been in place since the 1950s and, although it has no history of leaks, is regularly tested for leaks, and has cathodic protection, it does not meet current regulatory requirements for secondary containment.

The proposed action involves replacing the existing 7,500 linear foot underground fuel transfer pipeline with an eight-inch diameter, double-walled underground pipeline to meet the current regulatory requirement for secondary containment (i.e., double-walled construction). Because the existing pipeline would need to remain in use during construction of the replacement pipeline, the existing pipeline would be abandoned in place following construction of the new pipeline. The new pipeline would follow the general alignment of the existing pipeline along Bayou Road, Florida Avenue, and Fuels Avenue, or an alternative route along Expeditionary Road, from the 6000 Area to the 400 Area. Three different pipeline alignments are evaluated as part of this EA. The three proposed alignments, which form the three different action alternatives considered, are shown on **Figure 2-1**. A no action alternative is also evaluated as part of this EA.

2.2 HISTORY OF THE FORMULATION OF ALTERNATIVES

The proposed action, replacement of the existing six-inch diameter, single-walled JP-8 transfer pipeline with an updated double-walled pipeline that meets current regulatory requirements, is necessary to comply with current the FDEP regulation (F.A.C. 62-761.511(2)(d)) that requires tank systems to be double-walled construction if underground. To prevent further noncompliance, FDEP and the Air Force entered into a consent order (FDEP, 2010) to allow time to fund, design, and implement the necessary upgrades to the fuel transfer pipeline that would bring it into regulatory compliance. Upgrades to the bulk fuel storage tanks are being implemented as a separate project already underway. The consent order provides a legal mechanism for Tyndall AFB to continue operating the bulk fuel storage tanks and fuel transfer

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pipeline past the 1 January 2010 regulatory deadline when secondary containment was required to be in place. The DLA has committed to fund and complete the required upgrades by the 2018 deadline established in the consent order. The proposed action would allow the Air Force to meet the current regulatory requirements regarding secondary containment for the fuel transfer pipeline at Tyndall AFB, as well as meet the legal requirements and commitments established in the consent order.

In 2011, Pond & Company, Inc. was contracted to plan and design the JP-8 transfer pipeline upgrades. Several alternatives were evaluated as part of the initial planning and conceptual design phase. The alternatives that were eliminated from further consideration are discussed in the following subsection. These included rehabilitation of the existing pipeline to incorporate secondary containment, routing of a new pipeline next to the existing pipeline (within three feet along the same alignment), and replacement of the existing underground pipeline with an above ground pipeline. Removal of the existing pipeline following completion of the new pipeline versus abandonment in place was also considered. Based on the conceptual design evaluation presented in the Draft BOD Report (Pond & Company, 2011) and additional evaluation done for this EA, the pipeline alignment that best meets the needs of the project would be offset from the existing pipeline by at least eight feet and would be installed underground to address safety concerns associated with the fuel pipeline. The pipeline alignment alternatives that meet these requirements form the three action alternatives that are explained and evaluated in the EA sections that follow. As noted above, the alignment alternatives are shown on **Figure 2-1**. This figure is included at the end of Section 2. The no action alternative is also evaluated in this EA.

2.3 IDENTIFICATION OF ALTERNATIVES ELIMINATED FROM FURTHER CONSIDERATION

Several alternatives were evaluated as part of the initial planning and conceptual design review for the JP-8 replacement pipeline project and during development of this EA, but were eliminated from further consideration due to infeasibility, offset requirements, and safety concerns. One alternative considered was in-place rehabilitation of the existing pipeline to incorporate secondary containment. This alternative was determined not to be feasible since mission requirements at the base dictate that the existing pipeline remain active during construction of the new pipeline. Another alternative considered was routing the new double-walled pipe next to the existing pipe (within three feet along the same alignment). However, this alternative was eliminated from further consideration due to setback requirements associated with working near an active fuel pipeline. Since the existing pipeline will need to contain fuel while installation of the new pipeline occurs, a minimum eight foot separation distance would need to be maintained between the two pipelines for safety reasons during construction. The eight-foot setback would provide adequate room for construction equipment, trench side-wall slopes, and other safety considerations during construction.

A third alternative considered involved replacing the existing underground pipeline with an above ground pipeline. However, the project area is located within the accident potential zone (APZ) near the end of the runway. This alternative was eliminated from further consideration for a number of reasons, including safety concerns associated with having an above ground fuel transfer pipeline located within the APZ. Additionally, the risk of damage to the above ground pipeline and potential release of fuel that could result from an aircraft accident or from a hurricane, tornado, or other significant storm event further supported elimination of this alternative from further consideration.

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A fourth alternative, the use of trucks rather than a pipeline to transfer fuel from the 6000 Area to the 400 Area and to aircraft requiring fueling/refueling, was eliminated due to the significantly increased safety risk associated with transferring fuel to and from individual trucks, the increased potential for traffic accidents involving fuel trucks, and the significant impact on air quality associated with the transfer operations. The operational requirements for delivering fuel by trucks was estimated based on flight operation fuel consumption information and the time needed to refuel the trucks. Data was taken from the Environmental Assessment of the F-22 Operational Squadron and T-38 Detachment Beddown at Tyndall AFB (U.S. Air Force, 2011c) and from the aircraft manufacturer's specifications to estimate the fuel consumption for the primary flight operations. Then, an estimate of the number of trips and time necessary to transfer the fuel to the trucks was made. The result, assuming 2,000 gallon fuel trucks are used, is that trucks would operate 12 hours per day, five days per week. Approximately 23 trips a day from the 6000 Area to the 400 Area would be needed over the 12 hour period. This is equivalent to 8,378 miles a year. **Table 2-1** includes the calculation details for reference.

Refueling by truck would be a significant change to the fueling operations and would have impacts to the fire safety plans, flight crash safety plans, and Munitions Storage Area transfer operations. The Florida Avenue corridor is a high traffic area and the addition of 23 roundtrip truck trips per day would have a significant impact on the traffic patterns and, thus, also increase the risk of traffic incidents along that section of roadway. Air emissions from the fueling operations (i.e., emissions and volatilization) would also significantly increase impacts to air quality. As such, this alternative was eliminated from further consideration.

Table 2-1. Fuel Transfer by Truck Estimate

Planes	Fuel Capacity (gallon)	Number of estimated sorties per year	No. of gallons of fuel used per year
F-22 Raptor	2,700	4,032	10,886,400
T-38 Talon	583	1,560	909,480
		total	11,795,880

Total Number of Gallons Used Per Year	Transfer Truck Capacity	Number of Trips Per Year to Deliver Fuel from 6000 Area to 400 Area	Total Number of Trips Per Day	Trip Mileage	Total Mileage for the Year
11,795,880	2,000	5,898	22.7	7,500	8,378

Hours of truck operation per year	Fueling rate to fill truck	Fill time	Number of Hours per Day of Operation + Fill time
837.78	150 GPM	23.3	12

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Assumptions:

1. One Flight will consume one full tank of fuel
2. No extra tanks are accounted for in calculation
3. Assumed average speed is ten mph
4. Fuel transfers will only be performed on weekdays (260 days per year)
5. Fuel transfer time plus 10 minutes to account for fuel line attachments and safety
6. No weather delays or safety stops have been included in operation time requirements.

As part of the planning and design effort and EA preparation, several alternative alignments were also reviewed to determine feasible routes for the new pipeline. The general alignment parameters included using existing easements and corridors where possible to reduce environmental impacts, selecting the shortest possible pipeline route, re-routing when possible to minimize interferences with utilities and environmental resources, avoiding groundwater use restriction areas, and avoiding Environmental Restoration Program sites. Initial alignments that did not meet these parameters were eliminated from further consideration in this EA.

2.4 DETAILED DESCRIPTION OF THE PROPOSED ACTION

The proposed action involves replacing the existing 7,500 linear foot underground fuel pipeline, used to transfer JP-8 from the 6000 Area to the 400 Area, with a new eight-inch, double-walled pipeline. Once the new double-walled pipeline is in-place and operational, the existing single-walled pipeline would be abandoned in-place. The new pipeline would include secondary containment, cathodic protection, and a leak detection system. The new pipeline would be installed underground between the 6000 Area and the 400 Area. At the 6000 Area and 400 Area, the new pipeline would be brought above ground and would connect to the existing piping and equipment in these areas. In addition to the transfer pipeline and connections, three 600 gallon per minute (gpm) filter separators, two 600 gpm transfer pumps, and ancillary systems for cathodic protection and leak detection would be included.

Three JP-8 transfer pipeline alignment alternatives, which form proposed action alternatives 1, 2, and 3, were identified as feasible pipeline routes for further evaluation in this EA. These are based on the conceptual design presented in the Draft BOD Report (Pond & Company, 2011), discussions with Air Force staff, and a visual site reconnaissance performed in October 2011 by the PIKA/Malcolm Pirnie JV, LLC team. Although the proposed action is the same (i.e., replacement of the existing JP-8 transfer pipeline with a new double-walled pipeline providing secondary containment), the three proposed action alternatives differ by the pipeline route (refer to **Figure 2-1**). The different routes are detailed in the subsections that follow. For all three proposed action alternatives, the transfer pipeline would originate within the 6000 Area, south/southeast of the bulk fuel storage tanks. It would be connected to the existing above ground piping in this area and would run above ground for a short distance within the area. The pipeline would then be brought underground prior to exiting the fenced and secure 6000 Area on the north side of Bayou Road. The length of new pipeline that would be required to replace the existing pipeline between the 6000 Area and 400 Area varies depending on the action alternative selected and ranges from 7,445 linear feet to 6,890 linear feet. At the 400 Area, the pipeline would run southwest underground beneath Fuels Avenue and into this fenced and secure area, where it would be brought above ground. It would run above ground for a short distance and would connect with the existing above ground piping in this area.

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2.4.1 PROPOSED ACTION ALTERNATIVE 1

Proposed action alternative 1 would initiate at the southern side of the 6000 Area. After crossing under Bayou Road, the pipeline would be installed on the south side of Bayou Road where it would extend southwest to Florida Avenue. At the intersection of Bayou Road and Florida Avenue, the pipeline would cross Florida Avenue and run south along the west side of Florida Avenue to a point approximately 1,850 feet south at the intersection with Fuels Avenue. At this point, the pipeline would turn west and would be located along the north side of Fuels Avenue within the right-of-way (ROW). The pipeline would continue in the northwest ROW along Fuels Avenue to a point just north of the 400 Area. From there, it would run underground under Fuels Avenue and into the fenced and secure 400 Area where it would be brought above ground. The total length of the pipeline would be 7,445 feet (1.41 miles).

2.4.2 PROPOSED ACTION ALTERNATIVE 2

Proposed action alternative 2 would also initiate at the southern side of the 6000 Area. The pipeline would be installed on the south side along Bayou Road and would extend southwest to Florida Avenue. At the intersection of Bayou Road and Florida Avenue, the pipeline would run south along the east side of Florida Avenue to a point approximately 1,850 feet south at the intersection of Fuels Avenue. At this point, the pipeline would turn west, crossing Florida Avenue, and would be located along the north side of Fuels Avenue within the ROW. The pipeline would continue in the northwest ROW along Fuels Avenue to a point just north of the 400 Area, where it would cross under Fuels Avenue and be brought above ground within the fenced and secure 400 Area. The total length of the pipeline would be 7,450 feet (1.41 miles).

2.4.3 PROPOSED ACTION ALTERNATIVE 3

As with the first two action alternatives, proposed action alternative 3 would initiate at the southern side of the 6000 Area. The pipeline would be installed on the south side along Bayou Road and would extend southwest to Florida Avenue. At the intersection of Bayou Road and Florida Avenue, the pipeline would cross Florida Avenue and run south along the west side of Florida Avenue for 150 feet to the intersection with Expeditionary Road. At this point, the pipeline would turn west and would be located within the unpaved road bed along the south side of Expeditionary Road. The pipeline would continue to the southwest along Expeditionary Road, 3,400 feet to a point just northwest of the 400 Area. The pipeline would turn southeast along an unnamed trail and run to a point on the north side of the 400 Area. The alignment would then cross under Fuels Avenue and be brought above ground within the fenced and secure 400 Area. The total length of the pipeline would be 6,890 feet (1.31 miles).

2.5 DESCRIPTION OF THE NO ACTION ALTERNATIVE

Under the no action alternative, Tyndall AFB would not install the proposed new double-walled JP-8 transfer pipeline that would have secondary containment, cathodic protection, and a leak detection system. Rather, the base would continue to use the existing single-walled pipeline. If the no action alternative is selected, the JP-8 transfer pipeline would not be upgraded and the Air Force would need to shut down the existing pipeline and would have to consider other alternatives to meet aircraft fueling needs to support the base's mission. The age and single-walled construction of the pipeline are such that failure to replace it would, over time, result in a pipeline failure and create the potential for significant environmental harm to an ecologically sensitive area. Leaks in the JP-8 transfer pipeline would require that the pipeline be taken out of

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service immediately. Failure to upgrade the transfer pipeline to a double-walled configuration increase the risk of significant impact to Tyndall AFB's mission and increase the potential for environmental harm that might result from a failure of the existing pipeline.

2.6 DETAILED DESCRIPTION OF OTHER ACTION ALTERNATIVES

In addition to the proposed action, cumulative actions within the ROI, including non-federal actions, are evaluated as part of this EA. An ancillary action associated with the proposed action would be removing the existing JP-8 transfer pipeline or abandoning it in-place once the replacement pipeline is in use. Because abandonment in-place is an acceptable method under current regulations for taking an existing pipeline out of service, it can be done efficiently along a linear pipeline route, it provides a safer option when working around the new pipeline and other utility crossings, and it is much less disruptive of airfield support operations, abandonment in-place is preferred over removal. As such, the existing pipeline would be abandoned in-place by permanently removing it from service per 49 CFR Part 129. Specifically, the abandoned pipeline would be physically separated from its source of JP-8 and, then, purged of the fuel and refilled with a non-flammable slurry mixture to render the pipe inert.

Other actions within the ROI include a number of proposed construction, demolition, and renovation projects for facilities and infrastructure at the base. These projects are identified in the General Plan (U.S. Air Force, 2009) and include construction of a new 120-person dormitory, a new six-bay hangar, visitors quarters and billeting, seven new facilities and one building with a parking lot at the Munitions Storage Area, an alternative drone launch system, as well as demolition of headquarters administrative offices, cadet quarters, and the family support center. These projects will support flight operations, but will not significantly impact resources at the base. Other actions summarized in the Environmental Assessment of the F-22 Operational Squadron and T-38 Detachment Beddown at Tyndall AFB (U.S. Air Force, 2011c) include projects that could change flight operations. These projects; however, would not significantly change the recent levels of flight operations at Tyndall AFB and would not significantly impact resources at the base. As such, other actions within the ROI, in conjunction with the proposed action, are not anticipated to create significant cumulative impacts on resources at the base.

2.7 COMPARISON OF ENVIRONMENTAL EFFECTS OF ALL ALTERNATIVES

Based on the information presented in the Draft BOD Report (Pond & Company, 2011), mapping resources reviewed, and the PIKA/Malcolm Pirnie JV, LLC team's site reconnaissance of the project area prior to development of this EA, there are wetlands, floodplains, protected species habitats, and Environmental Restoration Program sites that have been identified along the three transfer pipeline alignment alternative routes. Potential impacts were assessed based on a 30-foot-wide construction corridor, which was based on the need for a 15-foot area on either side of the pipe centerline to facilitate equipment staging and installation of the new pipeline. The resource data used for the comparison of environmental effects for this EA was compiled from existing mapping available at the time of the analysis, information included in the Draft BOD Report, and observations made during the site reconnaissance.

Both the 6000 Area and the 400 Area have Environmental Restoration Program sites where fuel-related contamination of soil and groundwater has been identified. All three pipeline alignment alternatives would need to be installed above ground in the vicinity of the soil and groundwater

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contamination. If contaminated soil or groundwater is encountered, it would need to be removed from the site for off-site treatment or disposal in accordance with regulatory requirements. Based on the current design, piping within these areas would be above ground and contaminated areas would be avoided.

The only protected species known to inhabit the area where the three alignment alternatives are located is the gopher tortoise (*Gopherus polyphemus*). However, because the Eastern indigo snake (*Drymarchon corais couperi*) is dependent on the gopher tortoise, it should be assumed to inhabit the areas where gopher tortoises are found. As these species may be present along the alignment alternatives, precautions would need to be taken and species re-located if encountered. Detailed analysis of these potential issues is described in Section 4 of this EA.

Action alternative 1 would travel along established ROWs of major roads and would include impacts to the herbaceous wetlands (0.4 acres) and stormwater swales (1.29 acres), primarily along Florida Avenue and Fuels Avenue. However, the impacts to these systems would be linear and only constitute a temporary impact since there would be no permanent conversion of wetland vegetation. The ground surface would be restored using the hydric soils excavated from the site immediately following pipeline construction.

Impacts to the floodplain associated with the wetlands and the one stream crossing would be temporary. The one stream crossing is associated with Florida Avenue, but impacts could be avoided by directional drill installation or by using the elevated road bed/shoulder as the installation point. Provided directional drilling or the elevated road bed/shoulder are used for installation during construction, installation of the pipeline along Florida Avenue would not have a significant impact on wetlands. Evaluation of recommended and/or required agency involvement, permit requirements, and recommended and/or required mitigation measures, if any, for the various pipeline installation options is detailed in Section 4 of this EA.

Action alternative 1 also passes within approximately 235 feet of an Environmental Restoration Program site DA046 (Buried Drums/North End of Runway). A Preliminary Assessment/Site Inspection is planned for the site; it is unknown at this time the extent of contamination, if any. In the event contaminated soil or groundwater associated with this site is encountered within the pipeline alignment, it would need to be removed from the site for off-site treatment or disposal in accordance with regulatory requirements.

Action alternative 2 would include impacts to the herbaceous wetlands (0.4 acres) and stormwater swales (0.28 acres), primarily along Fuels Avenue. This alternative also includes the same stream crossing along Florida Avenue as noted above for action alternative 1. However, the impacts associated with the stormwater swale are less on the east side of Florida Avenue because of recent improvements to the stormwater infrastructure. Alternative installation methods would eliminate the stream impacts and the wetland and stormwater impacts would be temporary since no permanent conversion of wetland vegetation would occur.

The easement on the east side of Florida Avenue, where action alignment 2 would be located, is congested with existing utilities including the operating fuel pipeline to be replaced. The construction of another fuel line next to an active fuel pipeline would require a setback of eight feet for safety reasons. This places the proposed pipeline within the paved road system of Florida Avenue. There are no additional options for installation on the east side of Florida Avenue.

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Action alternative 2 also passes within approximately 175 feet of Environmental Restoration Program site DA046 (Buried Drums/North End of Runway). As noted for action alternative 1, a Preliminary Assessment/Site Inspection is planned for the site, but it is unknown at this time the extent of contamination, if any. In the event contaminated soil or groundwater associated with DA046 is encountered within the pipeline alignment, it would need to be removed from the site for off-site treatment or disposal in accordance with regulatory requirements.

Action alternative 3 diverges from the Florida Avenue corridor, following Expeditionary Road. This alignment alternative crosses through an Environmental Restoration Program site, 6000 Area Landfill (LF005). It also crosses through gopher tortoise (*Gopherus polyphemus*) and Eastern indigo snake (*Drymarchon corais couperi*) habitat, forested uplands (1.26 acres), floodplain for 1,700 linear feet, and forested wetlands (0.77 acres). Soil and groundwater in the vicinity of LF005 have elevated levels of metals; contaminated soil and/or groundwater encountered during construction of the pipeline would need to be containerized and disposed off-site in accordance with regulatory requirements. Although no gopher tortoise burrows were observed within the corridor during the site reconnaissance, burrows are known to exist within 25 feet of the corridor. Due to their proximity, species surveys would need to be performed during the permitting phase of the project to confirm whether these species are within the proposed alignment corridor. The alignment also crosses forested upland and wetland habitats. This alternative would necessitate the removal of trees from approximately two acres of habitat and permanently converting them to herbaceous systems. The floodplain impacts would also have temporary impacts during construction but surface topography would be replaced to their previous condition to avoid permanent impacts.

Since biological resources (wetlands and protected species) and hazardous waste (Environmental Restoration Program sites) have been initially identified as potential issues that require further evaluation in this EA, they have been highlighted in this section. It should be noted that all of the resource issues identified in Section 1.4 are considered, evaluated, and discussed in detail in Sections 3 and 4 of this EA. Based on the evaluation conducted for this EA, aircraft operations, earth resources, water resources, infrastructure and utilities, hazardous materials, cultural resources, socioeconomic resources, and land use would not be negatively impacted by the proposed action. **Table 2-2**, on the following page, summarizes the anticipated impacts by action alternative.

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Table 2-2. Comparison of Alternative Impacts

Resources	Alternatives			
	1	2	3	No Action
Aircraft Operations				Ö _P
Noise	Ö _T	Ö _T	Ö _T	
Air Quality	Ö _T	Ö _T	Ö _T	
Safety and Occupational Health			Ö _T	
Geology				
Topography				
Soils				
Surface Water	Ö _T	Ö _T	Ö _T	
Groundwater				
Sanitary Sewer				
Potable Water				
Solid Waste Management				
Drainage				
Transportation Systems	Ö _T	Ö _T	Ö _T	
Electricity	Ö _{PM}	Ö _{PM}	Ö _{PM}	
Natural Gas				
Hazardous Materials				
Hazardous Waste	Ö _T	Ö _T	Ö _T	
Vegetation			Ö _{PM}	
Wildlife			Ö _{TM}	
Threatened and Endangered Species			Ö _{TM}	
Wetlands	Ö _{TM}	Ö _{TM}	Ö _{PM}	
Floodplains	Ö _{TM}	Ö _{TM}	Ö _{PM}	
Historical Resources				
Archeological Resources			Ö _{TM}	
Socioeconomic Resources	Ö	Ö	Ö	Ö _P

Ö	Positive Impact on Resource
Ö	Negative Impact on Resource
P	PERMANENT AND UNAVOIDABLE IMPACT
T	TEMPORARY IMPACT
M	MITIGATED IMPACT

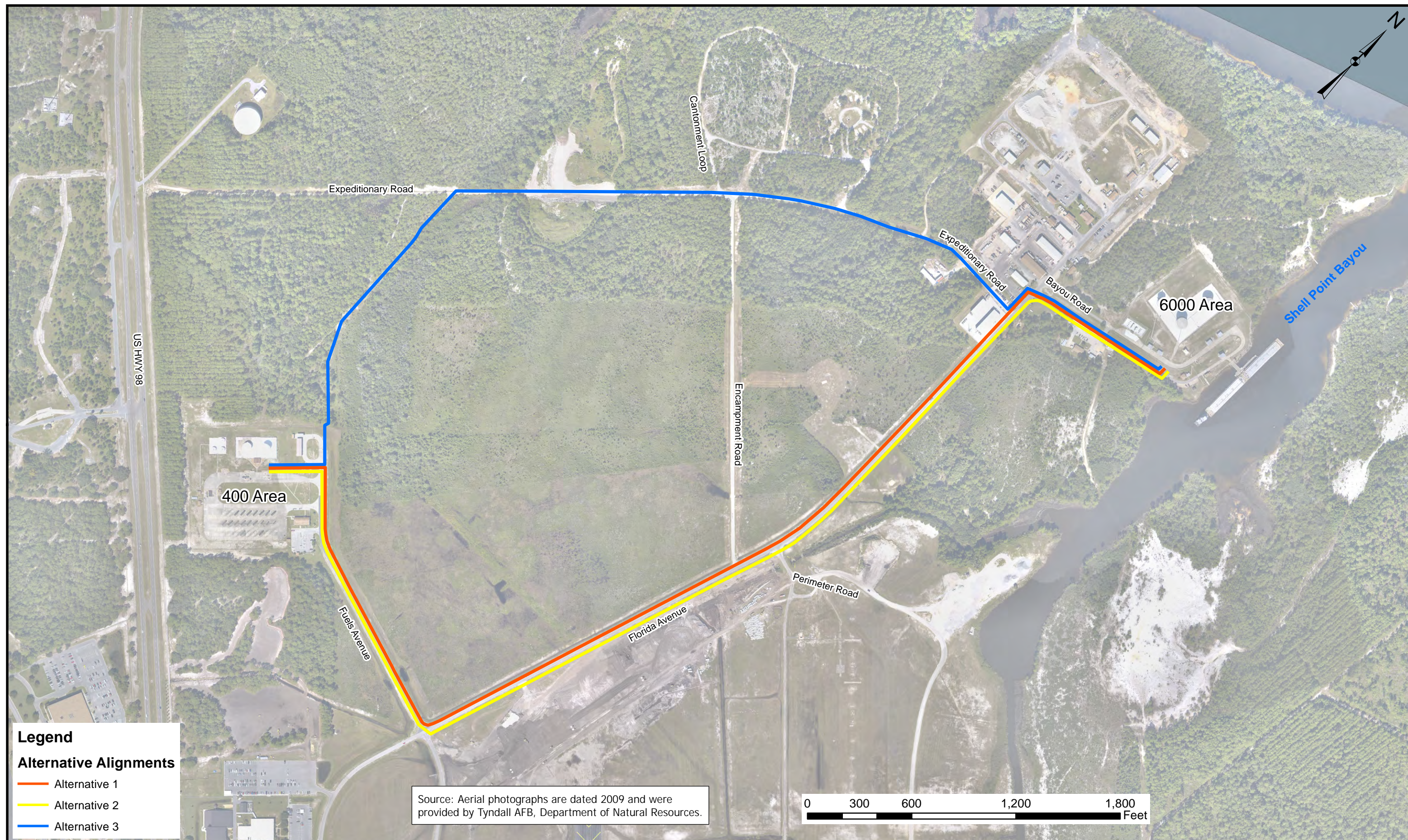
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2.8 IDENTIFICATION OF THE PREFERRED ALTERNATIVE

Based on the evaluation performed for this EA, the preferred action is selection/implementation of action alternative 1. This action alternative allows Tyndall AFB to continue using the existing JP-8 transfer pipeline to meet mission-specific fueling requirements while the new pipeline is installed. It also allows the Air Force to upgrade the fuel transfer system to meet current regulatory requirements, as well as the conditions established in the consent order (FDEP. 2010). This action alternative has the least permanent impacts on natural resources, avoids existing Environmental Restoration Program sites, and provides a pipeline route along established corridors in existing utility easements where there is room for the pipeline with minimal conflicts.

2.9 MITIGATION REQUIREMENTS MATRIX

Because the preferred action alternative 1 can be designed to avoid permanent wetland impacts, natural resource impacts, and areas with groundwater restrictions, no mitigation should be necessary. The preferred action alternative 1 passes within approximately 235 feet of an Environmental Restoration Program site, DA046 (Buried Drums/North End of Runway). A Preliminary Assessment/Site Inspection is planned for the site; it is unknown at this time the extent of contamination, if any. Although no protected species were observed in the alignment corridor, species-specific surveys had not been performed at the time this document was prepared. The potential need for species-specific surveys is addressed in Section 3 of this EA.



Final EA
ALTERNATIVE ALIGNMENT MAP

Tyndall Air Force Base (AFB)
Environmental Assessment (EA) for Replacement of JP-8 Transfer
Pipeline between 6000 Area and 400 Area

FIGURE 2-1
SEPTEMBER 2012

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SECTION 3. AFFECTED ENVIRONMENT

3.1 INTRODUCTION

This section presents the existing environment or baseline conditions for the biophysical resources that could potentially be affected by the implementation of the proposed action. This section is organized by individual resources, and includes descriptions of both the biological and physical portions of the ecosystems potentially impacted by the proposed action. Information is presented in this section to the level of detail necessary to support the conclusions made in Section 4, Environmental Consequences.

3.2 INSTALLATION LOCATION, HISTORY, AND CURRENT MISSION

Located in Bay County in the Florida panhandle, Tyndall AFB is approximately eleven travel miles southeast of Panama City. Tyndall AFB is located on a peninsula and encompasses more than 29,000 acres situated between the Gulf of Mexico and Saint Andrew Bay (see **Figure 1-1**). The base is about eighteen miles long, three miles wide and is surrounded by water on the north, west, and south. The base's transient barrier islands, Crooked Island West and East, form Saint Andrew Sound and Shell Island acts as a Gulf barrier island, which separates the Gulf of Mexico from Saint Andrew Bay.

Originally named Tyndall Field, the base commenced operations on 6 December 1941 to support gunnery training for World War II. After a three month closure in 1946, Tyndall Field became Tyndall AFB as part of the Tactical Air Command's Air University. In September 1950, the base was designated as the U.S. Air Force Pilot Instructor School in the Air Training Command unit. The mission at Tyndall AFB changed again when it became part of the Air Defense Command in September of 1957, and it remained the mission until October 1979 when the base was reassigned to the Tactical Air Command. The current host mission began in July 1981 with the activation of the 325th Fighter Wing under the AETC.

Although Tyndall AFB is an AETC base, other major associate units also maintain organizations at the base. These tenant organizations include: AFNORTH; Air Force Civil Engineer Support Agency; Air Force Research Laboratory; 16th Electronic Warfare Squadron, Detachment 1; 372nd Training Squadron, Detachment 4; 702nd Computer Systems Squadron and System Support Facility; 823rd Red Horse Squadron, Detachment 1; Airey Non-Commissioned Officer's Academy; and 53rd Weapons Evaluation Group.

3.3 DESCRIPTION OF THE AFFECTED ENVIRONMENT

Tyndall AFB serves as a center for training the Air Force's F/A-22 Raptor, as well as provides training for new and continuing student pilots, and pilots transitioning from other airframes. Training using both small and full-scale drones also takes place. A variety of other support and associated activities occur on base, as well. For example, JP-8 fueling operations for aircraft are an important component supporting the base's mission. At the base, bulk fueling operations

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occur primarily in two areas, the Bulk Fuel Storage Area (6000 Area) and the Refueling Operations Area (400 Area).

The 6000 Area is located in the northwestern portion of the flight operations area at Tyndall AFB. Bulk fuels are primarily received from barges that dock in Shell Point Bayou (also known as Fred Bayou) and the fuel is stored in bulk fuel storage tanks at the 6000 Area. The 6000 Area also has the capability to receive fuel by truck. The facility consists of three above ground storage tanks. The JP-8 fuel is currently transferred from the 6000 Area to the Refueling Operations Area (400 Area) by a six-inch diameter, single-walled fuel transfer pipeline that runs southwest along Bayou Road, south/southwest along Florida Avenue, and northwest along Fuels Avenue to the 400 Area. Transfer pumps are used to transfer the fuel via the pipeline. At the 400 Area, fuel is stored in above ground storage tanks. Airfield support vehicles and a pipeline are used to supply fuel from the 400 Area to aircraft on the flight line.

3.3.1 AIRCRAFT OPERATIONS

Tyndall AFB hosts the 325th Fighter Wing, which includes a squadron of F/A-22 Raptor aircraft. The 325th Fighter Wing trains pilots to fly the F/A-22 Raptor aircraft. Four new facilities have been constructed to support this mission. By the end of 2012, the 325th Fighter Wing will have two squadrons flying the F/A-22 aircraft. There is also a squadron of F4 Phantom aircraft used as full scale drones. Replacement of the F4 aircraft is planned in the future for the drone squadron.

3.3.2 NOISE

Airfield operations are the primary sources of noise at Tyndall AFB. Other noise sources include vehicular traffic, training activities, and intermittent construction. During periods of no flying activity, noise results primarily from ground traffic movement, occasional construction, and similar sources. This noise is comparable to sounds that occur in typical communities. It is during periods of aircraft ground or flight activity that the noise environment changes. Existing noise levels are typical of an urban residential area near a major airport.

The noise guidelines established for land use planning at Tyndall AFB are essentially the same as those published by the Federal Interagency Committee on Urban Noise in the June 1980 publication, *Guidelines for Considering Noise in Land-Use Planning and Control*. Based on these guidelines, the maximum acceptable noise level for most residential land uses is considered to be 65 decibels per Day-Night Average Sound Level (DNL).

The most noise-sensitive areas within Tyndall AFB are the military housing neighborhoods of Felix Lake, Wood Manor, Redfish Point, Bay View, and Shoal Point. The waters of Saint Andrew Bay and East Bay provide a natural noise buffer for the off-base communities that surround the Tyndall AFB peninsula and, therefore, construction noise will not be considered for other than local project areas.

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3.3.3 AIR QUALITY

The U.S. Environmental Protection Agency (USEPA) has established National Ambient Air Quality Standards (NAAQS) pursuant to Sections 109 and 301(a) of the CAA. These standards, expressed in micrograms per cubic meter ($\mu\text{g}/\text{m}^3$), establish safe concentration levels for each “criteria” pollutant. NAAQS have been set for six criteria pollutants: carbon monoxide; nitrogen dioxide; ozone; sulfur oxides, measured as sulfur dioxide; lead; and two types of particulate matter defined as particulate matter less than or equal to 10 microns in aerodynamic diameter and particulate matter less than or equal to 2.5 microns in aerodynamic diameter.

The CAA divides the U.S. into attainment and nonattainment areas, usually by county or Metropolitan Statistical Area. Areas not meeting NAAQS are designated nonattainment for the specific pollutant. Bay County, the county in which Tyndall AFB is located, is currently designated as an attainment area (meets the USEPA air quality standards for all criteria pollutants [60 Federal Register 62748, December 7, 1995]). A Conformity Determination is not required since Bay County is designated as “attainment.” (U.S. Air Force, 2003).

Tyndall AFB operates under a minor air operation permit issued by the State of Florida in 2010. The following five sources of air emissions at Tyndall AFB are regulated under this permit: bulk fuel storage tanks (6000 Area and 400 Area), fuel fill stands (aircraft refueler truck fill), jet engine testing (hush houses and engine shop), paint booths (seven separate units), and boilers (all units greater than 1.0 million British thermal units per hour).

3.3.4 SAFETY AND OCCUPATIONAL HEALTH

The action alternatives would require workers to be exposed to typical construction conditions (e.g., heat, solar radiation, wildlife, etc.) in Florida. All of the alternatives, except the No Action alternative, would also require working in and around heavy machinery. Alternative 3 would require some tree removal operations, which in turn would require working in and around the associated tree removal equipment. All of the action alternatives traverse environmental restoration program and/or petroleum, oil, and lubricant (POL) sites with known soil and groundwater contamination issues. Special OSHA requirements, including HAZWOPER 40-hour training, would be required to work in these areas if contaminated soil or groundwater is encountered during the pipeline construction.

3.3.5 EARTH RESOURCES

3.3.5.1 Geology

Tyndall AFB is underlain by unconsolidated depositional sands and clayey sands to approximately 110 feet below land surface (bls). This material is moderately permeable and is underlain by the Intracoastal Formation, which is primarily composed of fossils, quartz sand, and calcium carbonate grains cemented by crystalline calcite and clay. The upper portion of this formation is relatively impermeable, while the lower portion is highly permeable and extends down to approximately 330 feet bls. The Intracoastal Formation is underlain by highly permeable limestone that extends below 600 feet bls in some areas.

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3.3.5.2 Topography

Tyndall AFB is located within the East Gulf Coastal Plain physiographic province, which in general is relatively topographically flat, as shown in **Figure 3-1**. Elevations range from sea level along the coastline to approximately 30 feet above mean sea level along a ridge that generally runs the length of the peninsula following U.S. Highway 98. This ridge divides the base into the Beach Dunes and Wave-Cut Bluffs physiographic region to the west and the Flatwoods Forest physiographic region to the east where the project area is located.

3.3.5.3 Soils

The base's coastal environment consists of sand dunes, beaches, bayous, and tidal marshes. The interior portions of the base consist of moderately well drained, gently sloping uplands, poorly drained flatwoods, and wetlands. The base soils are characteristically sandy, acidic, and moderately to highly permeable. General soil associations and detailed soil types at Tyndall AFB have been identified by the U.S. Department of Agriculture (USDA), Natural Resources Conservation Service (NRCS) Soil Survey for Bay County, Florida (USDA, 1984). Based on the NRCS Soil Survey Geographic (SSURGO) soil map prepared for Bay County, five general soil associations, each consisting of numerous detailed soil types, are present at Tyndall AFB. The five major soil associations at Tyndall AFB are described below:

- Kureb-Resota-Mandarin: This soil association occurs on the sandy ridges throughout the northernmost part of the base and on the barrier islands. It includes soils that are nearly level to gently sloping; somewhat poorly drained to poorly drained; and sandy to a depth of 80 inches or more with some having organic stained sandy layers.
- Hurricane-Chipley-Albany: This soil association occurs in the flatwoods of the southeastern part of the base and includes soils of both upland and wetland habitats. Soils within this association are nearly level to gently sloping; somewhat poorly drained; and sandy throughout or sandy to a depth of 40 inches or more and loamy below.
- Pottsburg-Leon-Rutlege: This soil association occurs in the lower flatwoods that cover much of the base peninsula. It includes soils that are nearly level; poorly drained or very poorly drained; and sandy to a depth of 80 inches or more with some having organic stained layers.
- Rutlege-Allanton-Pickney: This soil association occurs in depressional areas and poorly defined drainageways in the southernmost part of the base. It includes soils that are nearly level or depressional; poorly drained or very poorly drained; and sandy to a depth of 80 inches or more with some having organic sandy layers.
- Bayvi-Dirego: This soil association occurs in the tidal marshes along East Bay in the east central part of the base. It includes soils that are nearly level; very poorly drained; and sandy to a depth of 80 inches or more or organic to a depth of 14 to 50 inches and sandy below.

The proposed action alternative alignments pass through the soil types listed in **Table 3-1** on the following page. The soil types are also illustrated on **Figure 3-2**.

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Table 3-1. Project Area Soil Types

Soil Map Symbol	Soil Type Name	Soil Association	Drainage Class	Alternative
13	Leon sand	Kureb-Resota-Mandarin	Poorly drained	1, 2, 3
22	Pamlico-Dorovan complex	Pottsburg-Leon-Rutlege	Very poorly drained	1, 2, 3
27	Mandarin sand	Kureb-Resota-Mandarin	Somewhat poorly drained	1, 2, 3
29	Rutlege sand	Rutlege-Allanton-Pickney	Very poorly drained	1, 2, 3
30	Pottsburg sand	Hurricane-Chipley-Albany	Poorly drained	1, 2
40	Arents, 0 to 5 percent slopes	Urban Land	Somewhat poorly drained	1, 2
42	Resota fine sand, 0 to 5 percent slopes	Kureb-Resota-Mandarin	Moderately well drained	3
43	Urban land	Urban Land	Somewhat poorly drained	1, 2, 3
47	Pits	Urban Land	Moderately well drained	3

3.3.6 WATER RESOURCES

3.3.6.1 Surface Water

Tyndall AFB is located in the Saint Andrew Bay watershed, part of the Choctawhatchee River Basin. The surface water bodies that surround the Tyndall AFB peninsula are Saint Andrew Bay, East Bay, Saint Andrew Sound, and the Gulf of Mexico. These systems are hydrologically connected to Choctawhatchee Bay to the west and the Apalachicola River Basin to the east, via the Intracoastal Waterway. Numerous tidal bayous exist along the northern coastline of Tyndall AFB. The southern coastline, with the recently combined Shell Island and Crooked Island West, form a barrier island system with Crooked Island East that separates the inhabited portions of Tyndall AFB from the open waters of the Gulf of Mexico.

The coastline is dominated by estuarine habitats, but Tyndall AFB has many freshwater lakes and wetland habitats, as well. Some were artificially created, while others, such as coastal dune lakes, developed naturally as a result of coastal land processes. There are some 45 intra-dune waterbodies. Salinities and water levels of some of these systems vary dramatically. According to habitat mapping developed through the Department of Natural Resources (U.S. Air Force, 2010), there are approximately 66 small fresh waterbodies on the base. They are generally smaller than two acres and shallow (< five feet deep). The largest natural lake on Tyndall AFB is the inland freshwater Felix Lake covering 33 acres.

In general, water drains northward in areas north of U.S. Highway 98 and southward in areas south of U.S. Highway 98. The project area is drained to the east by Shell Point Bayou and to the north by unnamed tributaries of East Bay.

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3.3.6.2 Groundwater

There are three groundwater aquifers that underlie Tyndall AFB. From land surface, the closest source of groundwater is the surficial aquifer. The surficial aquifer is composed of unconsolidated, poorly compacted, siliciclastic deposits and ranges in thickness from 50 to 100 feet bls. Depths to surficial groundwater at the base range from at land surface in wetlands to 15 feet bls in the upland sandy scrub. The surficial aquifer is not used as a source of potable water at the base. In surficial aquifers, the groundwater continuously moves along the hydraulic gradient from areas of recharge to places of discharge, which at Tyndall AFB are the surrounding bays and Gulf of Mexico. The surficial aquifer is recharged locally and fluctuates with the water-table in response to drought or rainfall.

The Intermediate Confining Unit is a low permeability layer that separates the surficial aquifer from the deeper Floridan Aquifer. This confining unit consists primarily of fine-grained siliciclastic deposits interlain with carbonate strata. At Tyndall AFB, the Intermediate Confining Unit ranges in thickness from approximately 200 to 250 feet. The Floridan Aquifer consists primarily of limestone and dolomite and is approximately 1,100 feet in thickness. The upper portions of the Floridan Aquifer provide potable water for most of the Florida Panhandle. Some of the potable water used by Tyndall AFB is pumped from the Floridan Aquifer using permitted wells. Water from these wells is filtered and chlorinated prior to use. Most of the potable that is used by the base is supplied by Bay County Utilities, which uses Deer Point Lake as its main source.

3.3.7 INFRASTRUCTURE / UTILITIES

The following sections regarding utilities are based on the information provided in the Final Infrastructure Investment Plan for Tyndall AFB. The plan is part of the Air Force Utilities Sustainment, Restoration and Modernization Program and provides an assessment of the future maintenance and modifications (U.S. Air Force, 2007).

3.3.7.1 Sanitary Sewer

Tyndall AFB provides wastewater services for the buildings on-base. The wastewater collection system consist of building sewers, laterals, mains, manholes, cleanouts, lift stations, oil water separators, grease traps, and septic tanks. The majority of the wastewater collection system infrastructure dates from the original construction of the base in the 1940s and 1950s, although it has periodically been upgraded and expanded. There are 80 wastewater lift stations in use to convey wastewater from the buildings on base to the Bay County Advanced Wastewater Treatment facility located in the northernmost portion of the base. About 70 lift stations are primarily used to service individual buildings or small groups of buildings. No hydraulic capacity study has been performed for the wastewater collection system, nor is there flow or run-time monitoring of the primary lift stations. It is, therefore, difficult to determine if the capacity of the collection system or lift stations is adequate for incoming flows. Based on the low number of reported overflows, it is assumed that the current level of occupation is adequate.

3.3.7.2 Potable Water

Tyndall AFB purchases potable water from Bay County. Bay County's water supply comes from Deer Point Lake, a 5,000 acre impoundment of the Saint Andrew Bay system. In addition

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to the Bay County supply, Tyndall AFB has 27 wells. Four are used for emergency potable water backup and six for irrigation purposes. Of the remaining 17 wells; six are used for potable water and 11 for other water supply at various buildings located in isolated locations on the base. These isolated locations are greater than one mile from the project area and include the Alert Area, Ammo Area, Wright Lab, and Silver Flag. The depths of these wells, which range from 440 feet to 693 feet bls, connect them to the Floridian Aquifer.

According to the Infrastructure Investment Plan, potable water from Bay County enters the base through a 16-inch pipeline that runs across the Dupont Bridge. The water then flows to a five-million-gallon ground-level storage tank and booster pump station that is operated and maintained by Bay County; the pump station was constructed by Bay County on Air Force property leased by the County. Water from the five-million-gallon tank is pumped through a County-owned transmission main to Tyndall AFB and eastward to Mexico Beach. The base taps into Bay County's 16-inch line at three locations along U.S. Highway 98. The water flows directly into the Tyndall AFB's water distribution system through pressure-reducing valves and into two of the base's elevated water storage tanks. Tyndall AFB does not provide any treatment to the water received from Bay County; primary and secondary standards are the responsibility of Bay County.

The Tyndall AFB potable water distribution system was constructed beginning in May 1941. The 1940s-era water system infrastructure has periodically been upgraded and expanded to handle increased system demands. The Tyndall AFB water distribution system currently supplies water for residential, industrial, and fire-fighting purposes. It serves a population of approximately 8,000. The Tyndall AFB elevated water storage tanks provide operational flexibility during the peak-flow demand periods exerted on the system, equalizing system pressure, and providing emergency storage capacity. The elevated tanks hold 250,000 gallons and 150,000 gallons, respectively, and provide Tyndall AFB with a total water storage capacity of approximately 400,000 gallons.

Facilities, such as the refueling operations and depot areas, require fire suppression systems that adequately meet the need and risk of operations to supply fuel to flight operations. Fire demand requirements for specific facilities, including the 6000 Area and 400 Area, are supported by three additional storage tanks and pump stations, with a total capacity of 781,000 gallons. Water to these tanks is provided through the potable water distribution system. Furthermore, emergency requirements are supported by two wells with a pumping capacity of 600 gpm each. The base has standby chlorine gas to disinfect the well water, if the emergency water source is used. The capacity for the designed population and emergency fire use has been accounted for in the current water system. A planned project to replace potable water used for irrigation purposes with reclaimed water will return up to 40 percent of the designed capacity to the system and, thus, ensure availability of potable water through the system for future uses.

3.3.7.3 Solid Waste Management

The following factors were considered in evaluating potential impacts to solid waste management: (1) the degree to which the proposed action would affect the existing solid waste management program at Tyndall AFB, and (2) the impact on the capacity of the area landfills. While construction associated with the proposed action would generate a limited amount of solid waste during the actual construction of the replacement JP-8 transfer pipeline, this waste would

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not significantly increase the amount of solid waste generated at the base or stress the existing waste disposal operations at Tyndall AFB. The existing JP-8 transfer pipeline would be abandoned in place, a common practice for underground utilities. This would not generate additional construction debris and, therefore, reduces the need for disposal of pipeline materials. Following construction, the proposed action would not generate solid waste. Additionally, the longevity of existing landfill resources is estimated to be eighty years under current conditions, which includes an estimated eight million people visiting Bay County each year. The proposed action is not anticipated to have a significant impact on the lifespan of the current landfill operations in the county.

3.3.7.4 Drainage

In general, water drains northward in areas north of U.S. Highway 98 and southward in areas south of U.S Highway 98. The same generally holds true on the east and west sides of the base. The base's stormwater system consists primarily of roadside ditches in undeveloped areas and underground piping in developed areas. Based on the 2004 Tyndall AFB General Plan, surface drainage is adequate in most parts of the base due to the high permeability of the soils. The project area is dominated by wetland and stormwater features with herbaceous grasses that drain north and northeast to East Bay via unnamed creeks and to Shell Point Bayou.

3.3.7.5 Transportation Systems

The roads on Tyndall AFB are primarily base-owned systems, with the exception of the 18.3 miles of U.S. Highway 98 that cross through the base. There are over 56 miles of paved roads and 81 miles of unpaved roads on the base. The paved systems carry all commuter vehicles on and off base. All action alternatives are planned to be within the roadside easements for the predominant length of the project (refer to **Table 3-2**). All three action alternatives would use the corridor on the south side of Bayou Road. Alternatives 1 and 2 would also utilize the Fuel Avenue and Florida Avenue corridors, while Alternative 3 would be within the unpaved Expeditionary Road corridor. In the short term, there would be construction delays to localized traffic for each action alternative. In the long term, there would be no lasting effects on traffic patterns or road systems.

Table 3-2. Transportation System Usage and Crossings

	Alignment Total Length (feet)	Length of Alignment NOT along Road Corridor	Length of Alignment along Road Corridor	Number of Road Crossings
Alternative 1	7,445	352	7,093	3 - Base Roads
Alternative 2	7,450	352	7,098	3 - Base Roads
Alternative 3	6,900	2,024	4,876	2- Paved Roads 1-Unpaved Road 1-Trail

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3.3.7.6 Electricity / Natural Gas

Electricity

Tyndall AFB purchases electricity from Gulf Power Company (GPC). The power is delivered through a GPC-owned electrical substation on the west end of the base, at Military Point. Power enters the GPC substation by two 46-kilovolt (kV) lines that were installed in 1961. The GPC substation steps the voltage down to the 12.47-kV distribution level. Each 46-kV line is capable of carrying 25 megawatts and feeds two separate 20-megavolt-ampere transformers. GPC supplies adequate power to support the electricity demands of the base (U.S. Air Force, 2007) and no new projects have been recommended to increase or improve the supply of power to the base by GPC.

The existing electrical system infrastructure at Tyndall AFB was initially installed in the 1940s, 1950s, and 1960s. The construction is predominantly overhead using wood poles. All the base-owned feeders are operated as radial feeders. The base's 12.47-kV electrical distribution system consists of approximately 159 wire miles of primary conductor with approximately 95% overhead and 5% underground in conduits. Although major renovation, restoration, and modernization projects have taken place throughout the last 40 years; the electrical system will need additional renovation projects within the next five years to replace the aging components on base.

Currently, JP-8 is pumped from the 6000 Area through the existing JP-8 transfer pipeline to the 400 Area using two 600 gpm fuel transfer pumps. The pumps operate independently, one at a time. If the action alternative is selected, the replacement JP-8 transfer pipeline project would include installation of two new fuel transfer pumps. These pumps would be designed such that they would be able to run simultaneously (Pond & Company, 2011). Although the support equipment is adequately sized to serve the new pump motors, the existing single feeder electrical power service to the pumps is not adequate to support both pumps running simultaneously. As such, the existing single feeder electrical power service to the pumps would need to be upgraded as part of the replacement project. Overall, the action alternative is expected to be comparable or have slightly less electrical demand in comparison with the existing JP-8 transfer system. Replacement of the existing pipeline and pumps could result in a decreased electrical demand because a larger diameter pipeline is specified that would reduce flow rate losses due to friction in the pipeline, and new pumps would be installed that would replace worn pump and motor components that require more energy to run.

Natural Gas

Peoples Gas, a division of TECO Energy, Inc., provides odorized natural gas to Tyndall AFB through a pipeline that enters the base along the Du Pont Bridge. A regulator station reduces the pressure from 120 pounds per square inch gauge (psig) to 55 psig before distributing the natural gas through the distribution system to base facilities. The Tyndall AFB natural gas distribution system consists of approximately 24 miles of buried piping, ranging in size from 0.75-inch service laterals to six-inch gas mains. Natural gas is distributed to approximately 218 facilities (some facilities have more than one connection), not including the housing facilities. The system is mostly looped, allowing gas to back-feed from different directions. The system was originally installed in the 1950s and 1960s. The Main Base's facilities are provided with natural gas at 55 psig. Each facility's service regulator further reduces the pressure from 8 to 12 inches of water or to the pressure required to meet specific equipment requirements within the facility.

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According to the civil survey completed by Pond & Company (Pond & Company, 2011), there are no natural gas utilities within the project area.

3.3.8 HAZARDOUS MATERIALS AND WASTES

3.3.8.1 Hazardous Materials

Hazardous materials would not be utilized in significant amounts to cause environmental hazards or impact environmental resources.

3.3.8.2 Hazardous Waste

The replacement of the JP-8 transfer pipeline is not expected to generate hazardous waste, unless contaminated soil or groundwater is encountered during the construction process. The only action alternative that traverses an Environmental Restoration Program site is alternative 3. All of the action alternatives would traverse the POL sites at the 6000 Area and 400 Area. While POLs are not considered hazardous waste, contaminated soil or groundwater would need to be containerized and removed from the site for proper treatment or disposal, as would a hazardous waste. Provisions in the replacement pipeline design would need to be made to limit the excavation depth at the 6000 Area and 400 Area. For example, the JP-8 transfer pipeline would need to be designed to be above ground in these secure areas to avoid excavation in areas of known contamination. Additionally, the depth of the pipeline support structure footers would need to be limited to avoid areas of known soil and groundwater contamination. These provisions are already included in the JP-8 replacement pipeline project design documents (Pond & Company, 2011). The Environmental Restoration Program and POL sites are discussed in the section that follows. Waste generated from construction activities (e.g., trenching for pipe installation) within the Environmental Restoration Program or POL sites will require disposal in accordance with Tyndall AFB's hazardous waste disposal protocols under CERCLA.

3.3.8.3 Environmental Restoration Program and Petroleum, Oil, and Lubricant Sites

There are three active Environmental Restoration Program sites (i.e., LF005, OT029, and DA046) and two areas with POL sites (i.e., 6000 Area and 400 Area) within the project area where the JP-8 replacement pipeline (depending on the alternative alignment selected) would be located. The two POL sites at the 6000 Area include SS014 and TA523. Within the 400 Area tank farm exists Environmental Restoration Program site TU213 (Area 400), which includes two areas of study: the 411 site and the 413 site. Refer to **Figure 3-3** for the locations of these sites relative to the project area. The following subsections briefly describe the Environmental Restoration Program and POL sites noted above, as well as the known soil and groundwater contaminants associated with each site.

The 6000 Area Landfill (LF005) is located on Expeditionary Road, west of Florida Avenue. The site was used as a debris landfill from approximately 1945 to 1965 and encompasses approximately 4.3 acres. It reportedly contains machine parts, batteries, and empty containers. Both soil and groundwater at the site have elevated levels of metals; however, it has not been determined if these levels are a result of naturally occurring metals or a result of the disposal activities at the landfill. Additional investigation of the site is planned.

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The Shell Point Bayou site (OT029) includes Shell Point Bayou and its feeder creeks and wetlands, as well as upland potential source areas located adjacent to the bayou. The upland source areas include two debris landfills, dredge spoil areas, and a former pesticide storage area. Contaminants of concern include pesticides and metals. Soil, surface water, sediment, and groundwater at the site may be contaminated. Investigations at this site are on-going.

The Buried Drums/North End of Runway site (DA046) is located east of Florida Avenue and south of Perimeter Road. At this location, eight buried drums containing roofing tar were found during excavation of a drainage pipe. The drums were removed for off-site disposal. Additional investigation at the site is planned to determine if soil or groundwater has been impacted.

The 6000 Area tank farm is located on Bayou Road on the flight line side of Tyndall AFB. The area is used to store diesel, unleaded gasoline, and JP-8. The 6000 Area has an associated groundwater plume (site TA523) with an on-going study. The 6000 Area tank farm also contains site SS014 (POL Area A Sludge Trenches) that has been investigated and closed by the State of Florida.

The 400 Area tank farm, including Environmental Restoration Program site TU213, is located on Fuels Road on the flight line side of Tyndall AFB. The area is used to store diesel, unleaded gasoline, and JP-8. The 400 Area has two separate investigation areas that include the former abandon-in place underground storage tank (the 411 site) and an active oil water separator (the 413 site). Groundwater monitoring is routinely conducted at the sites and contaminants of concern include petroleum constituents.

The above descriptions detail the existing conditions at each site in the vicinity of the proposed project. These sites contain contamination that may have a direct impact on worker safety and environmental resources. Alternatives 1 and 2 would not go through the Environmental Restoration Program sites; however, both would traverse portions of the POL sites at the 6000 Area and 400 Area. Alternative 3 would cross through the LF005 site; which has soil and groundwater with elevated levels of metals. As with alternatives 1 and 2, alternative 3 would also traverse portions of the POL sites at the 6000 Area and 400 Area. Construction within areas of soil and/or groundwater contamination (e.g., excavation and/or dewatering during pipeline installation) would require disposal of the contaminated soil or groundwater as noted in Section 3.3.8.2.

3.3.9 BIOLOGICAL RESOURCES

3.3.9.1 Vegetation

At the beginning of the 19th century, the dominant habitats at what is now Tyndall AFB, were longleaf pine flatwoods, sandhills, and savannahs (U.S. Air Force, 2006). Longleaf pine communities are dependent on frequent growing-season fires for their propagation and habitat composition. In communities where wildfires occurred infrequently, longleaf pine has been replaced by slash pine as the dominant canopy species, and a thick shrub layer of palmetto and gallberry out compete the wiregrass species as ground cover.

Due to large timber operations at Tyndall AFB and in Bay County, the forests on and adjacent to the base have been harvested on multiple occasions. In 1960, reforestation activities were begun

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on a large scale to get the forest resource into production, and extensive commercial plantations of slash, longleaf, and sand pine were established throughout the base.

Most of Tyndall AFB's land has been cleared of native vegetation. In general, uplands have been converted to slash pine commercial plantations, and uplands with deep, sandy soils have been planted with sand pine, the species that naturally occurs as secondary growth on these sites in the absence of fire and with a lack of longleaf pine seed source. Uplands with native longleaf pines have been identified and these areas are being enhanced by additional plantings to enhance these longleaf communities.

For this EA, the Florida Land Use, Cover, and Forms Classification System (FLUCCS) is used to describe natural communities at Tyndall AFB. The FLUCCS land use designations are summarized in **Table 3-3** and illustrated on **Figure 3-4** for reference. This system was utilized because it enables a more accurate differentiation of Tyndall AFB habitats and provides a more detailed means for analysis of natural communities and associated potential natural resource impacts. This land use classification system is also routinely used by federal and state agencies as part of natural resource reviews. Currently, the project area consists of the following habitats: herbaceous dry prairie, forested pine-mesic oak, xeric oak, live oak, hardwoods, conifer plantations, bay and titi swamps, slash pine swamp forest, streams, and freshwater marshes. Transportation corridors, utilities and associated facilities, stormwater conveyances, and buildings are also located within the project area. Refer to **Figure 3-4** for the natural communities and land uses in the project area.

Table 3-3. FLUCCS Land Uses within the Pipeline Corridors

FLUCCS Code	Land Use Description	Land Use Group
1462	Oil and Gas Storage	High Octane Fuels
3100	Herbaceous (Dry Prairie)	Herbaceous (Dry Prairie)
4140	Pine - Mesic Oak	Upland Coniferous Forests
4210	Xeric Oak	Upland Hardwood Forests
4360	Pine and Hardwoods	Upland Hardwood Forests
4410	Coniferous Plantations	Tree Plantations
5100	Streams and Waterways	Waterway
5120	Stormwater Conveyance	Waterway
6110	Bay Swamps	Wetland Hardwood Forests
6140	Titi Swamps	Wetland Hardwood Forests
6417	Freshwater Marsh with Shrubs, Bushes and Vin	Freshwater Marsh
8110	Airports	Transportation
8142	Roads and Highways	Transportation
8350	Solid Waste Disposal	Utilities

Each action alternative utilizes the road easements for the majority of the alignment. The below ground installation within the road easements, where trees are not present, is why the majority of the impacts are only temporary to the herbaceous ground cover or shrubs. Alternative 3 traverses a planted pine forest and would incur losses to trees along this section. This would result in a permanent impact to vegetation.

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3.3.9.2 Wildlife

Tyndall AFB has a diverse game and non-game animal population. Large, unfragmented, and diverse habitats support this large wildlife population. The principal game and non-game species include bob-white quail, gray squirrels, marsh rabbits, mourning dove, old field mice, white-tail deer, wild turkeys, black bear, and wood ducks. Availability to diverse aquatic systems also provide for healthy game fish populations, such as; trout, largemouth bass, catfish, and sunfish species.

3.3.9.3 Threatened and Endangered Species

A total of 20 taxa of plants and 31 taxa of listed animals are known to inhabit or use the immediate surroundings of Tyndall AFB. This includes 11 species of reptiles, 14 species of birds, one species of fish, and four species of mammals. For the purposes of this EA, a federally listed plant or animal is a species listed as endangered, threatened, or species of management concern by the U.S. Fish and Wildlife Service (USFWS). A state listed plant or animal species is one listed as endangered, threatened, or species of special concern plant species by the Florida Department of Agriculture and Consumer Services (FDACS) or animal species by the Florida Fish and Wildlife Conservation Commission (FWC), or a species of concern by the Florida Natural Areas Inventory (FNAI). The list of species and their respective listed status for Tyndall AFB has been included in **Appendix A** for reference.

Species of concern within the project area include the gopher tortoise, Eastern indigo snake, Florida black bear, and Gulf Coast lupine. However, the only protected species known to inhabit the action alternative alignment corridors is the gopher tortoise (*Gopherus polyphemus*). The gopher tortoise is a terrestrial turtle that is listed as threatened in the state of Florida (F.A.C. Chapter 68A-27). The gopher tortoise has been historically found on Tyndall AFB in areas dominated by sandy soils and open tree canopy. The tortoise prefers to excavate burrows in the loose sandy soils throughout Florida's upland sandhills, scrub, scrubby flatwoods, xeric hammocks, coastal strand, and ruderal habitats (Ashton and Ashton, 2008).

The Division of Natural Resources at Tyndall AFB has compiled data and mapped the known occurrences of endangered species at Tyndall AFB, including gopher tortoise burrow locations. In addition, a Florida Authorized Gopher Tortoise Agent with the PIKA/Malcolm Pirnie JV, LLC team visually surveyed the action alternative alignments for gopher tortoise and tortoise burrows. The historical occurrences and visual survey information regarding gopher tortoise burrow locations within the project area are shown on **Figure 3-5**.

The USFWS is currently reviewing the listed status of the gopher tortoise in Florida due to concern over habitat loss. Currently, coordination is not necessary with USFWS for the gopher tortoise because it is not yet federally listed. However, conservation issues for the gopher tortoise in Florida are managed through the FWC, which issues permits to Authorized Gopher Tortoise Agents to manage conservation elements and other gopher tortoise issues. Coordination regarding the gopher tortoise would be necessary with FWC following their established guidelines; it is recommended that this coordination commence approximately nine months prior to construction. Gopher tortoises must be relocated before any land clearing or development takes place, and permits to do so must be obtained from the FWC before they can be move. An Authorized Gopher Tortoise Agent must be involved in the relocation activities.

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In addition to coordination with FWC, activities associated with the action alternatives must also comply with the DoD Candidate Conservation Agreement (CCA). The Division of Natural Resources at Tyndall AFB has agreed to manage on-base gopher tortoise populations in accordance with this agreement (DoD, 2010). The CCA serves as a vehicle to coordinate and implement proactive, non-regulatory management actions to protect gopher tortoise habitat and current populations. Activities associated with the action alternatives must also comply with the intent of the CCA. A copy of the CCA is included in **Appendix B** for reference.

The gopher tortoise burrow also provides shelter for other species, such as the Eastern indigo snake (*Drymarchon corais couperi*). The Eastern indigo snake, a federally threatened species, is a large glossy black snake that can reach lengths of 7.9 feet and widths of up to two inches. Because it is dependent on the gopher tortoise for shelter against low temperatures, it is often found inhabiting gopher tortoise burrows. In fact, the Eastern indigo snake spends much of its life underground in either gopher tortoise burrows or in prey burrows. As such, surveys for this species commonly will not locate the snakes, even when known individuals inhabit the survey area (Ashton, 2008). Given the difficulty in locating this species, it should be assumed to inhabit the areas where gopher tortoises are found. The USFWS has specific protection protocols that would be required during construction regarding the Eastern indigo snake. These protocols are included in **Appendix C** for reference.

Alternative 3 is the only action alternative with known gopher tortoise burrows and, thus, the potential for gopher tortoise impacts. Two active adult burrows are located along Expeditionary Road. Given their distribution and differing burrow diameters, it is estimated that there are two different tortoises using these geographically-separated burrows. Suitable habitat exists throughout the project area and adjacent areas that could be used to provide temporary housing for displaced tortoises during construction of the replacement pipeline, if needed. While preliminary species surveys have been performed, the action alternative corridor selected would need to be surveyed for protected species, such as the gopher tortoise and Eastern indigo snake, prior to commencement of permit actions. Contractors would need specific training in the recognition of the gopher tortoise and Eastern indigo snake. Protocols describing how to avoid conflicts with Florida black bears during construction would also be recommended.

3.3.9.4 Wetlands

Wetlands comprise about 40% of Tyndall AFB land. Approximately 100 types of wetlands have been mapped on Tyndall AFB by the National Wetlands Inventory. These wetland types have been combined into three basic groups: Palustrine, Forested; Aquatic/Emergent; and Estuarine, with the most predominant being Palustrine, Forested. The FNAI (September 1994) also provides detailed information regarding natural areas and the most important natural community types on Tyndall AFB. This information was updated in 2010 for Tyndall AFB as part of the Survey of Amphibians, Reptiles and Bats (PIKA/Pirnie, 2011). For the survey, the base was divided into different areas representing various habitat types, including wetlands, using FLUCCS land uses designations based on remote sensing and field observations. The wetlands habitats are shown on **Figure 3-6** and are based on the updated FLUCCS land use designations, which are shown on **Figure 3-4**.

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Table 3-4 summarizes the results of the wetland impact analysis for each of the action alignment alternatives. The potential wetland impacts were estimated using an overlay analysis along each alignment corridor length and presumed corridor width where the alignment alternatives overlap the identified wetland habitats. The acreages shown in the table represent the potential impacts to the wetland habitats, which were delineated as part of the Basis of Design (Pond & Company, 2011), if standard excavated trenching techniques are used during installation of the JP-8 replacement pipeline. The paragraphs that follow provide a detailed description of the wetland crossings for each alternative alignment and a description of the estimated wetland impacts.

Table 3-4. Wetland Crossings and Estimated Impacts for the Pipeline Alignment Corridors

Wetland Crossing ID	Installation Method	Linear Crossing (feet)	Corridor Width (feet)	Crossing Acreage
A1-1	Trench	1562	30	0.656
A1-2	Trench	1928	30	0.400
A1-3***	Trench	1865	30	0.606
A1-4	Trench	136	30	0.027
	total	5491		1.689
A2-1*	Trench	1562	30	0.656
A2-2	Trench	25	30	0.758
A2-3***	Trench	25	30	0.429
A2-4**	Trench	136	30	0.027
	total	1612		1.843
A3-1	Trench	1562	30	0.493
A3-2	Trench	1928	30	0.025
A3-3	Trench	1865	30	0.133
A3-4	Trench	100	30	0.122
A3-5	Trench	100	30	0.033
A3-6	Trench	100	30	0.014
A3-7**	Trench	136	30	0.027
	total	5655		0.820

* Represents the same crossings as A1-1

** Represents the same crossings as A1-4

*** Wetland with associated stream crossing

All of the action alternatives share one segment in common that extends from the 6000 Area west along Bayou Road to Florida Avenue. This segment contains one wetland crossing (A1-4), an approximately 0.03-acre roadside herbaceous stormwater conveyance (see **Figure 3-6**) that is within the estimated 30-foot-wide construction corridor (refer to **Table 3-4** for individual wetland crossing impact calculations).

Alternative 1 has four wetland crossings, including the one on Bayou Road described previously. The first wetland crossing (A1-1) is on the north side of Fuels Avenue. The construction

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corridor (estimated to be 30 feet wide) on the north side of the road intersects the roadside stormwater swales. The stormwater swales, although maintained as surface water habitats, are also hydraulically connected to the bayous and integrated wetlands. The swales and ditches within the project area predominantly flow north to Shell Point Bayou (also known as Fred Bayou) and unnamed creeks of East Bay. Wetland crossings A1-2 and A1-3 are also intersecting the roadside herbaceous swales. Wetland crossing A1-3 also has an associated stream crossing; this stream drains the roadside swale and a forested wetland on west side of Florida Avenue. The stream is culverted within the road easement, with a crossing distance of 20 feet (headwall to headwall), and flows east under Florida Avenue to Shell Point Bayou. Typical trenching installation methods could be used for installation of the JP-8 replacement pipeline at this location, but directional drilling methods (subaqueous installation) would avoid some impacts associated with this stream crossing. Including all four crossings, the total estimated acreage of wetland impacts for action alternative 1 is 1.69 acres. Impacts to these wetlands are all within herbaceous systems and would be considered to be a temporary disturbance.

Alternative 2 also has four wetland crossings, including the Bayou Road crossing. The remaining three crossings, which are in the same general locations as alternative 1, are situated along Fuels Avenue (i.e., wetland crossings A2-1) and Florida Avenue (i.e., wetland crossings A2-2 and A2-3). These three crossings all intersect roadside herbaceous swales. Wetland crossing A2-3 also has a stream crossing and associated stormwater swale. The alternative 2 alignment crosses the stream for approximately 20 linear feet. In the road easement, the crossing does not have associated wetlands. Typical trenching installation methods could be used for this crossing, but directional drilling methods (subaqueous installation) would avoid all impacts at this crossing. Total wetland impacts for action alternative 2 are estimated at 0.70 acres. Impacts to these wetlands are all within herbaceous systems and would be considered a temporary disturbance. As noted above, stream crossing impacts could be avoided by using subaqueous installation techniques.

Alternative 3 has seven wetland crossings, including the Bayou Road crossing. The first four crossings (A3-1, A3-2, A3-3, and A3-4) are within forested wetland habitats. The first two (A3-1 and A3-2) are located along an unnamed trail northwest of the 400 Area. The second two (A3-3 and A3-4) are located along Expeditionary Road. These crossings would require permanent tree removal and, thus, the conversion from forested to herbaceous wetlands. Wetlands associated with A3-3 and A3-4 appear to have limited connectivity across Expeditionary Road, with no channel or culvert being noted during the visual survey conducted by PIKA/Pirnie team members. Two of the three remaining wetland crossings, A3-5 and A3-6, are within the roadside easement of Expeditionary Road and intersect the stormwater swale on the north side of the road. These wetland crossings, as well as A3-7 on Bayou Road, are within herbaceous habitats and impacts to these wetlands would be considered temporary disturbances. Total wetland impacts for action alternative 3 are estimated at 0.88 acres, of which 87% (0.77 acres) of the total impacts represent permanent conversion of forested wetlands.

As noted previously, wetland impacts associated with installing the JP-8 replacement pipeline were estimated based on use of excavated trenching technologies. While directional drilling is more costly than standard excavated trenching, directional drilling is often the preferred construction technique, where feasible, because it avoids impacts to wetland habitats. If trenching techniques are used, as assumed to determine the total estimated wetland impacts

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described above, permitting and mitigation requirements would also need to be met. The permitting and mitigation requirements can be costly and time consuming. The additional construction costs associated with directional drilling technologies can be somewhat off-set because this subaqueous installation method avoids the need for permitting and mitigation. Thus, if directional drilling technologies were used for all wetland crossings, the replacement pipeline would be installed using techniques that avoid impacts to wetland resources and eliminate the need for permitting and mitigation measures. As a more cost effective alternative for the JP-8 transfer pipeline replacement project, permitting and mitigation measures could be greatly reduced or avoided by restricting impacts to areas where the disturbance would be considered temporary (i.e., within herbaceous habitats) with no permanent change in habitat type and by using subaqueous techniques to avoid impacts to wetlands elsewhere along the alignment corridor. This option is preferred because it avoids impacts to wetland resources and eliminates the need for permitting and mitigation measures.

3.3.9.5 Floodplains

The portions of Tyndall AFB that have been mapped as 100-year floodplains according to Federal Emergency Management Agency Flood Insurance Rate Maps are shown on **Figure 3-7**. Much of the area mapped as 100-year floodplain exists along the coastline and is prone to flooding as a result of heavy tidal surges that occur during strong storms. Many parts of the base outside the mapped 100-year floodplain areas are also prone to tidal surge flooding. Alternative alignments 1 and 2 impact the 100 year floodplain (Zones A and AE) in one location along Florida Avenue, in association with wetland crossing A1-3 for alternative 1 and A2-2 for alternative 2. The proposed alignments would cross the 100 yr floodplain for a distance of 106 feet and 230 feet, respectively. These impacts would be within an existing easement and would not require removing trees within the floodplain areas. In places where the installation of the pipeline would be in herbaceous habitat, excavated ground would need to be replaced to original grade and re-vegetated. Erosion control measures, required by Florida statute, would need to be installed to eliminate sediment deposition into natural water bodies and habitats. Alternative alignment 3 crosses through the 100-year floodplain (Zone A) in five locations. These locations are associated with wetland crossings A3-1, A3-2, A3-3, A3-4, and A3-5, for a total of 1639 feet. These areas would require removal of trees from the habitats and constitute a permanent change to the floodplain.

3.3.10 CULTURAL RESOURCES

3.3.10.1 Historical Resources

The Department of Natural Resources at Tyndall AFB has identified eleven historic sites on the base. Although none of these sites are located within the action alternative alignment corridors, procedures for the unplanned discovery (U.S. Air Force, 2010) during construction activities would need to be utilized, if historic resources are encountered.

3.3.10.2 Archaeological Resources

The peninsula where Tyndall AFB is located has been an active home for many communities. As of 2010, the Department of Natural Resources at Tyndall AFB has identified 98 archeological sites. Not all of these sites are currently mapped and included in the Tyndall AFB Geographic Information System (GIS) database and, therefore, a definitive review of these sites

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has not been completed. However, using the archeological resources probability model developed by Natural Resources staff at Tyndall AFB, areas of high potential to encounter archeological resources have been determined and are shown for the project area on **Figure 3-8**. All action alternative alignments follow the Bayou Road easement (882 feet) that is depicted as being in a high probability area. However, the construction of the replacement pipeline would take place within previously disturbed road easements. As such, the probability of finding or impacting an archeological site is greatly reduced. Action alternative 3 also traverses a high probability area for 2,465 feet along Expeditionary Road. This road area is not an improved road and most likely was constructed by grading and filling. Excavation during construction of the roadway was most likely not needed. As a result, there is still a high probability of encountering archeological resources along this section of the alignment since it has not been significantly disturbed. Procedures for the unplanned discovery (U.S. Air Force, 2010).during construction activities would need to be utilized

3.3.11 SOCIOECONOMIC RESOURCES

Bay County, in which Tyndall AFB is located, has a population of approximately 166,798 people, as summarized in **Table 3-5**. Seven incorporated municipalities are located in the county. Panama City (population 36,400) is the largest. Between Tyndall AFB and Panama City are the communities of Springfield (population 8,800), Callaway (population 14,200), and Parker (population 4,600). Lynn Haven (population 12,451) is north of Panama City. Panama City Beach (population 7,700), the site of beachfront hotels and other tourist-oriented businesses, is west of Panama City. East of Tyndall AFB, although not bordering it, is Mexico Beach (population 1,000).

Table 3-5. Total Population and Populations of Concern, Year 2010*

Region	Total Population	Percent Minority	Percent Below Poverty*	Percent Youth
Bay County	166,798	20.6	14.2	22.0
Florida	18,843,326	23.5	16.5	21.2
United States	309,349,689	25.8	15.3	23.9

Note: *2006-2010 American Community Survey 5-Year Estimates

Sources: Census 2010,

Bay County's economic base is comprised of military, tourism, lumbering trades, services, manufacturing, construction, and commercial fishing. The largest contributors to the county economic base are Tyndall AFB and the Naval Support Activity Panama City. Tyndall AFB contributes significantly through its direct employment and purchases from local businesses. Total annual estimated economic impact in the communities within a 50-mile radius of Tyndall AFB is \$473 million. Excluding retirees, the annual military payroll is \$140 million, and the annual civilian payroll is \$43 million. In addition, the base has contracts with local entities totaling \$65 million annually. The future addition of another squadron of F-22 Raptors and the addition of the mission to support the Navy gunnery training by supplying drone target aircraft will positively impact to the local economy, as well. Previous investigations of the additional flight operations found no disproportionate impact to children, minority or low income populations (U.S. Air Force, 2011c). The construction of the proposed action would benefit the economy by providing an increase in civilian jobs, even though they are temporary construction jobs. As such, no disproportionate impact to children, minority, or low income populations would occur as a result of the proposed action.

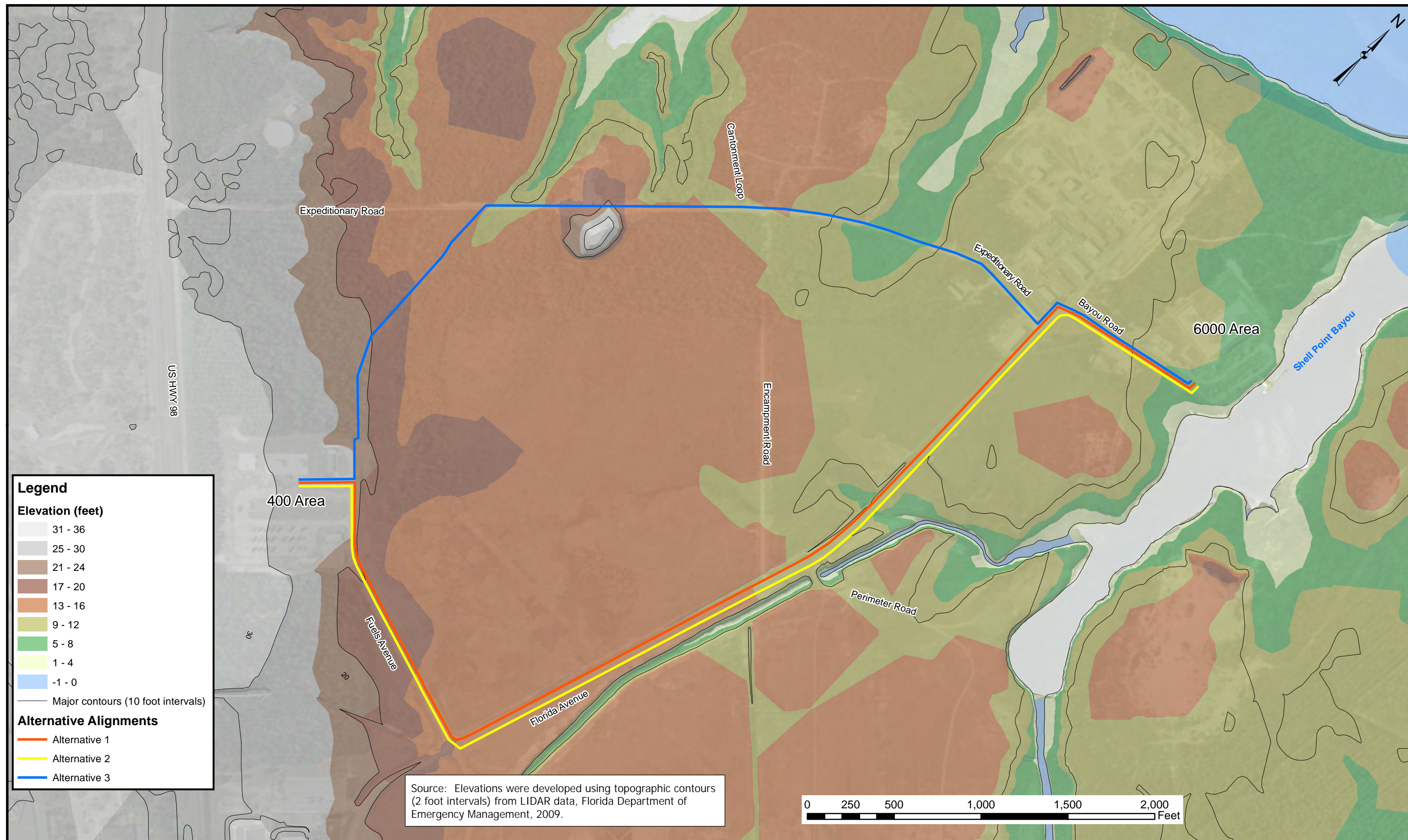
3.3.12 LAND USE COMPATIBILITY

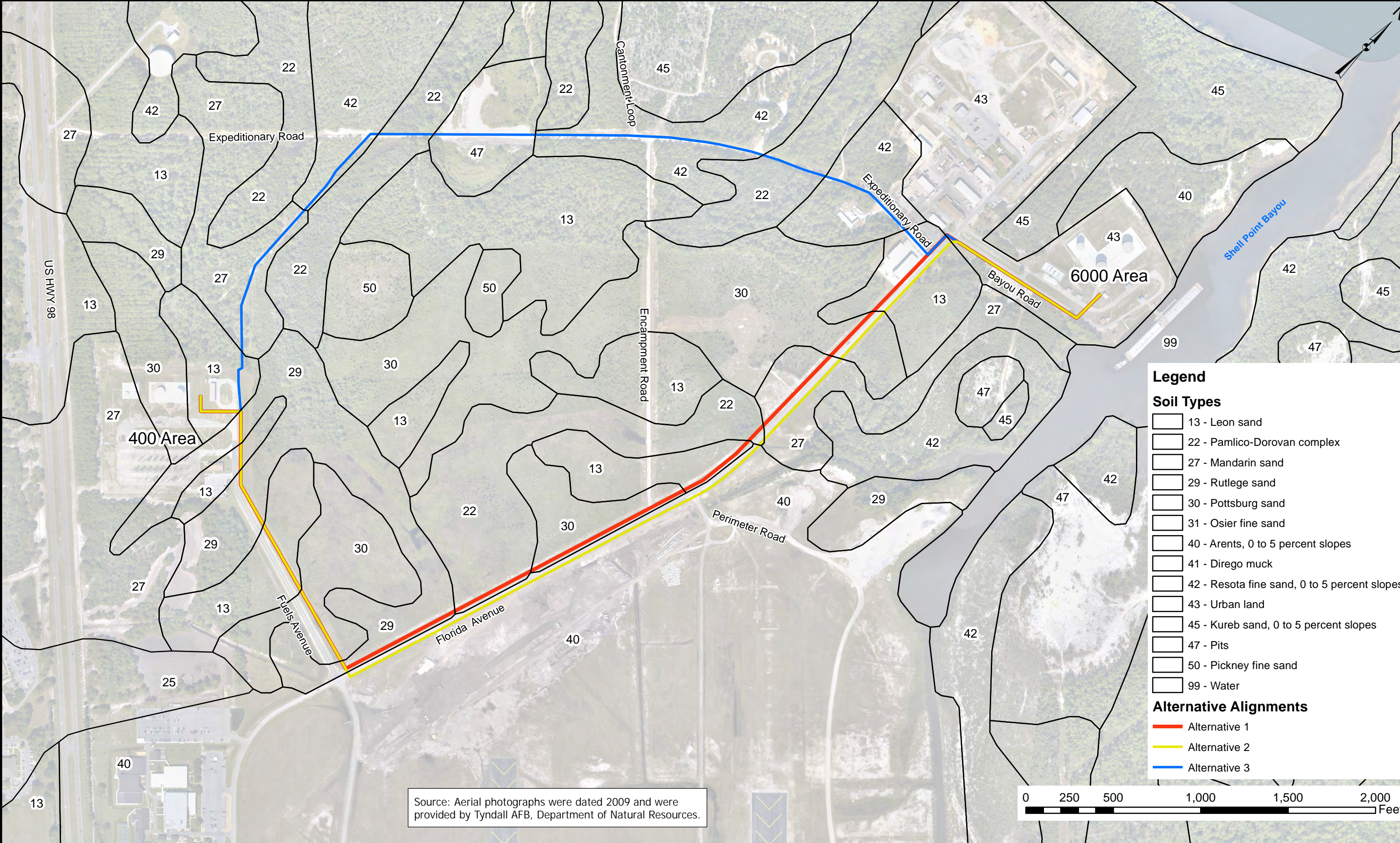
In general, the proposed action is compatible with the existing and future land uses at Tyndall AFB where the project is planned. For reference, current land uses are illustrated on **Figure 3-4** using FLUCCS land use designations. These designations, however, are more useful for environmental planning as they describe natural communities and developed land uses. The majority of the JP-8 replacement pipeline would be installed within existing utility easements. This is the case for the entire alignments associated with action alternatives 1 and 2. For action alternative 3, the pipeline would cross an area of planted pine trees where utilities have not been installed previously. To facilitate construction of the pipeline, a small number of trees would need to be removed. This would result in a permanent change in land use and require a FLUCCS designation change.

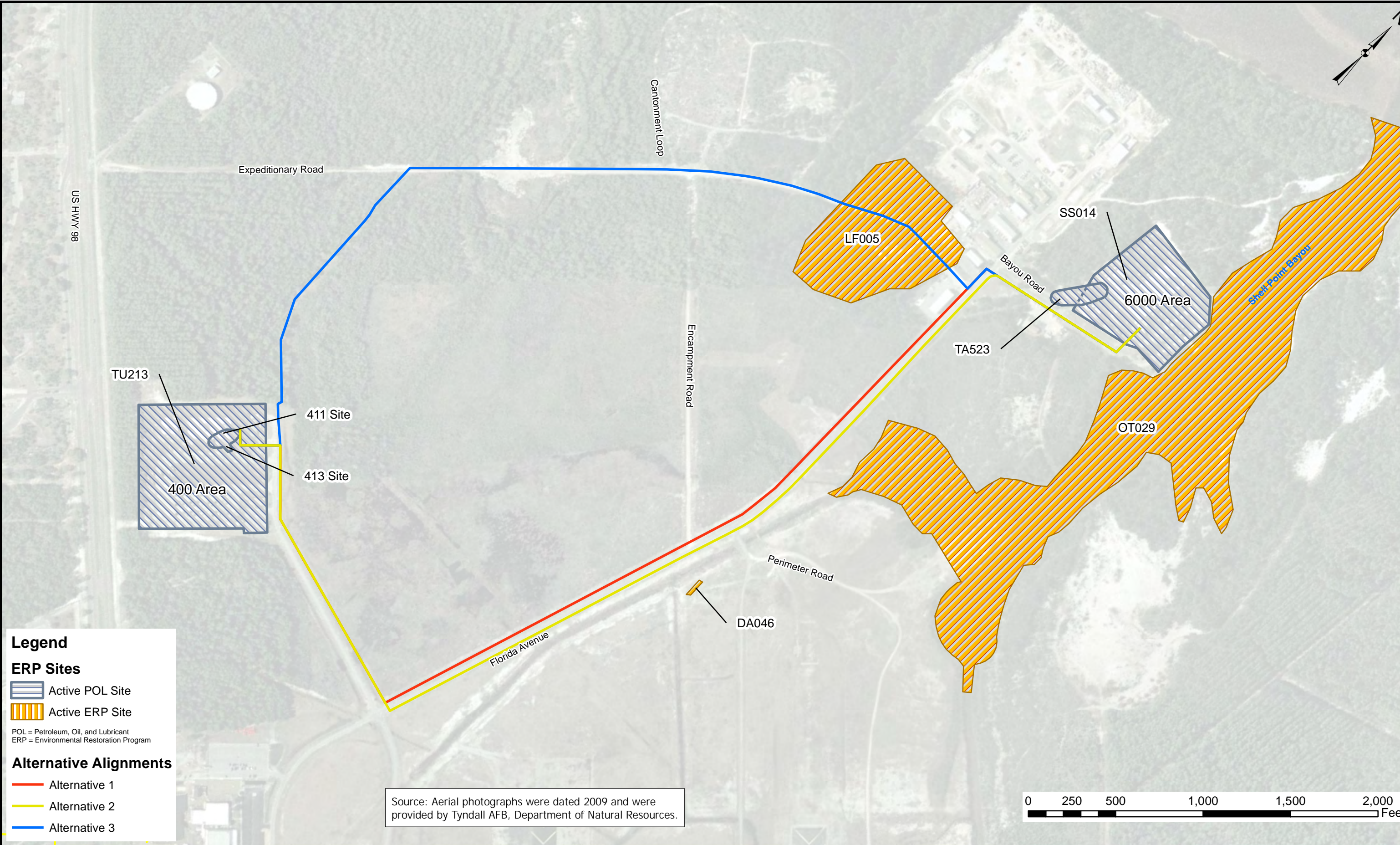
Land use planning at Tyndall AFB is done using a system of fifteen land use categories described in the General Plan. The land use categories include: water; airfield; airfield pavements; airfield operations and maintenance; industrial; administrative/organization; training; community (commercial); community (service); medical; housing (accompanied); housing (unaccompanied); outdoor recreation; open space; and constrained open space. These land use designations differ from the FLUCCS designations; they describe land uses based on the activities that occur in an area. Utilities, such as the JP-8 transfer pipeline, are not specifically designated. Rather, these utilities are considered infrastructure and are designated the same as the land uses they cross or support. As such, land use designation changes are not anticipated.

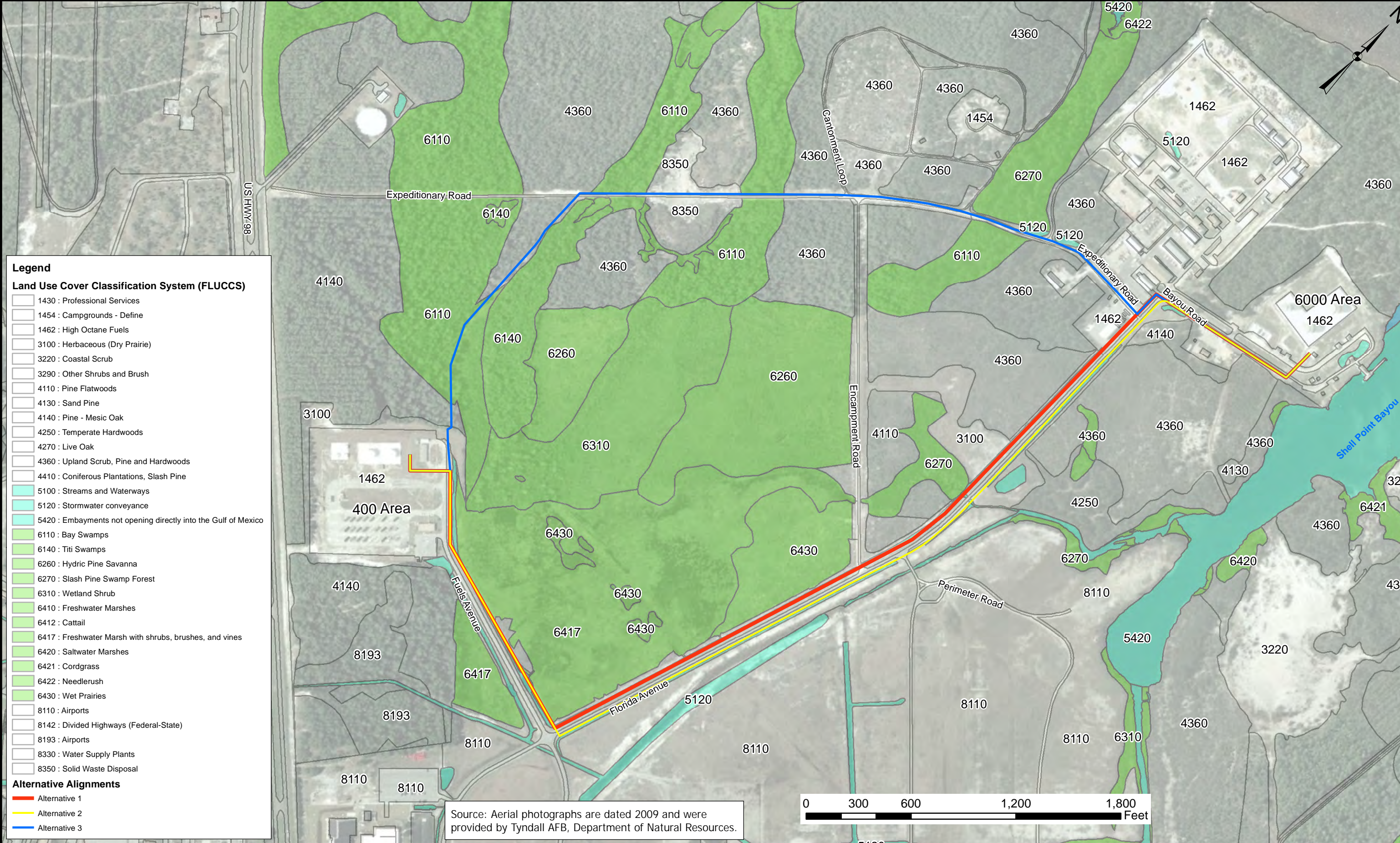
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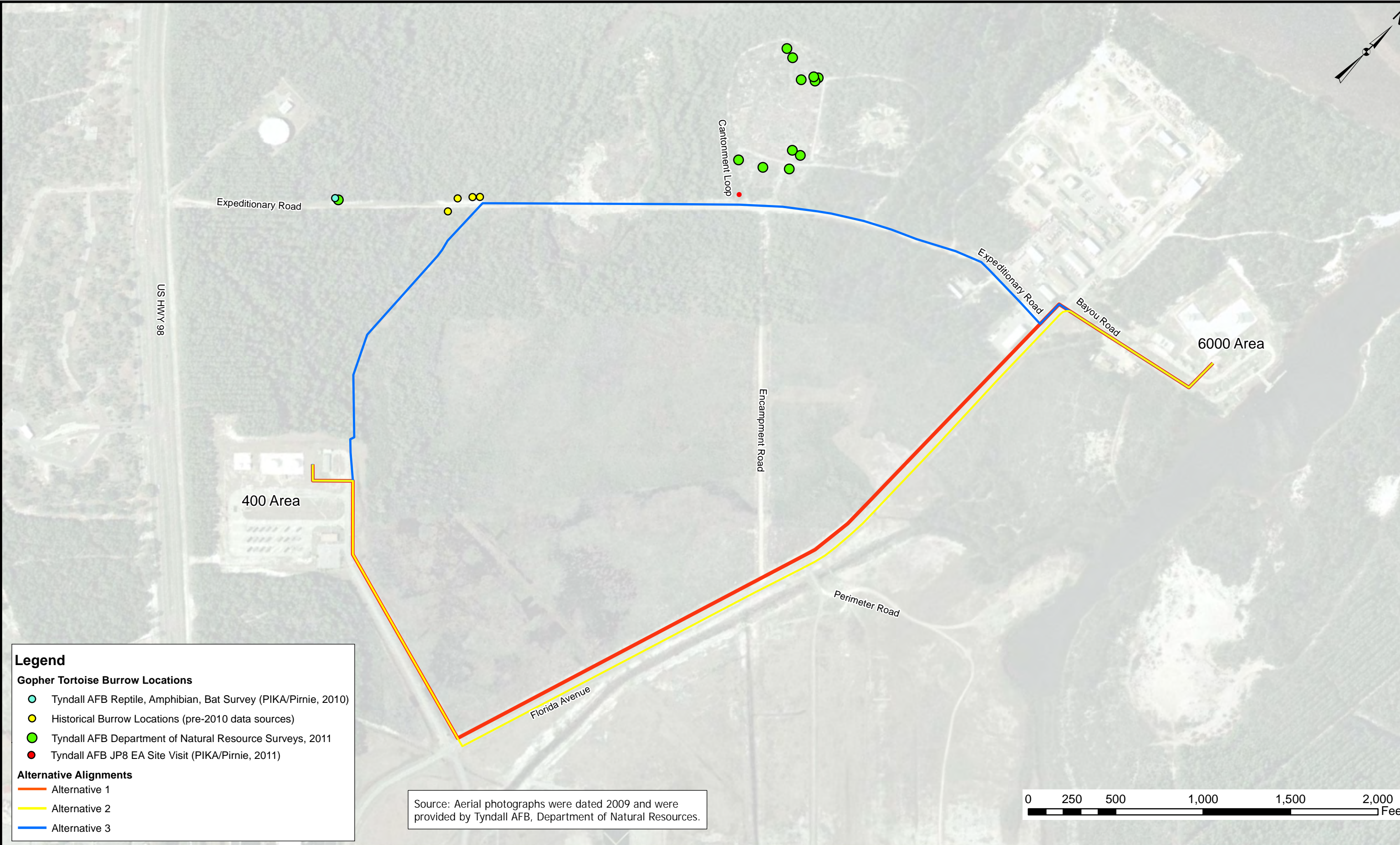


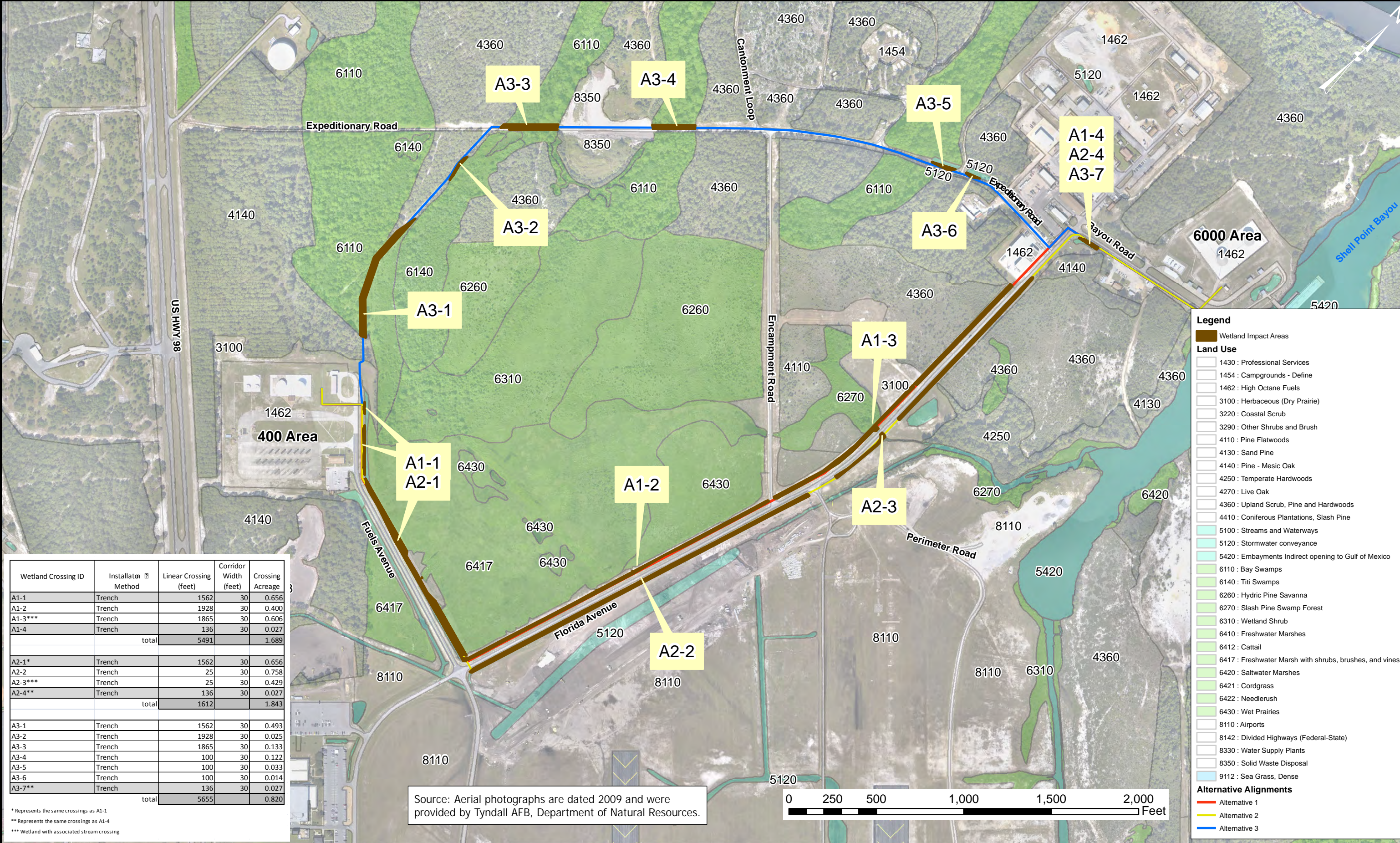


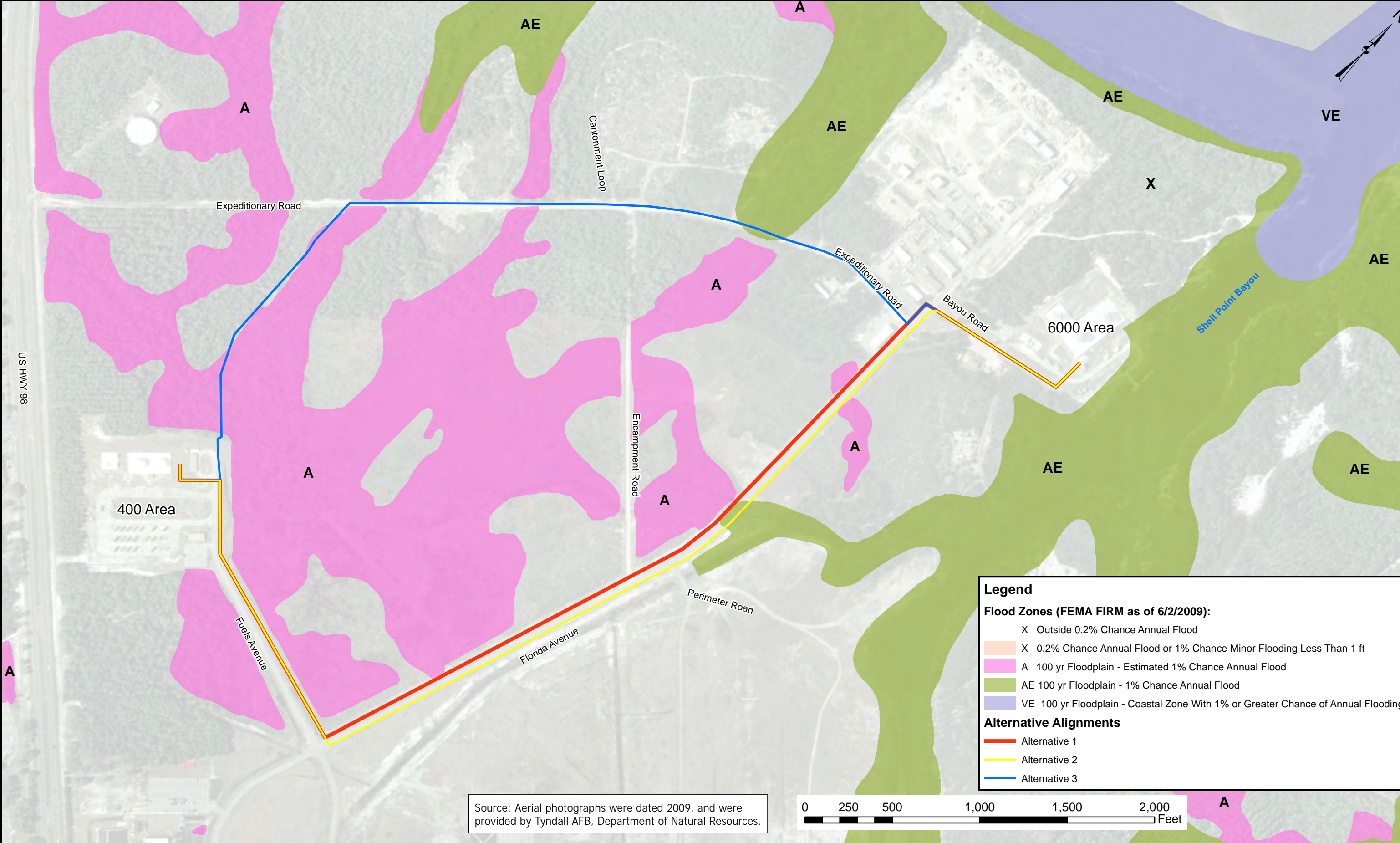
Final EA
LAND USE (FLUCCS) MAP

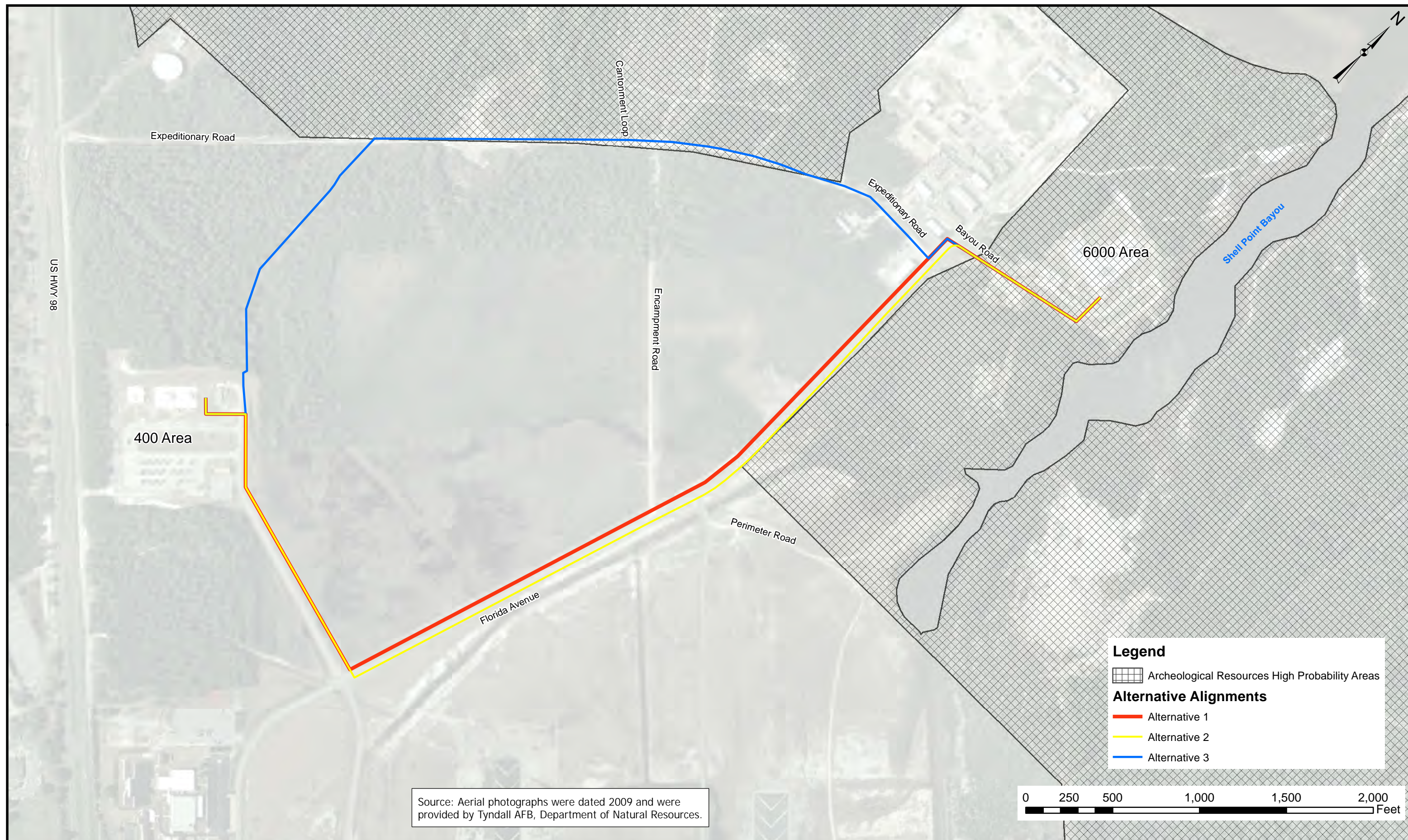
Tyndall Air Force Base (AFB)
Environmental Assessment (EA) for Replacement of JP-8 Transfer
Pipeline between 6000 Area and 400 Area

FIGURE 3-4
SEPTEMBER 2012









SECTION 4. ENVIRONMENTAL CONSEQUENCES

4.1 INTRODUCTION

This section describes potential environmental consequences and impacts that could occur if the proposed action is implemented by Tyndall AFB. Additionally, potential impacts are addressed for the no action alternative. Criteria used to evaluate potential impacts are discussed at the beginning of each resource area. Resultant irreversible or irretrievable resource commitments are noted, and collectively discussed at the end of the section. The proposed action and preferred alternative are discussed at the end of the section with respect to compatibility with land use plans, policies, and controls. The relationship between short-term use of the environment and the long-term productivity associated with implementing the proposed action and preferred alternative are also presented.

4.2 CHANGE IN CURRENT MISSION

The proposed action is not part of a change in the current mission. The proposed action does, however, support future changes in mission by replacing the existing JP-8 transfer pipeline that does not comply with current FDEP regulation. The FDEP and Air Force entered into a consent order in 2010 to allow Tyndall AFB to continue operating the bulk fuel storage tanks and fuel transfer pipeline while upgrades are planned and implemented. As specified in the consent order, construction of the replacement pipeline, and other upgrades, must be completed by the 2018 deadline. The proposed action would allow the Air Force to comply with the consent order while upgrading the JP-8 transfer pipeline to meet regulatory requirements and provide flexibility for future mission changes.

Alternatively, if the no action alternative is selected, the JP-8 transfer pipeline would not be upgraded and the Air Force would need to shut down the existing pipeline and would have to consider other alternatives to meet aircraft fueling needs to support the base's mission. The age and single-walled construction of the pipeline are such that failure to replace them would, over time, result in a pipeline failure and create the potential for significant environmental harm to an ecologically sensitive area. Leaks in the JP-8 transfer pipeline would require that the pipeline be taken out of service immediately. Failure to upgrade the transfer pipeline to a double-walled configuration increase the risk of significant impact to Tyndall AFB's mission and increase the potential for environmental harm that might result from a failure of the existing pipeline.

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

4.3.1 AIRCRAFT OPERATIONS

For the proposed action, aircraft operations at Tyndall AFB would be unaffected during the replacement of the JP-8 transfer pipeline. Because all aircraft operations are supported by the fuel supply operations, the existing JP-8 transfer pipeline would need to remain operational while the replacement pipeline is installed. Only after all components of the newly installed

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pipeline and associated equipment, including the two new transfer pumps, are fully operational would the existing pipeline be taken out of service and permanently abandoned in place.

Under the no action alternative; however, there would be a measurable decrease in the baseline condition over time regarding the base's ability to support aircraft operations. The no action alternative would require the existing pipeline be taken out of service without providing for a replacement JP-8 fuel supply alternative.

4.3.2 NOISE

Noise would be associated with the type of construction activity involved in the installation of the JP-8 transfer pipeline. Heavy equipment would be used to clear and prepare the construction sites, and to construct any one of the action alternatives. Restrictions on construction activity and the location of the project would serve to mitigate the impacts of noise on the surrounding environment. For these reasons, the project construction will not have a significant effect on the surrounding environment.

The no action alternative has the potential to reduce the number of flight operations resulting in a change in the baseline conditions regarding noise. The reduction in flights would result in fewer noise events.

4.3.3 AIR QUALITY

Air quality would only be affected during construction from small amounts of dust and heavy equipment exhaust. These releases would be de minimus and cause no significant effect on air quality. Additional analysis of conformity is not warranted because of Bay County's designation as in "attainment," meaning that air quality measurements are below the regulatory criteria.

The no action alternative has the potential to result in reduced flight operations, which would be a change in the baseline conditions regarding air quality. The reduction in flights would initially result in less air emissions and potentially better air quality. However, if alternative fueling operations are put in place, such as fueling by truck, the no action alternative could ultimately result in a significant increase in impacts to air quality.

4.3.4 SAFETY AND OCCUPATIONAL HEALTH

Action alternatives 1 and 2 do not traverse areas with Environmental Restoration Program sites. For action alternative 3, safety and occupational health during construction of the pipeline would be affected since a portion of the pipeline alignment would need to cross through LF005, which has elevated levels of metals in soil and groundwater. Additionally, all three action alternatives traverse POL-contaminated sites at the 6000 Area and 400 Area. Impacts, such as the need for increased safety and occupational health awareness and health and safety planning during construction of the pipeline, as well as OSHA-required HAZWOPER training and documentation for construction workers, could be mitigated if construction techniques were used that eliminated contact with either contaminated soil or groundwater. For example, restricting

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the depth of footers and running piping above ground in the secure 6000 Area and 400 Area would avoid POL-related issues. Due to safety concerns, the JP-8 replacement pipeline under action alternative 3 would need to be installed underground where it traverses LF005. As such, increased safety and occupational health impacts during construction of the pipeline would not be avoided or mitigated if this alternative was selected since contaminated soil and/or groundwater would be encountered.

The no action alternative has the potential to initially decrease safety and occupational health impacts once the existing JP-8 pipeline is shut down. However, if fueling operations continue using an alternative method to the pipeline, there could ultimately be an increase in safety and occupational health impacts.

4.3.5 EARTH RESOURCES

4.3.5.1 Geology

Geology will remain substantially unchanged by all of the proposed action alternatives and by the no action alternative.

4.3.5.2 Topography

The JP-8 replacement pipeline would be installed below the ground surface and the grade replaced to its original state, except within the 6000 Area and 400 Area where piping would be located above ground. Because either the existing grade would be replaced where underground installation would take place or installation would occur above ground in areas where no grade change would occur, there would be no change or impact to topography. Additionally, the existing JP-8 transfer pipeline would be abandoned in place, resulting in no change in topography either.

Under the no action alternative, no change or impact to topography would occur.

4.3.5.3 Soils

As noted in the previous section, the JP-8 replacement pipeline would be installed below ground and the grade would be replaced to its original state, except within the 6000 Area and 400 Area where piping would be located above ground. Native soil would be used to replace the grade, so soil types would not be modified. Because either the existing grade would be replaced using native soils where the pipeline is installed underground, or the pipeline would be installed above ground with minimal impact to soils, only minor impacts would occur during construction. Use of sediment and erosion control measures during construction would mitigate or eliminate the potential for erosion and, thus, decrease or eliminate impact on soils. Because the existing pipeline would be abandoned in place, no impacts on soils would occur. Once construction is complete, there would also be no impacts on soils.

Under the no action alternative, there would be no change in the baseline conditions regarding soils.

4.3.6 WATER RESOURCES

4.3.6.1 Surface Water

The proposed action would cross small streams and stormwater features. All crossings would need to be made with subaqueous installations and employ standard erosion control measures to minimize possible impacts to surface water habitats, or in areas with herbaceous habitats the grade and vegetation would need to be replaced to match current conditions and standard erosion control measures taken. Also, all construction areas within the crossing vicinity would need to be re-vegetated and ground surface replaced to original grade to prevent erosion. Because the existing JP-8 transfer pipeline would be abandoned in place, no impacts on surface water would occur.

Under the no action alternative, continued use of the existing pipeline has the potential to affect surface water if a pipeline failure and a release were to occur. Once the existing pipeline is shut down, impacts to surface water would be reduced unless alternative fueling operations are put in place.

4.3.6.2 Groundwater

The JP-8 replacement pipeline would be installed below land surface and, in some areas, would be in contact with the shallow groundwater. Directional bore installation of the pipeline at wetland crossing locations would also be in direct contact with shallow groundwater. However, no hazardous materials would be in contact with groundwater resources as a result of the pipeline installation process and the installation process would not extract or use groundwater unless minimal and localized dewatering is needed during installation of the pipeline. Placement of the pipeline above ground in the 6000 Area and 400 Area would eliminate exposure to known groundwater contamination. Action alternative 3 would cross through an area with elevated metals levels in soil and groundwater that is associated with LF005. Contaminated soil and/or groundwater encountered along this alignment would need to be containerized, managed properly, and disposed off-base in accordance with regulatory requirements. Action alternatives 1 and 2 would not traverse Environmental Restoration Program sites with known contamination and would eliminate the potential for encountering contaminated soil and groundwater. Long-term, selection of an action alternative would have a positive impact on groundwater by providing improvements to the JP-8 transfer pipeline system, such as cathodic protection, leak detection systems, and double-walled construction.

Under the no action alternative, continued use of the existing pipeline has the potential to affect groundwater quality if a pipeline failure were to occur resulting in a fuel release. Once the existing pipeline is shut down, impacts to groundwater would be reduced unless alternative fueling operations are put in place.

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4.3.7 INFRASTRUCTURE / UTILITIES

4.3.7.1 Sanitary Sewer

Under the action alternatives, replacement of the JP-8 transfer pipeline would not have an impact on the sanitary sewer collection system or create a change in the baseline conditions.

Under the no action alternative, there would be no change in the baseline condition for the sanitary sewer collection system. However, because this alternative could adversely impact the refueling operations and ultimately the base's mission, utilities such as the sanitary sewer could incur decreased demand and, thereby, result in increased capacity.

4.3.7.2 Potable Water

The action alternatives would not change fire suppression needs or requirements for the fueling operations and no change in baseline conditions would occur.

Alternatively, under the no action alternative there would be long-term impacts to potable water supplies because potable water would no longer be required for fire suppression for the fueling operations.

4.3.7.3 Solid Waste Management

The proposed action would have no significant impact on Tyndall AFB's solid waste management operations. During construction activities, only minor amounts of solid waste would be generated and it is not anticipated to tax the current solid waste management operations. Additionally, the existing pipeline would be abandoned in place so there would not be a significant amount of waste generated by its abandonment.

Under the no action alternative, there would a decrease in solid waste produced since fueling operations would cease when use of the pipeline is terminated.

4.3.7.4 Drainage

Drainage on the base would not be adversely impacted by the construction of the JP-8 transfer pipeline.

Under the no action alternative, there would be no change in the baseline conditions for drainage.

4.3.7.5 Transportation Systems

Transportation systems would be temporarily impacted by the construction activities in the easements of associated roads. Construction for action alternatives 1 and 2 would occur along more heavily traveled roadways, but measures during construction would reduce impacts on traffic.

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Under the no action alternative, there would be a decrease in traffic due to elimination of the fueling operations once the JP-8 transfer pipeline is shut down.

4.3.7.6 Electricity / Natural Gas

The proposed action would not adversely impact the electrical or natural gas utilities. The alignments have been designed to avoid interferences with electrical utilities wherever possible and there are no natural gas resources along the action alternative alignments. With replacement of the JP-8 transfer pipeline and upgrading of equipment, there would be minor modifications needed to the existing electrical system at the 6000 Area. However, the increased size of the replacement pipeline and installation of newer, more energy efficient equipment would off-set the cost of upgrades over time.

Under the no action alternative, there would be a decrease in electrical demand due to the existing pipeline being taken out of service.

4.3.8 HAZARDOUS MATERIALS AND WASTES

4.3.8.1 Hazardous Materials

Hazardous materials would not be utilized in significant amounts to cause environmental hazards or impact environmental resources. As such, the action alternatives would not create hazardous materials concerns and no change from baseline conditions would occur.

Under the no action alternative, a reduction in hazardous materials would be expected once the JP-8 transfer pipeline was shut down and fueling operations ceased.

4.3.8.2 Hazardous Waste

The replacement of the JP-8 transfer pipeline is not expected to generate hazardous waste, unless contaminated soil or groundwater is encountered during the construction process. The only action alternative that traverses an Environmental Restoration Program site is alternative 3. Excavation of contaminated soil or dewatering of contaminated groundwater could occur where the alignment for action alternative 3 traverses the LF005 boundary. All of the action alternatives would traverse the POL sites at the 6000 Area and 400 Area. While POLs are not considered hazardous waste, contaminated soil or groundwater would need to be containerized and removed from the site for proper treatment or disposal, as would a hazardous waste.

Action alternatives 1 and 2 would also pass within approximately 235 and 175 feet, respectively, of Environmental Restoration Program site DA046 (Buried Drums/North End of Runway). A Preliminary Assessment/Site Inspection is planned for the site; it is unknown at this time the extent of contamination, if any. In the event contaminated soil or groundwater associated with this site is encountered within the pipeline alignment, it would need to be removed from the site for off-site treatment or disposal in accordance with regulatory requirements. However, there is

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no known contamination or indication of contamination extending into either alignment alternative at this time so no impacts regarding hazardous waste are anticipated.

4.3.8.3 Environmental Restoration Program and Petroleum, Oil, and Lubricant Sites

As noted in the previous section, action alternative 3 would traverse an Environmental Restoration Program site, LF005. However, action alternatives 1 and 2 would not be located at or immediately adjacent to any Environmental Restoration Program sites. As such, environmental impacts associated with Environmental Restoration Program sites would only be expected for action alternative 3. If contaminated soil and/or groundwater cannot be avoided during construction, this alignment could prove a challenge. Extensive coordination with USEPA and FDEP would be required and may potentially delay the project schedule.

Provisions in the replacement pipeline design would need to be made to limit the excavation depth at the 6000 Area and 400 Area. For example, the JP-8 transfer pipeline would need to be designed to be above ground in these secure areas to avoid excavation in areas of known contamination. Additionally, the depth of the pipeline support structure footers would need to be limited to avoid areas of known soil and groundwater contamination. These provisions are already included in the JP-8 replacement pipeline project design documents (Pond & Company, 2011). Waste generated from construction activities (e.g., trenching for pipe installation) within the Environmental Restoration Program or POL sites would require disposal in accordance with Tyndall AFB's hazardous waste disposal protocols under CERCLA.

Under the no action alternative, there would be no change in the baseline conditions with respect to the Environmental Restoration Program and POL sites.

4.3.9 BIOLOGICAL RESOURCES

4.3.9.1 Vegetation

Action alternatives 1 and 2 would not require tree removal. However, action alternative 3 would necessitate removal of approximately 50 planted pine and bay trees. These trees would be replaced by a maintained herbaceous habitat. As such, action alternative 3 would impact tree resources. Mitigation for this loss would need to be performed and could occur as part of natural systems planting elsewhere on the base. For example, long leaf pine and wiregrass plantings could be used to support endangered species such as the gopher tortoise.

Under the no action alternative, there would be no change in the baseline conditions for vegetation.

4.3.9.2 Wildlife

The wildlife on Tyndall AFB is abundant due to the availability of habitat. Wildlife may be temporarily displaced from the alignments during construction; however, there are abundant alternative habitat resources for wildlife. The wildlife value of the roadside easements, especially for alternatives 1 and 2, is minimal. Action alternative 3 would diminish wildlife

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habitat (i.e., scrub areas along the Expeditionary Road corridor). Although the road itself does not offer good wildlife habitat, the alignment would alter habitat adjacent to large naturalized areas that are well utilized by wildlife.

Under the no action alternative, there would be no change in the baseline conditions for wildlife.

4.3.9.3 Threatened and Endangered Species

Action alternatives 1 and 2 have no known listed species within the proposed corridors. These alignments would not significantly impact listed species. Action alternative 3 would impact gopher tortoise burrows and would require coordination with FWC to permit the excavation and temporary exclusion or relocation of these individuals. A permit to relocate fewer than ten tortoises could be obtained within 90 days and permit fees are less than \$1,000. Because excavation of the tortoises can be stressful on the tortoises in the short-term, Florida relocation requirements dictate that tortoises are given biometric and health assessments prior to being released into approved recipient habitats. Impacts to the tortoises and habitat would be temporary due to the underground installation of the pipeline.

The Eastern indigo snake, a commensal species of the gopher tortoise, is assumed to be within the same habitats as the tortoise. As mitigation and protective measures would be required, USFWS construction protective measures should be complied with during the construction of the pipeline. These measures consist of instructing and posting information about the Eastern indigo snake. The project area has no known observations of the Eastern indigo snake, but will require implementation of the USFWS protection measures due to the presence of gopher tortoise burrows. Agency coordination would not be required until the project is permitted.

Under the no action alternative, there would be no change in the baseline conditions for threatened and endangered species.

4.3.9.4 Wetlands

The action alternatives would have multiple wetland crossings, as discussed in Section 3.3.9.4. The results of the wetland crossing analysis and estimated total acreage of wetland impacts, if excavated trenching technologies are used for installation of the JP-8 replacement pipeline, are summarized below:

- Action alternative 1 would have four wetland crossings, with the total acreage of wetland impacts estimated at 1.69 acres. This alternative would result in the second greatest amount of temporary wetland impacts, primarily to herbaceous systems within existing utility easements. This alignment has one stream crossing where directional drilling methods would be needed; a subaqueous installation would not result in wetland impacts as discussed in Section 3.3.9.4. Typical excavated trenching installation methods could be used for this wetland crossing, but would result in impacts for this alternative and would require permitting and mitigation
- Action alternative 2 would have four wetland crossings, with the total acreage of wetland impacts estimated at 1.84 acres. This alternative results in the greatest amount

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of temporary wetland impacts. This alignment also has one stream crossing where directional drilling methods would be necessary to avoid impacts.

- Action alternative 3 has seven wetland crossings, with the total acreage of wetland impacts estimated at 0.82 acres. Although this alternative has the least amount of wetland impacts, 0.72 acres represent permanent changes from forested to herbaceous habitats. These impacts could not be avoided and would require permitting and mitigation.

With the exception of the unnamed stream crossing associated with action alternatives 1 and 2, the wetland crossings for these action alternatives could be accomplished using standard excavated trenching technologies without permanent impacts to wetlands. Restoration of the crossings would be required; this would involve restoring the grade and vegetation along the entire alignment where excavation takes place in herbaceous habitats. It is recommended that this involve archiving the wetland soils and using them for backfilling excavated areas and regrading.

For the unnamed stream crossing for alternatives 1 and 2, as well as the majority of wetland crossings for alternative 3, the United States Army Corps of Engineers (USACE) and FDEP would require Environmental Resource Permits and could require specific mitigation compensation for wetland and stream impacts if standard excavated trenching techniques were used. Installation of the JP-8 replacement pipeline at these crossings could be done using directional drilling techniques instead of standard excavated trenching techniques to avoid impacts to wetland resources. This construction method is preferred since it supports the Air Force's goal of "no net wetland loss." Because directional drilling (i.e., installation of the pipeline using directional borings) would facilitate installing the pipeline beneath the water body without disturbing the vegetation or stream bottom, permitting agencies would not consider the use of this subaqueous technique as creating an impact on the wetland habitat. Thus, use of directional drilling to install the pipeline would not result in wetland impacts.

Directional drilling installation is covered under a regional permit, as promulgated through the Joint Environmental Resource Permit System for the USACE and FDEP, and would only require coordination prior to project commencement. For the stream crossing associated with alternatives 1 and 2, the additional construction costs associated with directional drilling technologies would be off-set because project-specific permits would not be required and no mitigation would be needed. Thus, this option for installation of the pipeline for alternatives 1 or 2 at the unnamed stream crossing is preferred because it avoids impacts to wetland resources and eliminates the need for permitting and mitigation measures. Use of directional drilling technologies along alignment 3 would not be practical and would still require conversion of the wetland from forested to herbaceous habitat to maintain a clear utility easement. As such, impacts, permitting, and mitigation would not be avoided with selection of action alternative 3.

If any of the action alternatives are implemented, the Air Force and the contractor selected to install the pipeline would need to verify permitting requirements and coordinate with USACE and FDEP. A pre-application meeting is recommended prior to initiating the permitting process. During the design and pre-construction phases, the Air Force and the contractor would be responsible for this coordination and for obtaining the proper permits for the project. FDEP contact information regarding Environmental Resource Permits and scheduling pre-application meetings is provided in Appendix D for reference.

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Under the no action alternative, there would be no change in the baseline conditions for wetlands.

4.3.9.5 Floodplains

All action alternatives would need to cross the 100-year floodplain. For action alternatives 1 and 2, the proposed alignments would cross the 100-year floodplain for a distance of 106 feet and 230 feet, respectively, at the unnamed stream crossing along Florida Avenue. This crossing would be within existing easements and would not result in removal of trees within the floodplain or permanent impacts. In places along these two alignments where the installation of the pipeline would be in herbaceous habitat, excavated ground would need to be replaced to original grade and the construction corridor re-vegetated. Erosion control measures, required by Florida statute, would need to be implemented to reduce or eliminate sediment deposition into natural water bodies and habitats. Provided these requirements are followed, there would be no permanent impact to the floodplain for either alternative 1 or 2. Alternative 3 crosses through the 100-year floodplain in five locations for a total of 1,639 feet. These areas would require removal of trees from the habitats and constitute a permanent change to the floodplain.

Under the no action alternative, there would be no change in the baseline conditions for floodplains.

4.3.10 CULTURAL RESOURCES

4.3.10.1 Historical Resources

There are no listed historic sites located along any of the action alternative routes. As such, the action alternatives would have no significant impact on the historical resources at Tyndall AFB.

Under the no action alternative, there would be no change in the baseline conditions for historical resources.

4.3.10.2 Archaeological Resources

The action alternative alignments would primarily be constructed within existing roadway and utility easements. These areas have been previously disturbed and the probability of finding or impacting an archeological site is greatly reduced, especially along the proposed alignments for alternatives 1 and 2. For alternative 3, the majority of the alignment would follow Expeditionary Road. Expeditionary Road is unimproved and excavation most likely did not occur as part of its construction. As a result, there is still a high probability of encountering archeological resources along this section of the alignment since it has not been significantly disturbed. Procedures for the unplanned discovery (U.S. Air Force, 2010) during construction activities would need to be utilized. Additionally, the Tyndall Integrated Cultural Resource Management Plan contains standard operating procedures that must be implemented for base construction projects. Although not expected, in the event of an accidental find during construction, work would need to cease until the cultural resource manager can make an inspection of the site and determine whether construction can continue. If prehistoric or historic artifacts are determined to be

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present, all ground disturbing activities would be placed on hold and the Air Force, or contractor selected to install the JP-8 replacement pipeline, would need to contact the Florida Department of State, Division of Historical Resources, Review and Compliance Section for further assistance. Project activities would not resume without verbal and/or written authorization from the Department of State. Contact information for the Division of Historical Resources is provided in Appendix D for reference. If any of the action alternatives are implemented, the Air Force and the contractor selected to install the pipeline would be responsible for coordination with the Division of Historical Resources and implementing the above described procedures should an artifact be found.

Under the no action alternative, there would be no change in the baseline conditions for archaeological resources.

4.3.11 SOCIOECONOMIC RESOURCES

The proposed action would provide a benefit to the socioeconomic resources of Bay County since it would provide temporary jobs in construction. It would also allow Tyndall AFB to continue its mission uninterrupted and eliminate issues related to the outdated JP-8 fueling system. Since Tyndall AFB is one of the largest contributors to the county's economic base through direct employment and purchases from local businesses, socioeconomic resources would significantly benefit by the proposed action that ensures continued mission support.

For the proposed action, no disproportionately high and adverse human health or environmental affects have been identified that will impact children, minority, or low-income populations due to construction activities at Tyndall AFB. Construction and pipeline installation activities would occur within the boundaries of Tyndall AFB and would not impact off-base populations. Therefore, no significant impacts are anticipated to environmental justice areas of concern from construction activities under the proposed action.

Under the no action alternative, socioeconomic impacts could be incurred depending on the alternative fueling options selected should the existing JP-8 transfer pipeline need to be shut down. Although unlikely, the base's mission could be compromised by shutting down the pipeline and implementing alternative fuel operations. This, in turn, could result in a loss of civilian jobs and revenue for the county, which could negatively impact socioeconomic resources.

4.3.12 LAND USE COMPATIBILITY

The proposed action is generally compatible with the existing and future land uses at Tyndall AFB where the project is planned. For action alternatives 1 and 2, the JP-8 replacement pipeline would be installed within existing utility easements. Utilities, such as the JP-8 transfer pipeline, are not given specific land use designations. Rather, they are considered infrastructure and are designated the same as the land uses they cross or support. For the action alternatives 1 and 2, no change in land use would be needed since the alignments follow existing utility corridors. For alternative 3, the alignment crosses an area of planted pine and bay trees. This area would be permanently converted to herbaceous habitat along the pipeline easement and would constitute a permanent change in land use and would require a FLUCCS designation change.

Under the no action alternative, there would be no change in land use or land use compatibility.

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4.4 UNAVOIDABLE ADVERSE ENVIRONMENTAL IMPACTS

Action alternative 3 would have permanent impacts to the tree resources by requiring the removal of trees along sections of the alignment, as well as permanent conversion of forested wetlands to herbaceous wetlands. Tree impacts would need to be mitigated, and could be done so by planting native long leaf pine and wiregrass habitat. Wetland impacts would require permitting and mitigation, as well. Action alternatives 1 and 2 would not impact trees since these alignments are located within existing roadway and/or utility easements. These two alternatives would also not permanently impact wetlands, provided directional drilling (i.e., subaqueous installation) at the stream crossing is used and areas where excavation for the pipeline occurs within herbaceous habitats are brought back to existing grade using native soils and re-vegetated.

All alternatives would incur temporary impacts to the floodplain during the construction process. However, impacts would be mitigated by implementing sediment and erosion controls during construction and returning excavated areas to their original topography using native soils and re-vegetating to eliminate sedimentation impacts to the floodplain. Alternative 3 would also have permanent impacts to the floodplain where forested wetlands are converted to herbaceous habitat. Action alternatives 1 and 2 would have no significant impact on listed species. Action alternative 3 would impact listed species unless special precautions are taken to either avoid or relocate species, such as the gopher tortoise. The project would need to have definitive surveys for the gopher tortoise and implement USFWS Eastern indigo snake protection measures prior to project commencement. There would be temporary de minimus impacts to noise and air quality due to heavy construction vehicles noise, exhaust and dust for the three alternatives, as well. Finally, the JP-8 replacement pipeline project would include two new transfer pumps that would need modifications to the electrical supply at the 6000 Area. Of the action alternatives, alternative 1 would have the least overall unavoidable adverse environmental impacts and alternative 3 would have the most. Alternative 1 is the preferred alternative for this reason.

4.5 COMPATIBILITY OF THE PROPOSED ACTION AND ALTERNATIVE WITH THE OBJECTIVES OF FEDERAL, REGIONAL, STATE, AND LOCAL LAND USE PLANS, POLICIES AND CONTROLS

The proposed action, including the preferred JP-8 replacement pipeline alignment - action alternative 1, is compatible with the objectives of federal, regional, state, and local land use plans, policies, and controls. For action alternative 1, the land use in the project area would not be modified. Furthermore, selection of the proposed action would mean the JP-8 transfer pipeline would be replaced with a new pipeline that would include cathodic protection, leak detection systems, and double-walled pipeline construction. With selection of the proposed action, the Air Force would meet its commitments under the consent order with FDEP, and would have upgraded fueling operations and infrastructure that would be consistent with federal, regional, state, and local policies and regulations. Selection of the proposed action would support the base's flight operations and mission. This is another example of the proposed action's compatibility with land use plans, policies, and controls, including the base's General Plan.

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For the pipeline alignment route, action alternative 1 is the preferred option because this alignment follows existing roadways and would be constructed in existing utility easements. Additionally, impacts to the base's mission are minimized due to pipeline construction activities being located off the paved road within an easement. There are also no impacts to or from Environmental Restoration Program sites along this alignment. Action alternative 1 also has the least impact on natural resources, including planted pine and bay trees and threatened and endangered species. While this action alternative has the second most wetland crossings, the crossings would create only temporary impacts, with no permanent conversion of wetland habitat. Directional drilling would be needed for the unnamed stream crossing on Florida Avenue; use of directional drilling for the stream crossing would avoid permitting and mitigation requirements. For these reasons, action alternative 1 is the most compatible of the pipeline alignment options as it relates to federal, regional, state, and local land use plans, policies, and controls.

Based on the information presented in this EA and the regulatory agency review comments included in Appendix D, the State of Florida determined that the proposed action is consistent with the Florida Coastal Management Program (FCMP). To ensure the project's continued consistency with the FCMP if any of the action alternatives are implemented, the Air Force and the contractor selected to install the JP-8 replacement pipeline would be responsible for coordination with federal and state agencies regarding environmental permitting requirements. The state's final concurrence of the project's consistency with the FCMP would be determined during the environmental permitting process in accordance with Section 373.428, Florida Statutes.

4.6 RELATIONSHIP BETWEEN THE SHORT-TERM USE OF THE ENVIRONMENT AND LONG-TERM PRODUCTIVITY

This subsection summarizes the short-term use of the environment for the proposed action compared with the long-term productivity derived from implementing the proposed action. The relationship between short-term uses of the environment and enhancement of long-term productivity has been analyzed throughout Section 4 of this EA. The impacts are depicted to show the beneficial uses of the environment in the long-term and/or uses that pose a long-term risk to human health or safety and/or the environment.

The construction of the JP-8 replacement pipeline along the preferred alternative, action alternative 1, utilizes previously developed utility easements, existing ROWs, and established roadway corridors on Tyndall AFB. This alignment minimizes the short-term and long-term impacts on the environment associated with the proposed action. The long-term project benefits include compliance with regulatory requirements regarding secondary containment for the fuel transfer pipeline at Tyndall AFB, as well as meeting the legal requirements and commitments established in the consent order with FDEP. Additionally, the proposed action will provide the base with upgraded fuel operations infrastructure that is more efficient and ensures that aircraft refueling operations can continue uninterrupted in the future. As such, the short-term use of the environment is outweighed by the long-term environmental productivity associated with implementing the proposed action. Under the no action alternative, these benefits would not be realized as there would legal ramifications and impacts to flight operations that would ultimately impact the base's mission.

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4.7 IRREVERSIBLE AND IRRETRIEVABLE COMMITMENTS OF RESOURCES

Irreversible and irretrievable resource commitments are related to the use of non-renewable resources and the effects that the uses of these resources have on future generations. Irreversible effects primarily result from the use or destruction of a specific resource (e.g., energy and minerals) that cannot be replaced within a reasonable time frame. Irretrievable resource commitments involve the loss in value of an affected resource that cannot be restored as a result of the action.

Construction of the proposed action would result in short-term increases to noise and air emissions. Construction would also use materials (e.g., plastic, concrete, metal) and energy (e.g., fuel, electricity) that would be irretrievably lost. The construction would temporarily impair traffic. While the new transfer pumps would require an upgraded electrical power supply, the replacement pipeline and pumps would create a more energy efficient system and decrease long-term electricity consumption and use of lubricants. Construction of the JP-8 replacement pipeline and associated improvements would incur wetland and floodplain impacts, but use of directional drilling techniques and selection of alternative 1 or 2 would eliminate permanent impacts to wetland resources and the floodplain. Additionally, alternatives 1 and 2 would avoid Environmental Restoration Program sites where soil and groundwater contamination could be encountered.

Overall, the increases in commitment of resources would be considered minor and would result in only a minor loss of these resources. This loss would be offset by the benefits of adhering to the consent order requiring replacement of the JP-8 transfer pipeline; avoiding NOVs and fines associated with non-compliance; upgrading aging infrastructure that no longer meets regulatory requirements and, thereby, reducing the potential for undetected POL leaks and uncontrolled fuel losses; as well as ensuring current and future mission requirements can be met through more efficient and fully operational aircraft fueling operations. An additional benefit of the proposed action would be creation of temporary construction jobs, as well as and avoiding loss of base mission and associated jobs.

Although irreversible and irretrievable commitment of resources would not occur under the no-action alternative, significant consequences to Tyndall AFB's mission could result if the JP-8 fueling operations are compromised due to the required shut down of the existing JP-8 transfer pipeline. This shut down would occur if the transfer pipeline is not upgraded to meet regulatory requirements by 2018. The proposed action's benefits, both short-term and long-term, outweigh the commitment of resources needed to undertake the project. Selection of the proposed action and action alternative 1 would require the least commitment of resources and would provide the most benefit in support of Tyndall AFB's mission by upgrading the JP-8 transfer pipeline to meet current regulatory requirements and provide a more efficient system for fueling operations at the base.

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SECTION 6. LIST OF AGENCIES, COMPANIES, AND INDIVIDUALS CONTACTED

The following is a list of the agencies, companies, and individuals contacted during preparation of this EA:

- FWC, Mr. Rick McCann, Telephone Communication, Confirm coordination requirements for the Air Force.
- Florida Department of State, Division of Historical Resources, Bureau of Historic Preservation, Mr. Vincent 'Chip' Birdsong, Supervisor, Florida Master Site File, Telephone/Email Communication, Confirm general vicinity description for 8BY25, Specific location information is not available.

The following is a list of the agencies, Native American Tribes/Nations, and individuals who have been contacted for regulatory and public review of the Draft EA:

- Florida State Clearinghouse, Florida Department of Environmental Protection, Ms. Lauren Milligan, Draft EA, FONSI/FONPA provided for state agency review.
- United States Fish and Wildlife Service, Panama City Ecological Services Field Office, Ms. Jannet Mizzi, Draft EA, FONSI/FONPA provided for federal agency review.
- National Marine Fisheries Service, Mr. Mark Thompson, Draft EA, FONSI/FONPA provided for federal agency review.
- Miccosukee Tribe of Indians of Florida, Tribal Historic Preservation Officer, Mr. Steven Terry, Draft EA, FONSI/FONPA provided for review.
- Muscogee (Creek) Nation, Cultural Preservation Manager, Ms. Joyce A. Bear, Draft EA, FONSI/FONPA provided for review.
- Poarch Band of Creek Indians, Tribal Historic Preservation Officer, Mr. Robert Thrower, Draft EA, FONSI/FONPA provided for review.
- Seminole Tribe of Florida, Ah-tah-thi-ki Museum, Tribal Historic Preservation Officer, Mr. Bill Steele, Draft EA, FONSI/FONPA provided for review.
- Bay County Public Library, Reference Department, Draft EA, FONSI/FONPA provided for public review.
- Tyndall AFB Library, Reference Department, Draft EA, FONSI/FONPA provided for public review.
- Tyndall AFB Website, Website Coordinator, Draft EA, FONSI/FONPA provided for public review.

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APPENDIX A: List of Species for Tyndall AFB

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Appendix A: Table of Listed Species for Tyndall AFB

Common Name	Species Name	State Status	Federal Status	Habitat Description
MAMMALS				
Choctawatchee Beach Mouse	<i>Peromyscus polionotus allophrys</i>	E	E CH	Barrier Island
St. Andrews Beach Mouse	<i>Peromyscus polionotus peninsularis</i>	E	E CH	Barrier Island
West Indian Manatee	<i>Trichechus manatus</i>	E	E	Marine
Florida Black Bear	<i>Ursus americanus floridanus</i>	T	ce	Swamps, forested areas
Common Name	Species Name	State Status	Federal Status	Habitat Description
BIRDS				
Snowy Plover	<i>Charadrius alexandrinus tenuirostris</i>	ce	T	Barrier Islands
Piping Plover	<i>Charadrius melodus</i>	T CH	T	Barrier Islands
Little Blue Heron	<i>Egretta caerulea</i>		SSC	Marshes, ponds, lakes
Reddish Egret	<i>Egretta rufescens</i>		SSC	Brackish marsh, shallow coastline
Snowy Egret	<i>Egretta thula</i>		SSC	Marshes, lakes, ponds, shallow coastline
Tricolor Heron	<i>Egretta tricolor</i>		SSC	Marshes, ponds
White Ibis	<i>Eudocimus albus</i>		SSC	Marshes, lakes
Peregrine Falcon	<i>Falco peregrinus tundrius</i>	ce	E	Open habitats
Southeastern American Kestrel	<i>Falco sparverius paulus</i>	ce	T	Open, partly open habitat
American Oystercatcher	<i>Haematopus palliatus</i>		SSC	Shoreline
Bald Eagle	<i>Haliaeetus leucocephalus</i>	BGEPA		Coastline, lakes
Brown Pelican	<i>Pelecanus occidentalis</i>		SSC	Barrier Island, bays
Red-cockaded Woodpecker	<i>Picoides borealis</i>	E	SSC	Mature Pine Forests
Black Skimmer	<i>Rhychops niger</i>		SSC	Shoreline
Least Tern	<i>Sterna antillarum</i>		T	Barrier Island, shoreline
Common Name	Species Name	State Status	Federal Status	Habitat Description
REPTILES (Aquatic)				
American alligator	<i>Alligator mississippiensis</i>	SSC	SAT in South Florida	ESTUARINE: tidal marsh LACUSTRINE: river floodplain lake, swamp lake RIVERINE: alluvial stream, blackwater stream
Loggerhead turtle	<i>Caretta caretta</i>	T	T	TERRESTRIAL: sandy beaches; nesting
Green turtle	<i>Chelonia mydas</i>	E	E	TERRESTRIAL: sandy beaches; nesting
Leatherback turtle	<i>Dermochelys coriacea</i>	E	E	TERRESTRIAL: sandy beaches; nesting
Hawksbill turtle	<i>Eretmochelys imbricata imbricata</i>	E	E	MARINE: open water; no nesting
Kemp's ridley turtle	<i>Lepidochelys kempii</i>	E	E	TERRESTRIAL: sandy beaches; nesting
Alligator snapping turtle	<i>Macroclmys temminckii</i>	SSC		ESTUARINE: tidal marsh LACUSTRINE: river floodplain lake, swamp lake RIVERINE: alluvial stream, blackwater stream
REPTILES (Terrestrial)				
Eastern indigo snake	<i>Drymarchon corais couperi</i>	T	T	ESTUARINE: tidal swamp PALUSTRINE: hydric hammock, wet flatwoods TERRESTRIAL: mesic flatwoods, upland pine forest, sandhills, scrub, scrubby flatwoods, rockland hammock, ruderal
Gopher tortoise	<i>Gopherus polyphemus</i>	T	Under review	TERRESTRIAL: sandhills, scrub, scrubby flatwoods, xeric hammocks, coastal strand, ruderal
Mole Snake	<i>Lampropeltis calligaster</i>	CS2		TERRESTRIAL: pineland, hardwood hammocks, sandhill, prairies, and agricultural fields
Florida pine snake	<i>Pituophis melanoleucus mugitus</i>	SSC	ce	LACUSTRINE: ruderal, sandhill upland lake TERRESTRIAL: sandhill, scrubby flatwoods, xeric hammock, ruderal

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Common Name	Species Name	State Status	Federal Status	Habitat Description
AMPHIBIANS				
Reticulated flatwoods salamander	<i>Ambystoma bishopi</i>	SSC	E CH	PALUSTRINE: wet flatwoods, dome swamp, basin swamp, ruderal TERRESTRIAL: mesic flatwoods (reproduces in ephemeral wetlands within this community)
Gopher frog	<i>Rana capito</i>	SSC	ce	TERRESTRIAL: sandhill, scrub, scrubby flatwoods, xeric hammock (reproduces in ephemeral wetlands within these communities)
Common Name	Species Name	State Status	Federal Status	Habitat Description
FISH				
Gulf sturgeon	<i>Acipenser oxyrinchus desotoi</i>	SSC	T CH	Marine, Large Rivers
Common Name	Species Name	State Status	Federal Status	Habitat Description
Plants				
Southern Milkweed	<i>Asclepias viridula</i>	T	ce	Wet prairie
Godfrey's Golden Aster	<i>Chrysopsis godfreyi</i>	E	ce	Dunes
Dew Thread Sundew	<i>Drosera filiformis</i>	E		Wet prairie
Spoon-leaved Sundew	<i>Drosera intermedia</i>	T		Wet prairie
Henry's Spider Lily	<i>Hymenocallis henryae</i>	E	ce	Cypress stringers
Thick-leaved Water Willow	<i>Justicia crassifolia</i>	E	ce	Wet prairie
Southern Red Lily	<i>Lilium catesbaei</i>	T		Wet prairie
Gulf Coast Lupine	<i>Lupinus westianus</i>	T		Scrub, dunes
Bog Tupelo	<i>Nyssa ursine</i>		ce	Wet prairie
Giant Water Dropwort	<i>Oxypolis greenmanii</i>	E		Wet prairie, ditches
Apalachicola Dragonhead	<i>Physostegia godfreyi</i>	T		Wet prairie
Violet-flowered Butterwort	<i>Pinguicula ionantha</i>	E	T	Cypress domes
Chapman's Butterwort	<i>Pinguicula planifolia</i>	T	ce	Wet prairie
Large-leaved Jointweed	<i>Polygonella macrophylla</i>	T	ce	Scrub
White-flowered Wild Petunia	<i>Ruellia noctiflora</i>	E		Wet prairie
White-Top pitcher plant	<i>Sarracenia leucophylla</i>	E		Wet prairie, bogs
Parrot pitcher plant	<i>Sarracenia psittacina</i>	T		Wet prairie, bogs
Decumbent pitcher plant	<i>Sarracenia purpurea</i>	T		Wet prairie, bogs
Chapman's Crownbeard	<i>Verbesina chapmanii</i>	T		Wet prairie
Drummond's Yellow-eyed Grass	<i>Xyris drummondii</i>		ce	Wet prairie, flatwoods
Quillwort Yellow-eyed Grass	<i>Xyris isoetifolia</i>	E	ce	Wet prairie
Karst Pond Yellow-eyed Grass	<i>Xyris longisepala</i>	E		Upland lake margin
Harper's Yellow-eyed Grass	<i>Xyris scabrifolia</i>	T		Wet prairie
E	endangered			
SSC	species of special concern			
T	threatened			
ce	consideration encouraged			
CH	critical habitat designated			
SAT	Species Listed because of Similar Appearance to endangered species			
BGEPA	Bald and Golden Eagle Protection Act			

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APPENDIX B: Gopher Tortoise Candidate Conservation Agreement

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CANDIDATE CONSERVATION AGREEMENT FOR THE GOPHER TORTOISE

**Annual Report
October 1, 2009 – September 30, 2010**

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INTRODUCTION

The gopher tortoise (*Gopherus polyphemus*) is endemic to the southeastern United States and has been in population decline in recent years. While the tortoise is federally-listed under the ESA in the western portion of its range, it is currently a candidate species for listing in the eastern portion. In 2006, the United States Fish and Wildlife Service received a petition to federally list the species throughout its non-listed range which includes Florida, Georgia, Alabama, and parts of South Carolina. As a response to the listing petition, stakeholders representing the four states' fish and wildlife agencies, branches of the Department of Defense, and related non-profit organizations drafted and executed a Candidate Conservation Agreement (CCA).

The purpose of the CCA is to address species management and conservation throughout the gopher tortoise's non-federal listed range. State and federal representatives from Florida, Georgia, Alabama, and South Carolina formed a partnership to develop a Candidate Conservation Agreement (CCA) for the gopher tortoise. The goal of the CCA is to organize a cooperative range-wide approach to gopher tortoise management and conservation in its eastern range. The CCA allows the signing parties to leverage knowledge and funding within a common conservation approach and framework. The CCA is voluntary and flexible in nature so that various conservation and management actions can be agreed to and implemented at different levels by the signing parties.

Established under the CCA, the Gopher Tortoise Team (GTT) is charged with implementation of the Agreement. The position of Chair rotates alphabetically among the four states' wildlife agencies, starting with Alabama in the first year of implementation, followed by Florida, Georgia, and South Carolina. Georgia currently serves as Chair of this team through June 30, 2011. The Chair's responsibilities include organizing the annual meeting of the parties and compiling the annual report required under the CCA.

In June 2010, the second annual meeting of the GTT was held at Florida's Nokuse Plantation/E. O. Wilson Biophilia Center. Twenty-five participants representing the thirteen parties attended the two-day meeting. During the meeting, parties presented conservation programs and actions currently being implemented by each agency. The meeting provided a great opportunity to meet all the representatives and establish a future work plan for the reporting requirement.

Comprehensive reports were to be submitted by one representative from each party by December 1, 2010. It is important to note that not every section of the report is applicable to every party. Parties with no information appropriate to a particular section have indicated this with "not applicable, or none during this reporting period." Reports were submitted by each party's point of contact and compiled by the Chair with minimal edits.

SECTION I EXECUTIVE SUMMARY

ARMY

The Army has gopher tortoises on five installations within the eastern portion of the gopher tortoise range: Fort Rucker, AL; Camp Blanding, FL; Fort Benning, GA; Fort Gordon, GA; and Fort Stewart, GA. All installations include conservation of the gopher tortoise in their Integrated Natural Resource Management Plans. These long range plans provide for the protection and enhancement of habitat and the conservation of gopher tortoises. The area of habitat or potential habitat on these installations is estimated at over 161,000 acres. The Army conducted GT management actions on over 100,000 acres including 81,000 acres of prescribed burning in FY 10. Partial surveys were conducted on Fort Stewart, Fort Benning and Fort Gordon in FY 10. Army installations relocated over 170 tortoises in FY 10. Education, outreach, and research continued in FY 10.

Fort Rucker, AL

Following the mapping of gopher tortoise habitat in 2008, management continued as normal for gopher tortoises on Fort Rucker. There was an increase in growing season burns. Forest management activities beneficial to gopher tortoises such as thinning, timber stand improvement, and invasive species control continued during 2009.

Fort Gordon, GA

In FY10 the Fort Gordon Natural Resources Branch maintained or improved 16,798 acres of habitat for the gopher tortoise through timber thinning, herbicide spraying, and prescribed fire. Population surveys were conducted on a portion of the installation and resulted in a population estimation of 203 tortoises for the area surveyed. A health assessment was also conducted, evaluating 9 tortoises for the presence of URTD (results unavailable at time of report).

Fort Benning, GA

Fort Benning's main objectives for FY10 were the relocation of gopher tortoises that were located within the construction footprints of many of the BRAC/Army Transformation projects on the installation. Fort Benning has been working with The Nature Conservancy and Auburn University to relocate these tortoises on and off of Fort Benning. Fort Benning moved 98 tortoises to Army Compatible Use Buffer property adjacent to the installation during this past year. This ACUB tract had recently been purchased and restored by removing an old slash pine plantation and planting Longleaf pine.

Fort Stewart, GA

Fort Stewart conducted a baseline survey in 2009 with a population estimate of 2,129 (excluding hatchlings and juveniles) in 3 regions on Fort Stewart. In 2010, Region 1 was surveyed with a population estimate of 1,354. Region 2 will be surveyed during 2011. Three hundred (300) acres of mid-story growth were reduced to improve GT habitat by mechanical and single stem herbicide application. 400 acres were delineated for future improvement

including site restoration, thinning, mechanical mowing, and single stem herbicide application. A total of 101 head-started gopher tortoises were released on Fort Stewart on June 11, 2010; 65 released into improved habitat improved in Training Area F13. An additional 35 GTs were released in various locations on the western half of the installation. The tortoises are being monitored for retention rate. The head-started tortoises were raised by Georgia Southern University.

Note: The Florida National Guard (FLARNG) and Camp Blanding is not a signatory to the Gopher Tortoise Candidate Conservation Agreement, therefore the Army's report will not include specific information about Camp Blanding. Camp Blanding has a proactive program to conserve the GT on Camp Blanding. Currently, the FLARNG and Camp Blanding are pursuing a Memorandum of Understanding with the US Fish and Wildlife Service to further the conservation of the GT on FLARNG lands.

NAVY

The US Navy has six installations within the eastern range of the Gopher Tortoise (GT). Naval Support Activity Panama City does not support a GT population and Naval Station Mayport supports a very small GT population. The four installations with significant GT populations include NSB Kings Bay in southeastern Georgia, NAS Jacksonville in northeastern Florida, and NAS Whiting Field and NAS Pensacola in the western Florida panhandle. NAS Whiting Field also has lands in southern Alabama. Each installation has an active and current Integrated Natural Resources Management Plan (INRMP). This report summarizes GT management activities for the six installations within the eastern range of the GT populations from the timeframe October 1, 2009 to September 30, 2010. During this reporting period, the Navy managed over 12,000 acres of tortoise habitat, prescribed burned 1,288 acres, reduced encroaching brush on 100 acres, treated 63 acres of invasive species, and eliminated 83 feral hogs and 9 coyotes. Surveys were conducted at all six installations and documented 1,104 burrows with approximately 775 burrows determined to be "active" - up from 685 active burrows reported in 2009. Subsamples of active burrows were camera scoped yielding an occupancy rate from 41% to 68% (percent of sample variable by installation). Scoping indicated an estimated population of 512 individuals, up from the 2009 estimate of 428. Issues with disease and predation were determined to be absent, minimal, or managed. There was one translocation conducted which involved moving a tortoise from an urban area to natural habitat. There were no gains or losses of habitat, but some improvement modifications were made involving grounds maintenance which were implemented to better identify and protect burrows. Additional improvement included restoration of 100 acres to longleaf pine and 50 acres of understory control by mechanical means in longleaf pine. Community outreach consisted of continued distribution of brochures, posters, and informational signage. No regulations, laws, or policies were changed or implemented, and there were no deviations or additions regarding the CCA Agency Conservation Strategy. Individual installation activities are reported in the following sections where appropriate. Navy GT management addresses the five Listing Factors identified in

section 4 (a) (1) of the Endangered Species Act - - Listing Factor One (present or threatened destruction, modification, or curtailment of the species' habitat or range), Listing Factor Two (overutilization for commercial, recreational, scientific, or education purposes), Listing Factor Three (predation or disease), Listing Factor Four (existing regulatory mechanisms), and Listing Factor Five (other manmade or natural factors affecting the species' continued existence). Navy GT management provided a net benefit to the species and its habitat with regard to all five Listing Factors. No adverse actions were identified in reference to the five Listing Factors for GT populations or habitat on Navy lands.

AIR FORCE

The US Air Force has a number of installations (or associated installation facilities) within the eastern range of the Gopher Tortoise (GT) that have identified GT populations: Avon Park Air Force Range, FL; Eglin AFB, FL; MacDill AFB, FL; the 45th Space Wing, FL (includes Patrick AFB, Cape Canaveral AFS, Malabar Tracking Annex, and Jonathan Dickinson Missile Tracking Annex); Tyndall AFB, FL and Moody AFB, GA. Each installation has an active Integrated Natural Resources Management Plan (INRMP). This report summarizes GT management activities for these installations from October 1, 2009 thru September 30, 2010. During this FY 10 reporting period, the US Air Force:

- Managed over 441,000 acres of estimated gopher tortoise habitat without a designated protection status (over 85 % on Eglin AFB).
- Over 9,000 acres of gopher tortoise habitat were restored or improved.
- Prescribed burned over 135,000 acres.
- 3,426 acres of invasive species treated/eradicated
- Surveys conducted at most installations identified active and inactive burrows.
- Eglin AFB had seven on-site gopher tortoise relocations and Patrick AFB, FL, was involved in 47 relocations during FY 10 to unprotected lands.
- Research surveys were conducted at Avon Park Air Force Range, FL and; at Moody AFB, GA - where surveillance for upper respiratory tract disease (URTD) and other physiological parameters were continued through the FY 10 reporting period.
- Two installations reported a permanent loss of land/habitat (Eglin = 330 acres; and Patrick = 118 acres) due to expanded military mission-related requirements.
- Avon Park Air Force Range held three briefings during FY 10 for incoming military units and contractors on identification and avoidance of threatened, endangered and sensitive species including gopher tortoise and their burrows; Eglin conducted a two-hour threatened and endangered species class which included a section on gopher tortoises; Patrick and its associated installations provided various natural resource presentations to different groups during FY 10 (details under VIII. B); and Moody AFB, GA did a presentation in Feb 2010 at the "Georgia Chapter of the Wildlife Society" meeting at Valdosta State University.

USAF INSTALLATION OVERVIEW

Avon Park Air Force Range, FL

Consists of approximately 107,000 acres in Highlands and Polk counties in peninsular Florida. Plant communities include mainly pine flatwoods, oak scrub, pine plantations, dry prairie, oak hammocks, marshes, swamps, and cutthroat seeps. Gopher tortoises are most often observed in oak scrub and pine flatwoods. A three year baseline survey is currently underway to obtain population size, density, and basic demographic information.

Eglin AFB, FL

From October 1, 2009 to September 30, 2010, Eglin implemented habitat management activities such as prescribed fire and mid-story and understory improvement. Surveys were primarily conducted in areas where development would be occurring, however, some surveys took place on undisturbed acreage in order to document population size. Very little monitoring was conducted for previously known burrows.

MacDill AFB, FL

MacDill AFB is a relatively small base (5,638 acres) surrounded by the waters of Tampa Bay on three sides and dense industrial and residential development on its northern side. The base supports only a small gopher tortoise population, roughly 100 tortoises, spread across several colonies throughout the airfield and pine forest areas. Including the airfield and pine forest areas there is roughly 1,500 acres of suitable gopher tortoise habitat on base. The installation has made a concerted effort to protect and improve gopher tortoise habitat on the installation, particularly in the forested areas. They spent DoD annual O&M funding to improve habitat areas through removal of dense exotic understory vegetation. MacDill also works with the base Plans and Programs office to avoid construction in gopher tortoise areas. In FY10 the installation worked with the Planning office to find a suitable alternative site for the proposed Civil Engineering and Security Forces Storage Yards which were initially proposed for construction in an area inhabited by gopher tortoises.

Patrick AFB, FL

The 45th Space Wing (45 SW) consists of four major installations and several smaller annexes. The four major installations: Cape Canaveral Air Force Station, Patrick Air Force Base, Malabar Tracking Annex, and Jonathan Dickinson Missile Tracking Annex, are the only properties within the 45 SW on which gopher tortoises are known to be present. Total area of all four properties is approximately 18,385 acres, of which roughly 6,200 is considered suitable gopher tortoise habitat. Cape Canaveral Air Force Station (CCAFS) has, by far, the largest population of gopher tortoises of the four sites; approximately 95% of gopher tortoises at 45 SW properties are found at CCAFS. A population survey has not been completed for all of the sites; therefore, an accurate population estimate is not available at this time. Management of gopher tortoise habitat is accomplished through mechanical cutting and controlled burning, as well as through the treatment/removal of invasive vegetation. Gopher tortoise relocations are conducted to

support various construction projects. Information pertaining to these activities is presented in this annual report.

Tyndall AFB, FL

Gopher tortoises are known from both the east and west units of the installation (roughly 400 occupied acres). These areas are known from incidental field observations and past surveys either in support of missions or for general biological information. Acres of potential habitat have been identified this year through a contract, and will guide field surveys next year. Longleaf pine restoration and frequent prescribed fire are used, which benefit suitable tortoise habitat. An installation-wide census is still needed, along with the status of each occupied area and an accurate population estimate.

Moody AFB, GA

Moody AFB is located 10 miles northeast of the City of Valdosta in Lowndes and Lanier counties in south-central Georgia. Comprising approximately 11,000 acres of federally owned land, the installation includes the main base (5,039 acres), the adjacent Grand Bay Range (5,874 acres), and the Grassy Pond Recreational Annex (489 acres), located 25 miles southwest of the main base. There are approximately 1,000 acres of gopher tortoise habitat located on the installation. Gopher tortoise management is accomplished through projects identified in the Moody AFB Integrated Natural Resources Management Plan with concurrence by the Georgia Department of Natural Resources and the U.S. Fish and Wildlife Service. Current projects include: seasonal monitoring and surveys of known gopher tortoise populations; disease surveillance for Upper Respiratory Tract Disease; gopher tortoise movement studies in relation to military activities; gopher tortoise mark-recapture population demography study; habitat improvement/restoration through burning, chemical release, and mechanical means.

UNITED STATES MARINE CORPS

The Marine Corps has two installations that have/may have gopher tortoises and conduct some management. Marine Corps Support Facility Blount Island (MCSF Blount Island), located in Jacksonville, FL, has 15 acres of gopher tortoise habitat. In July 2010 a burrow survey identified 63 active burrows, 15 inactive burrows, and 22 abandoned burrows. Though, the Marine Corps is evaluating the possibility of relocating all gopher tortoises to a site off of the installation. If this occurs, MCSF Blount Island will need to be moved from the Gopher Tortoise CCA. Marine Corps Logistics Base Albany (MCLB Albany), located in Albany, GA, has 1,400 acres of potential gopher tortoise habitat and utilizes prescribed fire to maintain and enhance this habitat. No burrow surveys have been conducted to determine if gopher tortoise are actually present on MCLB Albany.

UNITED STATES FOREST SERVICE

Gopher tortoises occur in both Covington and Escambia counties of Conecuh National Forest. Conecuh's gopher tortoise population is likely the largest in Alabama. The gopher tortoise and its burrows are protected on Conecuh National Forest by a Supervisor's Closure Order that bans the gassing of burrows and by timber sale specifications requiring protection of burrows. Management activities conducted for the restoration and maintenance of native fire ecosystems that support gopher tortoise include: timber thinning in mature longleaf stands, timber harvest to restore native over-story species (longleaf), prescribed fire, chemical treatment and eradication of cogongrass, trapping and removal of feral hogs, native grass seed collection and propagation for future restoration needs, and educational efforts through outreach and interpretation.

The National Forests in Florida's management activities for the maintenance/restoration of gopher tortoise habitat for FY10 include: Timber thinning in mature longleaf stands, prescribe fire, non-native invasive species eradication, mechanical mowing of mid-story vegetation, road restoration activities, gopher tortoise surveys, land enclosures via electric fence to prevent hog disturbance, seed collection and planting, fire line restoration, specific hog hunt in gopher tortoise areas, and education efforts through signage in strategic locations in the forests. The Apalachicola National Forest is serving as a research recipient site for the gopher tortoise and is in the process of receiving translocated gopher tortoises.

UNITED STATES FISH AND WILDLIFE SERVICE

Gopher tortoise conservation measures were reported for 21 National Wildlife Refuges within the unlisted range of the tortoise. All reported acreage below is the cumulative total of occupied and potential gopher tortoise habitat and habitat that was not categorized. A total of about 44,000 acres was permanently protected while nearly 49,000 acres were protected short-term during 2010. About 3,200 acres of tortoise habitat were unprotected and nearly 650 acres were managed but not protected. About 12,000 acres of gopher tortoise habitat was restored, improved, or maintained in 2010. Almost 30,000 acres of tortoise habitat was burned. One half acre of gopher tortoise habitat was acquired by the Refuge system in 2010. Twenty six tortoises were translocated within Refuge property during 2010.

All land management activities reported on Refuge property in 2010 resulted in the protection, management, and/or enhancement of about 182,500 acres of gopher tortoise habitat. Without these actions some of this acreage would have been susceptible to destruction (for those properties that were unprotected prior to Refuge encumbrance) and degradation (for those properties that were not previously managed). The cumulative benefits of protecting and managing gopher tortoise habitat on Refuge property precluded the loss or degradation of habitat. As a result of these conservation actions, about 182,500 acres of gopher tortoise habitat was not at risk of present or threatened destruction, modification, or curtailment which

is one of the threats the Fish and Wildlife Service evaluates when considering whether to list a species or, in some instances, when it reviews recovery actions to determine if a species has met its recovery criterion to eliminate this threat.

ALABAMA

Gopher tortoise occurs in the coastal plain of Alabama in 16 counties. Populations in two counties in the western portion of its Alabama range are listed as “threatened” by the U.S. Fish and Wildlife Service. Tortoises east of the Mobile and Tombigbee Rivers are currently unlisted but protected by state regulation from killing, taking, or possession. Overall the gopher tortoise is considered a P2 species or species of high conservation concern in the state.

While unlisted in most of the state, Alabama Department of Conservation and Natural Resources (ADCNR) supports efforts and actions aimed to preclude such action including continued funding through its Landowner Incentive Program to assist private landowners with longleaf pine habitat improvement and management, land acquisition by the State Lands Division Forever Wild program and management of current its longleaf holdings, and the continued management of longleaf pine habitats on state owned wildlife management and community hunting areas. In addition, a new regulation prohibiting the practice of gassing animal burrows has been enacted.

At this time ADCNR has no staff or budget dedicated to gopher tortoise conservation, but as identified in the Department’s Alabama Comprehensive Wildlife Conservation Strategy, longleaf pine restoration is identified as a priority which aids tortoises in the long term.

As such, the Department will continue to actively fund and support research and habitat acquisition and management which continue to aid the gopher tortoise.

FLORIDA

The gopher tortoise in Florida is a state threatened species. The Gopher Tortoise Management Plan was approved in September 2007. The overarching conservation goal of the management plan is to restore and maintain secure, viable populations of gopher tortoises throughout the species’ current range in Florida by addressing habitat loss. Specific objectives include increasing the amount of protected habitat; conducting appropriate vegetation management to maintain gopher tortoise habitat (e.g. prescribed burning); restocking tortoises to protected, managed, suitable habitats where densities are low; and decreasing tortoise mortality on lands proposed for development. Each objective provides benchmarks and measurements against which progress toward the plan’s goal can be assessed. A suite of conservation actions is proposed for the plan’s first five-year cycle. The extensive conservation actions outlined in the plan fall under the following broad categories: permitting, local government coordination, law enforcement, habitat preservation and management, population and disease management,

landowner incentives, monitoring and research, and public awareness.

Originally approved in April 2008, the Gopher Tortoise Permitting Guidelines were revised based on stakeholder and staff input and approved by FWC's Commission in June 2010. The guidelines include new permit options such as the Burrow and Structure Safety permit, a Research Recipient Site permit, and the Disturbed Site permit. The FWC continues to work with stakeholders to discuss any new challenges and work together toward possible solutions throughout the implementation of the Gopher Tortoise Management Plan. The continued participation of stakeholders is important to the long-term conservation of the species.

This report includes activities that benefit gopher tortoise conservation on nearly 112,000 acres of habitat throughout Florida. Specific accomplishments in implementing the management plan within the reporting timeframe are included in the sections that follow. In all, gopher tortoise conservation efforts in Florida are making significant progress. Much of the progress in prescribed fire and habitat management is made possible through partnerships with cities, counties, non-profit conservation organizations, and other state agencies.

During the reporting timeframe, close to 53,000 acres of gopher tortoise habitat were managed and restored either mechanically, chemically, by eradicating exotic plants, or through prescribed burning. Progress has also been made in protecting additional acres of habitat on private lands through the gopher tortoise recipient site permit program. Approximately 2,000 additional acres are now protected and being managed for gopher tortoises. One significant change from that last reporting cycle is the acres of habitat lost due to development. Since new development in Florida has slowed to a near standstill, approximately 5,500 acres of habitat were permanently impacted by development as compared to last year (30,000 acres).

Significant progress has been made in research with the publication of a long-anticipated study of URTD in May 2010. Further study results on the genetics of Florida tortoises were compiled, and a manuscript is forthcoming. Additional research is well underway, and future results will be included in the next reporting cycle. More educational materials have been developed and distributed, including a teacher's curriculum on gopher tortoises.

New permits were approved and implemented, and Florida's new imperiled species rule was approved and is currently being implemented.

Florida served as Chair of the Gopher Tortoise Team (GTT) for most of this reporting cycle and led the 1st annual reporting effort. The Florida representative attended and presented the first annual report results at the May 2010 SERPPAS Principals' meeting in Mobile, Alabama. Additional participation at the SERPPAS Steering Committee meetings also occurred during this reporting cycle. Georgia took the helm as Chair in July 2010.

Florida also hosted the 2nd annual meeting of the GTT under the Gopher Tortoise Candidate Conservation Agreement at Nokuse Plantation/E.O. Wilson Biophilia Center in Bruce, Florida.

The two-day meeting included updates from the CCA parties, a discussion on improving reporting information in future reports, and a field tour of the gopher tortoise habitat restoration activities completed and currently underway at Nokuse Plantation. One highlight of this field tour was viewing temporary enclosure (soft release) methods and results on the ground. New information gathered from various studies on temporary enclosures was shared with the group.

GEORGIA

The State of Georgia permanently protects 31,692 acres of tortoise habitat on Wildlife Management Areas, Natural Areas, Public Fishing Areas, State Parks, and Historic Sites. Land management beneficial to the gopher tortoise on these properties included prescribed burning of 15,686 acres, thinning or clear-cutting of 3,059 acres of off-site planted pines, removal of invasive exotic plants from 10 acres, and planting longleaf pine on 872 acres. Additionally, through a the Multistate Sandhills Ecological Restoration Project (funded by a Competitive State Wildlife Grant), Georgia DNR assisted private landowners with prescribed burns totaling 10,210 acres and longleaf pine plantings totaling 480 acres. Either through acquisition or conservation easements, DNR protected 5,765 acres of tortoise habitat during the reporting period. Georgia DNR contracted gopher tortoise surveys and population estimates, using line transect distance sampling (LTDS), on 18 total sites, including 3 state-owned sites. Research conducted or funded by DNR included studies at Reed Bingham State Park related to the head-starting efforts there: Predatory behavior and patterns of armadillos during the gopher nesting season, and; Behavior of head-started hatchling gopher tortoises. A Candidate Conservation Agreement with Assurances developed for the eventual repatriation of gopher tortoises at Plant Vogtle, Burke County remains under USFWS review. Numerous publications, website materials, workshops, and events aimed at increasing awareness for gopher tortoise conservation among both professionals and the general public were produced and/or conducted during the past year.

Georgia began serving as Chair of the Gopher Tortoise Team (GTT) during the latter part of the reporting period and will be replaced by South Carolina later in 2011.

SOUTH CAROLINA

During the 2010 calendar year SCDNR conducted land management and population management activities at the Aiken Gopher Tortoise Heritage Preserve in Aiken County, South Carolina. The goals of these actions were to restore and maintain gopher tortoise habitat and enhance the native gopher tortoise population occurring on this preserve. Land management activities included prescribed burning and vegetation control using both herbicides and mechanical means. Gopher tortoise population management focused on the translocation of new tortoises to the preserve, using temporary holding pens, and the monitoring of their movements post release from holding pens. In addition reproduction within the translocated population was also monitored.

Additional activities focused on gopher tortoise conservation included the development of a statewide conservation plan for the species, revision of an existing management plan for another gopher tortoise preserve and several public awareness and outreach projects.

POARCH BAND OF CREEK INDIANS

See Appendix I.

AMERICAN FOREST FOUNDATION

The American Forest Foundation (AFF) has been involved in the CCA since its inception in 2008. From October 1, 2009 through September 30, 2010 AFF has been working to increase the number of landowners involved with and engaged in imperiled species conservation, including the gopher tortoise.

This work has been facilitated by the distribution of the Pine Ecosystem Conservation Handbook for the Gopher Tortoise: A guide for family forest owners in Alabama, Florida and Georgia along with Conservation Awareness Signs for those landowners that have made a commitment to improving gopher tortoise habitat on their property. In addition to the handbooks and signs, AFF, the World Resources Institute (WRI), and Longleaf Alliance (LLA) have been working to develop and implement a market-based habitat crediting system for the gopher tortoise and associated species on family woodlands in portions of Georgia and Alabama. The incentive-based framework approach will complement other efforts in the region to help preclude the need to federally list and ultimately recover the eastern population of the gopher tortoise. A habitat-centric and proactive approach, focusing on mitigation before listing occurs provides numerous benefits and increases the overall likelihood of program success.

This new approach will hopefully generate new income streams for private landowners so their lands remain as well-managed forests, providing valuable ecosystem services and timber products. A working group of stakeholders has been consulted throughout the entire process and the framework incorporates monitoring, evaluation and adaptation protocols and builds upon previous and forthcoming USFWS species and habitat mitigation guidance. Supplementary to all this work, AFF has been holding field days to increase landowner awareness of the plight of the gopher tortoise and the availability of programs to help landowners improve conservation on their lands.

LONGLEAF ALLIANCE

The Alliance continued to conduct workshops, field days, and academies where gopher tortoise conservation is a curriculum component. In addition, work continued with the American Foundation and the World Resources Institute toward development and testing of a habitat crediting system for sandhill habitats with the aim of rewarding landowner for maintaining and enhancing gopher tortoise habitat through a credit trading system. Finally, the Alliance acted as the General Contractor for the Alabama Forestry Commission in expending American Recovery and Reinvestment Act (ARRA) funds on publicly owned lands in Alabama, restoring longleaf ecosystems on more than two thousand acres of state forests to better habitat conditions for gopher tortoises and encouraging expansion and growth of existing populations. Acreages reported below are on those lands.

SECTION II PROPERTIES OR AREA COVERED

This section provides background information on the acreage of land owned and/or managed by the various signatory agencies and organizations and occupied by gopher tortoises or suitable gopher tortoise habitat. Acreages are broken down based on their relative protected statuses.

ARMY

- a) Total estimated acreage of permanently protected tortoise habitat (either by public ownership or by easement): Not applicable, or none during this reporting period.
- b) Total estimated acreage of short-term protected tortoise habitat (either by public ownership or by easement): Not applicable, or none during this reporting period.
- c) Total estimated acreage of unprotected tortoise habitat: Not applicable, or none during this reporting period.
- d) Total estimated acreage tortoise habitat without a designated special protection status, but included in a management plan that provides for the conservation of the gopher tortoise:
 - Fort Benning: 62, 699
 - Fort Gordon: 35,277
 - Fort Rucker: 49,066
 - Fort Stewart: 14,302
 - Army Total: 161,244

NAVY

- a) Total estimated acreage of permanently protected tortoise habitat (either by public ownership or by easement): Not applicable, or none during this reporting period.
- b) Total estimated acreage of short-term protected tortoise habitat (either by public ownership or by easement): Not applicable, or none during this reporting period.
- c) Total estimated acreage of unprotected tortoise habitat: Not applicable, or none during this reporting period.
- d) Total estimated acreage tortoise habitat without a designated special protection status, but included in a management plan that provides for the conservation of the gopher tortoise: 12140. Installation subtotals include: NSB King's Bay 5,000, NAS Jacksonville 776, NAS Whiting Field 4,384, NAS Pensacola 1,978, and NS Mayport 2.

AIR FORCE

- a) Total estimated acreage of permanently protected tortoise habitat (either by public ownership or by easement):
Patrick AFB, FL: 101
Avon Park Air Force Range, Eglin AFB, FL, MacDill AFB, FL, Tyndall AFB, FL Moody AFB, GA: None, or not applicable during this reporting period.
- b) Total estimated acreage of short-term protected tortoise habitat (either by public ownership or by easement): None, or not applicable during this reporting period.
- c) Total estimated acreage of unprotected tortoise habitat:
Patrick AFB, FL: approx. 6,200
Avon Park Air Force Range, Eglin AFB, FL, MacDill AFB, FL, Tyndall AFB, FL, Moody AFB, GA: None, or not applicable during this reporting period.
- d) Total estimated acreage tortoise habitat without a designated special protection status, but included in a management plan that provides for the conservation of the gopher tortoise:
Avon Park Air Force Range: 50,410
Eglin AFB, FL: has 384,500 acres of potential habitat – which includes: 237,762 acres of natural sandhills; 74,351 acres of pine plantation; 36,704 acres of cleared vegetated areas (test areas); 13,025 acres of mesic flatwoods; 11,602 acres of upland pine; 6,060 acres of urban habitat; 2,563 acres of wet flatwoods; 2,432 acres of xeric flatwoods (Note: No overall change from 1st Annual Report)
MacDill AFB, FL: 550 acres of pine flatwoods habitat and 1,000 acres of mowed airfield
Patrick AFB, FL: None, or not applicable during this reporting period.
Tyndall AFB, FL: GIS modeling with field review has identified 15,303 acres of potential gopher tortoise habitat, split into the following categories: Highest Potential: 1,517 acres, Medium Potential: 8,678 acres, Fair Potential: 2,265 acres, and Little Potential: 2,843 acres.
Moody AFB, GA: 946

UNITED STATES MARINE CORPS

- a) Total estimated acreage of permanently protected tortoise habitat (either by public ownership or by easement): Not applicable, or none during this reporting period.

- b) Total estimated acreage of short-term protected tortoise habitat (either by public ownership or by easement): Not applicable, or none during this reporting period.
- c) Total estimated acreage of unprotected tortoise habitat: Not applicable, or none during this reporting period.
- d) Total estimated acreage tortoise habitat without a designated special protection status, but included in a management plan that provides for the conservation of the gopher tortoise:
MCSF Blount Island: 15
MCLB Albany: 1,400

UNITED STATES FOREST SERVICE

- a) Total estimated acreage of permanently protected tortoise habitat (either by public ownership or by easement):
Conecuh National Forest, AL: 84,000
Apalachicola, Osceola, and Ocala National Forests, FL: 283,516
- b) Total estimated acreage of short-term protected tortoise habitat (either by public ownership or by easement): Not applicable, or none during this reporting period.
- c) Total estimated acreage of unprotected tortoise habitat: Not applicable, or none during this reporting period.
- d) Total estimated acreage tortoise habitat without a designated special protection status, but included in a management plan that provides for the conservation of the gopher tortoise: Not applicable, or none during this reporting period.

UNITED STATES FISH AND WILDLIFE SERVICE

- a) Total estimated acreage of permanently protected tortoise habitat (either by public ownership or by easement): 44,268 (2,000 occupied, 2,450 potential, balance undetermined).*
- b) Total estimated acreage of short-term protected tortoise habitat (either by public ownership or by easement): 49,147 (2,000 occupied, 2,450 potential, balance undetermined).*
- c) Total estimated acreage of unprotected tortoise habitat: 3,200 (0 occupied, 1,100 potential, balance undetermined).*

- d) Total estimated acreage tortoise habitat without a designated special protection status, but included in a management plan that provides for the conservation of the gopher tortoise: 644 (644 undetermined).*

* = *Tortoise habitat may be reported as Occupied (Habitat known to be occupied by tortoises as determined by surveys/censuses) or Potential (Habitat which may or may not harbor tortoises [no survey or census has been conducted], but has suitable conditions for inhabitation).*

ALABAMA

- a) Total estimated acreage of permanently protected tortoise habitat (either by public ownership or by easement): Using the report generated by Hctor and Beyeler the estimated acreage of occupied and potential tortoise habitat on conservation land in Alabama is 142,065 acres. (Hctor, T. and Beyeler, S. 2010. Regional Gopher Tortoise Potential Habitat Model Report. University of Florida Center for Landscape and Conservation Planning. April 30, 2010.)
- b) Total estimated acreage of short-term protected tortoise habitat (either by public ownership or by easement): Not applicable, or none during this reporting period.
- c) Total estimated acreage of unprotected tortoise habitat: From Hctor and Beyeler, an estimated 4,444,371 acres of occupied and potential tortoise habitat under private ownership in Alabama.
- d) Total estimated acreage tortoise habitat without a designated special protection status, but included in a management plan that provides for the conservation of the gopher tortoise: Not applicable, or none during this reporting period.

FLORIDA

- a) Total estimated acreage of permanently protected tortoise habitat (either by public ownership or by easement): 4,486.14

Acreage reported below is not the total acreage of the properties, but the acreage of land within those properties that had reportable activities. The lands listed below reflect gopher tortoise recipient sites protected under a perpetual conservation easement newly permitted within the reporting period.

Long-term Protected Recipient Sites

Recipient Site Name	County	Acreage	Gopher tortoise habitat acres
Longbranch Crossing	Clay	293.05	210.76
Northwest Hackletrap	Glades	1165.4	510.55
C. Herman Beville Ranch	Sumter	890	492.37

Local Government Properties	Manager (County)	Gopher tortoise habitat acres
Alachua Fairgrounds	Alachua	56
Telegraph Creek	Lee	1459
Daniels Preserve	Lee	105
Sabal Bluff	Lake	38.5
Railhead Scrub	Collier	53.1
Barr Hammock	Alachua	220
Indrio Savannahs	St. Lucie	240
Flowing Waters	Lake	63.9
Lake Proctor Wilderness Area	Seminole	475
Upper Pithlachascotte River Preserve	Pasco	53
Lake Lizzie Conservation Area	Osceola	509

Data reported includes additional areas maintained or restored by Central Florida Ecosystem Support and the Northeast Florida Resource Management Partnership (a partnership of FWC, The Nature Conservancy, and the Florida Fire Strike Team). Their work was conducted at the following sites:

- Ordway-Swisher Biological Station
- Faver-Dykes State Park
- Bayard Conservation Area
- Etoniah Creek State Forest
- Black Creek Ravines Conservation Area
- Rock Springs Run State Reserve
- Heart Island Conservation Area
- River Rise State Park
- Longleaf Flatwoods Reserve
- Highlands Hammock State Park
- Saddle Blanket Lakes Preserve
- Catfish Creek Preserve
- Stokes Landing Conservation Area
- Archbold Biological Station

- Kissimmee Prairie State Preserve

b) Total estimated acreage of short-term protected tortoise habitat (either by public ownership or by easement): 106,418.3

Acreage reported is not the total acreage of the properties, but the acreage of gopher tortoise habitat acres within those properties.

FWC-managed lands

Name of Property	Manager	Gopher tortoise habitat acres
Box-R WMA	FWC	459.2
Joe Budd WMA	FWC	5213.5
L. Kirk Edwards WEA	FWC	0.4
Ft White Mitigation Park	FWC	1030.3
Andrews WMA	FWC	699.4
Big Bend WMA	FWC	1319.4
Half Moon WMA	FWC	728.1
Guana River WMA	FWC	1363.9
Three Lakes WMA	FWC	21992.8
Triple N Ranch WMA	FWC	7574.6
Salt Lake WMA	FWC	223.9
Split Oak Mitigation Ranch	FWC	563.1
Tosohatchee WMA	FWC	3540.7
Caravelle Ranch WMA	FWC	2064.9
Chassahowitzka WMA	FWC	6632.1
Chinsegut WEA	FWC	742.8
Perry Oldenberg Mitigation Park	FWC	303.6
Fred C Babcock/Cecil M Webb WMA	FWC	38703.9
Hilochee WMA	FWC	1118.6
Lake Wales Ridge WEA	FWC	5810.8
Bullfrog Creek Mitigation Park	FWC	513.9
Hickey Creek Mitigation Park	FWC	401.4
Moody Branch Mitigation Park	FWC	372.9
Platt Branch Mitigation Park	FWC	1080.4
Fisheating Creek WMA	FWC	1944.1
Watermelon Pond Mitigation Park	FWC	489
Apalachee WMA	FWC	1236.9

Short-term Protected Recipient Sites

Recipient Site Name	County	Acreage	Gopher tortoise habitat acres
Nokuse Plantation Black Creek	Walton	995	439
The Woods	Lafayette	701.8	301.3
Lake Louisa State Park	Lake	42.5	42.44
Total Gopher tortoise acreage			782.74

- c) Total estimated acreage of unprotected tortoise habitat: Not applicable, or none during this reporting period.
- d) Total estimated acreage tortoise habitat without a designated special protection status, but included in a management plan that provides for the conservation of the gopher tortoise.

Research Recipient Sites

Recipient Site Name	County	Acreage	Gopher tortoise habitat acres
Apalachicola National Forest - Munson Sandhills	Leon	869	869

GEORGIA

- a) Total estimated acreage of permanently protected tortoise habitat (either by public ownership or by easement): The State permanently protects 30,889 acres of tortoise habitat on Wildlife Management Areas, Natural Areas, Public Fishing Areas, State Parks, and Historic Sites. The table below breaks down the acreages by property. All state lands harboring tortoises are considered permanently protected. At this time we do not have information on protected tortoise habitat on private lands with conservation easements.

<u>Site</u>	<u>acreage</u>	<u>suitable tortoise acres</u>
Altamaha WMA	29,300	64
Bagby SP	742	82
Ballard Tract WMA	5700	840
Big Hammock WMA/NA	6900	140
Bullard Creek WMA	9331	1140
Chickasawhatchee WMA	19700	4200
Crooked River SP	511	195
Dixon Memorial WMA	35559	500
Dodge County PFA	445	110

Doerun Pitcher Plant Bog NA	600	300
Elmodel WMA	1600	200
Evans County PFA	400	30
Fall Line Sandhills NA	1576	1488
Flat Tub WMA	3597	740
Flint River WMA	2300	600
General Coffee SP	1428	564
George L. Smith SP	1666	380
Georgia Veterans SP	1474	388
Grand Bay WMA	8700	250
Griffin Ridge WMA	5600	645
Horse Creek WMA	8100	875
Howfyl-Broadfield State Historic Site	1264	200
Kolomoki Mounds SP	1297	185
Laura Walker SP	659	150
Little Ocmulgee SP	1290	332
Mayhaw WMA	4700	250
McDuffie PFA	600	40
Moody Forest NA	4455	1206
Ocmulgee WMA	11,700	600
Ohoopee Dunes NA	2500	1342
Paradise PFA	1300	100
Penholoway Swamp WMA	4565	500
Reed Bingham SP	1622	233
River Creek WMA	2793	1310
Seminole SP	776	300
Silver Lake WMA	8506	5000
Townsend WMA	24400	3263
Tuckahoe WMA	15100	250
Yuchi WMA	7800	2700
TOTAL	240,556	31,692

- b) Total estimated acreage of short-term protected tortoise habitat (either by public ownership or by easement): Not applicable, or none during this reporting period.
- c) Total estimated acreage of unprotected tortoise habitat: Not applicable, or none during this reporting period.
- d) Total estimated acreage tortoise habitat without a designated special protection status, but included in a management plan that provides for the conservation of the gopher tortoise: Not applicable, or none during this reporting period.

SOUTH CAROLINA

- a) Total estimated acreage of permanently protected tortoise habitat (either by public ownership or by easement):
Aiken Gopher Tortoise Heritage Preserve (AGTHP) – 1,622
Tillman Sandridge Heritage Preserve (TSR) - 1,437
- b) Total estimated acreage of short-term protected tortoise habitat (either by public ownership or by easement): Not applicable, or none during this reporting period.
- c) Total estimated acreage of unprotected tortoise habitat: Not applicable, or none during this reporting period.
- d) Total estimated acreage tortoise habitat without a designated special protection status, but included in a management plan that provides for the conservation of the gopher tortoise: Not applicable, or none during this reporting period.

POARCH BAND OF CREEK INDIANS

- a) Total estimated acreage of permanently protected tortoise habitat (either by public ownership or by easement): ~ 1
- b) Total estimated acreage of short-term protected tortoise habitat (either by public ownership or by easement): ~1
- c) Total estimated acreage of unprotected tortoise habitat: Not applicable, or none during this reporting period.
- d) Total estimated acreage tortoise habitat without a designated special protection status, but included in a management plan that provides for the conservation of the gopher tortoise: Not applicable, or none during this reporting period.

AMERICAN FOREST FOUNDATION

- a) Total estimated acreage of permanently protected tortoise habitat (either by public ownership or by easement): Not applicable, or none during this reporting period.
- b) Total estimated acreage of short-term protected tortoise habitat (either by public ownership or by easement): Not applicable, or none during this reporting period.

- c) Total estimated acreage of unprotected tortoise habitat: Not applicable, or none during this reporting period.
- d) Total estimated acreage tortoise habitat without a designated special protection status, but included in a management plan that provides for the conservation of the gopher tortoise: Not applicable, or none during this reporting period.

LONGLEAF ALLIANCE

- a) Total estimated acreage of permanently protected tortoise habitat (either by public ownership or by easement): Not applicable, or none during this reporting period.
- b) Total estimated acreage of short-term protected tortoise habitat (either by public ownership or by easement): Not applicable, or none during this reporting period.
- c) Total estimated acreage of unprotected tortoise habitat: Not applicable, or none during this reporting period.
- d) Total estimated acreage tortoise habitat without a designated special protection status, but included in a management plan that provides for the conservation of the gopher tortoise: Not applicable, or none during this reporting period.

SECTION III LAND MANAGEMENT

This section provides information on the amount of land owned or managed by the various signatory agencies and organizations that was burned, thinned, planted, chemically treated, or otherwise managed to the benefit of gopher tortoises during the reporting period.

ARMY

a) Acres of gopher tortoise habitat restored or improved:

Fort Benning: 926

Fort Gordon: 10,033

Fort Rucker: 30

Fort Stewart: 300

Army Total: 11,989

b) Acres of gopher tortoise habitat maintained:

Fort Benning: 62,699

Fort Gordon: 6,765

Fort Rucker: 522

Fort Stewart: 14,302

Army Total: 84,290 s

c) Acres of gopher tortoise habitat burned:

Fort Benning: 53,227

Fort Gordon: 13,893

Fort Rucker: 5,665

Fort Stewart: 8,946

Army Total: 81,731

i. Acres burned during dormant season:

Fort Benning: 26,244

Fort Gordon: 11,264

Fort Rucker: 3,349

Fort Stewart: 1,518

Army Total: 42,375

ii. Acres burned during growing season:

Fort Benning: 26,983

Fort Gordon: 2,629

Fort Rucker: 2,316

Fort Stewart: 7,428

Army Total: 39,356

- d) Other land management activities (chemical/mechanical treatment):
 - Fort Benning: 3,450
 - Fort Gordon: 919
 - Fort Rucker: 300
 - Fort Stewart: 300
 - Army Total: 4,969*
- e) Acres of invasive species treated/eradicated (include invasive plant/animal type):
 - Fort Benning: 200 (kudzu)
 - Fort Rucker: 6.8
 - Army Total: 206.8*

NAVY

- a) Acres of gopher tortoise habitat restored or improved: 100 (NAS Jacksonville 50 and NSB King's Bay 50).
- b) Acres of gopher tortoise habitat maintained: *(see paragraphs c, d, and e below)*.
- c) Acres of gopher tortoise habitat burned: 1,288 (NSB King's Bay 1050, NAS Pensacola 160, NAS Whiting Field 78).
 - i. Acres burned during dormant season: 1,110 (NSB King's Bay 1050, NAS Whiting Field 60).
 - ii. Acres burned during growing season: 178 (NAS Pensacola 160, NAS Whiting Field 18).
- d) Other land management activities (chemical/mechanical treatment): 147 acres of mechanical brush cutting in forest areas, clear zones, and military mission edge areas at NAS Pensacola).
- e) Acres of invasive species treated/eradicated (include invasive plant/animal type): 63 acres of cogon grass controlled (NAS Whiting Field 43 and NAS Pensacola 20); 83 feral hogs eliminated (NSB King's Bay 70 and NAS Whiting Field 13); and 9 coyotes eliminated at NAS Pensacola.

AIR FORCE

- a) Acres of gopher tortoise habitat restored or improved:
 - Eglin AFB, FL: 8,601 acres total improved – 1,983 acres of oak and sandpine fuelwood removal, 4,978 acres of sand pine timber stand improvement (sandpine cut and left in place), and 1,640 acres of herbicide application (primarily to control

oak mid-story). All of these land management activities are designed with the goal of improving sandhills habitat conditions for all species associated with this natural community. These operations open the canopy, allow for better longleaf pine regeneration, and permit the reintroduction of fire; the exclusion of which resulted in the unnatural abundance of oaks and sand pine.

Patrick AFB, FL: 647

Tyndall AFB, FL: Ecosystem restoration efforts benefiting gopher tortoises include roller drum chopping 420 acres of former sand pine plantation. Hand planting with longleaf pine seedlings is scheduled for next year.

Avon Park Air Force Range, Moody AFB, GA, MacDill AFB, FL: Not applicable, or none during this reporting period.

b) Acres of gopher tortoise habitat maintained:

Eglin AFB, FL: The vast majority of the acreage listed in *II(d)* above is maintained in a suitable condition for occupation by gopher tortoises. This includes test area acreage. Test area maintenance is moving away from roller drum chopping and towards the one time application of herbicides to control oak sprouting, with the use of repeated prescribed fire for long term vegetation control. This method will improve forage and make it even more suitable for gopher tortoises.

Patrick AFB, FL: 659

Avon Park Air Force Range, MacDill AFB, FL, Moody AFB, GA, Tyndall AFB, FL: Not applicable, or none during this reporting period.

c) Acres of gopher tortoise habitat burned:

Avon Park Air Force Range: 16,767

Eglin AFB, FL: 113,158

MacDill AFB, FL: Not applicable, or none during this reporting period.

Patrick AFB, FL: 659

Tyndall AFB, FL: 4,600

Moody AFB, GA: 108

i. Acres burned during dormant season:

Avon Park Air Force Range: 2,449

Eglin AFB, FL: 92,923

MacDill AFB, FL: Not applicable, or none during this reporting period.

Patrick AFB, FL: 266

Tyndall AFB, FL: 4,600

Moody AFB, GA: 108

ii. Acres burned during growing season:

Avon Park Air Force Range: 14,318

Eglin AFB, FL: 20,235

Patrick AFB, FL: 393

MacDill AFB, FL Moody AFB, GA, Tyndall AFB, FL: Not applicable, or none during this reporting period.

d) Other land management activities (chemical/mechanical treatment):

Avon Park Air Force Range: Acres of invasive species treated/eradicated (include invasive plant/animal type) 100 acres treated for cogon grass; 120 acres treated for a variety of other species including tropical soda apple, air potato, Japanese and Old World climbing fern, Brazilian pepper, and downy rose myrtle; for a total of 220 acres.

Eglin AFB, FL: *See subsection III.a above*

MacDill AFB, FL: 250

Moody AFB, GA: 208

Patrick AFB, FL, Tyndall AFB, FL: Not applicable, or none during this reporting period.

e) Acres of invasive species treated/eradicated (include invasive plant/animal type):

Avon Park Air Force Range: 220 acres treated for exotic plants (*see d above*). Feral hog control has been underway, primarily to control damage to Sensitive, Threatened, and Endangered plant habitats. Hog rooting permanently alters the soil structure upon which these plants rely. 828 hogs removed from APAFR between January 2009 and September 2010. Rooting of sensitive plant sites has been noticeably reduced. Effects on gopher tortoise are also presumed to be beneficial.

Eglin AFB, FL: An estimated 600 acres was surveyed and treated for various species including Cogon Grass, Torpedo Grass, Chinese Tallow, Chinaberry, Chinese Privet and Japanese Climbing Fern. A total of 300 feral hogs were trapped and removed.

MacDill AFB, FL: In FY10, the base: (1) treated invasive species such as Brazilian pepper, lead tree, cogon grass, and melaleuca in Quadrants 1, 2, 3A, and 4 (1,900 acres total) which included approximately 800 acres of pine forested areas (Cost: \$82,900); performed mechanical clearing of invasive tree species (primarily Brazilian pepper) across 28 acres of forested land (\$70,000); and eradicated grape vine across 40 acres of forested community (\$7,500).

Patrick AFB, FL: Approx. 825 acres of Brazilian pepper/cogon grass treated/eradicated; 69 feral hogs removed.

Tyndall AFB, FL: Cogon grass and torpedo grass was treated in 60 acres. Tyndall participates in a feral hog and coyote control program which reduces predation on the gopher tortoises. This is done through the BASH program and also through a USDA contract.

Moody AFB, GA: 1 acre (Japanese Climbing Fern)

UNITED STATES MARINE CORPS

a) Acres of gopher tortoise habitat restored or improved: Not applicable, or none during this reporting period.

b) Acres of gopher tortoise habitat maintained:

MCSF Blount Island: 15

MCLB Albany: 1,400

- c) Acres of gopher tortoise habitat burned:
 - i. Acres burned during dormant season: MCLB Albany – 450-500 burned winter 2010
 - ii. Acres burned during growing season: Not applicable, or none during this reporting period.
- d) Other land management activities (chemical/mechanical treatment): MCSF Blount Island – continued mowing delineated gopher tortoise habitat area near Pond B
- e) Acres of invasive species treated/eradicated (include invasive plant/animal type): MCSF Blount Island – continued removal of shrubs/nuisance trees at the edge of the tree canopy and removal of invasive tree saplings remaining after mowing occurs

UNITED STATES FOREST SERVICE

Conecuh National Forest, AL

- a) Acres of gopher tortoise habitat restored or improved: 17,560
- b) Acres of gopher tortoise habitat maintained: 332
- c) Acres of gopher tortoise habitat burned:
 - i. Acres burned during dormant season: 17,122
 - ii. Acres burned during growing season: 438
- d) Other land management activities (chemical/mechanical treatment): *See e below*
- e) Acres of invasive species treated/eradicated species: Cogon grass acres 25, feral hog 100

Apalachicola, Osceola, and Ocala National Forests, FL

- a) Acres of gopher tortoise habitat restored or improved: 2,966
- b) Acres of gopher tortoise habitat maintained: 866
- c) Acres of gopher tortoise habitat burned:
 - i. Acres burned during dormant season: 20,000

- ii. Acres burned during growing season: 25,204
- d) Other land management activities (chemical/mechanical treatment): 200
- e) Acres of invasive species treated/eradicated species: Feral hog 220

UNITED STATES FISH AND WILDLIFE SERVICE

- a) Acres of gopher tortoise habitat restored or improved: 6,170 (0 acres occupied, 1,000 acres potential, balance undetermined).
- b) Acres of gopher tortoise habitat maintained: 5,773 (250 acres occupied, 0 acres potential, balance undetermined).
- c) Acres of gopher tortoise habitat burned.
 - i. Acres burned during dormant season: 19,771 (0 acres occupied, 200 acres potential, balance undetermined).
 - ii. Acres burned during growing season: 10,190 (10,190 acres undetermined).
- d) Other land management activities (chemical/mechanical treatment): Not applicable, or none during this reporting period.
- e) Acres of invasive species treated/eradicated (include invasive plant/animal type): 684 (all undetermined).

ALABAMA

- a) Acres of gopher tortoise habitat restored or improved: During the report period, a total of 1,206 acres of habitat managed to potentially benefit gopher tortoises through the Landowner Incentive Program (LIP) resulting in the planting of 398,007 longleaf seedlings within eight counties of the unlisted range of the gopher tortoise. Habitat will be managed to maintain the quality and health of established longleaf stands.

506 acres longleaf pine planting project on Barbour Wildlife Management Area.

550 acres longleaf pine planting project on Fred T. Stimpson Community Hunting Area.
- b) Acres of gopher tortoise habitat maintained: Not applicable, or none during this reporting period.

- c) Acres of gopher tortoise habitat burned:
- i. Acres burned during dormant season: Not applicable, or none during this reporting period
 - ii. Acres burned during growing season: Not applicable, or none during this reporting period
- d) Other land management activities (chemical/mechanical treatment): Not applicable, or none during this reporting period.
- e) Acres of invasive species treated/eradicated (include invasive plant/animal type): Not applicable, or none during this reporting period.

FLORIDA

- a) Acres of gopher tortoise habitat restored or improved: Acreage reported is not the total acreage of the properties, but the acreage of land within those properties that had reportable activities. Note: affected habitat area may exceed total habitat acres since multiple treatments and activities may be applied to the same acreage.

FWC Managed Land	24,467.0
<u>Local Government Managed</u>	<u>920.6</u>
TOTAL acres	25,388.6

Name of Property	Manager	Gopher tortoise habitat managed (ac.)
Box-R WMA	FWC	0.38
Joe Budd WMA	FWC	92.12
L. Kirk Edwards WEA	FWC	287.99
Ft White Mitigation Park	FWC	312.54
Andrews WMA	FWC	0.49
Big Bend WMA	FWC	1377.40
Half Moon WMA	FWC	1574.65
Guana River WMA	FWC	247.88
Three Lakes WMA	FWC	7277.92
Triple N Ranch WMA	FWC	267.75
Salt Lake WMA	FWC	355.26
Split Oak Mitigation Ranch	FWC	171.57
Tosohatchee WMA	FWC	7.04

Caravelle Ranch WMA	FWC	195.18
Chassahowitzka WMA	FWC	2622.15
Chinsegut WEA	FWC	3020.17
Perry Oldenberg Mitigation Park	FWC	288.00
Fred C. Babcock/Cecil M. Webb WMA	FWC	2667.73
Hilochee WMA	FWC	657.47
Lake Wales Ridge WEA	FWC	842.93
Bullfrog Creek Mitigation Park	FWC	14.39
Hickey Creek Mitigation Park	FWC	28.54
Moody Branch Mitigation Park	FWC	31.37
Platt Branch Mitigation Park	FWC	13.62
Fisheating Creek WMA	FWC	0.12
Watermelon Pond Mitigation Park	FWC	5.75
Apalachee WMA	FWC	2106.56
SUB-TOTAL		24,466.98
Alachua Fairgrounds	Alachua	56.00
Telegraph Creek	Lee	100.00
Daniels Preserve	Lee	163.00
Sabal Bluff	Lake	38.50
County	Collier	53.10
Barr Hammock	Alachua	45.00
Indrio Savannahs	St. Lucie	100.00
Flowing Waters	Lake	30.20
Lake Proctor Wilderness Area	Seminole	117.00
Upper Pithlachascotte River Preserve	Pasco	121.00
Lake Lizzie Conservation Area	Osceola	96.80
SUB-TOTAL		920.60
TOTAL		25387.58

b) Acres of gopher tortoise habitat maintained (see above)

c) Acres of gopher tortoise habitat burned: 27,588.47

i. Acres burned during dormant season: 12,426.25

ii. Acres burned during growing season : 15,162.21

Area Name	Area manager	Prescribed Fire- Dormant Season	Prescribed Fire- Growing Season	Total acres by property
Box-R WMA	FWC	0.38	0	0.38
Joe Budd WMA	FWC	73.82	16.45	90.28
L. Kirk Edwards WEA	FWC	205.87	38.63	244.51
Ft White Mitigation Park	FWC	0	162.84	162.84
Big Bend WMA	FWC	235.2	862.77	1097.96
Half Moon WMA	FWC	466.88	565.85	1032.73
Guana River WMA	FWC	53.82	83.14	136.96
Three Lakes WMA	FWC	1354.54	4954.54	6309.08
Triple N Ranch WMA	FWC	40.29	224.81	265.1
Salt Lake WMA	FWC	6.03	216.58	222.61
Split Oak Mitigation Ranch	FWC	0	171.57	171.57
Tosohatchee WMA	FWC	0	6.7	6.7
Caravelle Ranch WMA	FWC	12.89	176.58	189.47
Chassahowitzka WMA	FWC	1212.79	913.15	2125.94
Chinsegut WEA	FWC	105.28	0	105.28
Perry Oldenberg Mitigation Park	FWC	0	69.04	69.04
Fred C. Babcock/Cecil M. Webb WMA	FWC	2146.59	374.97	2521.56
Hilochee WMA	FWC	249.09	79.86	328.95
Lake Wales Ridge WEA	FWC	73.41	433.82	507.23
Bullfrog Creek Mitigation Park	FWC	0	14.39	14.39
Moody Branch Mitigation Park	FWC	31.37	0	31.37
Platt Branch Mitigation Park	FWC	13.62	0	13.62
Apalachee WMA	FWC	984.38	373.52	1357.9
Upper Pithlachascotte River Preserve	Pasco County	53	0	53
Lake Lizzie Conservation Area	Osceola County	48	0	48
Lake Louise SP	DEP	296	0	296
Lake Wales Ridge SF	DOF	605	1047	1652
Lake Wales Ridge WEA	DOF	0	427	427
Tiger Creek	TNC	220	335	555
Highlands Hammock SP	DEP	130	673	803
Archbold Biological Station	ABS	60	654	714
Saddle Blanket Lakes Preserve	TNC	0	90	90
Kissimmee Prairie	DEP	0	2003	2003

Catfish Creek Preserve	DEP	0	194	194
Bayard CA	SJRWMD	534	0	534
Wekiwa Springs SP	DEP	5	0	5
Heart Island	SJRWMD	180	0	180
Faver-Dykes SP	DEP	589	0	589
Pumpkin Hill Preserve	DEP	3	0	3
Washington Oaks Garden SP	DEP	71	0	71
Etoniah Creek SF	DOF	318	0	318
Ordway-Swisher Biological Station	Univ. of FL	1185	0	1185
Rock Springs Run SR	DEP	107	0	107
River Rise SP	DEP	147	0	147
Barr Hammock Preserve	ACDPS	28	0	28
Longleaf Flatwoods Reserve	SJRWMD	147	0	147
Ewel Tract	Private	25	0	25
Cecil Field	City of Jacksonville	64	0	64
Stephen Foster Cultural Center	DEP	26	0	26
Morningside Nature Center	City of Gainesville	13	0	13
Black Creek Ravines CA	SJRWMD	125	0	125
Dudley Farm Historic SP	DEP	30	0	30
Stokes Landing CA	SJRWMD	110	0	110
Dunn's Creek	DEP	41	0	41
TOTALS		12426.25	15162.21	27588.47

d) Other land management activities (chemical/mechanical treatment): 5,661.62

e) Acres of invasive species treated/eradicated: 1,846.65

GEORGIA

Acres given below for various land management activities include all habitats within burn and stand units of state lands harboring tortoises, but undoubtedly include habitats, such as embedded wetlands, not suitable or occupied by tortoises.

a) Acres of gopher tortoise habitat restored or improved: *See c and d below.*

b) Acres of gopher tortoise habitat maintained: *See c and d below.*

c) Acres of gopher tortoise habitat burned:

- i. Acres burned during dormant season: 14,326. The table below breaks down the acreages by property.*

Big Hammock NA	310
Black Creek NA	80
Bullard Creek WMA	1800
Chickasawhatchee WMA	1600
General Coffee SP	55
Doerun NA	20
Flint River WMA	800
Laura Walker SP	40
Little Ocmulgee SP	50
Moody Forest NA	326
Ocmulgee WMA	1000
Ohoopee Dunes NA	1055
River Creek WMA	500
Seminole WMA	935
Silver Lake WMA	4405
Yuchi WMA	1350
TOTAL	14,326

* - Our burn data do not break down acreages by habitat. As a result, the acreages given here unfortunately over-estimate tortoise habitat burned by including all habitats within burn units.

- ii. 1,360 acres of state lands harboring gopher tortoises were burned during the growing season. The table below breaks down the acreages by property.*

Black Creek NA	295
Doerun NA	75
Little Ocmulgee SP	40
Moody Forest NA	700
Seminole SP	100
Silver Lake WMA	150
TOTAL	1360

* - Our burn data do not break down acreages by habitat. As a result, the acreages given here unfortunately over-estimate tortoise habitat burned by including all habitats within burn units.

d) Other land management activities (chemical/mechanical treatment)*

2,633 acres of state lands harboring gopher tortoises were thinned of off-site pines and 426 acres were clearcut. Additionally, 872 acres of longleaf pine were planted on state lands harboring gopher tortoises. The tables below breaks down the acreages by property.*

	Thin	Clearcut
Bagby SP	56	26
Chickasawhatchee WMA	1279	149
Flint River WMA	108	
Georgia Veterans SP	72	51
Penholoway Swamp WMA	470	
River Creek WMA	102	
Silver Lake WMA	218	
Townsend WMA		200
Tuckahoe WMA	328	
TOTAL	2633	426

* - Our timber data do not break down acreages by habitat. As a result, the acreages given here unfortunately over-estimate tortoise habitat thinned or clearcut by including all upland habitats within timber sales.

	Acres of longleaf pine planted
Black Creek NA	20
Chickasawhatchee WMA	77
Fall Line Sandhills NA	300
Flint River WMA	50
Kolomoki SP	37
Ocmulgee WMA	60
Penholoway WMA	90
Silver Lake WMA	75
Yuchi WMA	163
TOTAL	872

- e) Acres of invasive species treated/eradicated (include invasive plant/animal type): Non-native sand pine was removed from 5 acres of tortoise habitat on Black Creek Natural Area. Non-native Chinese Privet was treated with herbicide on five acres of tortoise habitat at Little Ocmulgee State Park.

Additionally, through the Multistate Sandhills Ecological Restoration Project (funded by a Competitive State Wildlife Grant), Georgia DNR assisted private landowners with prescribed burns totaling 10,210 acres and longleaf pine plantings totaling 480 acres.

SOUTH CAROLINA

- a) Acres of gopher tortoise habitat restored or improved: 1,400
- b) Acres of gopher tortoise habitat maintained: 1,400
- c) Acres of gopher tortoise habitat burned: 1,400
 - i. Acres burned during dormant season: Not applicable, or none during this reporting period.
 - ii. Acres burned during growing season: 500
- d) Other land management activities (chemical/mechanical treatment): 700
- e) Acres of invasive species treated/eradicated (include invasive plant/animal type): Not applicable, or none during this reporting period.

POARCH BAND OF CREEK INDIANS

- a) Acres of gopher tortoise habitat restored or improved: ~1
- b) Acres of gopher tortoise habitat maintained: ~1
- c) Acres of gopher tortoise habitat burned: ~1
 - i. Acres burned during dormant season:
 - ii. Acres burned during growing season:
- d) Other land management activities (chemical/mechanical treatment): Chemical and mechanical treatment used.
- e) Acres of invasive species treated/eradicated (include invasive plant/animal type): 100

AMERICAN FOREST FOUNDATION

- a) Acres of gopher tortoise habitat restored or improved: Not applicable, or none during this reporting period.
- b) Acres of gopher tortoise habitat maintained: Not applicable, or none during this reporting period.
- c) Acres of gopher tortoise habitat burned:
 - i. Acres burned during dormant season: Not applicable, or none during this reporting period.
 - ii. Acres burned during growing season: Not applicable, or none during this reporting period.
- d) Other land management activities (chemical/mechanical treatment): Not applicable, or none during this reporting period.
- e) Acres of invasive species treated/eradicated (include invasive plant/animal type): Not applicable, or none during this reporting period.

LONGLEAF ALLIANCE

- a) Acres of gopher tortoise habitat restored or improved : 2,160
- b) Acres of gopher tortoise habitat maintained: Not applicable, or none during this reporting period.
- c) Acres of gopher tortoise habitat burned:
 - i. Acres burned during dormant season: 1,600
 - ii. Acres burned during growing season: 200
- d) Other land management activities (chemical/mechanical treatment): 2,160 (Mechanical and Chemical)
- e) Acres of invasive species treated/eradicated (include invasive plant/animal type): Cogon Grass - 340

SECTION IV SURVEYS AND INVENTORY

This section provides information on the amount of land owned or managed by the various signatory agencies and organizations that was surveyed for the presence of gopher tortoises, inventoried to determine estimated or actual number of tortoises present, and monitored for evaluating population trends during the reporting period.

ARMY

- a) Survey date(s) and results by property (active and inactive burrows):
Fort Benning: 3,437 acres were surveyed in FY 10 (May 10 – Sep 10) – 3,095 burrows located – 1,333 active; 858 inactive; 904 abandoned
Fort Gordon: 17,905 acres were surveyed in FY 10 (Dec 09 – Mar 10) - 88 burrows useable and 54 not useable.
Fort Rucker: No surveys conducted in FY 10
Fort Stewart: Region 1 of the installation was surveyed and the estimated population is 1,354 (adults and sub-adults)
- b) Population trends
 - i. Monitoring (date, property/location, results): *See above Section IVa.*
 - ii. Disease and die-offs (date, property/location, cause if known, number of deaths): Not applicable, or none during this reporting period.
 - iii. Permitted takes (property/location, number of takes permitted): Not applicable, or none during this reporting period.

NAVY

- a) Survey date(s) and results by property (active and inactive burrows): Surveys for all six installations continued in 2010 and were conducted throughout the year during all seasons. Each installation used a different survey source which included the Florida Areas Natural Inventory, The Nature Conservancy, University of Georgia, Gulf South Research Corporation, Navy biologists, and the Student Conservation Association. An additional survey is scheduled for NAS Whiting Field in 2011 by University of Georgia, Savannah River Ecology Laboratory. A summary of the survey results indicated 775 active burrows on Navy lands (NSB King's Bay 228, NAS Pensacola 220, NAS Jacksonville 181, NAS Whiting Field 139, and NS Mayport 7.) In addition to GT surveys, NSB King's Bay completed a base-wide eastern indigo snake survey which involved specific investigations of 432 GT burrows, active and inactive.
- b) Population trends

- i. Monitoring (date, property/location, results): Monitoring occurred at all six installations during 2010. Specific surveys including camera scoping were conducted at three installations. Population estimates indicate 512 tortoises present on Navy properties collectively. This is up from a population estimate of 428 in 2009, but this may be due to increased surveying. Population estimates at the installations at the end of September 2010 were NSB King's Bay 135, NAS Whiting Field 139, NAS Pensacola 120, NAS Jacksonville 115, and NS Mayport 3.
- ii. Disease and die-offs (date, property/location, cause if known, number of deaths): No reports of mortality except by NSB Kings Bay where there was one confirmed road kill.
- iii. Permitted takes (property/location, number of takes permitted): Not applicable, or none this reporting period.

AIR FORCE

- a) Survey date(s) and results by property (active and inactive burrows):
Avon Park Air Force Range: (NOTE: The following information was delivered December, 2009 too late for the FY 09 (Initial) GT CCA Annual Report). Oct. 2008 through Sept. 2009. 999 burrows detected. 356 abandoned. 127 active. 516 possibly active. Scrub habitat randomly surveyed: 360 acres. Estimated tortoise population in Scrub = 1,429. Pine plantations/Flatwoods randomly surveyed: 457 acres. Estimated tortoise population in Plantations/Flatwoods = 5,361. Source: Population survey and monitoring of the gopher tortoise (*Gopherus polyphemus*) at Avon Park Air Force Range. Annual report. October 2008 – September 2009. Authors: Betsie Rothermel and Traci Castellon. Archbold Biological Station, Lake Placid, FL. In addition, the following information was developed for the period of October, 2009 through November 2010. Data was re-analyzed using the density of active burrow only since scoping with burrow camera apparatus experienced significant problems. Estimates of 1414 tortoise for scrub habitat and 2759 tortoise for flatwoods/plantation were obtained assuming each active burrow was occupied by one tortoise. The estimate for scrub is close to that obtained by burrow scoping. The estimate of 5361 for flatwoods/plantation from last year's report is an over-estimate of that population segment. In order to obtain better information on tortoise home range, reproduction, survivorship, mortality, fecundity, and behavior two reference sites have been established in scrub and flatwoods. Gopher tortoise are being captured, radio tagged, and monitored to obtain this information. Source: Population survey and monitoring of the gopher tortoise (*Gopherus polyphemus*) at Avon Park Air Force Range. Annual report. October 2009 – November 2010. Authors: Betsie Rothermel and Traci Castellon. Archbold Biological Station, Lake Placid, FL.

Eglin AFB, FL: From Oct. 1, 2009 through Sept. 30, 2010, 1,335 acres were surveyed. From these surveys and incidental sightings we documented 124 new active burrows, 28 new inactive burrows, and five new abandoned burrows.

MacDill AFB, FL: None

Patrick AFB, FL: (Cape Canaveral Air Force Station area) - eight surveys conducted in support of projects as described below: 11/3/09: Clearing of Airfield Clear Zone (East End) – six active, nine inactive, six tortoises relocated; 11/19/10: North Phillips Parkway Water Line Installation – two active, three inactive, one tortoise relocated; one burrow marked for avoidance; 12/16/10: MOCC Antenna Field Antenna Removal – two inactive, six active, no tortoises relocated; all burrows marked for avoidance; 12/16/09, 1/20/10, 2/5/10, 2/12/10, 2/12/10: Clear of Airfield Clear Zone (West End) – 32 active, 155 inactive, 32 tortoises relocated; 1/26/10: Re-contour Airfield Ditches – three active, four inactive, three tortoises relocated; 1/27/10: SLC 37 Security Upgrades (Fenceline) – zero active, eight inactive, zero tortoises relocated; 6/23/10: Construct Transporter Road – two active, six inactive, one tortoise relocated; 9/22/10: Construct Satellite Operations Support Facility – four active, two inactive, four tortoises relocated

Tyndall AFB, FL: Previous survey data from 1999 shows 43 active burrows, 55 inactive burrows. The survey method and coverage area is unknown. An additional 25 active burrows and one inactive burrow were located this year through incidental observations and during environmental review for projects. More thorough surveys are planned for next year.

Moody AFB, GA: Pedestrian surveys of suitable gopher tortoise habitat are conducted annually to identify new gopher tortoise burrows. All known burrows are marked in the field with semi-permanent markers, measured to determine occupant size class, and GPS'd for incorporation into the installation Geographic Information System (GIS) database. The activity of each burrow is collected annually and is used for making tortoise population estimates. Concurrent with gopher tortoise surveys, installation personnel conduct visual searches for eastern indigo snakes by searching burrow entrances and aprons for indigo snake skin sheds. As of 30 September 2010, there were 319 marked gopher tortoise burrows in seven colonies on the installation: Colony 71st (87 burrows), Colony CP (39 burrows), Colony AR (8 burrows), Colony BR (18 burrows), Colony BF (13 burrows), and Colony CS (154 burrows).

b) Population trends

i. Monitoring (date, property/location, results):

Eglin AFB, FL: Over the course of the year we revisited 27 old burrows. Of these, 2 were active that remained active, one changed from active to inactive, 9 went from active to abandoned or not present, and 15 went from inactive to abandoned or not present.: Not applicable, or none

during this reporting period.: Not applicable, or none during this reporting period.

Tyndall AFB, FL: Unknown population status. Burrows along forestry roads are marked to prevent vehicle traffic. Two tortoises were hit by vehicles on paved roads, with one mortality.

Moody AFB, GA: Gopher tortoise monitoring occurs on Moody AFB and Grand Bay Range from March through October annually. Gopher tortoises are captured and marked with subcutaneous and external radio frequency identification (RFID) tags and movements are monitored via a set of 20 continuous RFID readers placed on selected burrows in the largest gopher tortoise colonies. Additionally, 2 gopher tortoises are currently fitted with radio transmitters and tortoise locations are obtained 2-3 times weekly during the monitoring season (March through October). Data from these movement studies is used to determine home range, foraging habitat, and behavioral changes due to military training and other installation activities. Avon Park Air Force Range, MacDill AFB, FL, Patrick AFB, FL: Not applicable, or none during this reporting period.

- ii. Disease and die-offs (date, property/location, cause if known, number of deaths): Not applicable, or none during this reporting period.
- iii. Permitted takes (property/location, number of takes permitted): Not applicable, or none during this reporting period.

UNITED STATES MARINE CORPS

- a) Survey date(s) and results by property (active and inactive burrows): MCSF Blount Island – July 2010 (report finalized October 2010) showing 63 active burrows, 15 inactive burrows, and 22 abandoned burrows

- b) Population trends

- i. Monitoring (date, property/location, results): *See “a” above*
- ii. Disease and die-offs (date, property/location, cause if known, number of deaths): Not applicable, or none during this reporting period.
- iii. Permitted takes (property/location, number of takes permitted): Not applicable, or none during this reporting period.

UNITED STATES FOREST SERVICE

- a) Survey date(s) and results by property (active and inactive burrows):
Project – “A Survey of Gopher Tortoise (*Gopherus polyphemus*) Burrows on Key Properties in Alabama”: Gopher Tortoises are a keystone species of the southeastern Coastal Plains. Protection of this species through habitat conservation and restoration of longleaf pine forests will be vital to retaining the many sensitive species of this forest type and in preventing the need to list the Gopher Tortoise for protection under the Endangered Species Act throughout its geographic range. This project is designed to survey key state and federal properties in south Alabama to determine the current distribution of Gopher Tortoises and to create a model of carrying capacity for the species. The results of this project will be comprehensive maps of burrows on three properties; a model that uses soil type, over-story vegetation structure, and understory vegetation cover to predict density of Gopher Tortoise burrows; and an assessment of where on these three properties conservation banks for Gopher Tortoises might be established. Craig Guyer, AU. October 2008 – September 2011. 400 acres surveyed on Florida national forests. No burrows reported.
- b) Population trends
- i. Monitoring (date, property/location, results): Not applicable, or none during this reporting period.
 - ii. Disease and die-offs (date, property/location, cause if known, number of deaths): Not applicable, or none during this reporting period.
 - iii. Permitted takes (property/location, number of takes permitted): Not applicable, or none during this reporting period.

UNITED STATES FISH AND WILDLIFE SERVICE

- a) Survey date(s) and results by property (active and inactive burrows):
Ding Darling NWR: Gavin site (12/2009): 12 active, 1 inactive
Sanibel-Captiva Supplement (10/2009)
 Frannie Preserve: 59 active, 13 inactive
 Johnston Preserve: 49 active, 8 inactive
 Dayton Preserve: 0 active, 1 inactive
 Walker Preserve: 14 active, 4 inactive
 Wulfert: 48 active, 13 inactive
Eufaula NWR, Kimbrel tract (250 acres; date unknown): 30 active
Archie Carr NWR (2 acres; 7/2010): 11 active

Pelican Island NWR (5/2010): 1 active

Okeefenokee NWR (10/2010)

Compartment 3 (26 acres): 73 active, 35 inactive

Mizell Road (45 acres): 31 active, 16 inactive

b) Population trends

- i. Monitoring (date, property/location, results): Not applicable, or none during this reporting period.
- ii. Disease and die-offs (date, property/location, cause if known, number of deaths): Not applicable, or none during this reporting period.
- iii. Permitted takes (property/location, number of takes permitted): Not applicable, or none during this reporting period.

ALABAMA

- a) Survey date(s) and results by property (active and inactive burrows): Not applicable, or none during this reporting period.

b) Population trends

- i. Monitoring (date, property/location, results): From a State Wildlife Grant awarded to Dr. Craig Guyer of Auburn University awarded October 2008 with work continuing into 2011 an estimate of the number of tortoises to have historically occurred on three properties and in Alabama's ancestral landscape (See study description in "Research" section):
Conecuh National Forest: 27,669
Geneva State Forest: 2,876
Perdido River-- Longeaf Hills Tract: 4,208
Alabama Total: 2,149,379
- ii. Disease and die-offs (date, property/location, cause if known, number of deaths): Not applicable, or none during this reporting period.
- iii. Permitted takes (property/location, number of takes permitted): Not applicable, or none during this reporting period.

FLORIDA

- a) Survey date(s) and results by property (active and inactive burrows):

- During FY 2009-2010, Apalachee Wildlife Management Area in Jackson County received funding to support restoration of approximately 400 acres of sandhill natural communities with an estimated 1.16 tortoises per acre.
- Surveys and monitoring continued May-July 2010 on the Carter Tract of Econfina Creek WMA in Washington County—a 2,200 acre tract with nearly 1,200 acres of sandhill uplands containing 378 total burrows with 96 (25%) classified as active or possibly active.
- FWC continued a multi-year comprehensive burrow survey of 200,000 acres of Blackwater WMA in Okaloosa and Santa Rosa Counties. The land is managed by Florida Department of Agriculture and Consumer Services (FDACS) and is divided into FDACS-defined management compartments that more readily mirror their reporting process and translate into management actions. Across three surveyed management units, FWC found over 2,000 burrows and surveyed more than 1,500 acres of suitable gopher tortoise habitat.
- Surveys were conducted on a 350 acre sandhill restoration area of the Spring Creek Unit of the Big Bend WMA in Taylor County, resulting in 0.31 tortoises per acre. This estimate indicates that the current population is less than the population density observed on sandhill habitat in good condition and will provide a baseline for assessing population response to habitat enhancement in the future.
- A survey of Jennings State Forest WMA in Clay and Duval Counties yielded 830 burrows, of which 651 were active or inactive (78%) and 179 (22%) were abandoned. The estimated gopher tortoise population is 400, which is an increase of 48% over the 2005 population estimate of 271.
- Surveys are conducted on all sites permitted for relocation and on the recipient site property. Information on these survey results is only included for the recipient site since the relocation site is assumed developed and all tortoises relocated. The following are survey results from surveys conducted during the reporting period:

Gopher tortoise recipient sites

Recipient Site Name	Survey date	Gopher tortoise acres surveyed	Survey results (density)
Northwest Hackletrap	1/11/2010	150 (29% of 510.55 ac.)	.07 tortoises/acre
The Woods	1/25/2010	75.25 (25% of 301 ac.)	.03 tortoises/acre
Lake Louisa State Park	6/4/2010	6.4 (15% of 42 ac.)	.54 tortoises/acre

Recipient site surveys (in process or permitted after the CCA reporting time frame)

Recipient Site Name	Survey date	Gopher tortoise acres surveyed	Survey results (density)
Allen Broussard Conservancy	8/6/2010	40 (100% of 40 ac.)	.2 tortoises/acre

Withlacoochee Bay Trail (Felburn Trailhead)	7/29/2010	53 (100% of 53 ac.)	.2 tortoises/acre
PSC Gopher Ranch, Eight Mile Still Road	12/9/2009	55.7 (100% of 55.7 ac.)	.2 tortoises/acre
Chinquapin Farm	1/28/2010	31.9 (15.9% of 200 ac.)	1.88 tortoises/acre
Hatchineha Ranch Conservation Bank	2/3/2010	17.6 (16.7% of 105 ac.)	.9 tortoises/acre

b) Population trends

- i. Monitoring (date, property/location, results):
 - Completion of a 10-year monitoring effort (Jennings Forest Wildlife Management Area) in Clay and Duval Counties yielded 830 burrows, of which 651 were active or inactive (78%) and 179 (22%) were abandoned. The estimated gopher tortoise population is 400, which is an increase of 48% over the 2005 population estimate of 271.
 - Initiation of another monitoring effort (Guana River WMA) to evaluate the effects of land management practices and gopher tortoise populations in sandhill and coastal scrub.
- ii. Disease and die-offs (date, property/location, cause if known, number of deaths): Not applicable, or none during this reporting period.
- iii. Permitted takes (property/location, number of takes permitted): Not applicable, or none during this reporting period.

GEORGIA

- a) Survey date(s) and results by property (active and inactive burrows): Georgia DNR contracted the Jones Ecological Research Center to survey and estimate gopher tortoise population sizes (using line transect distance sampling: LTDS) on 18 total sites, including 3 state-owned sites (Reed Bingham SP, Townsend WMA - Murf Tract, Townsend WMA - Ballard Tract). Surveys began November 2010, after this year's reporting period ended.

b) Population trends

- i. Monitoring: Not applicable, or none during this reporting period.
- ii. Disease and die-offs: Not applicable, or none during this reporting period.

- iii. Permitted takes: Not applicable, or none during this reporting period.

SOUTH CAROLINA

- a) Survey date(s) and results by property (active and inactive burrows): 13 new burrows were created on a GTHP in 2010 by translocated tortoises.
- b) Population trends
 - i. Monitoring (date, property/location, results): 13 translocated tortoises were radio-tracked 1-3 times weekly.
 - ii. Disease and die-offs (date, property/location, cause if known, number of deaths): Not applicable, or none during this reporting period.
 - iii. Permitted takes (property/location, number of takes permitted): Not applicable, or none during this reporting period.

POARCH BAND OF CREEK INDIANS

- a) Survey date(s) and results by property (active and inactive burrows): Approximately once every three months.
- b) Population trends
 - i. Monitoring (date, property/location, results): Not applicable, or none during this reporting period.
 - ii. Disease and die-offs (date, property/location, cause if known, number of deaths): Not applicable, or none during this reporting period.
 - iii. Permitted takes (property/location, number of takes permitted): Not applicable, or none during this reporting period.

AMERICAN FOREST FOUNDATION

- a) Survey date(s) and results by property (active and inactive burrows): Not applicable, or none during this reporting period.
- b) Population trends

- i. Monitoring (date, property/location, results): Not applicable, or none during this reporting period.
- ii. Disease and die-offs (date, property/location, cause if known, number of deaths): Not applicable, or none during this reporting period.
- iii. Permitted takes (property/location, number of takes permitted): Not applicable, or none during this reporting period.

LONGLEAF ALLIANCE

- a) Survey date(s) and results by property (active and inactive burrows): Not applicable, or none during this reporting period.
- b) Population trends
 - i. Monitoring (date, property/location, results): Not applicable, or none during this reporting period.
 - ii. Disease and die-offs (date, property/location, cause if known, number of deaths): Not applicable, or none during this reporting period.
 - iii. Permitted takes (property/location, number of takes permitted): Not applicable, or none during this reporting period.

SECTION V POPULATION MANIPULATION

This section provides information on efforts by the various signatory agencies and organizations to move or head-start gopher tortoises for their conservation benefit or to avoid injury or mortality that may otherwise result from various activities during the reporting period.

ARMY

- a) Relocation (number of tortoises):
 - Fort Benning: 178
 - Fort Gordon: 1
 - Fort Rucker, Fort Stewart: Not applicable, or none during this reporting period.
- i. To permanently protected lands: Fort Benning – 178
 - ii. To short-term protected lands: Not applicable, or none during this reporting period.
 - iii. To unprotected lands: Fort Gordon – 1
- b) Repatriations (number of tortoises): Not applicable, or none during this reporting period.
 - i. To permanently protected lands: Not applicable, or none during this reporting period.
 - ii. To short-term protected lands: Not applicable, or none during this reporting period.
 - iii. To unprotected lands: Not applicable, or none during this reporting period.
- c) Head start efforts
 - i. Description of effort, property/location, release date (anticipated), number of tortoises: Fort Stewart - A total of 101 head-started gopher tortoises were released on Fort Stewart on June 11, 2010; 65 released into improved habitat improved in Training Area F13. An additional 35 GTs were released in various locations on the western half of the installation. The tortoises are being monitored for retention rate. The head-started tortoises were raised by Georgia Southern University.

- d) Onto or off of habitat without a designated special protection status, but included in a management plan that provides for the conservation of the gopher tortoise: Fort Stewart - 100 head-started juvenile GTs.

NAVY

- a) Relocation (number of tortoises): Not applicable to properties under an INRMP.
 - i. To permanently protected lands (number of tortoises): Not applicable, or none during this reporting period.
 - ii. To short-term protected lands: Not applicable, or none during this reporting period.
 - iii. To unprotected lands: Not applicable, or none during this reporting period.
- b) Repatriations (number of tortoises): Not applicable to properties under an INRMP.
 - i. To permanently protected lands: Not applicable, or none during this reporting period.
 - ii. To short-term protected lands: Not applicable, or none during this reporting period.
 - iii. To unprotected lands: Not applicable, or none during this reporting period.
- c) Head start efforts: Not applicable to properties under an INRMP.
 - i. Description of effort, property/location, release date (anticipated), number of tortoises: Not applicable, or none during this reporting period.
- d) Onto or off of habitat without a designated special protection status, but included in a management plan that provides for the conservation of the gopher tortoise: One tortoise was relocated from an urban area at NAS Pensacola to installation habitat.

AIR FORCE

- a) Relocation (number of tortoises):
 - i. To permanently protected lands (number of tortoises): Not applicable, or none during this reporting period.

- ii. To short-term protected lands: Not applicable, or none during this reporting period.
- iii. To unprotected lands:
Patrick AFB, FL: 47
Avon Park Air Force Range, Eglin AFB, FL, MacDill AFB, FL Moody AFB, GA,
Tyndall AFB, FL: Not applicable, or none during this reporting period.

b) Repatriations (number of tortoises)

- i. To permanently protected lands: Not applicable, or none during this reporting period.
- ii. To short-term protected lands: Not applicable, or none during this reporting period.
- iii. To unprotected lands: Not applicable, or none during this reporting period.

c) Head start efforts

- i. Description of effort, property/location, release date (anticipated), number of tortoises: Not applicable, or none during this reporting period.

- d) Onto or off of habitat without a designated special protection status, but included in a management plan that provides for the conservation of the gopher tortoise:
Eglin AFB, FL: Seven on-site relocations
Avon Park Air Force Range, MacDill AFB, FL, Moody AFB, GA, Patrick AFB, FL, Tyndall AFB, FL: Not applicable, or none during this reporting period.

UNITED STATES MARINE CORPS

a) Relocation (number of tortoises)

- i. To permanently protected lands (number of tortoises): Not applicable, or none during this reporting period.
- ii. To short-term protected lands: Not applicable, or none during this reporting period.
- iii. To unprotected lands: Not applicable, or none during this reporting period.

b) Repatriations (number of tortoises)

- i. To permanently protected lands: Not applicable, or none during this reporting period.
 - ii. To short-term protected lands: Not applicable, or none during this reporting period.
 - iii. To unprotected lands: Not applicable, or none during this reporting period.
- c) Head start efforts
 - i. Description of effort, property/location, release date (anticipated), number of tortoises: Not applicable, or none during this reporting period.
- d) Onto or off of habitat without a designated special protection status, but included in a management plan that provides for the conservation of the gopher tortoise: Not applicable, or none during this reporting period.

UNITED STATES FOREST SERVICE

- a) Relocation (number of tortoises): None have occurred as yet, but are planned as part of the indigo snake repatriation to enclosed areas.
 - i. To permanently protected lands (number of tortoises): Not applicable, or none during this reporting period.
 - ii. To short-term protected lands: Not applicable, or none during this reporting period.
 - iii. To unprotected lands: Not applicable, or none during this reporting period.
- b) Repatriations (number of tortoises)
 - i. To permanently protected lands: Not applicable, or none during this reporting period.
 - ii. To short-term protected lands: Not applicable, or none during this reporting period.
 - iii. To unprotected lands: Not applicable, or none during this reporting period.
- c) Head start efforts
 - i. Description of effort, property/location, release date (anticipated), number of tortoises: Not applicable, or none during this reporting period.

- d) Onto or off of habitat without a designated special protection status, but included in a management plan that provides for the conservation of the gopher tortoise: Not applicable, or none during this reporting period.

UNITED STATES FISH AND WILDLIFE SERVICE

- a) Relocation (number of tortoises)
 - i. To permanently protected lands: 26
 - ii. To short-term protected lands: Not applicable, or none during this reporting period.
 - iii. To unprotected lands: Not applicable, or none during this reporting period.
- b) Repatriations (number of tortoises):
 - i. To permanently protected lands: Not applicable, or none during this reporting period.
 - ii. To short-term protected lands: Not applicable, or none during this reporting period.
 - iii. To unprotected lands: Not applicable, or none during this reporting period.
- c) Head start efforts
 - i. Description of effort, property/location, release date (anticipated), number of tortoises: Not applicable, or none during this reporting period.
- d) Onto or off of habitat without a designated special protection status, but included in a management plan that provides for the conservation of the gopher tortoise: Not applicable, or none during this reporting period.

ALABAMA

- a) Relocation (number of tortoises)

- i. To permanently protected lands (number of tortoises): One waif tortoise discovered in Shelby County north of the species range in Alabama released in Barbour County on state property.
 - ii. To short-term protected lands: Not applicable, or none during this reporting period.
 - iii. To unprotected lands: Not applicable, or none during this reporting period.
- b) Repatriations (number of tortoises)
- i. To permanently protected lands: Not applicable, or none during this reporting period.
 - ii. To short-term protected lands: Not applicable, or none during this reporting period.
 - iii. To unprotected lands: Not applicable, or none during this reporting period.
- c) Head start efforts
- i. Description of effort, property/location, release date (anticipated), number of tortoises: Not applicable, or none during this reporting period.
- d) Onto or off of habitat without a designated special protection status, but included in a management plan that provides for the conservation of the gopher tortoise: Not applicable, or none during this reporting period.

FLORIDA

- a) Relocation (number of tortoises): A total of 2,727 tortoises were relocated during the reporting period. The summary table is listed below.
- i. To permanently protected lands (number of tortoises): 1,601

Most of the tortoises relocated from development sites during this reporting period went to long-term protected sites. These sites are all permitted by the FWC and include a perpetual conservation easement to FWC. A total of 1601 tortoises were relocated sites with this designation.
 - ii. To short-term protected lands: 792

Most of the 792 tortoises relocated to short-term protected sites were relocated to a research project site that is permitted to study the effects of cattle grazing on relocated tortoise landscape distribution.

iii. To unprotected lands: 331

The 331 tortoises relocated were all tortoises relocated on-site of small projects (unprotected) and development projects (from the 10 or Fewer Burrows permit).

Summary of relocation activities

FWC permit type	i) Relocated to Long-term Protected Sites	ii) Relocated to Short-term Protected sites	iii. Relocated to Unprotected sites	Relocated to Areas with No Designated Status
10 or Fewer Burrows permit	149	104	331	3
Conservation permit	1452	688	0	0
TOTALS	1601	792	331	3

b) Repatriations (number of tortoises): FWC is working with state land management agencies to develop guidelines for a consistent, scientific approach to re-establishing gopher tortoise populations on public conservation lands. Draft restocking guidelines have been completed as of June 2010. FWC will seek additional public input before finalizing the guidelines.

- i. To permanently protected lands: Not applicable, or none during this reporting period.
- ii. To short-term protected lands: Not applicable, or none during this reporting period.
- iii. To unprotected lands: Not applicable, or none during this reporting period.

c) Head start efforts

- i. Description of effort, property/location, release date (anticipated), number of tortoises: Not applicable, or none during this reporting period.

d) Onto or off of habitat without a designated special protection status, but included in a management plan that provides for the conservation of the gopher tortoise: *See table under "a" above.* A total of 3 tortoises were relocated to the Apalachicola National Forest during the reporting period. This area is designated as a research recipient site but meets this definition for this report.

GEORGIA

a) Relocation (number of tortoises)

- i. To permanently protected lands (number of tortoises): Three waif tortoises (origin unknown) found in the Piedmont of Georgia were relocated to the Aiken Gopher Tortoise Heritage Preserve in South Carolina.
- ii. To short-term protected lands: Not applicable, or none during this reporting period.
- iii. To unprotected lands: Not applicable, or none during this reporting period.

b) Repatriations (number of tortoises)

- i. To permanently protected lands: A Candidate Conservation Agreement with Assurances (CCAA) has been jointly developed by Georgia DNR-WRD, Georgia Power, and USFWS for the repatriation of tortoises to restored habitat at Plant Vogtle, Burke County. The CCAA is remains under review by USFWS, after which, if approved, tortoises may be moved from development sites as they become available.
- ii. To short-term protected lands: Not applicable, or none during this reporting period.
- iii. To unprotected lands: Not applicable, or none during this reporting period.

c) Head start efforts

- i. Description of effort, property/location, release date (anticipated), number of tortoises: In response to concerns for excessive nest predation, personnel at Reed Bingham State Park recovered a number of nests for laboratory incubation and eventual release of head-started juvenile tortoises. Unfortunately, either through transport or incubator malfunction, none of the 215 eggs developed to hatching.

d) Onto or off of habitat without a designated special protection status, but included in a management plan that provides for the conservation of the gopher tortoise: Not applicable, or none during this reporting period.

SOUTH CAROLINA

- a. Relocation (number of tortoises): The AGTHP received 3 adult waif tortoises in 2010 from GA DNR; 1 juvenile waif (a Florida animal) from SCDNR in 2010. We received nine hatchling tortoises from elsewhere in South Carolina. These were all released into large confined pens on the AGTHP, which is a permanently protected land.
 - i. To permanently protected lands (number of tortoises): Not applicable, or none during this reporting period.
 - ii. To short-term protected lands: Not applicable, or none during this reporting period.
 - iii. To unprotected lands: Not applicable, or none during this reporting period.
- b. Repatriations (number of tortoises)
 - i. To permanently protected lands: Staff and partners documented eleven hatchling tortoises from natural nests on the AGTHP in 2010. Four of these hatchlings were the offspring of native tortoises; seven hatchlings were the offspring of previously translocated tortoises.
 - ii. To short-term protected lands: Not applicable, or none during this reporting period.
 - iii. To unprotected lands: Not applicable, or none during this reporting period.
- c. Head start efforts
 - i. Description of effort, property/location, release date (anticipated), number of tortoises - A total of 20 hatchling tortoises were released into chain link dog pens on the AGTHP in 2010. These pens have wire mesh roofs as well as an interior aluminum flashing barrier. They should prevent predation from mammals and birds. All hatchling tortoises were provided with starter burrows. The pens have ample forage for feeding. We will recapture hatchlings and take body measurements in the spring of 2011.
- d. Onto or off of habitat without a designated special protection status, but included in a management plan that provides for the conservation of the gopher tortoise: Not applicable, or none during this reporting period.

POARCH BAND OF CREEK INDIANS

- a) Relocation (number of tortoises)
 - i. To permanently protected lands (number of tortoises): 5

- ii. To short-term protected lands: Not applicable, or none during this reporting period.
 - iii. To unprotected lands: Not applicable, or none during this reporting period.
- b) Repatriations (number of tortoises)
- i. To permanently protected lands: Not applicable, or none during this reporting period
 - ii. To short-term protected lands: Not applicable, or none during this reporting period.
 - iii. To unprotected lands: Not applicable, or none during this reporting period.
- c) Head start efforts
- i. Description of effort, property/location, release date (anticipated), number of tortoises: Found on roadways or construction sites (3)
- d) Onto or off of habitat without a designated special protection status, but included in a management plan that provides for the conservation of the gopher tortoise: Not applicable, or none during this reporting period.

AMERICAN FOREST FOUNDATION

- a) Relocation (number of tortoises): Not applicable, or none during this reporting period.
- i. To permanently protected lands (number of tortoises): Not applicable, or none during this reporting period.
 - ii. To short-term protected lands: Not applicable, or none during this reporting period.
 - iii. To unprotected lands: Not applicable, or none during this reporting period.
- b) Repatriations (number of tortoises):
- i. To permanently protected lands: Not applicable, or none during this reporting period.
 - ii. To short-term protected lands: Not applicable, or none during this reporting period.

- iii. To unprotected lands: Not applicable, or none during this reporting period.
- c) Head start efforts
 - i. Description of effort, property/location, release date (anticipated), number of tortoises: Not applicable, or none during this reporting period.
- d) Onto or off of habitat without a designated special protection status, but included in a management plan that provides for the conservation of the gopher tortoise: Not applicable, or none during this reporting period.

LONGLEAF ALLIANCE

- a) Relocation (number of tortoises)
 - i. To permanently protected lands (number of tortoises): Not applicable, or none during this reporting period.
 - ii. To short-term protected lands: Not applicable, or none during this reporting period.
 - iii. To unprotected lands: Not applicable, or none during this reporting period.
- b) Repatriations (number of tortoises)
 - i. To permanently protected lands: Not applicable, or none during this reporting period.
 - ii. To short-term protected lands: Not applicable, or none during this reporting period.
 - iii. To unprotected lands: Not applicable, or none during this reporting period.
- c) Head start efforts
 - i. Description of effort, property/location, release date (anticipated), number of tortoises: Not applicable, or none during this reporting period.
- d) Onto or off of habitat without a designated special protection status, but included in a management plan that provides for the conservation of the gopher tortoise: Not applicable, or none during this reporting period.

Section VI Research

This section provides information on gopher tortoise-related research projects either conducted or funded by the various signatory agencies and organizations, or that took place on land owned or managed by them, during the reporting period.

ARMY

- a) Conducted by or supported by agency (if published, include citation):
Fort Benning: Auburn University is currently conducting research related to habitat requirements and forest assessments for the gopher tortoise.

Fort Stewart: Fort Stewart is currently monitoring the 65 released head-started GTs in F13. Recruitment is being monitored in 300 acres of habitat improved in 2009. Activities for David Rostal (Georgia Southern University) from Oct 1, 2009 to Sept 30, 2010: Reproductive studies May 20 - June 9, 2010.

Fort Gordon: Researchers from the Southeastern Cooperative Wildlife Disease Study conducted a health assessment by capturing and evaluating gopher tortoises from various areas of Fort Gordon. Each tortoise was tested for URTDs (results pending) and marked for future identification.

Other Army Research and Development:

Radzio, T. A., J. C. Hackler, A. D. Walde, D. K. Delaney and M. G. Hinderliter. 2009. *Gopherus polyphemus* (Gopher Tortoise). Emergence behavior. Herpetological Review 40(1):77.

Radzio, T. A., J. C. Hackler, A. D. Walde, D. K. Delaney and M. G. Hinderliter. 2009. *Terrapene carolina* (Eastern Box Turtle) and *Gopherus polyphemus* (Gopher Tortoise). Interspecific Interaction. Herpetological Review. 40(2): 217.

Evans, D., S. Roberts, J. Jones, K. Edwards, H. Alexis Londo, D. Nicholson, S. Tweddle, and D. Delaney. In editing. Field Assessment of Gopher Tortoise Habitat at Camp Shelby, MS - Phase II: Overstory and Combined Assessments. ERDC-CERL TR-09-DRAFT

NAVY

- a) Conducted by or supported by agency (if published, include citation):

- Rare Plant and Animal Inventory of Naval Air Station Whiting Field and Associated Properties by Jim Surdick Ph.D. and Paul Russo of Florida Natural Areas Inventory. Final report issued October 2010
- Rare Plant and Animal Inventory of Naval Air Station Pensacola, Bronson Field, Saufley Field, and Corry Station by Jim Surdick Ph.D. and Paul Russo of Florida Natural Areas Inventory. Final report issued October 2010
- Endangered and Threatened Species Survey Naval Air Station Jacksonville, Duval County, Florida. Gulf South Research Corporation. Final Report issued September 2010.
- Endangered and Threatened Species Survey Naval Station Mayport, Duval County, Florida. Gulf South Research Corporation, in progress.
- Endangered and Threatened Species Survey Whitehouse Outlying Landing Field, Duval County, Florida. Gulf South Research Corporation, in progress.
- A Survey of NSA Panama City for Gopher Tortoises by Robby Smith and Jered Jackson, U.S. Navy, NAVFAC SE, Final Report, July 2010.

AIR FORCE

- a) Conducted by or supported by agency (if published, include citation):
Avon Park Air Force Range: Rothermel and Castellon, unpublished survey reports for October 2008 through September, 2009 and October 2009 through November, 2010 (See details provided in Section IV.a above)

Moody AFB, GA: Surveillance for upper respiratory tract disease (URTD) and other physiological parameters was continued through the reporting period. Long-term monitoring of habitat response to prescribed burning continued during the reporting period. This study involves mapping and quantifying vegetation response to prescribed burns to facilitate adaptive management for gopher tortoises. Results from this study will be received at the end of the study (2013).

Eglin AFB, FL, MacDill AFB, FL, Patrick AFB, FL, Tyndall AFB, FL: Not applicable, or none during this reporting period.

UNITED STATES MARINE CORPS

- a) Conducted by or supported by agency (if published, include citation): Not applicable, or none during this reporting period.

UNITED STATES FOREST SERVICE

- a) Conducted by or supported by agency (if published, include citation): Several research studies, including a long-term study by Dr. Guyer, have been ongoing in the Conecuh National Forest. Recent and ongoing State Wildlife Grant research involving the Conecuh National Forest and the gopher tortoise are summarized at Alabama Department of Conservation and Natural Resources website at:
<http://www.outdooralabama.com/research-mgmt/State%20Wildlife%20Grants/projectsfunded.cfm>

Summaries of the relevant studies are as follows -

Amphibian and Reptile Response to Longleaf Pine Ecosystem Restoration, Conecuh National Forest: Conecuh National Forest (CNF) is in the third year of a 30-year plan to restore the native longleaf pine ecosystem. CNF supports populations of 38 high priority amphibians and reptiles, including more species of frogs than any other National Forest. This project will evaluate 60 restoration plots to document amphibian and reptile response to longleaf ecosystem restoration, compare current conditions to previous studies, identify potential reintroduction sites for rare and extirpated species, evaluate monitoring protocols of Partners in Amphibian and Reptile Conservation and provide educational opportunities for partners and resource managers. Craig Guyer, AU and Mark Bailey, Conservation Southeast. October 2004 - November 2006. (Final Report)

Use of Gopher Tortoises in Restoration of the Upland Longleaf Fauna on the Conecuh National Forest: The longleaf pine ecosystem is one of the world's most imperiled forest types. Many rare amphibian and reptile species are found in this forest, especially those that burrow in loose soils. For these reasons, restoration of longleaf pine forests is one of the most challenging conservation problems in North America. The Gopher Tortoise is a keystone species of the longleaf pine ecosystem, principally because of the burrows that this species creates. These holes assist in maintenance of an unusually rich flora and fauna. For these reasons, Gopher Tortoises are crucial to the success of conservation plans for the longleaf pine ecosystem. Thanks to 15 years of proactive management on the Conecuh National Forest (CNF), the habitat structure of a significant portion of the forest has moved closer to the aspect of old-growth longleaf pine forests. Despite success in improving habitat structure, Gopher Tortoise populations on the CNF have not recovered to densities observed in old-growth forests. The slow recovery of tortoises makes it difficult to create features that will allow recovery of missing species such as the Eastern Indigo Snake, Southern Hognose Snake, and Eastern Pocket Gophers. Therefore, implementation of active tortoise management to enhance populations on the CNF is vital for maintenance of the longleaf herpetofauna on this key property. This project will 1) work with staff at the CNF to develop a plan for implementing herpetofauna repatriation projects, 2) survey and map

burrows of Gopher Tortoises on a large site selected for eventual release of Eastern Indigo Snakes and 3) establish five large penned sites for relocation of adult Gopher Tortoises and juvenile Eastern Indigo Snakes. Dr. Craig Guyer, AU. October 2007 - September 2008. (Final Report)

UNITED STATES FISH AND WILDLIFE SERVICE

- a) Conducted by or supported by agency (if published, include citation): Not applicable, or none during this reporting period

ALABAMA

- a) Conducted by or supported by agency (if published, include citation): A State Wildlife Grant has been awarded to Dr. Craig Guyer of Auburn University. Dr. Guyer's study is entitled "A Survey of Gopher Tortoise (*Gopherus polyphemus*) burrows on key Alabama Properties". The key properties include Conecuh National Forest (Covington/Conecuh County), Geneva State Forest (Geneva County), and Alabama Forever Wild property, the Perdido River-Longleaf Hills Tract (Baldwin County). Stated objectives of this research include: 1.) Creating maps of habitats likely to be occupied by gopher tortoises on the Perdido River-Longleaf Hills Tract, Conecuh National Forest, and Geneva State Forest. 2.) Performing comprehensive burrow surveys and vegetative analyses on each property. 3.) Using burrow surveys and vegetative analyses to develop a model of carrying capacity for properties likely to be used in state conservation plans for gopher tortoises. This is a three year project beginning in October 2008. Project is budgeted for approximately \$300,000 of which \$136,00 is State Wildlife Grant funds. To date, Objective 1 has been completed. Objective 2 has been determined unworkable in its original intent but will be modified using data collected for third phase of the project during 2010-2011. (Guyer, C., S. Glenos, and B. Lowe. 2010. A Survey of Gopher Tortoise (*Gopherus polyphemus*) burrows on key Alabama Properties Annual Performance Report. Alabama State Wildlife Grant: T-3-3)

FLORIDA

- a) Conducted by or supported by agency (if published, include citation):

Currently underway:

- FWC is funding a study to evaluate the effects of cattle grazing on gopher tortoise stocking densities to determine optimal numbers of gopher tortoises that can co-exist with cattle. This study is anticipated to be completed in 2012.

- Evaluate effectiveness of restocking peninsular tortoises to the Panhandle (Nokuse Plantation).
- The response of translocated gopher tortoises to stocking density and enclosure size on the Apalachicola National Forest.

Completed:

- Population dynamics assessment of a previously-studied gopher tortoise population in northern Florida, Final Report (June 16, 2010), Florida Fish and Wildlife Conservation Commission. The results of this study indicated that viable and robust gopher tortoise populations can persist on sites undergoing intensive silviculture, and further substantiated tortoise use of windrow berms, ecotones, and better drained soils.
- The results of the study on the genetics of Florida Panhandle gopher tortoises will be presented at the upcoming Gopher Tortoise Council Meeting in October 2010.
- "Effects of Mycoplasmal Upper Respiratory Tract Disease on Morbidity and Mortality of Gopher Tortoises in Northern and Central Florida" published in the Journal of Wildlife Diseases (July 2010). Several techniques (serological and clinical signs) were used to study URTD of 205 adult gopher tortoises on public lands in Northern and Central Florida from 1998-2001 showing a 5% (11 tortoises) prevalence of a mycoplasmal infection (either *M. agassizii* or *M. testudineum*), but none of the techniques were able to predict the likelihood of death.

GEORGIA

- a) Conducted by or supported by agency (if published, include citation): Two studies at Reed Bingham State Park, related to the head-starting efforts (*See Section V(c-i)*), are being conducted by researchers at Valdosta State University: 1) Dr. Colleen McDonough is researching the predatory behavior of armadillos to determine patterns during gopher nesting season and 2) Dr. Mitch Lockhart is conducting behavioral studies on the head-started hatchlings themselves.

SOUTH CAROLINA

- a) Conducted by or supported by agency (if published, include citation): Radio-tracking of released tortoises is currently on-going. A manuscript on home range size and activity patterns of the translocated tortoises on the AGTHP is in preparation

POARCH BAND OF CREEK INDIANS

- a) Conducted by or supported by agency (if published, include citation): Not applicable, or none during this reporting period.

AMERICAN FOREST FOUNDATION

- a) Conducted by or supported by agency (if published, include citation): Not applicable, or none during this reporting period.

LONGLEAF ALLIANCE

- a) Conducted by or supported by agency (if published, include citation): Not applicable, or none during this reporting period.

SECTION VII LAND CONSERVATION

This section provides information on the amount of gopher tortoise habitat the various signatory agencies and organizations protected through acquisition, conservation easement, or other efforts, and/or lost due to development or other activities, during the reporting period.

ARMY

- a) Acquisitions, easements and other long-term conservation protection: Not applicable, or none during this reporting period.
- b) Land/habitat loss due to development activities or habitat degradation (identify cause of loss and if permanent/non-permanent): Fort Benning – 250 acres during new range construction. Most of the acreage will be regained after construction of the ranges.

NAVY

- a) Acquisitions, easements and other long-term conservation protection: Not applicable, or none during this reporting period.
- b) Land/habitat loss due to development activities or habitat degradation (identify cause of loss and if permanent/non-permanent): Not applicable, or none during this reporting period.

AIR FORCE

- a) Acquisitions, easements and other long-term conservation protection: Not applicable, or none during this reporting period.
- b) Land/habitat loss due to development activities or habitat degradation (identify cause of loss and if permanent/non-permanent):
Eglin AFB, FL: Loss of 330 acres permanently due to development of 7th Special Forces Group backyard range complex and various other mission critical construction projects.
Patrick AFB, FL: Three projects completed in FY10 resulted in the permanent loss of gopher tortoise habitat: Clearing of Airfield East and West End Clear Zones – permanent loss of 114 acres of habitat; Construction of Transporter Road – permanent loss of 4 acres of habitat; Construction of Satellite Operations Support Facility – permanent loss of .5 acres of habitat.

Avon Park Air Force Range, Tyndall AFB, FL, MacDill AFB, FL, Moody AFB, GA: Not applicable, or none during this reporting period.

UNITED STATES MARINE CORPS

- a) Acquisitions, easements and other long-term conservation protection: Not applicable, or none during this reporting period.
- b) Land/habitat loss due to development activities or habitat degradation (identify cause of loss and if permanent/non-permanent): Not applicable, or none during this reporting period.

UNITED STATES FOREST SERVICE

- a) Acquisitions, easements and other long-term conservation protection: Not applicable, or none during this reporting period.
- b) Land/habitat loss due to development activities or habitat degradation (identify cause of loss and if permanent/non-permanent): Not applicable, or none during this reporting period.

UNITED STATES FISH AND WILDLIFE SERVICE

- a) Acquisitions, easements and other long-term conservation protection: Not applicable, or none during this reporting period.
- b) Land/habitat loss due to development activities or habitat degradation (identify cause of loss and if permanent/non-permanent): Not applicable, or none during this reporting period.

ALABAMA

- a) Acquisitions, easements and other long-term conservation protection: A 1,786 acre tract in Monroe County was purchased by the Alabama Forever Wild Program in September 2010. Potential gopher tortoise habitat is contained in this property but exact acreage has yet to be determined.
- b) Land/habitat loss due to development activities or habitat degradation (identify cause of loss and if permanent/non-permanent): Not applicable, or none during this reporting period.

FLORIDA

- a) Acquisitions, easements and other long-term conservation protection: 1,996.42 acres

The properties covered in this section reflect gopher tortoise recipient sites protected under a conservation easements newly permitted within the reporting period. Other permitted long-term recipient sites were utilized for relocation efforts during this reporting period.

Long-term Protected Recipient Sites

Recipient Site Name	County	Acreage under perpetual conservation easement	Acreage of gopher tortoise habitat under perpetual conservation easement
Longbranch Crossing	Clay	293.05	210.76
NW Hackletrap	Glades	1165.4	510.55
C. Herman Beville Ranch	Sumter	890	492.37
Total gopher tortoise habitat protected/acquired			1213.68

Short-term Protected Recipient Sites

Recipient Site Name	County	Acreage protected and managed	Acreage of gopher tortoise habitat under a conservation easement or public ownership
Nokuse Plantation Black Creek	Walton	995	439
The Woods	Lafayette	701.8	301.3
Lake Louisa State Park	Lake	42.5	42.44
Total gopher tortoise habitat protected/acquired			782.74

- b) Land/habitat loss due to development activities or habitat degradation (identify cause of loss and if permanent/non-permanent)

Description	Number of Permits	Acres of gopher tortoise habitat impacted/lost
Gopher Tortoise 10 or Fewer Burrows	215	2190.28
Gopher Tortoise Conservation	89	3278.57
Total acres lost due to development activities		5468.85

GEORGIA

Acquisitions, easements and other long-term conservation protection: 803 acres of tortoise habitat were acquired by the state and 4765 acres were protected through conservation easements as part of both the Georgia Land Conservation Program and the Georgia Land Conservation Tax Credit Program. The table below breaks down the acreages by property.

TYPE	NAME	COUNTY	TOTAL ACRES	ACRES POTENTIAL TORTOISE HABITAT
Acquisition	Rayonier-Phase 2	Long	6199	803
Easement	Fountain	Macon/Taylor	817	205
Easement	Nonami Oglethorpe	Dougherty	8595	717
Easement	Kelley Crop LLC 1	Baker	401	102
Easement	Kelly Crop LLC 2	Baker	105	101
Easement	NWTF	Burke	1150	75
Easement	NWTF	Screven	730	46
Easement	GALT	Brantley	909	3
Easement	Gaskins	Berrien	5040	1014
Easement	Tall Timbers	Thomas	516	51
Easement	NWTF	Burke	909	27
Easement	Tall Timbers	Brooks	1075	172
Easement	GALT	Laurens	471	15
Easement	Towns	Wheeler	4498	1254
Easement	SRLC	Charlton	235	10
Easement	Tall Timbers	Brooks	1393	289
Easement	GALT	Effingham	132	7
Easement	GALT	Effingham	154	10
Easement	GALT	Effingham	146	11
Easement	Tall Timbers	Decatur	647	114
Easement	GALT	Decatur	1335	7
Easement	GALT	Decatur	1336	47
Easement	GALT	Crawford	418	73
Easement	Myrtlewood	Thomas	1572	26
Easement	Tall Timbers	Brooks	1077	262
Easement	GALT	Effingham	138	7
Easement	GALT	Montgomery	182	109
Easement	GALT	Toombs	110	11
Easement Total			19205	5765

- b) Land/habitat loss due to development activities or habitat degradation (identify cause of loss and if permanent/non-permanent): Not applicable, or none during this reporting period.

SOUTH CAROLINA

- a) Acquisitions, easements and other long-term conservation protection: Not applicable, or none during this reporting period.
- b) Land/habitat loss due to development activities or habitat degradation (identify cause of loss and if permanent/non-permanent): Not applicable, or none during this reporting period.

POARCH BAND OF CREEK INDIANS

- a) Acquisitions, easements and other long-term conservation protection: On-going
- b) Land/habitat loss due to development activities or habitat degradation (identify cause of loss and if permanent/non-permanent): Not applicable, or none during this reporting period.

AMERICAN FOREST FOUNDATION

- a) Acquisitions, easements and other long-term conservation protection: Not applicable, or none during this reporting period.
- b) Land/habitat loss due to development activities or habitat degradation (identify cause of loss and if permanent/non-permanent): Not applicable, or none during this reporting period.

LONGLEAF ALLIANCE

- a) Acquisitions, easements and other long-term conservation protection: Not applicable, or none during this reporting period.
- b) Land/habitat loss due to development activities or habitat degradation (identify cause of loss and if permanent/non-permanent): Not applicable, or none during this reporting period.

SECTION VIII EDUCATION AND OUTREACH

This section provides information on publications, workshops, events, promotional activities, and other efforts by the various signatory agencies and organizations designed to educate the public and train professionals about gopher tortoises and to promote their conservation during the reporting period.

ARMY

- a) Publications (signage, brochures):

Fort Gordon – Fort Gordon updated their installation map to include GT data. The map is provided to military units who conduct field training exercises on the installation. The units use the map to plan their training exercises with consideration given to environmental conditions.

- b) Workshops and events (date, location, audience, organizer):

Fort Gordon – Staff biologists conducted approximately 10 GT events in FY 10. GT life history, habitat requirements and conservation are briefed. Audiences included children, military personnel, civilian personnel and the general public..

Fort Rucker – Earth Day Event that included GT conservation.

Fort Stewart - Five Environmental Compliance Officer courses were taught 11/19/2009; 01/28/2010; 03/25/2010; 06/10/2010; 08/19/2010); School Visits - 24 (2400 students; Boy/Girl/Cub Scout presentations – 4; Field Trips for outside groups – 21; Professional presentations to organizations – 4.

- c) Public service broadcasts/announcements:

Fort Benning – Article on GT in Fort Benning News.

- d) Electronic media (website, Listserv, other internet-based outreach):

Fort Stewart - In June 2010 several television news crews and newspaper reporters came to conduct interviews on Fort Stewart's head-start release and the research being conducted.

Fort Rucker – Established a Natural Resources Website that provide GT conservation information.

NAVY

- a) Publications (signage, brochures): Habitat protection and species informational signage posted and maintained at Navy Outlying Landing Field Whitehouse to protect tortoise

road crossings. All installations produced signage and brochures for identification and information on protected species including the gopher tortoise. Burrow protection markers and cones were used for education, outreach, and protection at NAS Pensacola and NAS Whiting Field.

- b) Workshops and events (date, location, audience, organizer): Navy Region Southeast participated in the 2nd Annual Gopher Tortoise CCA meeting.
- c) Public service broadcasts/announcements: Not applicable, or none during this reporting period.
- d) Electronic media (website, Listserv, other internet-based outreach): Tortoise informational material published to NAS Pensacola website, Conservation section.

AIR FORCE

- a) Publications (signage, brochures): Not applicable, or none during this reporting period.
- b) Workshops and events (date, location, audience, organizers):
Avon Park Air Force Range: We brief incoming military units and contractors on identification and avoidance of Threatened, Endangered and sensitive species including gopher tortoise and burrows. We provided three such briefing this year: prior to Joint Integrated Fire Exercise (November, 2009) and Atlantic Strike (May, 2010) and one on-site briefing prior to construction of vehicle shed and parking area in tortoise habitat (March, 2010). All briefing were conducted at APAFR and organized by staff members: Hal Sullivan, Tod Zechiel, and Mark Fredlake. Traci Castellon gave a presentation on the results of her survey work at the Turtle Survival Alliance conference, Orlando, FL, August, 2010. Traci also conducted a Master Naturalist training session on Gopher Tortoise, indigo snake, and other sensitive reptiles and amphibians in September, 2010.

Eglin AFB, FL: December 2009 – Air Armament Academy class open to all Eglin personnel. Two hour threatened and endangered species class which included a section on gopher tortoises.

Patrick AFB, FL: The 45th Space Wing exhibited an educational display that included information regarding the gopher tortoise program at the Wing. This display was set up at the following venue: 1/27/10 – 1/31/10: Space Coast Wildlife and Birding Festival; Titusville, FL; organized Brevard Nature Alliance; audience is public nature/bird lovers. Additionally, 45 SW natural resource personnel conducted a tour of CCAFS natural and cultural resources, which included a talk on the biology of gopher tortoises, as well as the Air Force's part in protecting them. 3/13/10: Natural resources presentation that included gopher tortoises given to the Customs and Border Patrol (CBT) at CCAFS. Organized by CCAFS biologists; audience was approximately 30 members of the CBT;

5/17/10: Natural resources presentation that included gopher tortoises given at the NASA Climate Change Workshop. Organized by NASA; audience was NASA and various federal/state agencies; 8/3/10: Natural resources presentation that included gopher tortoises given at the Installation Restoration Program (IRP) Advisory Board meeting; organized by IRP; audience is board members and the public.

Moody AFB, GA: In Feb 2010 the installation did a presentation at the "Georgia Chapter of The Wildlife Society" meeting at Valdosta State University.

- c) Public service broadcasts/announcements: Not applicable, or none during this reporting period.
- d) Electronic media (website, Listserv, other internet-based outreach): Not applicable, or none during this reporting period.

UNITED STATES MARINE CORPS

- a) Publications (signage, brochures): Not applicable, or none during this reporting period.
- b) Workshops and events (date, location, audience, organizer): Not applicable, or none during this reporting period.
- c) Public service broadcasts/announcements: Not applicable, or none during this reporting period.
- d) Electronic media (website, Listserv, other internet-based outreach): Not applicable, or none during this reporting period.

UNITED STATES FOREST SERVICE

- a) Publications (signage, brochures): 3 signs erected on national forest lands in FL
- b) Workshops and events (date, location, audience, organizer): Not a workshop, but the State and Private Forestry branch of the USDA Forest Service is working with private landowners on longleaf pine restoration efforts.
- c) Public service broadcasts/announcements: Not applicable, or none during this reporting period.
- d) Electronic media (website, Listserv, other internet-based outreach): Not applicable, or none during this reporting period.

UNITED STATES FISH AND WILDLIFE SERVICE

- a) Publications (signage, brochures): Not applicable, or none during this reporting period.
- b) Workshops and events (date, location, audience, organizer) : Not applicable, or none during this reporting period.
- c) Public service broadcasts/announcements: Not applicable, or none during this reporting period.
- d) Electronic media (website, Listserv, other internet-based outreach): Not applicable, or none during this reporting period.

ALABAMA

- a) Publications (signage, brochures): The ADCNR official magazine, Outdoor Alabama, produced a six-page article in the July 2010 issue entitled "Longleaf and Gophers: An Odd Pair Supporting a Full House". Magazine featured a cover photograph of a gopher tortoise with the article describing the association of gopher tortoises and longleaf pine forests, history of decline, and look towards the future.
- b) Workshops and events (date, location, audience, organizer): Not applicable, or none during this reporting period.
- c) Public service broadcasts/announcements: Not applicable, or none during this reporting period.
- d) Electronic media (website, Listserv, other internet-based outreach): ADCNR official website maintains a species profile of the gopher tortoise (<http://www.outdooralabama.com/watchable-wildlife/what/Reptiles/Turtles/gt.cfm>).

FLORIDA

- a) Publications (signage, brochures): A newly created Spanish version of the "Living with Gopher Tortoises" brochure was distributed to more than 500 non-profit, educational, and governmental organizations in Florida. FWC staff also created the "Got Gophers, Get Permits" poster for distribution to planning councils, county and city building departments, and local permitting offices. Additionally, staff developed a field manual for FWC law enforcement officers to help address wildlife complaints related to gopher tortoises in an effective and consistent manner statewide. A fact sheet for Recipient Sites was also developed and distributed to private landowners enrolled in FWC's landowner Assistance Program. The fact sheet, along with all gopher tortoise

publications, is available for free download on our website:
MyFWC.com/GopherTortoise.

- b) Workshops and events (date, location, audience, organizer): To enhance the protection and conservation of gopher tortoises and gopher tortoise habitat statewide, FWC developed a training workshop for agency law enforcement officers. This training will help FWC officers address wildlife complaints related to gopher tortoises in an effective and consistent manner statewide. Additionally a series of seven workshops were conducted in Bay, Clay, Citrus, Collier, Martin, Polk, and Taylor County. The workshops were attended by over 200 representatives primarily from public organizations. Citizens were further engaged in gopher tortoise conservation through two stakeholder meetings held 2/26/10 in Lecanto, Florida, and 9/24/2010 in Gainesville, Florida. A facilitator's training and companion teacher's curriculum was developed and implemented in October 2010 at a FWC-sponsored Project Wild training. This curriculum has been duplicated on DVDs that is available upon request to teachers in Florida. The curriculum meets Florida's Sunshine Standards for education.
- c) Public service broadcasts/announcements: The gopher tortoise was the cover feature article of the May/June 2010 issue of FWC's magazine Florida Wildlife. Additionally, a full-page newspaper insert ran throughout Florida called the "Featured Critter." The goal is to reach a broad public audience with key facts about gopher tortoises and the gopher tortoise conservation efforts underway in Florida. In June 2010, a press release was circulated to notify citizens of updates to the Gopher Tortoise Permitting Guidelines.
- d) Electronic media (website, Listserv, other internet-based outreach): The online gopher tortoise permitting system was expanded to include additional permit application types online for easy access by the public.

GEORGIA

- a) Publications (signage, brochures): No new GA DNR-WRD publications were produced during the reporting period, but three items have been reprinted and/or widely distributed during this time. A tear-sheet specific to the gopher tortoise in GA is made available to educators across the state and is regularly set out on tables at pertinent public events. Similar use is given to a Longleaf Pine-Wiregrass Community Access Guide booklet, although it contains information on other animals, plants, and issues beyond just tortoises. A booklet entitled "A Landowner's Guide to Conservation Incentives" is provided to interested private landowners, and although it does not have information specific to gopher tortoises, it does provide excellent information on programs that can assist landowners in managing or conserving their lands for tortoises and other species.

- b) Workshops and events (date, location, audience, organizer): GA DNR personnel either organized the workshops/events shown in the table below or GA DNR personnel were heavily involved in conducting them. These events reached approximately 1800 people who were instructed on land management and conservation programs beneficial to gopher tortoises, as well as conservation issues facing the gopher tortoise. The table below summarizes each workshop.

<u>Location</u>	<u>Topic/Audience</u>	<u># in Attendance</u>
McRae	Advanced Project WILD Sandhills Workshop	20
Swainsboro	Pine Tree Festival (DNR sandhills booth)	1000+
Hawkinsville	GA Land Conservation Program	30
Butler	Healthy Forest Reserve Program	50
Donalsonville	Gopher Tortoise Workshop for Landowners	45
Swainsboro	Land Conservation/ Ochopee Dunes NA	75
Tifton	Master Timber Harvester Workshop	50
Butler	Cons. Management at Fall Line Sandhills NA	15
Atlanta	Endangered Species Day at ATL Botanical Garden	500+
Cusseta	Mead-Westvaco Forester Training	50

- c) Public service broadcasts/announcements: Not applicable, or none during this reporting period.

- d) Electronic media (website, Listserv, other internet-based outreach):

- Gopher Tortoise conservation was featured in the March 2010 WRD-Nongame Conservation Section's monthly e-newsletter, which has a current distribution of 5,000 addresses. (http://us1.campaign-archive.com/?u=946679e7fe51bbf81ce578cc1&id=f56bae569b&e=&utm_source=WRD+nongame+news&utm_campaign=f56bae569b-DNR_e_news_March_20103_24_2010&utm_medium=email)
- The Gopher Tortoise was also a focal species in the August e-newsletter. (<http://us1.campaign-archive.com/?u=946679e7fe51bbf81ce578cc1&id=9cf4951eb7&e=>)
- State Parks' quarterly e-newsletter (distribution currently to 1,200 children) for Junior Rangers ("The Georgia Junior Ranger") featured "Creatures of the Longleaf Pine Forest," including the Gopher Tortoise. (<http://us1.campaign-archive.com/?u=bee8920090f58e70def4d630a&id=7a05e22078>)
- Tortoises were featured in three press releases during this period:

April 19: "Townsend WMA project aimed at restoring sandhills habitat," gopher tortoises mentioned as a key species in logging to remove slash pine and restore longleaf.

(<http://jacksonville.com/news/georgia/2010-04-20/story/dnr-restore-sandhills-habitat>)

August 30: "States make headway conserving sandhills," review of multistate sandhills project's first year includes coverage of work involving gopher tortoises. (www.georgiawildlife.com/node/2345)

Sept. 1: "Georgia events mark 10th anniversary of wildlife grants," celebration of SWG's first decade briefly mentions gopher tortoises and efforts to keep off the species off the endangered list. (www.georgiawildlife.com/node/2346)

- Lastly, one of the printed documents listed under VIII(a), "A Landowner's Guide to Conservation Incentives," is also available electronically: (<http://georgiawildlife.dnr.state.ga.us/documentdetail.aspx?docid=370&pageid=1&category=conservation>)

SOUTH CAROLINA

- a) Publications (signage, brochures): Andrew Grosse, SREL technician working with SCDNR on AGTHP project submitted a paper on nest guarding behavior in female tortoises.
- b) Workshops and events (date, location, audience, organizer): Several of the researchers led a University of Georgia herpetology class on a weekend field trip to the AGTHP in 2010. A local Boy Scout Troop also visited the site for a field trip.
- c) Public service broadcasts/announcements: DNR's conservation work with the gopher tortoise at AGTHP was featured in an episode of SCETV's Expedition's with Patrick McMillan, we produced a news release on the AGTHP work.
- d) Electronic media (website, Listserv, other internet-based outreach): Not applicable, or none during this reporting period.

POARCH BAND OF CREEK INDIANS

- a) Publications (signage, brochures): Two
- b) Workshops and events (date, location, audience, organizer): Not applicable, or none during this reporting period

- c) Public service broadcasts/announcements: Not applicable, or none during this reporting period.
- d) Electronic media (website, Listserv, other internet-based outreach): Not applicable, or none during this reporting period.

AMERICAN FOREST FOUNDATION

- a) Publications (signage, brochures): AFF has distributed Gopher Tortoise Conservation Awareness signs as well as the Pine Ecosystem Handbook for the Gopher Tortoise to over 50 landowners and resource professionals that requested them in Florida, Georgia and Alabama. These landowners and resource professionals own or impact decisions on over 97,500 acres across the southeast. Landowners that request signage must provide AFF with information on how their forest management benefits pine ecosystem conservation and gopher tortoise habitat. AFF also wrote about the gopher tortoise in two publications:
 - Gartner, T. "Habitat Credit Trading" PERC Reports, Improving Environmental Quality Through Markets. Spring 2010.
 - Gartner, T. "Voluntary Gopher Tortoise Habitat Credit Trading System." Mountain Forum Bulletin, Payments for Environmental Services edition. Dec 2009.
- b) Workshops and events (date, location, audience, organizer): AFF has presented at many events throughout the past year. These events include:
 - October 15-16, 2009, Ann Arbor, Michigan, University of Michigan Ross School of Business Net Impact Conference: Markets with a Mission. Audience: business leaders, students, non-profit organizations concerned with ecological issues that define today's business environment.
 - May 3-6, 2010 Austin, Texas, National Mitigation Banking Association Conference. Audience: bankers, regulators and users of mitigation banks.
 - May 17-20, 2010, Lake Tahoe, Nevada, Project Learning Tree Conference. Audience: environmental educators and students.
 - June 9 - June 11, 2010, Bozeman, Montana, PERC, Workshop III on Property Rights, Markets, and the Environment. Audience: Researchers, environmental entrepreneurs, policy makers, environmental practitioners.
 - June 14, 2010, Valencia, Spain, Generalitat Valenciana (Valencia Department of Agriculture). Audience: policy makers.

- June 23-24, 2010 Raleigh-Durham, North Carolina, Ecosystem Markets Conference. Audience: conservation non-profits, federal & state natural resources agencies, academia, the private investment sector, forestry, and private tree farms.
 - July 13-15, Burlington, Vermont, 17th National Tree Farm Convention. Audience: Tree Farmers
 - July 19-23, 2010, USFWS/The Conservation Fund Conservation Banking Training Workshop: Federal natural resource agencies (Department of Defense, Federal Highways, US Army Corps of Engineers, USDA, USFWS, US Army, US Marine Corps, USDA Office of Environmental Markets, National Oceanic and Atmospheric Administration, Department of Interior).
- c) Public service broadcasts/announcements: Not applicable, or none during this reporting period.
- d) Electronic media(website, Listserv, other internet-based outreach): AFF maintains a website (http://www.affoundation.org/ccs_sandhill.html) that contains information on the gopher tortoise habitat crediting system.

LONGLEAF ALLIANCE

- a) Publications (signage, brochures): Economics of Longleaf Booklet, Brochure on Sandhill Mitigation Credit System (in press)
- b) Workshops and events (date, location, audience, organizer):
- 8 Longleaf Academies at SDFEC conducted by LLA
 - 4 landowner workshops at Autaugaville, Geneva, Monroeville, SDFEC
- c) Public service broadcasts/announcements: Not applicable, or none during this reporting period.
- d) Electronic media (website, Listserv, other internet-based outreach): Not applicable, or none during this reporting period.

SECTION IX LEGAL PROTECTION MEASURES

This section provides information on any gopher tortoise-related laws, rules, regulations, policies, etc. proposed, passed, or put in place either by the various signatory agencies and organizations or that will affect them during the reporting period.

ARMY

- a) State laws, rules and regulations: Not applicable, or none during this reporting period.
- b) Agency policies/directives/compliance documents: Not applicable, or none during this reporting period.

NAVY

- a) State laws, rules and regulations: Not applicable, or none during this reporting period.
- b) Agency policies/directives/compliance documents: Not applicable, or none during this reporting period.

AIR FORCE

- a) State laws, rules and regulations: Not applicable, or none during this reporting period.
- b) Agency policies/directives/compliance documents: Not applicable, or none during this reporting period.

UNITED STATES MARINE CORPS

- a) State laws, rules and regulations: Not applicable, or none during this reporting period.
- b) Agency policies/directives/compliance documents: Not applicable, or none during this reporting period.

UNITED STATES FOREST SERVICE

- a) State laws, rules and regulations: Not applicable, or none during this reporting period.

- b) Agency policies/directives/compliance documents: Forest Supervisor's Closure Order Banning the Gassing of Gopher Tortoise Burrows originated in 2002 and reauthorized in 2007 (through 2012). Clause in Timber Sale Contracts – CT6.24 – Site Specific Special Protection Measures: "To protect gopher tortoise burrows, log decks and skid trails will be agreed upon in advance by the Forest Service and the Purchaser. Within the Sale Area, gopher tortoise burrows will be protected from damage by all motorized vehicles."

UNITED STATES FISH AND WILDLIFE SERVICE

- a) State laws, rules and regulations: Not applicable, or none during this reporting period.
- b) Agency policies/directives/compliance documents: Not applicable, or none during this reporting period.

ALABAMA

- a) State laws, rules and regulations: Adopted by the Alabama Conservation Advisory Board in March 2009, an addition to an existing regulation was enacted in 2010 stating "it shall be unlawful to concentrate, drive, rally, molest, or to hunt, take, capture or kill or attempt to hunt, take capture or kill any bird or animal from or by the aid of gasoline or any noxious chemical or gaseous substance to drive wildlife from their burrows, dens, or retreats". The regulation is 220-2-1 Prohibited Methods and Devices for Hunting.
- b) Agency policies/directives/compliance documents: Not applicable, or none during this reporting period.

FLORIDA

- a) State laws, rules and regulations: Over the past year, FWC worked with stakeholders and developed rules for imperiled species in Florida. Additional new rules were enacted to eliminate permitting duplication and confusion between federal and state listed species. Along with the new imperiled species rule, the airport safety rule was developed and implemented allowing airports in Florida to take and harass wildlife that pose a safety threat within airport safety areas. The revised rule can be accessed here: http://www.myfwc.com/docs/WildlifeHabitats/Chapter_68A-27_final.pdf

- b) Agency policies/directives/compliance documents: Three new permits were approved and two were implemented. Expected implementation of the Disturbed Site permit will take place after further revision in 2011.
- Disturbed Site permit will be used when sites are prematurely cleared before relocation of tortoises has occurred or when the clearing prevents burrow surveys to be accurately verified.
 - Burrow and Structure Safety—this permit is intended for on-site relocation of tortoises when burrows have compromised public safety or an existing structure. The “Burrow or Structure Protection” permit option is used only when FWC education efforts do not provide relief and assurance to homeowners where a tortoise has burrowed under an existing structure.
 - Research Recipient Site permit authorizes properties to receive displaced tortoises in order to carry out FWC-permitted research projects that further the goals of the Gopher Tortoise Management Plan.

GEORGIA

- a) State laws, rules and regulations: Not applicable, or none during this reporting period.
- b) Agency policies/directives/compliance documents: Not applicable, or none during this reporting period.

SOUTH CAROLINA

- a) State laws, rules and regulations: Not applicable, or none during this reporting period.
- b) Agency policies/directives/compliance documents: The Management Plan for Tillman Sandridge Heritage Preserve was updated and approved by the SCDNR Board. A Conservation Strategy for the Gopher Tortoise in South Carolina was finalized and is currently under review by DNR leadership.

POARCH BAND OF CREEK INDIANS

- a) State laws, rules and regulations: Not applicable, or none during this reporting period.
- b) Agency policies/directives/compliance documents: Not applicable, or none during this reporting period.

AMERICAN FOREST FOUNDATION

- a) State laws, rules and regulations: Not applicable, or none during this reporting period.
- b) Agency policies/directives/compliance documents: AFF continues to work with USFWS and other stakeholders to develop a pre-compliance methodology for non-listed species like the gopher tortoise. During this reporting period, we have made significant progress and have been in continual talks with USFWS at the local, regional and national level.

LONGLEAF ALLIANCE

- a) State laws, rules and regulations: Not applicable, or none during this reporting period.
- b) Agency policies/directives/compliance documents: Not applicable, or none during this reporting period.

SECTION X CCA AGENCY CONSERVATION STRATEGY (SEE CCA SECTION 10.2)

This section provides information on any deviations from the CCA by the various signatory agencies and organizations, or any additional goals or strategies adopted by them beyond those stated in the CCA during the reporting period.

ARMY

- a) Deviations from CCA Agency Conservation Strategy: Not applicable, or none during this reporting period.
- b) New goals and strategies not included under the CCA Agency Conservation Strategy: Not applicable, or none during this reporting period.

NAVY

- a) Deviations from CCA Agency Conservation Strategy: Not applicable, or none during this reporting period.
- b) New goals and strategies not included under the CCA Agency Conservation Strategy: Not applicable, or none during this reporting period.

AIR FORCE

- a) Deviations from CCA Agency Conservation Strategy: Not applicable, or none during this reporting period.
- b) New goals and strategies not included under the CCA Agency Conservation Strategy: Not applicable, or none during this reporting period.

UNITED STATES MARINE CORPS

- a) Deviations from CCA Agency Conservation Strategy: Not applicable, or none during this reporting period.
- b) New goals and strategies not included under the CCA Agency Conservation Strategy: MCSF Blount Island – Still plan on relocating all gopher tortoises to location off of the installation. Once this action is complete MCSF Blount Island will need to be removed from the Gopher Tortoise CCA.

UNITED STATES FOREST SERVICE

- a) Deviations from CCA Agency Conservation Strategy: Not applicable, or none during this reporting period.
- b) New goals and strategies not included under the CCA Agency Conservation Strategy: Not applicable, or none during this reporting period.

UNITED STATES FISH AND WILDLIFE SERVICE

- a) Deviations from CCA Agency Conservation Strategy: Not applicable, or none during this reporting period.
- b) New goals and strategies not included under the CCA Agency Conservation Strategy: Not applicable, or none during this reporting period.

ALABAMA

- a) Deviations from CCA Agency Conservation Strategy: Not applicable, or none during this reporting period.
- b) New goals and strategies not included under the CCA Agency Conservation Strategy: Discussions with the U.S. Fish and Wildlife Service were held in March 2010 aimed at a possible future adoption of a gopher tortoise/black pine snake safe harbor agreement/candidate conservation agreement with assurances.

ADCNR is a continuing partner in a Multistate Sandhills Ecological Restoration Plan which received State Wildlife Grant funding in 2009 with goals to enhance and restore over 30,000 acres of sandhills habitat throughout the gopher tortoise's eastern range by 2012.

FLORIDA

- a) Deviations from CCA Agency Conservation Strategy: Not applicable, or none during this reporting period.
- b) New goals and strategies not included under the CCA Agency Conservation Strategy: Not applicable, or none during this reporting period.

GEORGIA

January 2011

- a) Deviations from CCA Agency Conservation Strategy: The CCA strategy for Georgia includes potential translocation efforts involving tortoises displaced by development in Florida. Since the finalization of the CCA, the Florida tortoise stakeholders' group declined to allow Florida animals to be moved to other states. The translocation efforts remain the same; however, non-Florida sources of tortoises will be used, as they become available. No other deviations have been made.
- b) New goals and strategies not included under the CCA Agency Conservation Strategy: Not applicable, or none during this reporting period.

SOUTH CAROLINA

- a) Deviations from CCA Agency Conservation Strategy: Not applicable, or none during this reporting period.
- b) New goals and strategies not included under the CCA Agency Conservation Strategy: Not applicable, or none during this reporting period.

POARCH BAND OF CREEK INDIANS

- a) Deviations from CCA Agency Conservation Strategy: Not applicable, or none during this reporting period.
- b) New goals and strategies not included under the CCA Agency Conservation Strategy: Not applicable, or none during this reporting period.

AMERICAN FOREST FOUNDATION

- a) Deviations from CCA Agency Conservation Strategy: Not applicable, or none during this reporting period.
- b) New goals and strategies not included under the CCA Agency Conservation Strategy: Not applicable, or none during this reporting period.

LONGLEAF ALLIANCE

- a) Deviations from CCA Agency Conservation Strategy: Not applicable, or none during this reporting period.

- b) New goals and strategies not included under the CCA Agency Conservation Strategy:
Not applicable, or none during this reporting period.

Appendix I - Poarch Band of Creek Indians: Executive Summary



Appendix II - Definitions (please see the GTCCA for a full list of definitions)

Habitat without a designated special protection status – applies to lands that are included in a management plan: this could consist of state public lands under a state management plan; Department of Defense installations (with a signed/approved Integrated Natural Resources Management Plan - INRMP).

Integrated Natural Resources Management Plan (INRMP) - a document that supports the military mission by combining a series of component plans into an ecosystem management approach and is the primary tool for managing species and their habitats on military installations. INRMPs are statutory driven natural resources management plans required by the Sikes Act.

Long-term protection (habitat) – applies to either privately owned lands placed under a perpetual (i.e., endless duration) conservation easement, or publicly owned lands purchased for conservation purposes where either restrictions on the acquisition funding source or government commitment (through ordinances or other regulations) would prevent or prohibit the eventual sale or development of the property.

Protected (habitat) – applies to any land that is protected from any future development (i.e. take of habitat).

Short-term protection (habitat) – applies to either privately or publicly owned lands that have some enforceable protection commitment, but those commitments do not meet the definition of "long-term protection."

Unprotected Site (habitat) – applies to lands that do not have any enforceable protection commitments or use restrictions that would prevent them from being modified and made unsuitable for tortoises.

Appendix III - List of Acronyms

ACDPS	Alachua County Department of Public Safety
ADCNR	Alabama Department of Conservation and Natural Resources
AFB	Air Force Base
AFF	American Forest Foundation
AGTHP	Aiken Gopher Tortoise Heritage Preserve
APAFR	Avon Park Air Force Range
ARRA	American Recovery and Reinvestment Act
BRAC	Base Closure and Realignment Commission
CA	Conservation Area
CCA	Candidate Conservation Agreement
CCAA	Candidate Conservation Agreement with Assurances
CCAFS	Cape Canaveral Air Force Station
DEP	Florida Department of Environmental Protection
DOF	Florida Division of Forestry
DOD (or DoD)	Department of Defense
FDACS	Florida Department of Agriculture and Consumer Services
FLARNG	Florida National Guard
FWC	Florida Fish and Wildlife Conservation Commission
GIS	Geographic Information System
GPS	Global Positioning System
GT	Gopher Tortoise
GTHP	Gopher Tortoise Heritage Preserve
GTT	Gopher Tortoise Team
INRMP	Integrated Natural Resources Management Plan
LLA	Longleaf Alliance
LIP	Landowner Incentive Program
MCSF	Marine Corps Support Facility
MCLB	Marine Corps Logistics Base
MOCC	Mobile Operations Control Center
NA	Natural Area
NAS	Naval Air Station
NSB	Naval Submarine Base
OSBS	Ordway-Swisher Biological Station
PFA	Public Fishing Area
SCDNR	South Carolina Department of Natural Resources
SERPPAS	Southeast Regional Partnership for Planning and Sustainability
SF	State Forest
SJRWMD	St. Johns River Water Management District
SP	State Park
SREL	Savannah River Ecology Laboratory
SW	Space Wing

TSR	Tillman Sandridge Heritage Preserve
UF	University of Florida
URTD	Upper Respiratory Tract Disease
USFS	United States Forest Service
USFWS	United States Fish and Wildlife Service
WEA	Wildlife and Environmental Area
WMA	Wildlife Management Area
WRD	Wildlife Resources Division
WRI	World Resources Institute

FINAL

APPENDIX C: Indigo Snake Protection Measures

FINAL

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TYNDALL AFB DIVISION OF NATURAL RESOURCES

Eastern Indigo Snake Protection Plan

Replacement of the JP-8 Transfer Pipeline between the 6000 Area and 400 Area
Project

2/22/2012

Eastern Indigo Snake

(*Drymarchon corais couperi*)

The eastern indigo snake (*Drymarchon corais couperi*) is a large, **non-poisonous**, and relatively docile snake. The eastern indigo snake is listed as a Threatened Species by the U.S. Fish and Wildlife Service and the Florida Fish and Wildlife Conservation Commission and is therefore protected from being captured, harmed, harassed, wounded, hunted, etc. Although rare, the eastern indigo snake may occur in any habitat in the project area.

Life History And Ecology

The eastern indigo snake is shiny, blue-black or glossy black in color with cream, orange or reddish color around the chin, throat and side of the head. It is a thick-bodied snake that can reach 8.6 feet in length but smaller individuals (6 feet) are more commonly seen. Although some young indigos exhibit a lighter coloring and speckled pattern on their back, the young generally resemble the adults. Eggs are laid in May or June (5-10 eggs), hatchlings may appear as late as August and September. Hatchlings are 18-24 inches long with a black body and usually have a blue and white speckled pattern on the back and tail. The eastern indigo snake is most commonly confused with two similar species; black ratsnake (*Elaphe obsoleta obsoleta*) and southern black racer (*Coluber constrictor priapus*). An identification guide to common black snakes is available in Appendix A.



Figure 1. Eastern Indigo Snake Head Colors
Credit : Pattavia, P./USFWS



Figure 2. Eastern Indigo Snake Common Sighting
Credit : Mount R./USFWS

The indigo snake is diurnal, i. e., active during the day. In the construction area, the indigo snake is most likely to be found along the edges of wetlands and other water bodies where food is abundant. It feeds on fish, frogs, toads, lizards, snakes, small turtles, birds, and small mammals. This snake also prefers large woody debris piles in pine flatwoods and hardwoods communities.

Laws and Enforcement

The eastern indigo snake is listed as a *threatened* species by the U.S. Fish and Wildlife Service. Under Section 9 of the Endangered Species Act of 1973 (16 U.S.C. 1531), as amended, it is unlawful for any person to “take” any threatened species. The term “take” is defined as “...harass, harm, pursue, hunt, shoot wound , kill, trap, capture, or collect, or attempt to engage in any such conduct.”

The eastern indigo snake is listed as a state *threatened* species by the Florida Fish and Wildlife Conservation Commission. Under the State of Florida Wildlife Code Rule, Chapter 39 of the State Administrative Code, Rule 39-27.002 states the “No person shall pursue, molest, harm, harass, capture or possess any endangered or threatened species or parts thereof or their nest or eggs...”. Additionally, Rule 39-27.011 states that “No person shall kill, attempt to kill, or wound any endangered or threatened species”.



Figure 3. USFWS Fish and Wildlife Biologist holds a threatened Eastern indigo snake (*Drymarchon corais couperi*). Credit :Pattavia, P./USFWS

Violating these federal and state laws could be punishable with fines up to \$50,000 and/or one year imprisonment for crimes involving endangered species, and \$25,000 and/or six months imprisonment for crimes involving threatened species. Misdemeanors or civil penalties are punishable by fines up to \$25,000 for crimes involving endangered species and \$12,000 for crimes involving threatened species.

What Should You Do If You See An Eastern Indigo Snake On-Site?

- Stop all Construction activity in the vicinity of the snake.
- Allow the snake to exit the construction area on its own and without aid or interference.
- Location of live sightings shall be reported to the Primary Contact (Marybeth Morrison, Solid Waste Authority, Environmental Programs Supervisor) or if unavailable then the contractor should contact the Authority’s Construction Environmental Liaison (specified on the following page). The Authority will then contact the USFWS Panama City field office at (850) 769-0552 and FWC (941) 575-5765 for further instruction.
- Once the snake has left the area, then construction activities can resume.

What Should You Do If You Find a Dead Eastern Indigo Snake On-Site?

- Stop all Construction activity in the vicinity of the snake.
- Location of the snake shall be reported to the Primary Contact (Marybeth Morrison) or if unavailable then the contractor should contact the Authority's Construction Environmental Liaison (specified below). The Authority will either perform or direct the collection and preservation of the dead snake. Preservation will involve soaking the dead snake in water and freezing it immediately. The Authority shall consult with the USFWS Panama City field office at (850) 769-0552 for further instruction.

Reporting Contacts for Eastern Indigo Snake Sightings

Primary Contact

Tyndall AFB Division of Natural
Resources
Wildlife Biologist A Civ USAF AETC
325 CES/CEAN
Wendy Jones (850) 527-2009

Secondary Contacts (For use when Primary Contact is unavailable)

Tyndall's Natural Resource Office:
(850) 283-2822

Construction Personnel Education for the Eastern Indigo Snake

Provide eastern indigo snake educational information to construction personnel prior to the initiation of any clearing or construction. An educational exhibit, approved by USFWS, will be posted in a conspicuous on-site location accessible to employees.

1. Educational information shall be posted and distributed to all construction personnel. The exhibit and brochure includes photographs of the eastern indigo snake, information on life history and legal protection of the species in Florida, and how to avoid impacts to the species. This material shall be supplied by the Authority at the pre-construction meeting.
2. To reduce any potential for harm to the eastern indigo snake, the following plan will be utilized to educate construction personnel and Authority staff of the possible presence of the protected eastern indigo snake in the project area prior to and during construction.
3. Construction personnel will be informed of the possible presence of the eastern indigo snake at the pre-construction meeting.
4. Construction personnel will be provided a description of the eastern indigo snake along with information on the ecology of the species at the pre-construction meeting. A copy of the educational material is available in Appendix B of this document.
5. Color photographs of the eastern indigo snake will be provided at the pre-construction meeting.
6. At the pre-construction meeting, construction personnel will be informed of the protection status of the eastern indigo snake and the penalties that may be imposed if regulations are violated.
7. At the pre-construction meeting, a sufficient number of exhibits will be provided in order to ensure that the materials are conspicuously posted at the construction site. A copy of the exhibit to be posted is available in Appendix C.
8. The Authority or its Construction Environmental Liaison will verify that the exhibits have been conspicuously posted prior to construction and will periodically confirm the posting of this exhibit during construction.

References

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Smith, T-I. M. and E. D. Brodie, Jr. 1982. A Guide to Field Identification; Reptiles of North America. Golden Press, New York.

Steiner, T.M., O.L. Bass, Jr., and J.A. Kushlan. 1983. Status of the eastern indigo snake in southern Florida National Parks and vicinity. S. FL. Res. Ctr. Rept. SFRC-83/01. 25 pp. (Everglades National Park, Homestead, Florida).

U.S. Fish and Wildlife Service. 1982. Eastern Indigo Snake Recovery Plan. U.S. Fish and Wildlife Service. Atlanta, Georgia. 23 pp.

*Photographs are courtesy of U.S. Fish and Wildlife Service Online Digital Library and are Public Domain. Credit :Pattavia, P. and Mount, R./USFWS

Appendix A

"Black Snakes": Identification and Ecology¹

Steve A. Johnson and Monica E. McGarrity²

Introduction

The southeastern United States is home to a great diversity of snakes. There are about 45 species of snakes (only 6 of which are venomous) that may be found along the Atlantic and Gulf coastal states from Louisiana to North Carolina. These snakes live in a variety of upland and wetland habitats and play important roles in the region's ecology. They are both predators and prey, and thus form important links in natural food webs.

Regrettably, populations of many species of snakes are declining not only throughout the southeastern United States but also worldwide. These declines are largely due to habitat loss and degradation, high mortality on roads and pollution associated with development, agriculture and other human activities. In addition, introduction of invasive species, disease, parasitism and even climate change may exert negative effects on snake populations. Many species of snakes must also withstand pressures caused by unsustainable collection for the pet trade as well as persecution by humans as a result of misinformation or lack of knowledge regarding snakes.

Black-Colored Snakes in the Southeast

Some snake species look quite similar and may be difficult for those inexperienced with snakes to confidently identify. Among these are several species of southeastern snakes commonly called "black snakes" because of their primarily black coloration. These include the Black Swampsnake, Black Ratsnake, Ring-necked Snake, Red-bellied Mudsnake, Black Pinesnake, Eastern Indigo Snake and the Southern Black Racer. The latter two — Eastern Indigo and Black Racer—are the species most often referred to as "black snakes".

In addition to those listed above, individuals of several species of water snakes, the Eastern Hog-nosed Snake and the venomous Cottonmouth Moccasin may be black colored to a great extent, depending on the age of the individual and the habitat in which it is found. The following is a list of black-colored snakes found in the southeastern U.S., the habitats they occur in and some identifying features. The Eastern Indigo Snake and Southern Black Racer are given special consideration.

1. This document is WEC214, of the Department of Wildlife Ecology and Conservation, Institute of Food and Agricultural Sciences, University of Florida. Published November 2006. Reviewed November 2009. Please visit the EDIS Web Site at <http://edis.ifas.ufl.edu>. For a better understanding of figures and graphics, please print in a color printer.

2. Steve A. Johnson, Ph.D., Assistant Professor, University of Florida, Gulf Coast REC and Department of Wildlife Ecology and Conservation, Plant City, FL
Monica E. McGarrity, Biological Scientist, University of Florida, Gulf Coast REC, Plant City, FL

Black Swampsnake (*Seminatrix pygaea*)

The Black Swampsnake inhabits coastal areas from North Carolina to Florida (Fig. 1). This small snake (10-15 inches) has smooth scales, a glossy black back and a bright orange belly (Fig. 2). Black Swampsnakes are only found in and around wetlands: primarily cypress swamps, marshes and lake edges, where they feed on tadpoles, worms, small fish, frogs and salamanders. In the U.S., many states have lost as much as 80% of their wetlands, resulting in the loss of great numbers of individuals of species that, like the Black Swampsnake, are restricted to these wetland habitats.

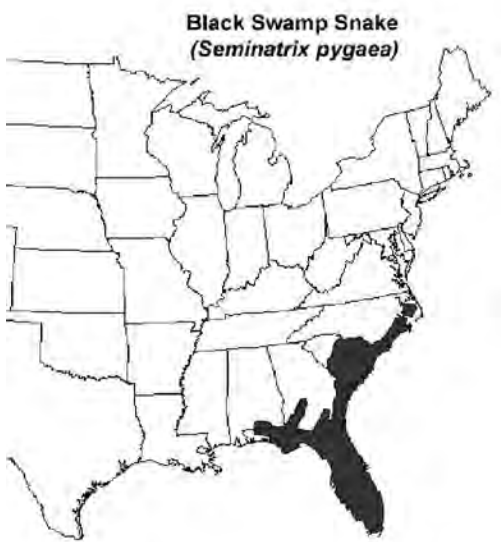


Figure 1. Black Swampsnake Range (shown in black). Credits: Monica McGarrity, University of Florida



Figure 2. Black Swampsnake showing bright orange belly. Credits: John Jensen, Georgia DNR, 27 Aug 2005

Black Ratsnake (*Elaphe obsoleta obsoleta*)

The Black Rat Snake is one of several subspecies of Ratsnakes (Yellow and Gray Ratsnakes are others). Ratsnakes are common throughout the eastern U.S., although the black subspecies of rat snake does not occur in Florida (Fig. 3). This snake can be quite large (it may exceed six feet in length) and has slightly keeled scales (raised ridge along the middle of each scale) that make it appear somewhat rough. Its back is almost entirely black (small flecks of whitish color may show through the black), whereas its chin and belly have a lot of white markings (Fig. 4). Black Ratsnakes are excellent climbers and are found in a great variety of habitats, ranging from pine forests to agricultural fields. They feed primarily on rodents, birds and birds' eggs.

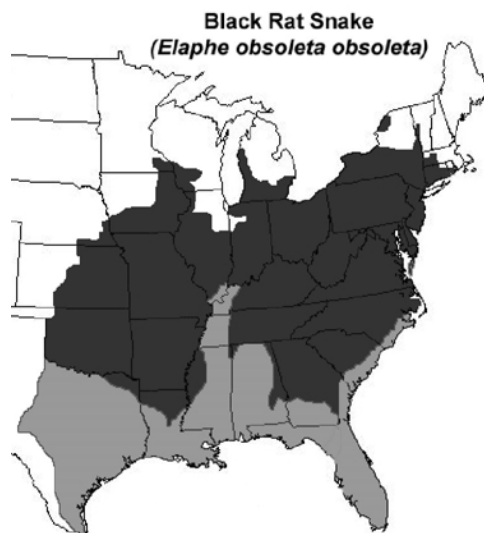


Figure 3. Black Ratsnake Range (shown in black, other Rat Snake subspecies in gray). Credits: Monica McGarrity, University of Florida

Southern Ring-necked Snake (*Diadophis punctatus punctatus*)

Ring-necked Snakes are found throughout most of the eastern U.S. (Fig. 5). These diminutive snakes seldom grow longer than 12 inches. Ring-necked Snakes have smooth scales and a black or dark gray back, whereas the belly is a bright orange/yellow, often with a row of black spots. As the name implies, there is an obvious ring of orange/yellow around its neck (Fig. 6, Fig 7). When alarmed or threatened, Ring-necked Snakes coil their tail like a corkscrew.



Figure 4. Black Ratsnake showing white chin and belly markings and white flecks on back. Credits: John Jensen, Georgia DNR, May 2004

These snakes are fairly secretive and may be found under logs and rocks in moist uplands, where they eat earthworms, slugs, small salamanders and small snakes.

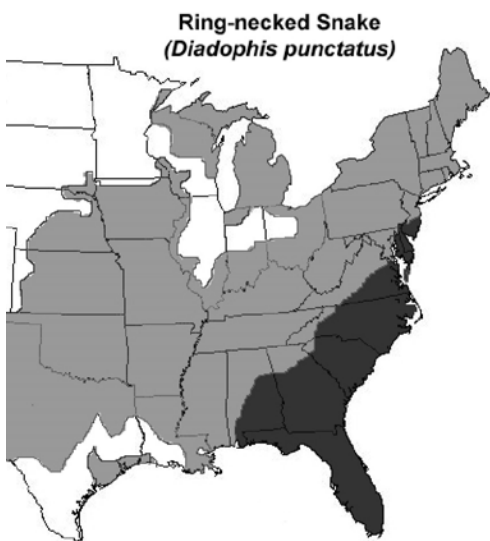


Figure 5. Southern Ring-necked Snake Range (shown in black, other ring-necked subspecies in gray). Credits: Monica McGarrity, University of Florida

Eastern Mudsnake (*Farancia abacura*)

Mudsnakes are found in coastal areas and river basins in the southeastern U.S. (Fig. 8). They can grow to over six and a half feet in length, but are very docile snakes despite their large size and pose no threat to people. They are thick bodied with smooth, glossy scales and a pointed tail tip (Fig. 9). The back is black, whereas the belly is a checkerboard of black and a reddish pink color that extends up onto the sides



Figure 6. Southern Ring-necked Snake showing typical defensive posture -- note the coiled tail. Credits: Steve A. Johnson, University of Florida



Figure 7. Southern Ring-necked snake showing yellow belly coloration. Credits: Kenneth Krysko, FLMNH, 1996

of the snake. Mudsnakes are highly aquatic and may be found in swamps, lakes and rivers throughout the Southeast, where they feed primarily on large, eel-like aquatic salamanders such as *Amphiumas*.

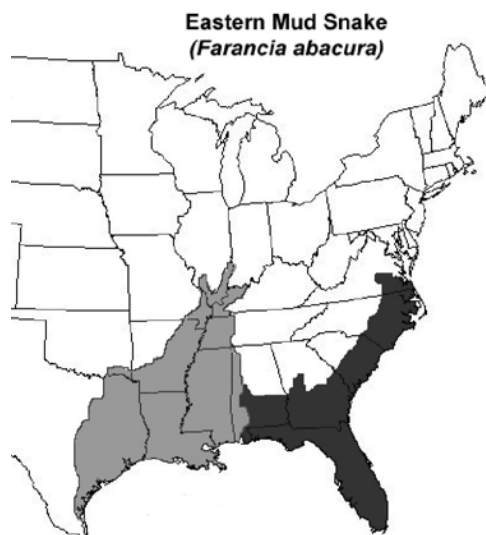


Figure 8. Eastern Mudsnake Range (shown in black, other mud snake species in gray). Credits: Monica McGarrity, University of Florida



Figure 9. Eastern Mudsucker. Credits: Dirk Stevenson, USAEC, 13 June 2006

Black Pinesnake (*Pituophis melanoleucus*)

The Black Pinesnake is one of a group of closely related snake species (includes other Pinesnakes, Bull and Gopher Snakes) with a fairly broad geographical range. However, the range of the Black Pinesnake is relatively limited, and this species is only found in certain parts of the southeastern U.S. (Fig. 10). Black Pinesnakes have keeled scales and a nearly uniform black or dark brown color on their backs and bellies with a faint blotched pattern often seen toward the tail (Fig. 11). Black Pinesnakes, like the other species of pinesnakes, have a distinctive cone-shaped scale on the tip of their snout. These snakes may grow as large as six feet in length. When they feel threatened, pinesnakes will coil and hiss loudly. They prefer dry pinelands with sandy soils and are excellent burrowers, spending much of their lives underground in mammal burrows. They feed mainly on mammals, but will also eat birds.

Eastern Indigo Snake (*Drymarchon couperi*)

Eastern Indigo Snakes are found from southeastern Georgia, Alabama and Mississippi south to the Upper Florida Keys (Fig. 12). These are magnificent, thick-bodied snakes that can grow to over eight feet long, making them the largest native snake in North America (north of Mexico). Their smooth scales are a glossy bluish-black color, including the belly, although the chin and throat may range from light cream to orange or deep maroon in color (Fig. 13). They are usually very docile in nature, but when threatened may hiss loudly and

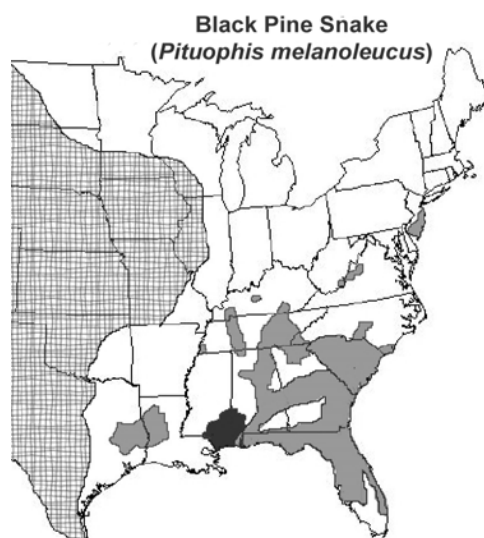


Figure 10. Black Pinesnake Range (shown in black, other pinesnake species in gray, Gopher and Bullsnares in crosshatch). Credits: Monica McGarrity, University of Florida



Figure 11. Black Pinesnake. Credits: Kenneth Krysko, FLMNH, 1996

shake their tail, making a rattling sound if the snake is in dry leaves or debris.

Eastern Indigo Snakes inhabit pine forests, hardwood hammocks, scrub and other uplands. They also rely heavily on a variety of wetland habitats for feeding and temperature regulation needs and are able to swim, even though they are not considered aquatic. In drier upland sites they inhabit the burrows of the Gopher Tortoise, which has resulted in the colloquial name of "blue gopher". Eastern Indigos are well known and respected for their ability to eat venomous snakes, such as rattlesnakes, Cottonmouths and Copperheads. In addition, they feed on other non-venomous snakes, frogs and rodents.

Habitat loss from development and agriculture, habitat degradation due to lack of fire and human activities, and collection for the pet trade have led to significant reductions in populations of Eastern Indigo Snakes, which are protected throughout their range by state and federal laws. Eastern Indigo Snakes have been listed as a threatened species by the Florida Fish and Wildlife Conservation Commission since 1971 and by the U.S. Fish and Wildlife Service under the Endangered Species Act since 1978, and it is illegal to handle, harass, kill, capture, keep or sell them without a federal permit. However, despite these protections, habitat loss and degradation throughout their range continue to cause the decline of this important snake. You should consider yourself lucky if you see one of these beautiful "black snakes."



Figure 12. Eastern Indigo Snake Range (shown in black). Credits: Monica McGarrity, University of Florida

Southern Black Racer (*Coluber constrictor priapus*)

Black Racers, also known as Eastern Racers, are a group of closely related subspecies that are similar in appearance and range across the eastern half of the U.S. (Fig. 14). The Southern Black Racer, along with several other subspecies of racers, is the true black snake of the southeastern U.S. These snakes are long and slender; the largest reaching up to six feet in length (most are less than four feet long). They have smooth scales and range from jet black to



Figure 13. Eastern Indigo Snake showing maroon chin coloration. Credits: Natalie Hyslop, University of Georgia, Feb 2005

dark gray on their backs and bellies, with chins and throats that are lighter or white in color (Fig. 15).

Young Black Racers, though thin like the adults, have an overall appearance much different than adults. Juvenile Black Racers have a series of reddish to brown colored blotches down the middle of their backs on a background color of gray. They also have abundant small, dark specks on their sides and bellies (Fig. 16). Because of these mid-dorsal blotches, juveniles are sometimes confused with the venomous Pygmy Rattlesnake (*Sistrurus miliarius*), which also has blotches down the center of its back. However, Pygmy Rattlesnakes have much heavier bodies and stocky heads with a dark band from the eye to the corner of the jaw.

Despite their scientific name (*Coluber constrictor*), Black Racers do not always constrict their prey, but rather use their speed to chase down a prey animal, grab it with their strong jaws and swallow it alive. Racers are harmless to people and generally attempt to make a speedy escape when approached. However, if they feel threatened and are unable to flee, they may vigorously shake their tail (making a rattling sound on dry leaves), defecate on their captor or even bite if handled.

Black Racers inhabit a great variety of natural habitats, ranging from pine forests to the Florida Everglades. They are active during the day and are one of the most commonly encountered snakes in suburban yards and parks. As their name implies, they are swift and agile. They spend most of their

lives on the ground, yet are excellent climbers and may be found in shrubs and small trees. Black Racers eat a variety of prey items including frogs, lizards, mice, rats, small snakes and even birds' eggs.

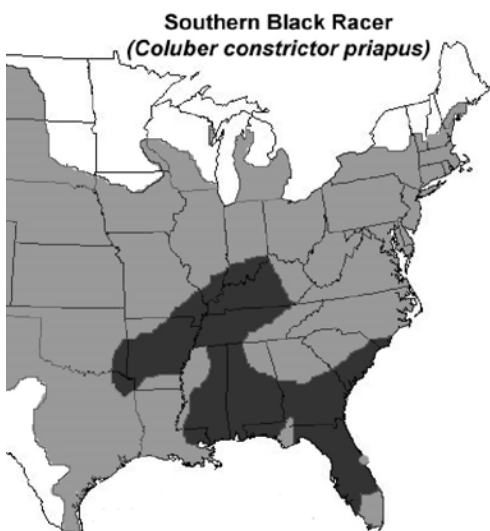


Figure 14. Southern Black Racer Range (shown in dark gray, other black racer subspecies in light gray). Credits: Monica McGarrity, University of Florida



Figure 15. Southern Black Racer (Adult). Credits: Steve A. Johnson, University of Florida, 4 June 2005

Summary

In spite of great variation in body size, habitat use, diet and behavior, the lack of bold, readily apparent distinguishing marks can make identification of these "black snakes" a daunting task for those inexperienced with snakes. Nonetheless, an informed observer can readily recognize the bright orange belly of the Black Swamp Snake or the namesake ringed neck of the Ring-necked Snake, and may quickly learn to



Figure 16. Southern Black Racer (Juvenile) - note the slender body and reddish colored blotches. Credits: Steve A. Johnson, University of Florida

distinguish between the smooth, glossy sheen of the Eastern Indigo or Black Racer and the keeled, somewhat rough look of the Black Pine and Black Rat Snakes. These snakes may seem nondescript at first glance, though knowledge of these and other more subtle, yet telltale characteristics will assist in the rewarding task of becoming familiar with the "black snakes" of the southeastern U.S.

Fortunately, there are a variety of books and web sites that are extremely helpful references for use in determining the identity of an unknown non-venomous or venomous snake. In addition, these references will assist you in learning even more about the ecology of our native snakes, and may help to further your understanding of the threats facing these species and the importance of protecting them. Certainly, knowledge is the key to understanding that the only good snake is NOT a dead snake, and that these species play vital roles in the habitats in which they are found – an important lesson that must be learned and passed on before it is too late for already threatened species like the Eastern Indigo Snake.

Snake Identification Resources

Web Sites

Florida Museum of Natural History—Online guide to Florida Snakes
<http://www.flmnh.ufl.edu/natsci/herpetology/FL-GUIDE/onlineguide.htm>

University of Florida EDIS Documents - Venomous Snakes

Dealing with Venomous Snakes in Florida
School Yards <http://edis.ifas.ufl.edu/UW225>

Emergency Snakebite Action Plan
<http://edis.ifas.ufl.edu/UW226>

Preventing Encounters Between Children
and Snakes <http://edis.ifas.ufl.edu/UW227>

Recognizing Florida's Venomous Snakes
<http://edis.ifas.ufl.edu/UW229>

Baylor, J.L. & F.W. King. 1998. *National
Audobon Society Field Guide to North American
Reptiles and Amphibians*. New York:
Knopf/Chanticleer Press, 743pp, illustr.

Florida Fish and Wildlife Conservation
Commission - Snakes
<http://www.wildflorida.org/critters/snakes.asp>

University of Georgia—Snakes of Georgia and
South Carolina
<http://www.uga.edu/srelherp/snakes/index.htm>

Georgia Wildlife Federation - Reptiles of
Georgia
[http://www.gwf.org/resources/georgiawildlife/
reptileindex.html](http://www.gwf.org/resources/georgiawildlife/reptileindex.html)

Alabama Department of Conservation and
Natural Resources Snakes in Alabama
[http://www.dcnr.state.al.us/watchable-wildlife/what/
Reptiles/Snakes/](http://www.dcnr.state.al.us/watchable-wildlife/what/Reptiles/Snakes/)

Books and Guides

Gibbons, W. & M. Dorcas. 2005. *Snakes of the
Southeast*. University of Georgia Press, 253 pp.

Carmichael, P. & W. Williams. 1991. *Florida's
Fabulous Reptiles and Amphibians*. Tampa: World
Publications.

Conant, R. & J. Collins. 1998. *A Field Guide to
Reptiles and Amphibians: Eastern and Central North
America*. New York: Houghton Mifflin Company,
xvii + 616pp, illustr.

Appendix B

What Should You Do If You Find a Dead Eastern Indigo Snake On-Site?

- Stop all Construction activity in the vicinity of the snake.
- Report to Tyndall AFB Wildlife Biologist. Tyndall will either perform or direct the collection and preservation of the dead snake. Preservation will involve soaking the dead snake in water and freezing it immediately.
- Tyndall shall consult with the USFWS Panama City field office at (850) 769-0552 immediately for further instruction.

Project Contacts for Indigo Snake Sightings:

**Tyndall AFB Division of Natural Resources
Wildlife Biologist A Civ USAF AETC 325
CES/CEAN
Wendy Jones
(850) 527-2009**

If the Wildlife Biologist Contact is unavailable, please contact Tyndall's Natural Resource Office:
(850) 283-2822

*The eastern indigo snake is most commonly confused with two similar species; black ratsnake (*Elaphe obsoleta obsoleta*) and southern black racer (*Coluber constrictor priapus*). Adults of these species are shorter in length, have thin bodies and are white under the chin and body.*

For more information:

Ashton, R. E., Jr. and P. S. Ashton. 1988. Handbook of Reptiles and Amphibians of Florida, Part One, The Snakes. Windward Publishing, Inc., Miami, Florida.

Logan, T.H. 1997. Florida's Endangered Species, Threatened Species, and Species of Special Concern. Florida Game and Fresh Water Fish Commission, Tallahassee, FL

Moler, P. E. 1992. Rare and Endangered Biota of Florida, Amphibians and Reptiles. Volume 111. University Press of Florida, Tallahassee, Florida.

U.S. Fish and Wildlife Service. 1982. Eastern Indigo Snake Recovery Plan. U.S. Fish and Wildlife Service. Atlanta, Georgia. 23 pp.

Brochure developed by the Environmental Restoration Division of PIKA/Pirnie JV.



Photographs are courtesy of U.S. Fish and Wildlife Service Online Digital Library and are Public Domain. Credit :Pattavia, P. and Mount, R.

EASTERN INDIGO SNAKE Protection Plan



LEARN MORE INSIDE

EASTERN INDIGO SNAKE

LIFE HISTORY AND ECOLOGY

The eastern indigo snake is shiny, blue-black or glossy black in color with cream, orange or reddish color around the chin, throat and side of the head.



It is a thick-bodied snake that can reach 8.6 feet in length but smaller individuals (6 feet) are more commonly seen. Eggs are laid in May or June (5-10 eggs), hatchlings may appear as late as August and September.

Hatchlings are 18-24 inches long with a black body and usually have a blue and white speckled pattern on the back and tail. Despite the speckled pattern on their back, the young generally resemble the adults.

The indigo snake is diurnal, i. e., active during the day. The indigo snake is most likely to be found along the edges of wetlands and other water bodies where food is abundant. This snake also prefers large woody debris piles in pine flatwoods and hardwoods communities.

Protection Status

The eastern indigo snake is listed as a **threatened species** by the U.S. Fish and Wildlife Service. Under Section 9 of the Endangered Species Act of 1973 (16 U.S.C. 1531), and the State of Florida Wildlife Code Rule, Chapter 39 of the State Administrative Code, Rule 39-27.002, as amended, it is unlawful for any person to "take" any threatened species. The term "take" is defined as "...harass, harm, pursue,, hunt, shoot wound , kill, trap, capture, or collect, or attempt to engage in any such conduct."



Violating these laws with regard to the Indigo snake is punishable with fines up to \$25,000 and/or six months imprisonment. Misdemeanors or civil penalties are punishable by fines up to \$25,000 for crimes involving endangered species and \$12,000 for crimes involving threatened species.

What Should You Do If You See An Eastern Indigo Snake On-Site?

- Stop all Construction activity in the vicinity of the snake.
- Allow the snake to exit the construction area on its own and without aid or interference.
- Report to the Authority's Environmental Programs Supervisor. The Authority will contact the USFWS Panama City field office at (850) 769-0552 for further instruction.
- Once the snake has left the area, then construction activities can resume.



Appendix C

WARNING



PROTECTED BY LAW

The protected Eastern Indigo Snake (*Drymarchon corais couperi*) may exist on this site.

Photography and Video imaging have been used to Document this Protected Species!

It is a **FEDERAL** Violation of the Endangered Species Act of 1973 (16 U.S.C. 1531), Under Section 9 as amended, it is unlawful for any person to “take” any threatened species. The term “take” is defined as “...harass, harm, pursue,, hunt, shoot wound , kill, trap, capture, or collect, or attempt to engage in any such conduct.”

It is a Violation of the State of Florida Administrative Code, Chapter 39 Rule 39-27.002 states the “No person shall pursue, molest, harm, harass, capture or possess any endangered or threatened species or parts thereof or their nest or eggs...”. Additionally, Rule 39-27.011 states that “No person shall kill, attempt to kill, or wound any endangered or threatened species”.

Protected Species Violations will be Prosecuted!

Project Contacts for Indigo Snake Sightings:

Tyndall AFB Division of Natural Resources
Wildlife Biologist A Civ USAF AETC 325 CES/CEAN
Wendy Jones
(850) 527-2009

If the Wildlife Biologist Contact is unavailable, please contact Tyndall’s Natural Resource Office: (850) 283-2822

APPENDIX D: Draft EA Regulatory Agency Review Comments and Response to Comments Table

Note: While the Draft EA was provided for review by the public, Native American Tribes/Nations, and regulatory agencies, only comments were received from the regulatory agencies. These comments are included in this appendix, along with a response to comments table addressing each comment received.

FINAL

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Response to Comments Table
Draft EA/FONSI/FONPA
Replacement of the JP-8 Transfer Pipeline between the 6000 Area and 400 Area
Tyndall Air Force Base

Comment Number	Reviewer	Document / Section / Page Number	Comment	Response to Comment
1.	Florida Department of State (DOS)	General	The Florida DOS advises that all three pipeline alternatives run through archaeological site 8BY25, which has been documented as containing human remains. Based on the information provided and a review of DOS' files, staff concurs that Alternatives 1 and 2 should have no adverse effect on historic properties. Action Alternative 3, however, could impact site 8BY25, so this alternative would need to be subjected to a professional reconnaissance survey with judgmental testing to locate and assess any cultural resources present. The resultant survey report must conform to the specifications set forth in Chapter 1A-46, <i>Florida Administrative Code</i> , and be forwarded to the DOS Division of Historical Resources to complete the state review process. If significant remains are located, the report will assist staff in determining measures that must be taken to avoid, minimize or mitigate adverse impacts to archaeological sites and historic properties.	Comment noted. Action alternatives 1 and 2 are preferred over action alternative 3 because they have the least potential for impacts to cultural resources. During the construction phase of the JP-8 pipeline replacement project, the Air Force and the contractor selected to replace the JP-8 transfer pipeline will be responsible for coordination with DOS in the event prehistoric or historic artifacts are encountered during construction. This is noted in Section 4.3.10.2, Archaeological Resources, of the Final EA. Telephone and e-mail communication with the Florida DOS, Division of Historical Resources, Bureau of Historic Preservation confirmed that only general location information is available for site 8BY25, but it is not likely to be located along the preferred action alternative 1 route.
2.	Florida Fish and Wildlife Conservation Commission (FWC)	General	The Florida Fish and Wildlife Conservation Commission (FWC) notes that, although Tyndall AFB has identified the occurrence of gopher tortoises within the areas along Alternative 3, gopher tortoise burrows have not been identified in the preferred alternative project area. Tyndall AFB is aware of gopher tortoise permitting requirements and will be complying with the Department of Defense Candidate Conservation Agreement (CCA), which serves as a vehicle to coordinate and implement proactive, non-regulatory management actions to protect gopher tortoise habitat and populations. In addition, the U.S. Fish and Wildlife Service's Eastern indigo snake protection protocols will be observed during construction activities and contractors will undergo training to avoid conflicts with Florida black bears.	Comment noted. Action alternative 1 is the preferred alternative since it has the least environmental impacts, including the least impacts to gopher tortoise, Eastern indigo snake, and Florida black bear habitats and populations. A copy of the CCA is included in Appendix B of the EA for reference. Likewise, the Eastern indigo snake protection plan is included in Appendix C.

Comment Number	Reviewer	Document / Section / Page Number	Comment	Response to Comment
3.	Florida Department of Environmental Protection (DEP), Northwest District Branch Office	General	As noted in the Draft EA, wetland trenching activities would require a permit from the Florida Department of Environmental Protection's (DEP) Northwest District Branch Office in Panama City. A sovereignty submerged lands authorization for the wetland crossings may also be required if the wetland areas are determined to be state-owned submerged lands. Please continue to coordinate with DEP staff on the wetlands crossing and Office of General Counsel consent order for the required fuel transfer pipeline upgrades.	During the final design/pre-construction phase of the JP-8 replacement pipeline project, the Air Force and the contractor selected to replace the transfer pipeline will be responsible for coordination with DEP and obtaining proper permits for the project. This is noted in Section 4.3.9.4, Wetlands, of the EA.
4.	Florida Department of Environmental Protection (DEP), Office of Inter-governmental Programs	General	Based on the information contained in the Draft EA and enclosed agency comments, the state has determined that, at this stage, the proposed federal action is consistent with the Florida Coastal Management Program (FCMP). To ensure the project's continued consistency with the FCMP, the concerns identified by the reviewing agencies must be addressed prior to project implementation. The state's continued concurrence will be based on the activity's compliance with FCMP authorities, including federal and state monitoring of the activity to ensure its continued conformance, and the adequate resolution of issues identified during this and subsequent reviews. The state's final concurrence of the project's consistency with the FCMP will be determined during the environmental permitting process in accordance with Section 373.428, <i>Florida Statutes</i> .	Comment noted. As the projects transitions into the final design and pre-construction phases, the Air Force and the contractor selected to replace the JP-8 transfer pipeline will be responsible for coordination with federal and state agencies regarding environmental permitting requirements. This is noted in Section 4.5, Compatibility of the Proposed Action and Alternative with the Objectives of Federal, Regional, State, and Local Land Use Plans, Policies and Controls, of the EA.



Florida Department of Environmental Protection

Marjory Stoneman Douglas Building
3900 Commonwealth Boulevard
Tallahassee, Florida 32399-3000

Rick Scott
Governor

Jennifer Carroll
Lt. Governor

Herschel T. Vinyard Jr.
Secretary

May 17, 2012

Mr. Jose J. Cintron
325 CES/CEANC
Department of the Air Force
119 Alabama Avenue, Mail Stop 42
Tyndall AFB, FL 32403-5014

RE: Department of the Air Force – Draft Environmental Assessment for the
Replacement of the JP-8 Transfer Pipeline Between the 6000 Area and 400
Area at Tyndall Air Force Base – Bay County, Florida.
SAI # FL201203296175C

Dear Mr. Cintron:

The Florida State Clearinghouse has coordinated a review of the referenced Draft Environmental Assessment (EA) under the following authorities: Presidential Executive Order 12372; Section 403.061(42), *Florida Statutes*; the Coastal Zone Management Act, 16 U.S.C. §§ 1451-1464, as amended; and the National Environmental Policy Act, 42 U.S.C. §§ 4321-4347, as amended.

The Florida Department of State (DOS) advises that all three pipeline alternatives run through archaeological site 8BY25, which has been documented as containing human remains. Based on the information provided and a review of DOS' files, staff concurs that Alternatives 1 and 2 should have no adverse effect on historic properties. Action Alternative 3, however, could impact site 8BY25, so this alternative would need to be subjected to a professional reconnaissance survey with judgmental testing to locate and assess any cultural resources present. The resultant survey report must conform to the specifications set forth in Chapter 1A-46, *Florida Administrative Code*, and be forwarded to the DOS Division of Historical Resources to complete the state review process. If significant remains are located, the report will assist staff in determining measures that must be taken to avoid, minimize or mitigate adverse impacts to archaeological sites and historic properties. Please see the enclosed DOS letter for additional information.

The Florida Fish and Wildlife Conservation Commission (FWC) notes that, although Tyndall AFB has identified the occurrence of gopher tortoises within the areas along Alternative 3, gopher tortoise burrows have not been identified in the preferred alternative project area. Tyndall AFB is aware of gopher tortoise permitting requirements

Mr. Jose J. Cintron
May 17, 2012
Page 2 of 2

and will be complying with the Department of Defense Candidate Conservation Agreement (CCA), which serves as a vehicle to coordinate and implement proactive, non-regulatory management actions to protect gopher tortoise habitat and populations. In addition, the U.S. Fish and Wildlife Service's Eastern indigo snake protection protocols will be observed during construction activities and contractors will undergo training to avoid conflicts with Florida black bears. Please refer to the enclosed FWC letter for further details.

As noted in the Draft EA, wetland trenching activities would require a permit from the Florida Department of Environmental Protection's (DEP) Northwest District Branch Office in Panama City. A sovereignty submerged lands authorization for the wetland crossings may also be required if the wetland areas are determined to be state-owned submerged lands. Please continue to coordinate with DEP staff on the wetland crossings and Office of General Counsel consent order for the required fuel transfer pipeline upgrades.

Based on the information contained in the Draft EA and enclosed agency comments, the state has determined that, at this stage, the proposed federal action is consistent with the Florida Coastal Management Program (FCMP). To ensure the project's continued consistency with the FCMP, the concerns identified by our reviewing agencies must be addressed prior to project implementation. The state's continued concurrence will be based on the activity's compliance with FCMP authorities, including federal and state monitoring of the activity to ensure its continued conformance, and the adequate resolution of issues identified during this and subsequent reviews. The state's final concurrence of the project's consistency with the FCMP will be determined during the environmental permitting process in accordance with Section 373.428, *Florida Statutes*.

Thank you for the opportunity to review the proposed project. Should you have any questions regarding this letter, please contact Ms. Lauren P. Milligan at (850) 245-2170.

Yours sincerely,



Sally B. Mann, Director
Office of Intergovernmental Programs

SBM/jms
Enclosures

cc: Laura Kammerer, DOS
Scott Sanders, FWC



Florida

Department of Environmental Protection

"More Protection, Less Process"



Categories

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Project Information	
Project:	FL201203296175C
Comments Due:	05/10/2012
Letter Due:	05/28/2012
Description:	DEPARTMENT OF THE AIR FORCE - DRAFT ENVIRONMENTAL ASSESSMENT FOR THE REPLACEMENT OF THE JP-8 TRANSFER PIPELINE BETWEEN THE 6000 AREA AND 400 AREA AT TYNDALL AIR FORCE BASE - BAY COUNTY, FLORIDA.
Keywords:	USAF - DEA, REPLACEMENT OF THE JP-8 TRANSFER PIPELINE, TYNDALL AFB - BAY CO.
CFDA #:	12.200
Agency Comments:	
FISH and WILDLIFE COMMISSION - FLORIDA FISH AND WILDLIFE CONSERVATION COMMISSION	
<p>The FWC notes that, although Tyndall AFB has identified the occurrence of gopher tortoises within the areas along alternative 3, gopher tortoise burrows have not been identified in the preferred alternative project area. Tyndall AFB is aware of gopher tortoise permitting requirements and will be complying with the Department of Defense Candidate Conservation Agreement (CCA), which serves as a vehicle to coordinate and implement proactive, non-regulatory management actions to protect gopher tortoise habitat and populations. In addition, the U.S. Fish and Wildlife Service's Eastern indigo snake protection protocols will be observed during construction activities and contractors will undergo training to avoid conflicts with Florida black bears.</p>	
ENVIRONMENTAL PROTECTION - FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION	
<p>As noted in the Draft EA, wetland trenching activities would require a permit from the DEP's Northwest District Branch Office in Panama City. A sovereignty submerged lands authorization for the wetland crossings may also be required if the wetland areas are determined to be state-owned submerged lands. Please continue to coordinate with DEP staff on the wetland crossings and Office of General Counsel consent order for the required fuel transfer pipeline upgrades.</p>	
STATE - FLORIDA DEPARTMENT OF STATE	
<p>The DOS advises that all three pipeline alternatives run through archaeological site 8BY25, which has been documented as containing human remains. Based on the information provided and a review of DOS' files, staff concurs that Alternatives 1 and 2 should have no adverse effect on historic properties. Action Alternative 3, however, could impact site 8BY25, so this alternative would need to be subjected to a professional reconnaissance survey with judgmental testing to locate and assess any cultural resources present. The resultant survey report must conform to the specifications set forth in Chapter 1A-46, F.A.C., and be forwarded to the DOS Division of Historical Resources to complete the state review process. If significant remains are located, the report will assist staff in determining measures that must be taken to avoid, minimize or mitigate adverse impacts to archaeological sites and historic properties.</p>	

For more information or to submit comments, please contact the Clearinghouse Office at:

3900 COMMONWEALTH BOULEVARD, M.S. 47
TALLAHASSEE, FLORIDA 32399-3000
TELEPHONE: (850) 245-2161
FAX: (850) 245-2190

Visit the [Clearinghouse Home Page](#) to query other projects.

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FLORIDA DEPARTMENT of STATE

RICK SCOTT
Governor

KEN DETZNER
Secretary of State

Ms. Lauren P. Milligan
Environmental Manager
Florida State Clearinghouse
Florida Department of Environmental Protection
3900 Commonwealth Boulevard, Mail Station 47
Tallahassee, Florida 32399-3000

April 30, 2012

RECEIVED

MAY 03 2012

RE: DHR Project File Number: 2012-1890
SAI #: 201203296175C
U.S. Department of the Air Force
Draft Environmental Assessment for the Replacement of the JP-8 Transfer Pipeline Between the 6000 Area and 400 Area
Tyndall Air Force Base, Bay County

DEP Office of
Intergovt'l Programs

Dear Ms. Milligan:

Our office reviewed the referenced project for possible impact to historic properties listed, or eligible for listing, in the *National Register of Historic Places*, or otherwise of historical, architectural or archaeological value. The review was conducted in accordance with Section 106 of the *National Historic Preservation Act of 1966*, as amended and 36 *CFR Part 800: Protection of Historic Properties* and the implementing state regulations.

We note that the preferred pipeline alignment is *Action Alternative 1*. Portions of all three alternatives run through archaeological site (8BY25), which has been documented as containing human remains. Based on the information provided and a review of our files, this office concurs with the finding that *Alternative 1 and 2* should have no adverse effect on historic properties.

However, *Action Alternative 3*, could impact 8BY25, therefore, this alignment would need to be subjected to a professional reconnaissance survey with judgmental testing. The purpose of this survey would be to locate and assess any cultural resources that may be present in the subject property. The resultant survey report must conform to the specification set forth in Chapter 1A-46, *Florida Administrative Code*, and will need to be forwarded to *The Division of Historical Resources* in order to complete the reviewing process for this proposed project and its impacts. The results of the analysis will determine if significant cultural resources would be disturbed by this development. In addition, if significant remains are located, the data described in the report and the consultant's conclusions will assist this office in determining measures that must be taken to avoid, minimize, or mitigate adverse impacts to archaeological sites and historical properties listed, or eligible for listing in the NRHP, or otherwise significant

DIVISION OF HISTORICAL RESOURCES

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Ms. Milligan
DHR No.:2012-1890
April 30, 2012
Page 2 of 2

If you have any questions concerning our comments, please contact Scott Edwards, Historic Preservationist, by electronic mail scott.edwards@dos.myflorida.com, or at 850.245.6333 or 800.847.7278.

Sincerely,

A handwritten signature in cursive script that reads "Laura A. Kammerer". The signature is written in dark ink and is positioned above the printed name and title.

Laura A. Kammerer
Deputy State Historic Preservation Officer
For Review and Compliance

PC: Jose Cintron USAF
David D. O'Brian III, USAF



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and Wildlife
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Commission**

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MyFWC.com

April 6, 2012

Ms. Lauren P. Milligan
Environmental Manager
Florida State Clearinghouse
Florida Department of Environmental Protection
3900 Commonwealth Boulevard, MS 47
Tallahassee, FL 32399-3000
Lauren.Milligan@dep.state.fl.us

Re: SAI #FL201203296175C, U.S. Department of Air Force, Draft Environmental Assessment (EA) for the replacement of the JP-8 transfer pipeline between the 6000 Area and 400 Area at Tyndall Air Force Base (AFB), Bay County, Florida

Dear Ms. Milligan:

Florida Fish and Wildlife Conservation Commission (FWC) staff has reviewed the referenced project, and provides the following comments and recommendations in accordance with the Coastal Zone Management Act, Florida's Coastal Management Program, and the National Environmental Policy Act of 1969.

Proposed Action

The proposed action would involve replacing the existing 7,500 linear foot underground JP-8 pipeline connecting the Bulk Fuel Storage Area (6000 Area) and the Refueling Operating Area (400 Area) at Tyndall AFB. The existing pipeline consists of six-inch diameter, single-walled piping that has no leak detection system. The preferred pipeline alignment is action alternative 1. This alignment, which would use existing utility easements along Bayou Road, the west side of Florida Avenue, and the north side of Fuels Avenue, would be the best alternative alignment for the JP-8 fuel transfer pipeline between the 6000 Area to the 400 Area. This alignment would have the least impacts on natural resources, wetlands, and the floodplain.

Potentially Affected Resources


Tyndall AFB has identified in the draft EA that gopher tortoises [*Gopherus polyphemus*, State-Threatened (T)] occur within the areas along alternative 3, which is not the preferred alternative. The preferred alternative does not have gopher tortoise burrows that have been identified. The draft EA indicates that the Eastern indigo snake (*Drymarchon corais couperi*, Federal-T) may occur in the area. Finally, the Florida black bear is known to occur in the area. Tyndall AFB is within the primary zone of the Apalachicola sub-population of Florida black bear.

Comments and Recommendations

Tyndall AFB is very proactive in protecting its natural resources. Tyndall is aware of gopher tortoise permitting requirements and will be complying with the Department of Defense Candidate Conservation Agreement (CCA). The CCA serves as a vehicle to coordinate and implement proactive, non-regulatory management actions to protect gopher tortoise habitat and current populations. Activities associated with the action alternatives must also comply with the intent of the CCA. Tyndall AFB has indicated that the U.S. Fish and Wildlife Service Eastern indigo snake specific protection protocols will be required during construction. Finally, the draft EA indicates that contractors will be required to undergo training to avoid human-bear conflicts.

We concur that the proposed project is consistent with our authorities under Chapter 379 Florida Statutes. We appreciate the opportunity to review this draft EA. If you would like to coordinate further on the information contained in this letter, please contact Jane Chabre at FWCConservationPlanningServices@MyFWC.com or by phone at (850) 410-5367, and she will be glad to make the necessary arrangements. Lastly, if you have technical questions regarding this particular review, please contact Theodore Hoehn at 850-488-8792 or by email at ted.hoehn@myfwc.com.

Sincerely,



Bonita Gorham, Program Administrator
Office of Conservation Planning Services

bg/th

ENV 2-3-3

Tyndall AFB JP-8 Transfer Pipeline_16094_040612

cc: Mr. Jose J. Cintron, Tyndall AFB, jose.cintron@tyndall.af.mil