Environmental Assessment

Improvements to Silver Flag Training Area at Tyndall Air Force Base, Florida


Contract No. W91278-08-D-0032
Task Order 0019

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For:
Air Combat Command
325th Fighter Wing
Tyndall Air Force Base, Florida
and
U.S. Army Corps of Engineers
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14. ABSTRACT

The Silver Flag Training Area at Tyndall AFB is proposed to be modified to allow a broader range of training conditions. The modifications are needed because the facilities, roads, and grounds at Silver Flag do not adequately meet all the requirements of the current training program. This EA has been prepared in accordance with the National Environmental Policy Act to assess the potential environmental impacts associated with the Proposed Action and alternatives. Under Alternatives 1, 2, and 3, the following six new facilities would be constructed and operated within or in the immediate vicinity of the Silver Flag cantonment area: Mine Resistant Ambush Protected (MRAP) vehicle obstacle course, urban warfare village, Silver Flag entrance gate, MRAP vehicle parking area latrine/shower/laundry facility, and bed-down training site. Each of these alternatives would also involve improvements to existing roads in the Silver Flag area that are used for MRAP vehicle training. The road improvements would primarily involve stabilization of existing roads, improvements to the drainage systems of existing roads, and upgrades to an existing bridge. In addition to the new facilities and road improvements, Alternatives 2 and 3 would involve new road/bridge construction. Under Alternative 2, a new route for MRAP vehicle training would be created in the northwestern part of the Silver Flag road network by constructing one of three new roads (Alternative 2a, 2b, or 2c). Under Alternative 3, a new route for MRAP vehicle training would be created in the north central part of the Silver Flag road network by constructing either a new vehicular bridge (Alternative 3a) or one of two new roads (Alternative 3b or 3c). Under the No-Action Alternative, the Silver Flag Training Area would not be modified in any manner in support of training conditions. Based on the findings of this EA, Alternative 1, 2, or 3 would each have no effect or impacts that range from negligible to moderate in magnitude on air quality, noise, Air Installation Compatible Use Zone program soils, wetlands, surface water, floodplains, vegetation, fish and wildlife, listed species, land use, recreation cultural resources, environmental compliance, socioeconomics, and traffic flow. The impacts that each alternative would have on these resources would not be significant. Each alternative would not have disproportionately high or adverse human health or environmental effects on minority or low-income populations, and would not result in environmental health or safety risks to children. No adverse cumulative impacts would occur when each alternative is combined with past, present, or reasonably foreseeable actions. The No-Action Alternative would have no effect on any environmental resource. Compensatory wetland mitigation would be required under Alternatives 2a, 2b, 2c, 3b, and 3c, and potentially under Alternatives 1 and 3a.

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Final
Finding of No Significant Impact (FONSI)/
Finding of No Practicable Alternative (FONPA)
For
Improvements to Silver Flag Training Area Environmental Assessment (EA)
Tyndall Air Force Base, Florida

AGENCY: Department of the Air Force

BACKGROUND: Detachment 1, 823rd Rapid Engineer Deployable Heavy Operational Repair Squadron Engineers (RED HORSE) Squadron proposes to modify the Silver Flag Training Area at Tyndall AFB, Florida to allow a broader range of training conditions for Explosive Ordnance Disposal (EOD) war fighters. The modifications are needed because the facilities, roads, and grounds at Silver Flag do not adequately meet all the requirements of the current training program.

PROPOSED ACTION AND ALTERNATIVES: The EA analyzed three action alternatives (Alternatives 1, 2, and 3) that would each meet the goals and intent of the Proposed Action, as well as the No-Action Alternative. Under Alternatives 1, 2, and 3, the following six new facilities would be constructed and operated within or in the immediate vicinity of the Silver Flag cantonment area: Mine Resistant Ambush Protected (MRAP) vehicle obstacle course, urban warfare village, Silver Flag entrance gate, MRAP vehicle parking area, latrine/shower/laundry facility, and bed-down training site. Each of these alternatives would also involve improvements to existing roads in the Silver Flag area that are used for MRAP vehicle training. The road improvements would primarily involve stabilization of existing roads, improvements to the drainage systems of existing roads, and upgrades to an existing bridge. In addition to the new facilities and road improvements, Alternatives 2 and 3 would involve new road/bridge construction. Under Alternative 2, a new route for MRAP vehicle training would be created in the northwestern part of the Silver Flag road network by constructing one of three new roads (Alternative 2a, 2b, or 2c). Under Alternative 3, a new route for MRAP vehicle training would be created in the north central part of the Silver Flag road network by constructing either a new vehicular bridge (Alternative 3a) or one of two new roads (Alternative 3b or 3c). Under the No-Action Alternative, the Silver Flag Training Area would not be modified in any manner in support of training conditions for EOD war fighters.

SUMMARY OF FINDINGS: Based on the findings of the EA, Alternatives 1, 2, and 3 would each have no effect, or impacts that range from negligible to moderate in magnitude, on air quality, noise, Air Installation Compatible Use Zone program, soils, wetlands, surface water, floodplains, vegetation, fish and wildlife, listed species, land use, recreation, cultural resources, environmental compliance, socioeconomics, and traffic flow. The impacts that each alternative would have on these resources would not be significant. Each alternative would not have disproportionately high or adverse human health or environmental effects on minority or low-income populations, and would not result in environmental health or safety risks to children. No adverse cumulative impacts would occur when each alternative is combined with past, present, or reasonably foreseeable actions. The No-Action Alternative would have no effect on any environmental resource.

Alternatives 1, 2, and 3 would each involve construction in jurisdictional wetlands/surface waters and the 100-year floodplain. Under Alternative 1, improvements to the drainage systems of existing roads and upgrades to an existing bridge are expected to result in only minor temporary impacts to jurisdictional wetlands/surface waters without loss of wetland/surface water area or function. Construction of the new road under Alternative 2a, 2b, or 2c would result in the permanent loss of 0.46 acre, 0.32 acre, or 0.10 acre of jurisdictional wetlands, respectively. Construction of the new road proposed under Alternative 3b or 3c would result in the permanent loss of 0.16 acre of jurisdictional wetlands. Construction of the new bridge proposed under Alternative 3a would result in only minor impacts to jurisdictional wetlands/surface waters without loss of wetland/surface water function; the impacts would result from the installation of a small number of support pilings and any embankment stabilization efforts. Federal and/or state regulatory permits would be required for the

jurisdictional wetland/surface water impacts that would result under Alternative 1, 2, or 3. Alternatives 1, 2, and 3 would each have a negligible impact on floodplains. Under each alternative, wetland/surface water and floodplain impacts would be avoided and minimized to the maximum extent possible. Each alternative would be implemented in strict compliance with the conditions specified in required regulatory permits, in coordination with the 325 CES/CEAN Environmental Element, and in accordance with all Tyndall AFB environmental plans and policies pertaining to the protection of wetlands/surface waters and floodplains. Based on the nature and extent of the impacts that would result, compensatory wetland mitigation would be required under Alternatives 2a, 2b, 2c, 3b, and 3c, and potentially under Alternatives 1 and 3a. The mitigation requirements of the alternative selected for implementation would be determined prior to construction during project permitting and the required mitigation would be provided by Tyndall AFB during the permitting phase of the project.

MITIGATION MEASURES: The compensatory wetland mitigation required for the Proposed Action is estimated by combining mitigations for the sub-alternatives incurring the most wetland impacts, which are Alternative 2a (0.46 acre) and Alternative 3b or 3c (0.16 acre). Tyndall AFB plans to provide compensatory mitigation for the 0.62 acre wetland impact through mitigation credits generated by removing existing forestry roads on the installation which have displaced, fragmented, or hydrologically impacted the wetlands systems. Mitigation credits would be generated through restoration of wetland area within the footprints of the roads and restoration of functions of adjacent wetland systems that have been fragmented by the roads. These fragmented wetlands would be physically and hydrologically reconnected after the roads are removed. The compensatory wetland mitigation for the Proposed Action is estimated to cost approximately $100,000.

SUMMARY OF PUBLIC REVIEW AND INTERAGENCY COORDINATION: A public notice placed in the *Panama City News Herald* of Panama City, FL announced the 30-day public review period. Copies of the draft EA were made available for public review at the Bay County Public Library, at the Tyndall AFB Library, and on the Tyndall AFB public website. Letters and copies of the draft EA were sent to the Florida State Clearinghouse, U.S. Fish and Wildlife Service, and Native American tribes who previously expressed an interest in Tyndall AFB for their ancestral ties. The Florida State Clearinghouse coordinated state and local review of the draft EA and determination of federal consistency with the Florida Coastal Management Program. The draft EA was also coordinated with the National Marine Fisheries Service via email correspondence. The final EA includes all documentation of public, agency, and tribal consultation and addresses all received comments.

FINDING OF NO SIGNIFICANT IMPACT/FINDING OF NO PRACTICABLE ALTERNATIVE: Based on my review of the facts and analysis in the EA, I conclude that Alternative 1, 2, or 3 would not have a significant impact on the natural or human environment, either by itself or considering cumulative impacts. Therefore, any of these alternatives may be considered for implementation. 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. Pursuant to Executive Orders 11988 and 11990, and considering all supporting information, I find that there is no practicable alternative to the Proposed Action being sited in floodplains or wetlands as described in the attached EA. All reasonable alternatives analyzed would occur within floodplains and wetlands. The attached EA identifies all practicable measures to minimize harm to the existing environment.

Tim Green

TIMOTHY S. GREEN
Brigadier General, USAF
Director, Installations and Mission Support

2 Aug 13
Date

Cover Sheet

Environmental Assessment

Improvements to Silver Flag Training Area at Tyndall Air Force Base

a. **Responsible Agency:** Department of the Air Force

b. **Proposed Action:** Improvements to Silver Flag Training Area at Tyndall Air Force Base (AFB)

c. **Written comments and inquiries** regarding this document should be directed to: Mr. Jose J. Cintron, 325 CES/CEANC, 119 Alabama Ave., Tyndall AFB, FL, 32403; telephone: (850) 283-4341

d. **Report Designation:** Environmental Assessment (EA)

e. **Abstract:** The Silver Flag Training Area at Tyndall AFB is proposed to be modified to allow a broader range of training conditions. The modifications are needed because the facilities, roads, and grounds at Silver Flag do not adequately meet all the requirements of the current training program. This EA has been prepared in accordance with the National Environmental Policy Act to assess the potential environmental impacts associated with the Proposed Action and alternatives.

Under Alternatives 1, 2, and 3, the following six new facilities would be constructed and operated within or in the immediate vicinity of the Silver Flag cantonment area: Mine Resistant Ambush Protected (MRAP) vehicle obstacle course, urban warfare village, Silver Flag entrance gate, MRAP vehicle parking area, latrine/shower/laundry facility, and bed-down training site. Each of these alternatives would also involve improvements to existing roads in the Silver Flag area that are used for MRAP vehicle training. The road improvements would primarily involve stabilization of existing roads, improvements to the drainage systems of existing roads, and upgrades to an existing bridge. In addition to the new facilities and road improvements, Alternatives 2 and 3 would involve new road/bridge construction. Under Alternative 2, a new route for MRAP vehicle training would be created in the northwestern part of the Silver Flag road network by constructing one of three new roads (Alternative 2a, 2b, or 2c). Under Alternative 3, a new route for MRAP vehicle training would be created in the north central part of the Silver Flag road network by constructing either a new vehicular bridge (Alternative 3a) or one of two new roads (Alternative 3b or 3c). Under the No-Action Alternative, the Silver Flag Training Area would not be modified in any manner in support of training conditions.

Based on the findings of this EA, Alternative 1, 2, or 3 would each have no effect or impacts that range from negligible to moderate in magnitude on air quality, noise, Air Installation Compatible Use Zone program, soils, wetlands, surface water, floodplains, vegetation, fish and wildlife, listed species, land use, recreation, cultural resources, environmental compliance, socioeconomics, and traffic flow. The impacts that each alternative would have on these resources would not be significant. Each alternative would not have disproportionately high or adverse human health or environmental effects on minority or low-income populations, and would not result in environmental health or safety risks to children. No adverse cumulative impacts would occur when each alternative is combined with past, present, or reasonably foreseeable actions. The No-Action Alternative would have no effect on any environmental resource. Compensatory wetland mitigation would be required under Alternatives 2a, 2b, 2c, 3b, and 3c, and potentially under Alternatives 1 and 3a.

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Acronyms and Abbreviations

ACC	Air Combat Command
ACM	asbestos-containing materials
AICUZ	Air Installation Compatible Use Zone
AFB	Air Force Base
AFI	Air Force Instruction
APZ	Accident Potential Zone
AT/FP	Anti-Terrorism/Force Protection
BMPs	Best Management Practices
CAA	Clean Air Act
CES	Civil Engineer Squadron
CES/CEAN	Civil Engineer Asset Management Flight Natural Resources Element
CFR	Code of Federal Regulations
CoBRA	Combat Battlefield Ready Airmen
CZ	Clear Zone
CZMA	Coastal Zone Management Act
dBA	A-weighted scale
Det	Detachment
DNL	Day-Night Average A-Weighted Sound Level
DoD	Department of Defense
EA	Environmental Assessment
EIAP	Environmental Impact Analysis Process
EIS	Environmental Impact Statement
EO	Executive Order
EOD	Explosive Ordnance Detonation
ERP	Environmental Resource Permit
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
FEMA	Federal Emergency Management Agency
FIRM	Flood Insurance Rate Map
FNAI	Florida Natural Areas Inventory
FONPA	Finding of No Practicable Alternative
FONSI	Finding of No Significant Impact
ft	feet
FWC	Florida Fish and Wildlife Conservation Commission
ICRMP	Integrated Cultural Resources Management Plan
IED	improvised explosive device
IICEP	Interagency and Intergovernmental Coordination for Environmental Planning
IRP	Installation Restoration Program
LBP	lead-based paint
MRAP	Mine Resistant Ambush Protected

NEPA	National Environmental Policy Act
NAAQS	National Ambient Air Quality Standards
NMFS	National Marine Fisheries Service
NPDES	National Pollution Discharge Elimination System
NRCS	Natural Resources Conservation Service
NRHP	National Register of Historic Places
NWI	National Wetlands Inventory
POL	petroleum, oil, and lubricant
RED HORSE	Rapid Engineer Deployable Heavy Operational Repair Squadron Engineers
ROW	right-of-way
SHPO	State Historic Preservation Office
SOP	Standard Operating Procedure
sq	square
SSC	Species of Special Concern
SWPPP	Stormwater Pollution Prevention Plan
USACE	U.S. Army Corps of Engineers
USEPA	U.S. Environmental Protection Agency
USFWS	U.S. Fish and Wildlife Service

SECTION 1

Purpose of and Need for the Proposed Action

1.1 Introduction

The Silver Flag Training Area at Tyndall Air Force Base (AFB), Florida, is home to Detachment (Det) 1, 823rd Rapid Engineer Deployable Heavy Operational Repair Squadron Engineers (RED HORSE) Squadron. The Squadron's 102-person cadre provides contingency combat support training to active-duty, Air Force Reserve Command, and Air National Guard personnel. At times, Army, Marine Corps, and allied nations mission support group personnel also participate in the training. More than 6,800 personnel are trained each year at Silver Flag.

Det 1, 823rd RED HORSE Squadron proposes to improve the Silver Flag Training Area to modify the training conditions for Explosive Ordnance Detonation (EOD) war fighters. The Proposed Action would allow the full range of training for deploying EOD personnel. The training at Silver Flag is directly related to increased survivability during combat operations.

The 325th Fighter Wing, Tyndall AFB, with the support of the Air Combat Command (ACC) and the U.S. Army Corps of Engineers (USACE), has prepared this Environmental Assessment (EA) for the Proposed Action. This EA has been prepared in accordance with the National Environmental Policy Act ([NEPA], Title 42, U.S. Code, Section 4321 et seq.), Air Force implementing regulations (32 Code of Federal Regulations [CFR] Part 989), and Department of Defense (DoD) directives. It assesses the potential environmental impacts associated with the Proposed Action and alternatives, as described in Section 2.

1.2 Purpose and Need

The purpose of the Proposed Action is to modify the Silver Flag Training Area at Tyndall AFB to allow a broader range of training conditions for EOD war fighters. The Proposed Action is needed because the facilities, roads, and grounds at the Silver Flag Training Area do not adequately meet all the requirements of the current training program. Over the past few years, additional training functions for EOD war fighters have been added to the Silver Flag training program. In addition to their traditional role of managing improvised explosive devices (IEDs), EOD personnel are routinely being tasked to accompany troops on combat missions, and to carry out other additional roles. New training functions have been added to the Silver Flag program to provide EOD personnel with the necessary skills to effectively carry out these additional roles and to maximize their chances of survival during combat operations. The proposed improvements to Silver Flag would provide the necessary new facilities and upgrades to existing facilities that are needed to accommodate the types of training currently being provided under the program. The resulting modification of the Silver Flag Training Area would enhance EOD war fighter readiness and survivorship, and would have a positive impact on the overall mission of RED HORSE and Tyndall AFB. Further discussion of the need for the specific infrastructure improvement projects under the Proposed Action is provided in Section 2.1.

1.3 Location of the Proposed Action

Tyndall AFB is located approximately 13 miles east of Panama City in the southeastern corner of Bay County, Florida (**Figure 1-1**). The Base is approximately 18 miles long by 3 miles wide, and encompasses nearly 30,000 acres on a peninsula that is surrounded by the waters of the Gulf of Mexico to the south, St. Andrews Bay to the west, and East Bay to the north. U.S. Highway 98 runs through the peninsula, dividing the Base into north and south segments.

The Silver Flag Training Area is located in the eastern part of Tyndall AFB along the southern coast of East Bay (**Figure 1-2**). It encompasses approximately 1,200 acres and includes a cantonment area, training runway, and three remote field-training areas.

Source: Microsoft Mappoint

FIGURE 1-1
Vicinity Map
EA for Improvements to Silver Flag Training Area at Tyndall AFB

FIGURE 1-2
Base Map
EA for Improvements to Silver Flag Training Area at Tyndall AFB

1.4 Applicable Regulatory Requirements

Regulations relevant to NEPA and the resources assessed in this EA include, but are not limited to, the following:

- Title 40, CFR, Parts 1500-1508
- Title 42, U.S. Code, Sections 4321-4370f
- Title 32 CFR Part 989, *Environmental Impact Analysis Process*
- Executive Order (EO) 11988, *Floodplain Management*, May 24, 1977
- EO 11990, *Protection of Wetlands*, May 24, 1977
- EO 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*, February 11, 1994
- EO 13175, *Consultation and Coordination With Indian Tribal Governments*, November 6, 2000
- DoD Instruction 4715.9, *Environmental Planning and Analysis*, May 3, 1996
- Air Force Instruction (AFI) 32-7061, *The Environmental Impact Analysis Process*, March 12, 2003
- AFI 32-7064, *Integrated Natural Resources Management*, September 17, 2004
- AFI 32-7065, *Cultural Resources Management Program*, June 1, 2004
- Noise Control Act (Title 42, U.S. Code, Sections 4901 et seq.)
- Clean Air Act (CAA [Title 42, U.S. Code, Sections 7401 et seq.])
- Clean Water Act (Title 33, U.S. Code, Sections 1251 et seq.)
- Rivers and Harbors Act (Title 33, U.S. Code, Section 401)
- National Historic Preservation Act (Title 16, U.S. Code, Section 470)
- Archaeological Resources Protection Act (Title 16, U.S. Code, Section 470)
- Endangered Species Act (ESA [Title 16, U.S. Code, Section 1531 et seq.])
- Coastal Zone Management Act (CZMA [Title 16, U.S. Code, Section 1451 et seq.])
- Resource Conservation and Recovery Act (Title 42, U.S. Code, Section 6901 et seq.)

An EA is required to accomplish the following objectives:

- Briefly provide sufficient evidence and analysis for determining whether to prepare an Environmental Impact Statement (EIS) or a Finding of No Significant Impact (FONSI).
- Aid in an agency's compliance with NEPA when an EIS is not necessary and facilitate preparation of an EIS when necessary.

AFI 32-7061 directs Air Force officials to follow 32 CFR 989 which specifies the procedural requirements for the implementation of NEPA and requires consideration of environmental consequences as part of the planning and decision-making process. 32 CFR 989.14(g) requires preparation of a Finding of No Practicable Alternative (FONPA), which must be submitted to the Major Command Environmental Planning Function when the alternative selected is located in jurisdictional wetlands/surface waters or floodplains.

1.5 Interagency Coordination and Public Involvement

The Air Force invites public participation in the evaluation of the Proposed Action through the NEPA process. Consideration of the views and information of all interested persons promotes open communication and enables better decision-making. The Intergovernmental Coordination Act and EO 12372, *Intergovernmental Review of Federal Programs*, require federal agencies to cooperate with and consider state and local views in implementing a federal proposal. AFI 32-7060, *Interagency and Intergovernmental Coordination for Environmental Planning* (IICEP), requires the Air Force to implement the IICEP process, which is used for the purpose of facilitating agency coordination and implementing scoping requirements under NEPA.

All agencies, organizations, and members of the public having a potential interest in the Proposed Action will be given an opportunity to provide comments on the EA during a 30-day review period. At the end of the 30-day review period, the Air Force will evaluate all comments received and will modify the EA and/or Proposed Action based on the comments as appropriate. The Air Force may then execute a FONSI and proceed with the Proposed Action. If it is determined that implementation of the Proposed Action would result in significant impacts, the Air Force will either publish in the Federal Register a Notice of Intent to prepare an EIS, revise the Proposed Action to avoid significant impacts, incorporate mitigation to reduce impact to less than significant, or not take the action.

1.5.1 Coastal Zone Management Consistency

The federal CZMA provides assistance to states, in cooperation with federal and local agencies, for developing land and water use programs in coastal zones. According to Section 307 of the CZMA, federal projects that affect land uses, water uses, or coastal resources in a state's coastal zone must be consistent, to the maximum extent practicable, with the enforceable policies of that state's federally approved coastal zone management plan.

The Florida Coastal Management Program (FCMP) is based on a network of agencies implementing 23 statutes that protect and enhance Florida's natural, cultural, and economic coastal resources. The Florida Department of Environmental Protection (FDEP) implements the FCMP through the Florida State Clearinghouse. The Clearinghouse routes applications for federal activities, such as EAs, to the appropriate state, regional, and local reviewers to determine federal consistency with the FCMP. Following their review of the EA, the FCMP state agencies provide comments and recommendations to the Clearinghouse based on their statutory authorities. Based on an evaluation of the comments and recommendations, FDEP makes the state's FCMP consistency determination. Comments and recommendations regarding federal consistency are then forwarded to the applicant in the state clearance letter issued by the Clearinghouse.

A letter and copies of the draft EA will be sent to the Florida State Clearinghouse to obtain the state's FCMP consistency determination for the Proposed Action. The state's FCMP consistency determination for the Proposed Action and associated comments will be included in Appendix A and addressed in the final EA. The Air Force will evaluate all comments received and will modify the EA and/or Proposed Action based on the comments as appropriate.

1.5.2 Regulatory Agency Consultation

A letter and copy of the draft EA will be sent to the U.S. Fish and Wildlife Service (USFWS). Consultation with pertinent state agencies, including the Florida Fish and Wildlife Conservation Commission (FWC) and State Historic Preservation Office (SHPO), will occur through the Florida State Clearinghouse. Comments from all regulatory agencies will be included in Appendix A and addressed in the final EA. The Air Force will evaluate all comments received and will modify the EA and/or Proposed Action based on the comments as appropriate.

1.5.3 Native American Tribal Consultation

Letters and copies of the draft EA will be sent to the Native American tribes who have expressed an interest in Tyndall AFB for their ancestral ties. Comments from these tribes will be included in Appendix A and addressed in the final EA. The Air Force will evaluate all comments received and will modify the EA and/or Proposed Action based on the comments as appropriate.

1.5.4 Public Involvement

There will be a 30-day public review period to solicit public comments on the draft EA. The public review period will be announced in a public notice in the *Panama City News Herald* of Panama City, Florida. Copies of the draft EA will be made available for public review at the Bay County Public Library, at the Tyndall AFB Library, and on the Tyndall AFB public website. Copies of the public notice and public review correspondence will be included in Appendix B and public comments will be addressed in the final EA. The Air Force will evaluate all comments received and will modify the EA and/or Proposed Action based on the comments as appropriate.

1.6 Scope of the Environmental Assessment

This EA assesses the potential environmental impacts associated with the Proposed Action of modifying the Silver Flag Training Area at Tyndall AFB. More specifically, this EA assesses the potential environmental impacts of alternatives of the Proposed Action and the No-Action Alternative of maintaining existing conditions. Under the No-Action Alternative, the Silver Flag Training Area would not be modified in any manner. The Proposed Action involves construction of new facilities and modifications to existing facilities. This EA addresses the proposed facility construction/modifications as well as the operation of those facilities.

1.7 Resources Considered but Eliminated From Further Analysis

The Proposed Action was determined to have no potential to affect several resources. Therefore, these resources were eliminated from further analysis and discussion in this EA. Table 1-1 identifies the resources that were considered but eliminated from further analysis because there is no potential affect on them by the Proposed Action.

TABLE 1-1
Resources Considered but Eliminated from Further Analysis
EA for Improvements to Silver Flag Training Area at Tyndall AFB

Resource	Rationale
Geology	The Proposed Action would not involve any intrusive activity that would affect subsurface geological formations. Therefore, the Proposed Action would have no effect on geology.
Topography	The Proposed Action would not involve major land contouring or any other activity that would affect site topography. Therefore, the Proposed Action would have no effect on topography.
Groundwater	The Proposed Action would not involve withdrawals from, or discharges to, groundwater. Any dewatering necessary during construction activities would have no effect on groundwater quality or flow. Therefore, the Proposed Action would have no effect on groundwater.
Housing and Schools	The Proposed Action would not require permanent personnel relocations or permanent employee hires. Therefore, the Proposed Action would have no effect on the number of persons living in on-base or off-base housing or the number of children attending schools in the area.
Energy, Potable Water, and Wastewater	The Proposed Action would not require permanent personnel relocations or permanent employee hires. Therefore, the Proposed Action would have no effect on energy consumption/distribution, potable water consumption/distribution, or domestic wastewater distribution/treatment at Tyndall AFB. The existing domestic wastewater spray field that is proposed to be converted to a bed-down training site under the Proposed Action is currently inactive and no longer needed because all domestic wastewater generated at Silver Flag is currently discharged to the Bay County sewer treatment plant.
Medical, Police, and Fire-Fighting Services	The Proposed Action would not require permanent personnel relocations or permanent employee hires. Therefore, the demand for medical, police, and fire-fighting services at Tyndall AFB would remain at current levels under the Proposed Action. The proposed improvements to the unpaved road network in the Silver Flag area would increase the ability of emergency service personnel to safely access the area.

TABLE 1-1
Resources Considered but Eliminated from Further Analysis
EA for Improvements to Silver Flag Training Area at Tyndall AFB

Resource	Rationale
Rail and Water Transportation	There are no railroads or navigable waterways within the area of the Proposed Action and the Proposed Action would not involve the use of rail or water transportation. Therefore the Proposed Action would have no effect on rail or water transportation.

1.8 Organization of the EA

Table 1-2 presents the organization of the EA.

TABLE 1-2
EA Organization
EA for Improvements to Silver Flag Training Area at Tyndall AFB

Section	Title	Description
	Acronyms and Abbreviations	*Identifies the acronyms and abbreviations used in the EA*
1	*Purpose of and Need for the Proposed Action*	*Provides an introduction to the EA; identifies the need for and the purpose and objectives of the Proposed Action; describes the location of the Proposed Action; discusses the scope and organization of, and the regulatory, consultation, and public involvement requirements for, the EA; identifies the resources considered but eliminated from further analysis in the EA*
2	*Description of the Proposed Action And Alternatives*	*Describes the alternatives development and selection processes; describes the Proposed Action and alternatives*
3	*Affected Environment*	*Describes the existing conditions of each resource for which the Proposed Action and alternatives are assessed*
4	*Environmental Consequences*	*Discusses the potential effects of implementing the Proposed Action and alternatives on the resources described in Section 3*
5	*List of Preparers*	*Provides information on the persons who prepared the EA*
6	*List of Persons and Agencies Consulted*	*Presents a list of persons and agencies consulted during preparation of the EA*
7	*References*	*Presents bibliographical information about the sources used to prepare the EA*
Appendix		
A	*IICEP Correspondence*	*Presents documentation of IICEP correspondence for the EA*
B	*Public Involvement*	*Presents documentation of public review of the EA*

SECTION 2

Description of the Proposed Action and Alternatives

2.1 Description of the Proposed Action

The Proposed Action involves various improvements to the Silver Flag Training Area at Tyndall AFB. The following seven projects are proposed under the Proposed Action:

1. Improve roads used for Mine Resistant Ambush Protected (MRAP) vehicle training
2. Construct MRAP vehicle obstacle course
3. Construct urban warfare village
4. Construct Silver Flag entrance gate
5. Construct MRAP vehicle parking area
6. Construct latrine/shower/laundry facility
7. Convert spray field to bed-down training site

The Proposed Action also includes operation of the infrastructure under the Proposed Action. The projects under the Proposed Action are described in detail below.

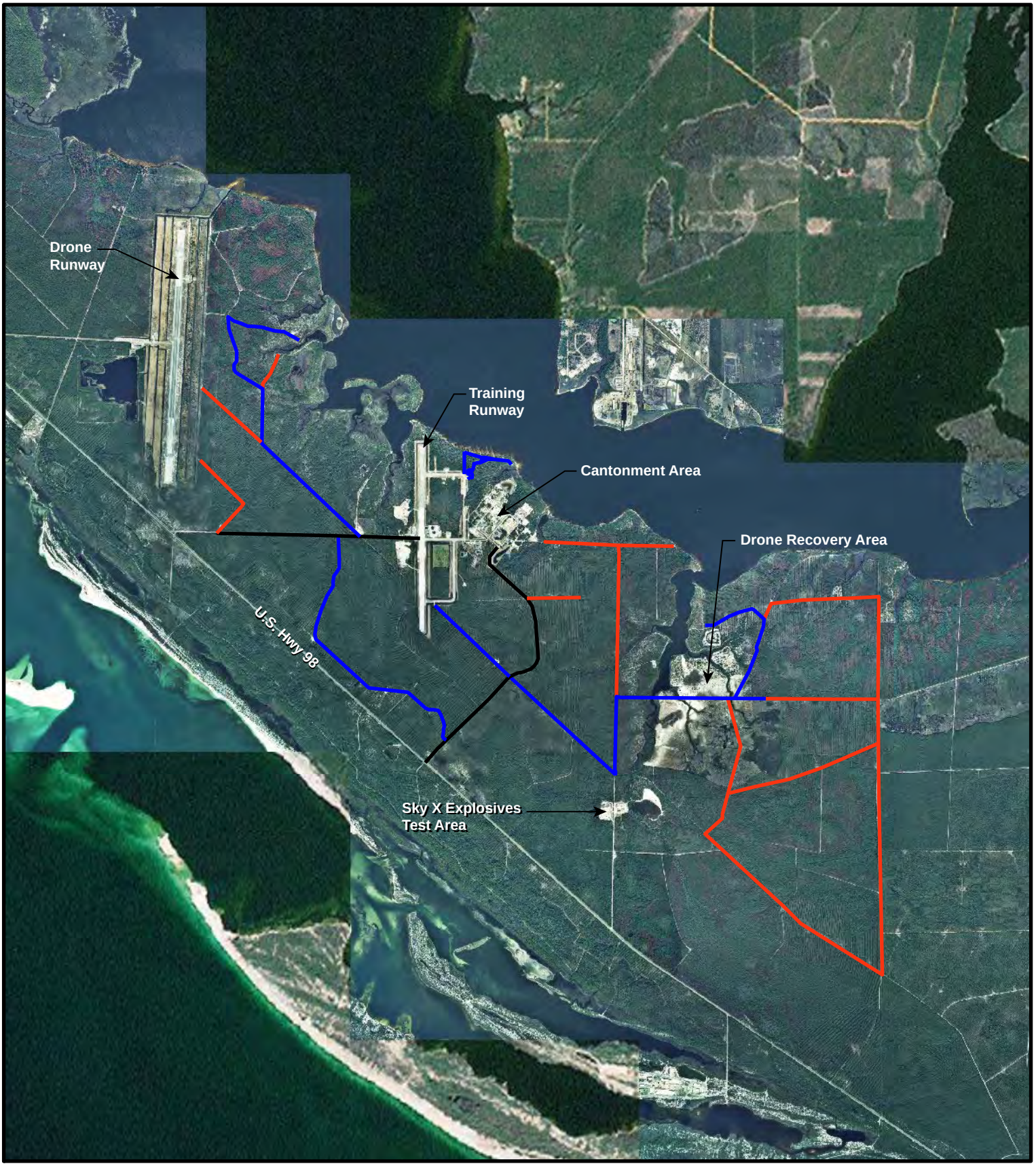
2.1.1 Improve Roads Used for MRAP Vehicle Training

This project would improve the roads in the Silver Flag area that are currently used for MRAP vehicle training. The MRAP vehicle training currently conducted by RED HORSE on the roads in the Silver Flag area is part of the EOD Combat Battlefield Ready Airmen (CoBRA) training program, and primarily involves training of personnel on the various aspects of operating the MRAP vehicles on the roads, either as single vehicles or in convoys of two or more vehicles. The EOD CoBRA training program provides six training sessions per year. Each session lasts four weeks and includes 48 students. RED HORSE maintains a fleet of 17 MRAP vehicles at Silver Flag. Up to ten MRAP vehicles may be operated on the roads at a given time, either all together or in separate groups throughout the road network. During training events, some personnel walk on the roads around the MRAP vehicles. Each student is required to drive the MRAP vehicles on the roads for 40 hours. Under the Proposed Action, there would be no changes to the MRAP vehicle training that is currently conducted on the roads in the Silver Flag area.

Most of the roads that would be improved are currently designated as Base forestry roads and some are currently designated as Base mission roads. All of these roads are currently used for both forestry and mission operations. Under the Proposed Action, the primary use designation of the forestry roads would be changed from “forestry” to “mission”. Conversion of the forestry roads to mission roads would transition responsibility for maintenance of the roads from the Base forestry management program to RED HORSE; however, the roads would continue to be jointly used for forestry and mission operations.

The road network in the Silver Flag area currently used for MRAP vehicle training is shown on **Figure 2-1**. Most of these roads are unpaved; some are dirt roads and some are semi-improved roads that are stabilized by varying amounts/combinations of crushed concrete, gravel, shell, and sand. The only paved roads (asphalt) are the two roads that extend from U.S. Highway 98 eastward and northward to the Silver Flag Training Area. All of the dirt roads and some of the semi-improved roads are forestry roads. The mission roads include the two paved roads and some of the semi-improved roads. Most of the roads have drainage ditches and some have drainage culverts. Detailed information on the roadside drainage ditches are provided in Section 3.5.

The road modifications proposed are stabilization, repair, and maintenance to improve support of the MRAP vehicles. The roadside drainage ditches and culverts would also be repaired, upgraded, and maintained as needed to improve their overall functionality. The proposed road improvements, especially stabilization of the unpaved roads, would also benefit Base forestry operations by providing more stable roads for forestry vehicles and



Source: 2010 FDOT Natural Color Imagery

North

0 0.5 1 2 Miles

LEGEND

- Dirt Roads
- Semi-improved Roads
- Asphalt Roads

FIGURE 2-1
Roads Used for MRAP Vehicle Training
EA for Improvements to Silver Flag Training Area at Tyndall AFB

equipment. Stabilization of the unpaved roads would also reduce the frequency and extent of maintenance and repair that is required for the unpaved roads. The proposed road improvements would be conducted on an as-needed, periodic basis for as long as the roads are used for MRAP vehicle training. The proposed road work is expected to be conducted by existing RED HORSE personnel and equipment; some construction support may be provided by Tyndall AFB's 325th Civil Engineer Squadron (325 CES).

Some of the alternatives analyzed in this EA include new road/bridge construction in addition to improvements to existing roads and associated drainage systems. New road/bridge construction and improvements to existing roads/drainage systems are discussed in greater detail in Section 2.3.

2.1.2 Construct MRAP Vehicle Obstacle Course

This project would involve constructing a MRAP vehicle obstacle course in an existing cleared area adjacent to the western side of the training runway at Silver Flag (**Figure 2-2**). Silver Flag currently does not have a facility to support DoD-mandated MRAP vehicle obstacle course training recently added to the EOD CoBRA training program at Silver Flag. This training involves training of personnel on operation of MRAP vehicles through various road conditions and obstacles, including course roadway, washboard obstacle, slope left/right obstacle, hill obstacle, entry control point obstacle, and backing obstacle. The obstacles would be constructed primarily of dirt, gravel, containers, and other simple structures. Each student would be required to drive a MRAP vehicle successfully through the obstacle course once during daytime and once during nighttime. The MRAP vehicles would be driven by the students through the course a minimum of 576 times per year. One MRAP vehicle would be driven through the course at a time. The MRAP vehicles would be driven at speeds of approximately 5 miles per hour on ground-level obstacles and at slower speeds on elevated obstacles. The MRAP vehicles would be the only vehicles to use the course.

The proposed site layout for the MRAP vehicle obstacle course is shown on **Figure 2-3**. The site is approximately 7.4 acres and portions of it are currently used for urban warfare village training and berm/dike construction training. Under the Proposed Action, there would be no changes to the training conducted at the site. There is sufficient room for the MRAP vehicle obstacle course on the site, and the obstacle course training would not interfere with other training conducted at Silver Flag. The site consists mostly of sandy soils and is surrounded by upland forest. The urban warfare village training area is located in the northeastern part of the site and consists of shipping containers and other structures assembled and painted to mimic a Middle Eastern urban setting. The berm/dike construction training area is located throughout most of the southern part of the site and contains a few remnant berm and dike structures.

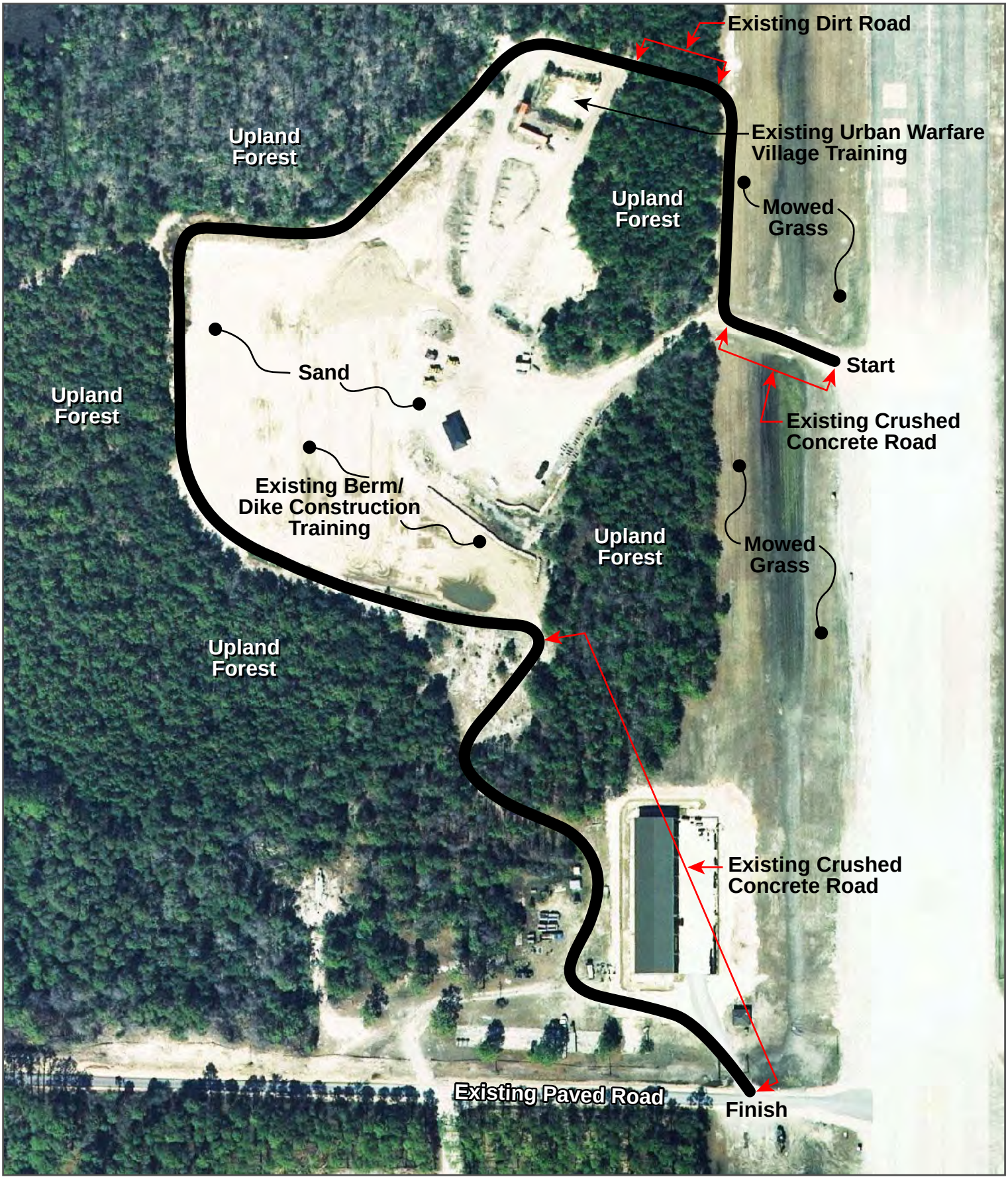
As shown on **Figure 2-3**, the proposed MRAP vehicle obstacle course road would extend from the training runway to the perimeter of the existing cleared area to a paved road that runs perpendicular to the runway. The obstacle course route would utilize an existing crushed concrete road that extends westward from the runway to the adjacent forested area, an existing dirt road that extends westward from the mowed grass right-of-way (ROW) of the runway to the cleared area, and an existing crushed concrete road that extends southward from the cleared area to the paved road that runs perpendicular to the runway. These existing roads could be further stabilized with crushed concrete and potentially widened if needed. At a minimum, the existing dirt road is expected to require widening. The remaining portions of the obstacle course route (cleared area perimeter and mowed grass ROW of the runway) do not contain any existing roads. The proposed obstacle course road would be approximately 3,250 feet (ft) in total length and have a varying width of 15 to 30 ft, depending on the type of obstacles present. The obstacle course road would be constructed of crushed concrete and the portion of the road that would run along the perimeter of the cleared area would contain the various training obstacles. The obstacles would include incline and decline structures, and telephone poles laid across the road.

Source: 2010 FDOT Natural Color Imagery

North

0 280 560 1,120 Feet

FIGURE 2-2
Projects Under the Proposed Action
EA for Improvements to Silver Flag Training Area at Tyndall AFB



Source: 2010 FDOT Natural Color Imagery

0 90 180 360 Feet

North

Proposed Obstacle Course Road

FIGURE 2-3
Proposed MRAP Vehicle Obstacle Course
EA for Improvements to Silver Flag Training Area at Tyndall AFB

2.1.3 Construct Urban Warfare Village

This project would involve constructing a mock urban warfare village in the southeastern part of the Silver Flag cantonment area (see **Figure 2-2**). There is no urban warfare village in the cantonment area; there are eight urban warfare villages in remote locations outside the cantonment area. The proposed urban warfare village is needed to provide a readily accessible site to train both EOD CoBRA personnel and Silver Flag personnel (non-EOD training) on urban warfare tactics in an area that does not require vehicular transportation to access.

The proposed site layout for the urban warfare village is shown on **Figure 2-4**. The site is approximately 5.3 acres and is currently semi-developed. The site consists of patchy upland forest and areas of exposed sand that are devoid of vegetation. Portions of the site are currently used as storage space for various equipment and hardware. The site is bordered by similar semi-developed land that consists of cleared areas, crushed concrete roads, and small buildings. Under the Proposed Action, a mock Middle Eastern urban setting would be created at the site consisting of shipping containers and other structures, similar to the other urban warfare villages at Silver Flag. One or more crushed concrete roads would also be constructed within the site. As at the other urban warfare villages, students would be trained at the site on various urban warfare tactics, such as searching for IEDs, engaging with the enemy, clearing buildings, and communicating with the locals. As at the other sites, the training would include the use of various simulator explosives and munitions. Live explosives or munitions would not be used at the site. The site would be used at variable frequencies throughout the year, depending on the overall training schedule.

2.1.4 Construct Silver Flag Entrance Gate

This project would involve constructing a new Silver Flag main entrance gate to replace the existing main entrance gate. The existing main entrance gate is located on Silver Flag Road, approximately 1,600 ft south of the Silver Flag cantonment area (see **Figure 2-2**). The existing entrance gate is a simple swing gate that consists of swinging metal poles attached to stone walls that extend off both sides of the road. The existing gate is closed and opened by manual locking and unlocking a pad lock and chain on the metal poles. The existing entrance gate provides inadequate site security, is controlled manually, and does not meet current Anti-Terrorism/Force Protection (AT/FP) requirements.

Under the Proposed Action, the existing entrance gate would be removed and a new automated entrance gate would be constructed at the current gate location. The new gate would improve site security, allow automated control of site access, and would meet current AT/FP requirements. The new entrance gate would be remotely controlled by RED HORSE and is expected to be opened and closed on the same schedule that is currently implemented.

2.1.5 Construct MRAP Vehicle Parking Area

This project would involve constructing a MRAP vehicle parking area in the Silver Flag cantonment area. Two sites are being considered for the parking area (see **Figure 2-2**). The two sites are located relatively close to each other and have similar characteristics. Both sites are crushed concrete lots; the southern site is currently used for bed-down training and the northern site is currently vacant but recently contained student billets. Both of these sites are also being considered as potential sites for a latrine/shower/laundry facility (see Section 2.1.6)

At present, MRAP vehicles are parked in various uncovered locations at Silver Flag. Constant direct exposure to rain has resulted in damage to certain components of some of the MRAP vehicles, such as camera systems and electronics. Under the Proposed Action, a covered parking area would be constructed to protect the MRAP vehicles from rain and harsh weather. The proposed parking area would be an 8-stall structure on a 115 ft x 60 ft crushed concrete base and overlying asphalt pad with approach aprons. The structure would be 112 ft long, 50 ft wide, and 16 ft high, and each of the 8 stalls would be 14 ft wide. The structure would have a sloped/angled roof and no side walls. The structure would provide covered parking for 16 MRAP vehicles.

2.1.6 Construct Latrine/Shower/Laundry Facility

This project would involve constructing a latrine/shower/laundry facility in the Silver Flag cantonment area. Two sites are being considered for this facility (see **Figure 2-2**). As discussed in Section 2.1.5, these two sites are also being considered as potential sites for a MRAP vehicle parking area.

Source: 2010 FDOT Natural Color Imagery

North

0 150 300 600 Feet

FIGURE 2-4
Proposed Urban Warfare Village
EA for Improvements to Silver Flag Training Area at Tyndall AFB

The proposed latrine/shower/laundry facility would be used by students who are trained at Silver Flag. The existing latrine, shower, and laundry accommodations at Silver Flag are not currently sufficient for the number of students who undergo training. The proposed facility would be a permanent, enclosed structure approximately 2,000 square (sq) ft in size. The facility would be constructed of masonry block and would have metal roof.

2.1.7 Convert Spray Field to Bed-Down Training Site

This project would involve converting the existing inactive domestic wastewater spray field at Silver Flag to a bed-down training site. The existing spray field is located southwest of the Silver Flag cantonment area and adjacent to the eastern side of the training runway (see **Figure 2-2**). The spray field measures 768 ft x 530 ft and was used in the past to spray irrigate the effluent generated by the domestic wastewater treatment plant at Silver Flag. The spray field and the domestic wastewater treatment plant are no longer operated because all domestic wastewater generated at Silver Flag is now discharged via a force main directly to the Bay County sewer treatment plant.

Under the Proposed Action, the spray field would be converted a bed-down training site for students. Students currently conduct bed-down training in a crushed concrete lot within the cantonment area (see **Figure 2-2**). This training primarily involves site survey and tent assembly/disassembly. The existing bed-down training site is not large enough to accommodate the number of students that are trained at Silver Flag. As a result, the optimal number of tents cannot be used and the overall efficiency of the training at the existing site is less than desired.

Under the Proposed Action, the existing spray field's irrigation system would be removed. Soil constituents at the site would be tested to determine if they are at levels acceptable for human habitation. Any soil treatment to reduce constituent levels, if necessary, would be conducted prior to further site preparation. Site preparation would primarily include adding a layer of crushed concrete to provide a stable surface for bed-down training.

2.2 Alternatives Development

Under NEPA and 32 CFR Part 989, this EA is required to address the potential environmental impacts of the Proposed Action, No-Action Alternative, and "reasonable" alternatives. Reasonable alternatives are those that meet the underlying purpose of and need for the Proposed Action, are feasible from a technical and economic standpoint, and meet reasonable screening criteria (selection standards) that are suitable to a particular action. Screening criteria may include requirements or constraints associated with operational, technical, environmental, budgetary, and time factors. Alternatives that are determined to not be reasonable can be eliminated from detailed analysis in this EA.

During project planning, an alternatives analysis was conducted to identify potential reasonable alternatives. These alternatives were evaluated based on their ability to meet the goals and intent of the Proposed Action, and based on applicable screening criteria. The primary screening criteria used to identify reasonable alternatives for the proposed projects included site accessibility to users, site proximity to associated infrastructure, site size sufficiency, land use compatibility, and environmental impacts (Table 2-1). Using these screening criteria, RED HORSE in collaboration with 325 CES evaluated the potential suitability of several alternative sites for the proposed infrastructure improvement projects.

TABLE 2-1
Screening Criteria for Alternatives Selection
EA for Improvements to Silver Flag Training Area at Tyndall AFB

Screening Criteria	Description
#1 - Site accessibility to users	The sites for the proposed non-road facilities must be readily accessible to the intended users so they can be efficiently used.
#2 - Site proximity to associated infrastructure	The sites for the proposed non-road facilities must be located in close proximity to existing associated infrastructure to allow efficient co-functioning of the new facilities with existing facilities and equipment.
#3 - Site size sufficiency	The sites for the proposed non-road facilities must be of sufficient size to accommodate the dimensions of the facilities and the space needed for associated operations.

TABLE 2-1
Screening Criteria for Alternatives Selection
EA for Improvements to Silver Flag Training Area at Tyndall AFB

Screening Criteria	Description
#4 - Land use compatibility	The sites for the proposed non-road facilities must not have existing land uses/operations that are incompatible with the operations of the proposed facilities.
#5 - Environmental impacts	Construction of the proposed non-road facilities must not result in excessive environmental impacts, particularly excessive impacts to wetlands and other ecologically sensitive habitats.

Based on the alternatives analysis conducted, three action alternatives (Alternatives 1, 2, and 3) were selected to be carried forward for detailed analysis in this EA along with the No-Action Alternative. These action alternatives were determined to be reasonable alternatives because they would meet the goals and intent of the Proposed Action, and they meet the screening criteria used for alternatives selection presented in Table 2-1. These action alternatives and the No-Action Alternative are described in Section 2.3 and analyzed in detail in Chapter 4. Several other alternatives that were considered did not meet the goals and intent of the Proposed Action and/or one or more of the screening criteria. These alternatives were, therefore, determined to not be reasonable and were eliminated from detailed analysis in this EA. These alternatives and the reasons why they were determined to not be reasonable are discussed in Section 2.4.

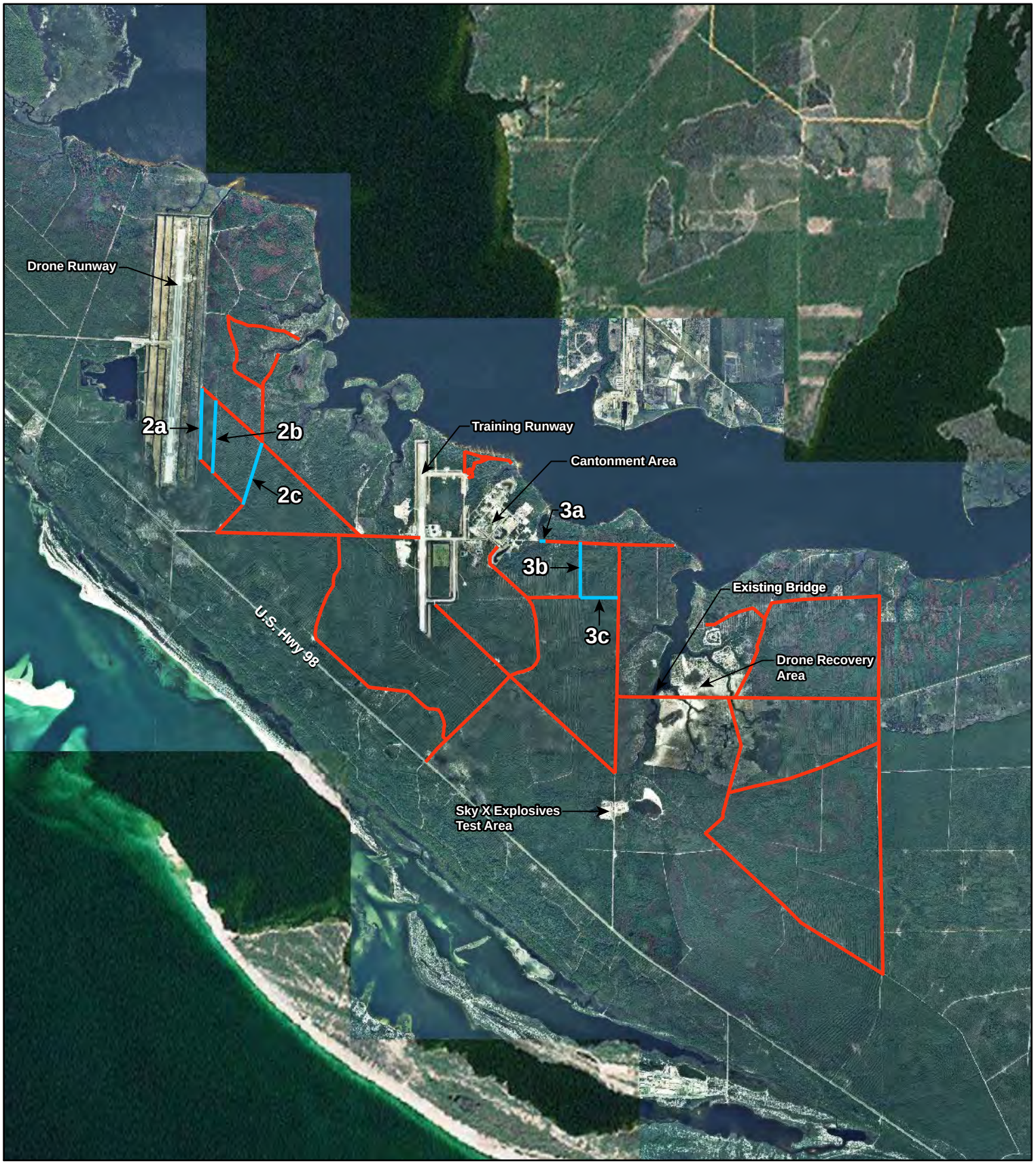
2.3 Alternatives Carried Forward for Detailed Analysis

Three action alternatives (Alternatives 1, 2, and 3) and the No-Action Alternative are analyzed in detail in this EA. Alternatives 1, 2, and 3 would all meet the goals and intent of the Proposed Action and would all involve improvements to the road network in the Silver Flag area in support of MRAP vehicle training; they differ from one another with respect to the specific manner in which the overall road network would be improved. Under each of these action alternatives, the other projects of the Proposed Action would be implemented as described in Section 2.1.

2.3.1 Alternative 1

Under Alternative 1, the road network in the Silver Flag area would be improved only through upgrades to the existing roads currently used for MRAP vehicle training (**Figures 2-1 and 2-5**). This alternative would not involve any new road or new bridge construction, only improvements to the existing road network. The other six non-road projects of the Proposed Action would be implemented under Alternative 1 as described in Section 2.1.

Under Alternative 1, the unpaved roads currently used for MRAP vehicle training would be stabilized via grading, compaction, and application of crushed concrete. The dirt roads would be converted to crushed concrete roads; approximately 6 inches of crushed concrete is expected to be applied to the dirt roads. The semi-improved roads that are currently stabilized with varying amounts/combinations of crushed concrete, gravel, shell, and sand would be further stabilized via application of new crushed concrete as needed. Portions of the paved asphalt roads would be repaired and repaved as needed. The current widths of all the roads are sufficient for MRAP vehicle training; therefore, little to no road widening is expected to be conducted. Drainage improvements would include as-needed dredging of existing roadside drainage ditches, construction of new drainage ditches, replacement of existing drainage culverts, and construction of new drainage culverts. Lastly, an existing vehicular bridge in the central part of the road network would be upgraded (see **Figure 2-5**). This bridge is approximately 30 ft long and once was able to support the weight of the MRAP vehicles; however, it no longer can due to deterioration of its pilings. This bridge, which is currently rated to support 8 tons, would be upgraded to support more than the weight of the heaviest MRAP vehicle (32.5 tons) through piling replacement and other structural modifications. The structural upgrades are not expected to significantly change the length or width of the bridge.



Source: 2010 FDOT Natural Color Imagery

LEGEND

- Existing Roads/Bridge
- New Roads/Bridge

North

0 0.5 1 2 Miles

Alternative 1: Upgrade existing roads/bridge only.

Alternative 2: Upgrade existing roads/bridge and construct 2a, 2b, or 2c.

Alternative 3: Upgrade existing roads/bridge and construct 3a, 3b, or 3c.

FIGURE 2-5
Alternatives Analyzed in Detail
EA for Improvements to Silver Flag Training Area at Tyndall AFB

2.3.2 Alternative 2

Under Alternative 2, the road network in the Silver Flag area would be improved through upgrades to the existing roads currently used for MRAP vehicle training as described for Alternative 1, and by creating a new route in the northwestern part of the road network. The new route would be created by constructing one of three new roads, referred to under this alternative as Alternative 2a, 2b, or 2c. A new route in the northwestern part of the road network is proposed under Alternative 2 because the existing road segments in this area dead end, which requires the MRAP vehicles to back out at the end of each road segment. The new road would connect two of the road segments in this part of the network, thereby creating a contiguous looping route for the MRAP vehicles and eliminating the need for the vehicles to back out at the end of the road segments. The new road would be approximately 15 ft wide and constructed of crushed concrete. The other six non-road projects of the Proposed Action would be implemented under Alternative 2 as described in Section 2.1.

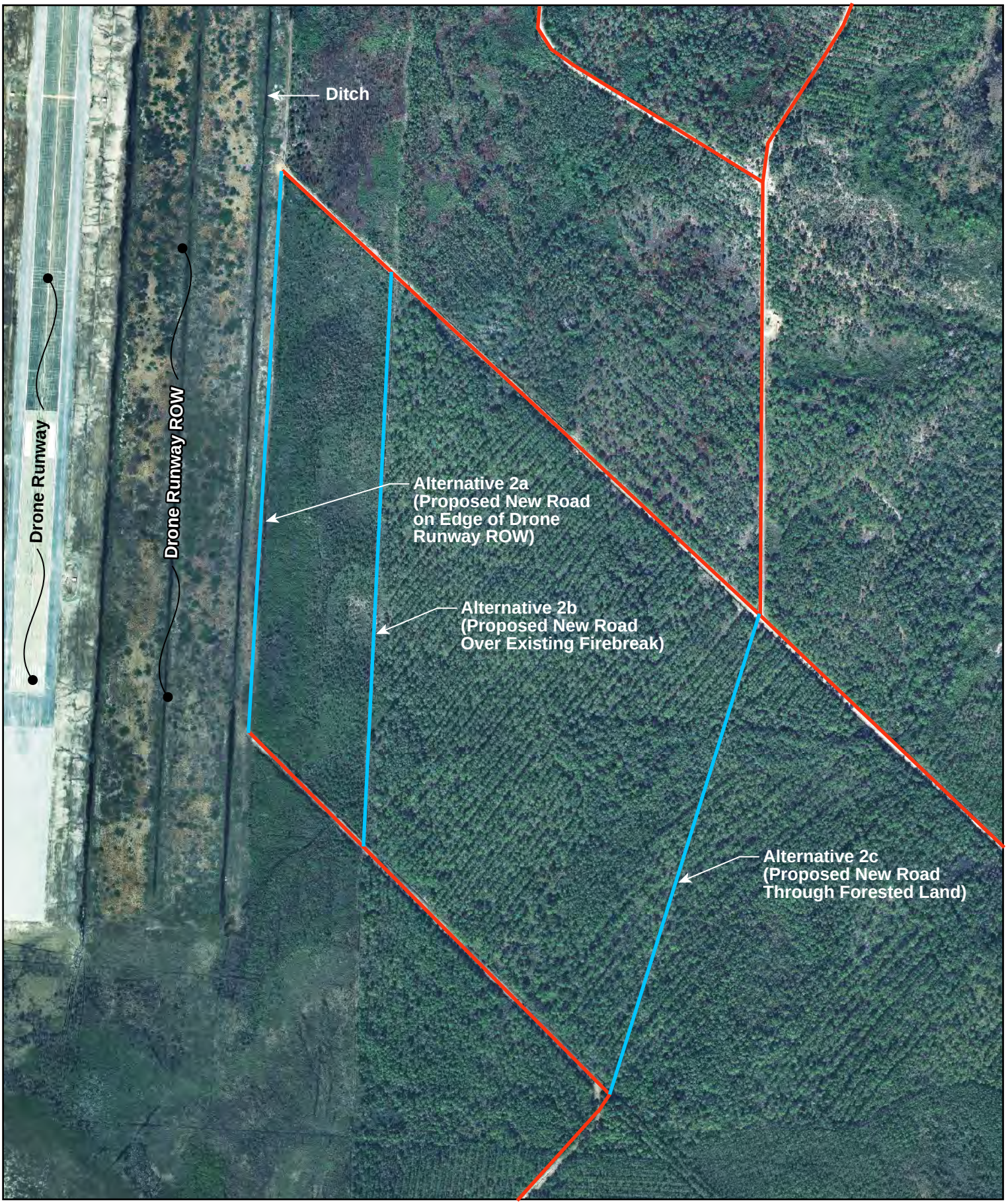
Alternatives 2a, 2b, and 2c are shown on **Figures 2-5 and 2-6**. Under Alternative 2a, a new road would be constructed along the easternmost edge of the maintained vegetated ROW of the drone runway. This portion of the drone runway ROW is infrequently maintained by mowing and consists of non-forested uplands and wetlands. The width of the runway ROW from the adjacent tree line on its eastern side to an adjacent ditch on its western side is approximately 100 ft. The new road that would be constructed under Alternative 2a would be approximately 2,450 ft long.

Under Alternative 2b, a new road would be constructed over the footprint of an existing firebreak located approximately 500 ft east of, and parallel to, the easternmost edge of the drone runway ROW. The existing firebreak is infrequently maintained and traverses forested uplands and wetlands; portions of the firebreak themselves are non-forested wetland. The width of the firebreak from the adjacent tree lines on both of its sides is approximately 12 ft. The new road that would be constructed under Alternative 2b would be approximately 2,450 ft long.

Under Alternative 2c, a new road would be constructed through forested land approximately 2,100 ft east of the easternmost edge of the drone runway ROW at its nearest point. Unlike Alternatives 2a and 2b, Alternative 2c would not utilize any previously cleared corridor. The road that would be constructed under Alternative 2c would traverse forested uplands and wetlands and would be approximately 2,150 ft long.

2.3.3 Alternative 3

Under Alternative 3, the road network in the Silver Flag area would be improved through upgrades to the existing roads currently used for MRAP vehicle training as described for Alternative 1, and by creating a new route in the north central part of the road network. The new route would be created by constructing either a new vehicular bridge or one of two new roads, referred to under this alternative as Alternative 3a, 3b, or 3c. A new route in the north central part of the road network is proposed under Alternative 3 because access to the eastern part of the road network is at times prevented by operations in the Sky X Explosives Test Area (see **Figure 2-5**). The MRAP vehicles currently must travel on the road that extends southward through the Sky X Explosives Test Area to access the eastern part of the road network. When explosives testing is conducted in the Sky X Explosives Test Area, the MRAP vehicles are not allowed to use the portion of the road that extends southward through the test area nor are they allowed to access the portion of the same road that extends northward from the test area via the connecting road to the west. A new vehicular bridge or road in the north central part of the road network, coupled with upgrades to the existing vehicular bridge as described in Section 2.3.1, would allow the MRAP vehicles to access the eastern part of the road network even when operations are being conducted in the test area. Under the new vehicular bridge option, the bridge would be approximately 15 ft wide and constructed of wood and/or metal with wood support pilings. Under the new road option, the road would be approximately 15 ft wide and constructed of crushed concrete. The other six non-road projects of the Proposed Action would be implemented under Alternative 3 as described in Section 2.1.



Source: 2010 FDOT Natural Color Imagery

0 250 500 1,000 Feet

North

LEGEND

Existing Roads

New Roads

FIGURE 2-6
Alternatives 2a, 2b, and 2c
EA for Improvements to Silver Flag Training Area at Tyndall AFB

Alternatives 3a, 3b, and 3c are shown on **Figures 2-5 and 2-7**. Under Alternative 3a, a new vehicular bridge would be constructed across a tidal creek located along the eastern boundary of the cantonment area. A foot bridge across this tidal creek currently exists and a vehicular bridge once existed in the same location. The existing foot bridge is constructed of telephone poles and metal siding. Under Alternative 3a, the existing foot bridge would be removed and a new vehicular bridge would be constructed in the same location. The width of the tidal creek channel at the existing foot bridge is approximately 25 ft. The cantonment area lies immediately west of the channel crossing and a road used for MRAP vehicle training lies immediately east of the channel crossing. The length of the new vehicular bridge that would be constructed under Alternative 3a would be roughly equal to the width of the tidal creek channel (25 ft).

Under Alternative 3b, a new road would be constructed over the footprint of an existing dirt trail located approximately 1,800 ft east of the cantonment area at its nearest point. The existing dirt trail is drivable by small vehicles such as pickup trucks but is not regularly maintained as a road. The trail is located mostly within forested uplands; its southernmost portion is wetland. The width of the trail is approximately 10 ft. The new road that would be constructed under Alternative 3b would be approximately 1,850 ft long.

Under Alternative 3c, a new road would be constructed through forested land approximately 3,000 ft southeast of the cantonment area at its nearest point. Unlike Alternatives 3a and 3b, Alternative 3c would not utilize any previously cleared corridor. The road that would be constructed under Alternative 3c would traverse forested uplands and wetlands and would be approximately 1,300 ft long.

2.3.4 No-Action Alternative

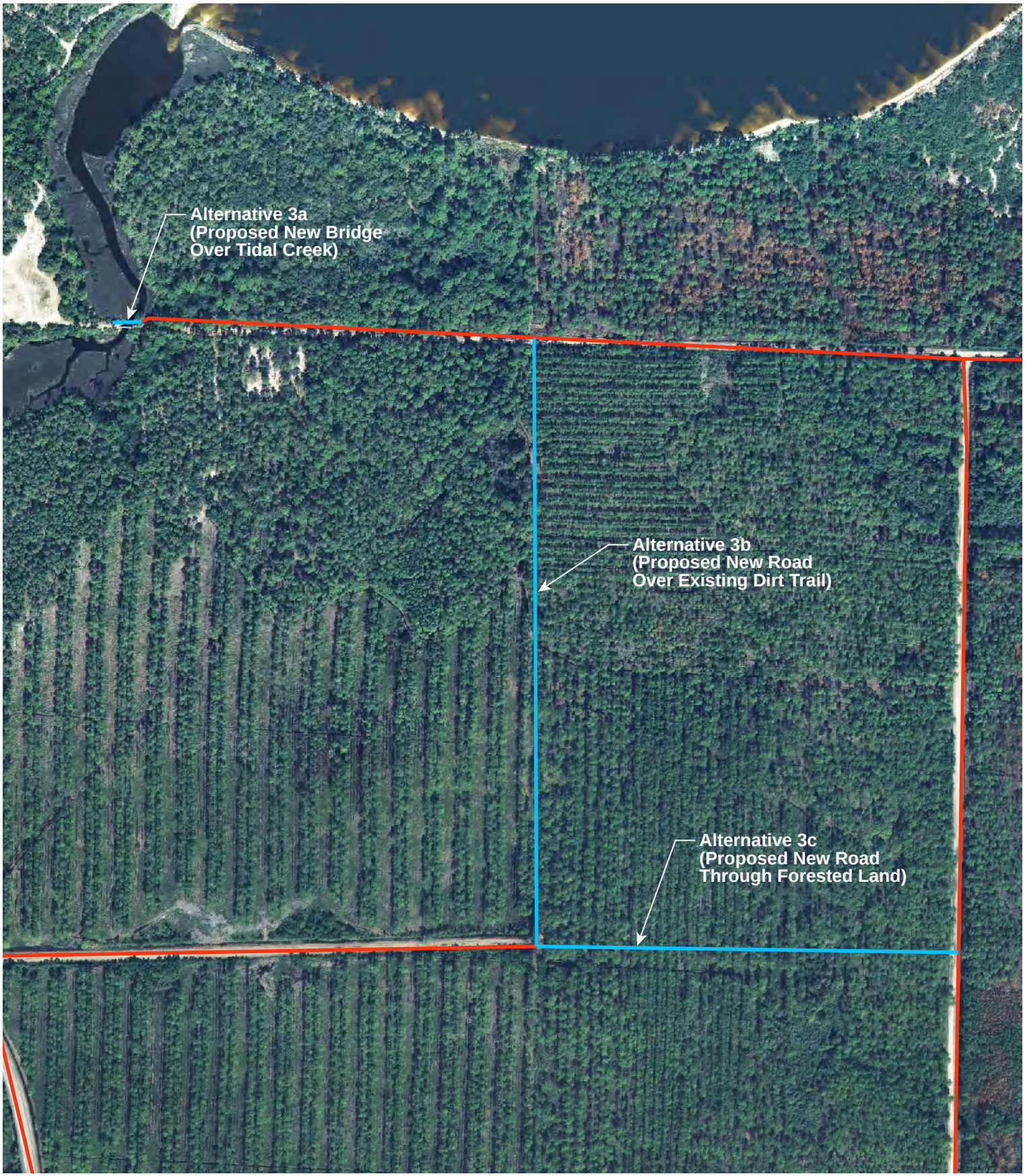
The No-Action Alternative is to maintain existing conditions. Under the No-Action Alternative, the Silver Flag Training Area would not be improved in any manner to optimize the training conditions for EOD war fighters. Under the No-Action Alternative, EOD war fighters would continue to be trained at Silver Flag as they currently are.

2.4 Alternatives Eliminated from Detailed Analysis

Several alternatives considered during project planning did not meet the goals and intent of the Proposed Action, and/or one or more of the screening criteria presented in Table 2-1. These alternatives were, therefore, determined to not be reasonable and were eliminated from detailed analysis in this EA. These alternatives and the reasons they were determined to not be reasonable are discussed below.

The proposed urban warfare village, Silver Flag entrance gate, MRAP vehicle parking area, latrine/shower/laundry facility, and bed-down training site must all be located within or very near the Silver Flag cantonment area so they can be readily accessible to RED HORSE personnel (Screening Criteria #1)and be in close proximity to associated existing infrastructure (Screening Criteria #2). RED HORSE training instructors and students, who would be the users of these facilities, are located within the cantonment area. Locating the proposed facilities far from the cantonment area would require the instructors and students to use transportation and spend travel time to access the facilities, and, therefore, would create operational inefficiencies in the training program. The proposed facilities would also co-function with existing infrastructure within the cantonment area. Locating the proposed facilities far from the cantonment area would not allow efficient co-functioning of the proposed facilities with existing facilities, equipment, and hardware within the cantonment area. Separation of the proposed facilities with existing associated infrastructure would negatively affect training activities and the overall operational functionality of Silver Flag. For these reasons, sites far from the cantonment area did not meet Screening Criteria #1 or #2; therefore, they were determined to not be reasonable location alternatives for these proposed facilities.

As for the above facilities, the proposed MRAP vehicle obstacle course must be located near the cantonment area so it is readily accessible to RED HORSE instructors and students (Screening Criteria #1), and in close proximity to associated infrastructure, including the MRAP vehicle parking areas, maintenance facilities, and equipment (Screening Criteria #2). Sites far from the cantonment area did not meet these screening criteria; therefore, they were eliminated from consideration.



Source: 2010 FDOT Natural Color Imagery

0 180 360 720 Feet

North

LEGEND

Existing Roads

New Roads

FIGURE 2-7
Alternatives 3a, 3b, and 3c
EA for Improvements to Silver Flag Training Area at Tyndall AFB

Other than the proposed site, only one site near the cantonment area was identified to be of sufficient size to accommodate the obstacle course. This site is located approximately 600 ft south of the proposed site, and like the proposed site, it is cleared of vegetation. However, unlike the proposed site, most of this site is currently used for other operations and is bordered by extensive wetlands. Over 90 percent of the cleared area of this site is currently used to stockpile large amounts of concrete that are generated during runway repair training conducted on the training runway. Although this site is large enough accommodate the minimum length of the obstacle course (2,500 ft), the available space within the site was determined to be insufficient to accommodate all the obstacles associated with the obstacle course; therefore, this site did not meet Screening Criteria #3. Moreover, the stock piling activity that is conducted at this site was determined to be an incompatible land use for MRAP vehicle obstacle course training. This site experiences heavy truck traffic with trucks bringing concrete into the site for stockpiling and taking concrete out of the site for use throughout the Base. The volume of truck traffic, including the amount of loading, offloading, and associated stockpile mounding/spreading operations that occurs at this site was determined to have the potential to conflict with MRAP vehicle obstacle course training; therefore, this site did not meet Screening Criteria #4. Also with respect to Screening Criteria #4, this site is located within the explosive clear zone of the portion of the training runway that is used for runway repair operations. As such, MRAP vehicle obstacle course training at this site would be restricted when explosives are used during runway repair training. Lastly, with respect to Screening Criteria #5, the use of this site would result in wetland impacts from construction of portions of the obstacle course road that would extend from the site to adjacent developed land. In addition to the direct wetland impacts that would be incurred during construction, substantial retaining walls or other suitable structures would need to be constructed around the obstacle course road to prevent indirect impacts to wetlands adjacent to the cleared area. Although the wetland impacts that would be incurred under this alternative could be compensated through wetland mitigation, the overall environmental impacts coupled with the technical challenges and construction costs associated with the necessary ancillary retaining structures were determined to be excessive constraints. For the above reasons, this site was determined to not be a reasonable location alternative for the proposed MRAP vehicle obstacle course.

2.5 Identification of the Preferred Alternative

The preferred alternative has not been identified for the Draft EA. The preferred alternative will be identified in the Final EA, and may include a combination of the action alternatives.

SECTION 3

Existing Conditions

3.1 Air Quality

The CAA requires the U.S. Environmental Protection Agency (USEPA) to set National Ambient Air Quality Standards (NAAQS) for pollutants considered harmful to public health and the environment. USEPA has established NAAQS for the following six principal pollutants, which are called criteria pollutants: carbon monoxide, lead, nitrogen dioxide, ozone, particulate matter, and sulfur dioxide. Areas that meet the air quality standard for the criteria pollutants are designated as being "in attainment." Areas that do not meet the air quality standard for one of the criteria pollutants may be subject to the formal rule-making process and designated as being "in nonattainment" for that standard. Areas that currently meet the air quality standard but previously were classified as nonattainment are "in maintenance" for that standard. Bay County is currently classified as being "in attainment" for all criteria pollutants stipulated under the NAAQS.

Tyndall AFB currently operates under a minor air operation permit, last issued by the State of Florida in June 2010. This permit regulates specific major stationary sources of air emissions at Tyndall AFB and requires that the emissions from these sources do not exceed major source values regulated under Title V air permitting. The following five stationary sources of air emissions at Tyndall AFB are regulated under this permit: paint booths (nine separate units), fuel fill stands (aircraft refueler truck fill), jet engine testing (hush houses and engine shop), bulk fuel storage tanks (6000 and 400 Areas), and boilers (all units $\geq$ 1.0 million British thermal units per hour). There are no stationary sources of air emissions in the Silver Flag area that are regulated under the Base air permit.

3.2 Noise

Human hearing is best approximated by using an A-weighted decibel scale (dBA). Psychologically, most humans perceive a doubling of sound as an increase of 10 dBA (USEPA, 1974). Noise level is often expressed as day-night averaged sound level (DNL), which is the dBA sound level over a 24-hour day and night period. The DNL also applies a 10-dBA penalty to nighttime sounds occurring between 10 pm and 7 am to account for the desirability of a quieter night than day. The U.S. Department of Housing and Urban Development and DoD define outdoor DNL levels up to 65 dBA as acceptable for residences.

Based on data presented in the USEPA publication, *Noise from Construction Equipment and Operations, Building Equipment, and Home Appliances* (USEPA, 1971), outdoor construction noise levels range from 78 dBA to 89 dBA, approximately 50 ft from a typical construction site. Noise levels at 50 ft from a source decrease by approximately 3 dBA over a hard, unobstructed surface (such as asphalt), and by approximately 4.5 dBA over a soft surface (such as vegetation). Table 3-1 presents typical noise levels (dBA at 50 ft from source) estimated by USEPA for the main phases of outdoor construction.

TABLE 3-1
Typical Noise Levels for Outdoor Construction
EA for Improvements to Silver Flag Training Area at Tyndall AFB

Construction Phase	Noise Level (dBA at 50 feet from source)
Ground Clearing	84
Excavation, Grading	89
Foundations	78
Structural	85
Finishing	89

dBA – decibel on the A-weighted scale
Source: USEPA, 1971

Airfield operations are the primary sources of noise at Tyndall AFB. Other noise sources include vehicular traffic, training activities, and intermittent construction.

The nearest on-base noise-sensitive areas to Silver Flag are the accompanied military housing neighborhoods of Felix Lake, Wood Manor, Redfish Point, Bay View, and Shoal Point, all of which are located several miles west of the training area. The nearest off-base noise-sensitive areas to Silver Flag are the residential communities within the City of Allanton, located approximately two miles northeast of the training area. The waters of East Bay provide a natural noise buffer for these off-base communities.

3.3 Air Installation Compatible Use Zone

Tyndall AFB implements an Air Installation Compatible Use Zone (AICUZ) program to analyze the compatibility of land use development on and off the Base with aircraft noise, aircraft accident potential, and other aspects of airfield operations. The 2008 Tyndall AFB AICUZ Study presents the most recent noise contours determined for airfield operations and the Clear Zones (CZs) and Accident Potential Zones (APZs) identified for the Base runways (Tyndall AFB, 2008).

The training runway that is adjacent to the Silver Flag cantonment area is used only for runway repair training and other on-ground training. Aircraft do not take off from or land on the training runway; therefore, the training runway has no established CZs or APZs. The main Base runway/airfield and the drone runway are used by aircraft and, therefore, have established CZs and APZs. None of the proposed sites for the non-road facilities, existing roads used for MRAP vehicle training, or routes/sites for the new roads/bridge under Alternative 2 or 3 are located within the CZs or APZs of the main runway or drone runway. The ends of two of the roads currently used for MRAP vehicle training abut the easternmost edge of the maintained vegetated ROW of the drone runway (see Figure 2-6). The route for the new road that would be constructed under Alternative 2a is also located along the easternmost edge of the drone runway ROW (see Figure 2-6). The drone runway is used for launching and landing full-scale drone (unmanned) aircraft only. Drone aircraft are used at Tyndall AFB to test and develop various types of weapons systems and for associated training. Drone aircraft take off and land on the drone runway intermittently in accordance with the schedule of the associated weapons testing/training program.

3.4 Soils

In general, the soils of Tyndall AFB are sandy and acidic. General soil associations and detailed soil types at Tyndall AFB have been identified by the Natural Resources Conservation Service (NRCS) Soil Survey for Bay County, Florida (NRCS, 1984). Based on the NRCS generalized soil map prepared for Bay County, the Silver Flag cantonment area and immediate vicinity is mapped as the Hurricane-Chipley-Albany soil association. Some of the roads currently used for MRAP vehicle training and all the proposed sites for the on-road facilities are located within this soil association. 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.

The remaining roads currently used for MRAP vehicle training are mapped either as the Pottsburg-Leon-Rutlege soil association or the Rutlege-Allanton-Pickney soil association. Soils within the Pottsburg-Leon-Rutlege association are nearly level; poorly or very poorly drained; and sandy to a depth of 80 inches or more, with some soils having organic stained layers. Soils within the Rutlege-Allanton-Pickney association are nearly level or depressional; poorly or very poorly drained; and sandy to a depth of 80 inches or more, with some soils having organic stained layers.

3.5 Wetlands

EO 11990, *Protection of Wetlands* (signed May 24, 1977) directs Federal agencies to avoid, to the extent possible, the long and short-term adverse impacts associated with the destruction or modification of wetlands, and to avoid direct or indirect support of new construction in wetlands wherever there is a practicable alternative.

Wetlands on Tyndall AFB have been mapped and classified in accordance with the USFWS's National Wetlands Inventory (NWI) classification system as described in *Classification of Wetlands and Deepwater Habitats of the United States* (Cowardin et. al., 1979). Approximately 40 percent of Tyndall AFB is estimated to be wetland based on NWI mapping (Tyndall AFB, 2006). Based on the NWI classification system, the most dominant wetland type on

Tyndall AFB is Palustrine Forested. Other wetland types on the Base include Palustrine Scrub/Shrub, Palustrine Emergent, and Estuarine.

The field investigations conducted for this EA (October 5 - 6, 2011; June 26 – July 3, 2012) included wetland (and surface water) delineations and characterizations at the proposed project sites. Wetland delineations and characterizations were conducted via aerial photo interpretation and ground truthing in accordance with the routine methodology described in USACE's 1987 *Corps of Engineers Wetlands Delineation Manual* (Environmental Laboratory, 1987) and the State methodology as authorized by Subsection 373.421, Florida Statutes. The jurisdictional boundaries of wetlands were based on the dominance of hydrophytic vegetation, presence of hydric soils, and evidence of hydrology. Aerial photo interpretation of wetland boundaries was conducted using 2010 Florida Department of Transportation true-color, ortho-rectified aerial photography. NWI wetland mapping was also used in the field for reference. Ground truthing of wetland boundaries alongside the roads was conducted approximately 50 ft to 100 ft from the roads, depending on access and visibility, and the wetland boundaries further out were in some cases approximated via interpretation of wetland signatures on the aerial photographs.

It is important to note that the combination of aerial photo interpretation and ground truthing conducted for this EA provides only a qualitative estimation of the boundaries of wetlands at the project sites. Formal determinations of state and federal jurisdictional wetland boundaries involving flagging, professional survey, and regulatory agency reviews would need to be conducted during the permitting phase of the projects, and may result in wetland boundaries that differ from those estimated for this EA.

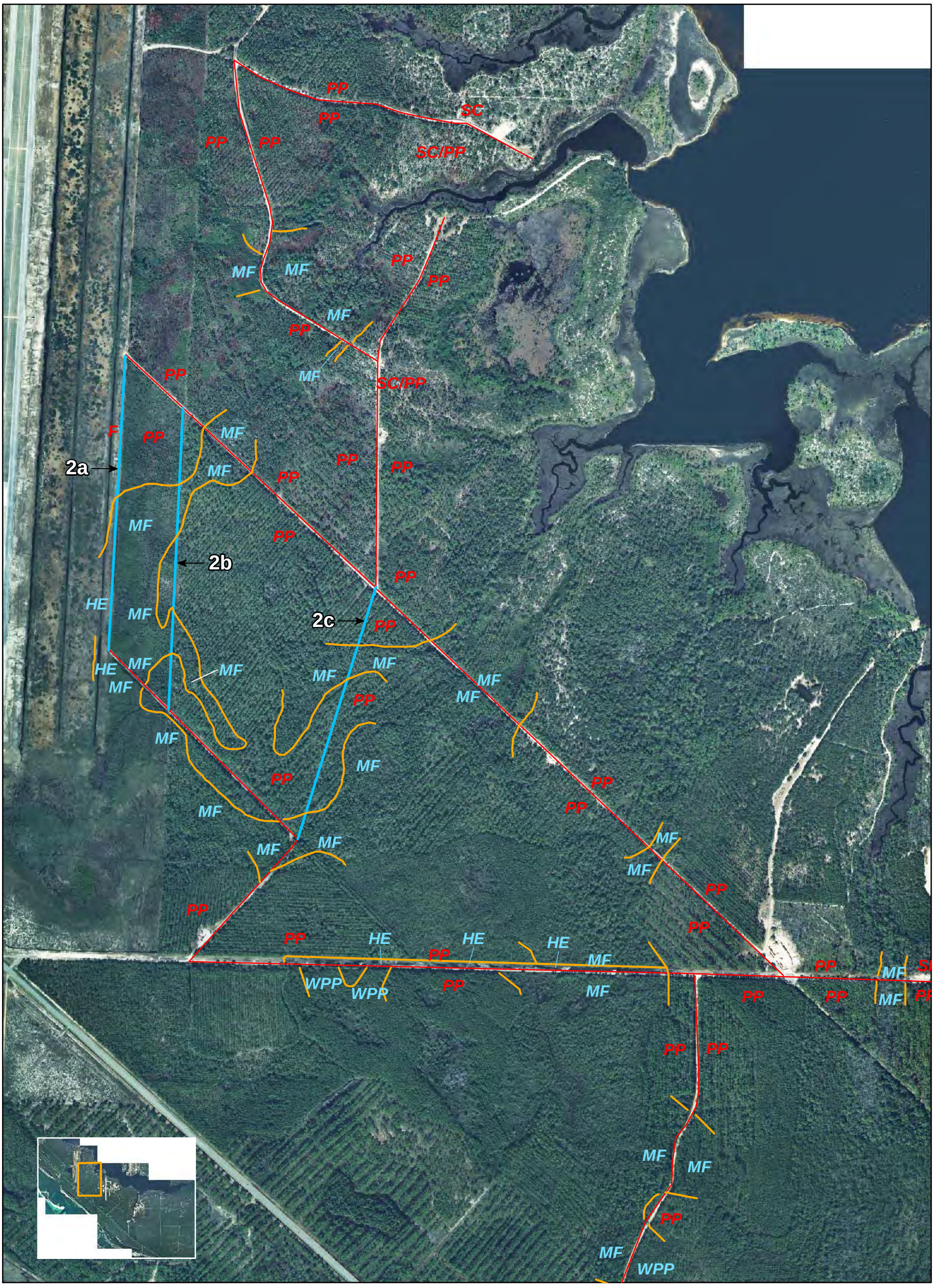
Based on the wetland delineations conducted for this EA, no wetlands exist within or adjacent to any of the proposed sites for the non-road facilities. Wetlands do border portions of some of the roads currently used for MRAP vehicle training. Portions of all the routes for the new roads that would be constructed under Alternatives 2a, 2b, 2c, 3b, and 3c are located within wetlands, as is the site for the new bridge that would be constructed under Alternative 3a.

The wetland delineations conducted within the road network of the Silver Flag area are shown on Figures 3-1 through 3-6. The wetland boundaries determined in the field correlated closely with NWI mapping for some wetlands and did not correlate closely with NWI mapping for others. The following wetland types were delineated during the surveys: herbaceous wetland, mixed forested wetland, shrub wetland, salt marsh, and wet (hydric) planted pine. All of these wetland types are Palustrine (non-tidal, freshwater systems) except for salt marsh, which is Estuarine (tidal, brackish water system).

Mixed forested wetland and wet planted pine are the dominant wetland types within the Silver Flag road network. Most of these systems are large and hydrologically interconnected. The overall coverage of the remaining wetland types is relatively low. Herbaceous wetlands are located primarily within the drone recovery area. Regular mowing of the drone recovery area sustains these wetlands in an herbaceous state. There are relatively few isolated wetlands within the area. It should be noted that some areas of upland planted pine contain small, isolated hydric depressions that appear to likely have been artificially created by forestry practices.

Although ditching and forestry practices appear to have hydrologically impacted some of the wetlands within the area, the systems overall are of relatively high quality. The surface soils of the wetlands vary from silty sands with organics near the surface to highly organic muck. The dominant plant species that occur in the wetland types identified are discussed in Section 3.8.

Six areas at Tyndall AFB have been identified by the Florida Natural Areas Inventory (FNAI) as Special Interest Natural Areas. These areas consist mostly of wetland habitat and are relatively pristine. They are considered ecologically valuable and support a variety of plant and wildlife species, some of which are rare or protected. None of the project sites addressed in this EA are located within any of the Special Interest Natural Areas.



0 600 1,200 2,400 Feet

North

LEGEND

- Existing Roads/Bridge
- New Roads/Bridge

Uplands

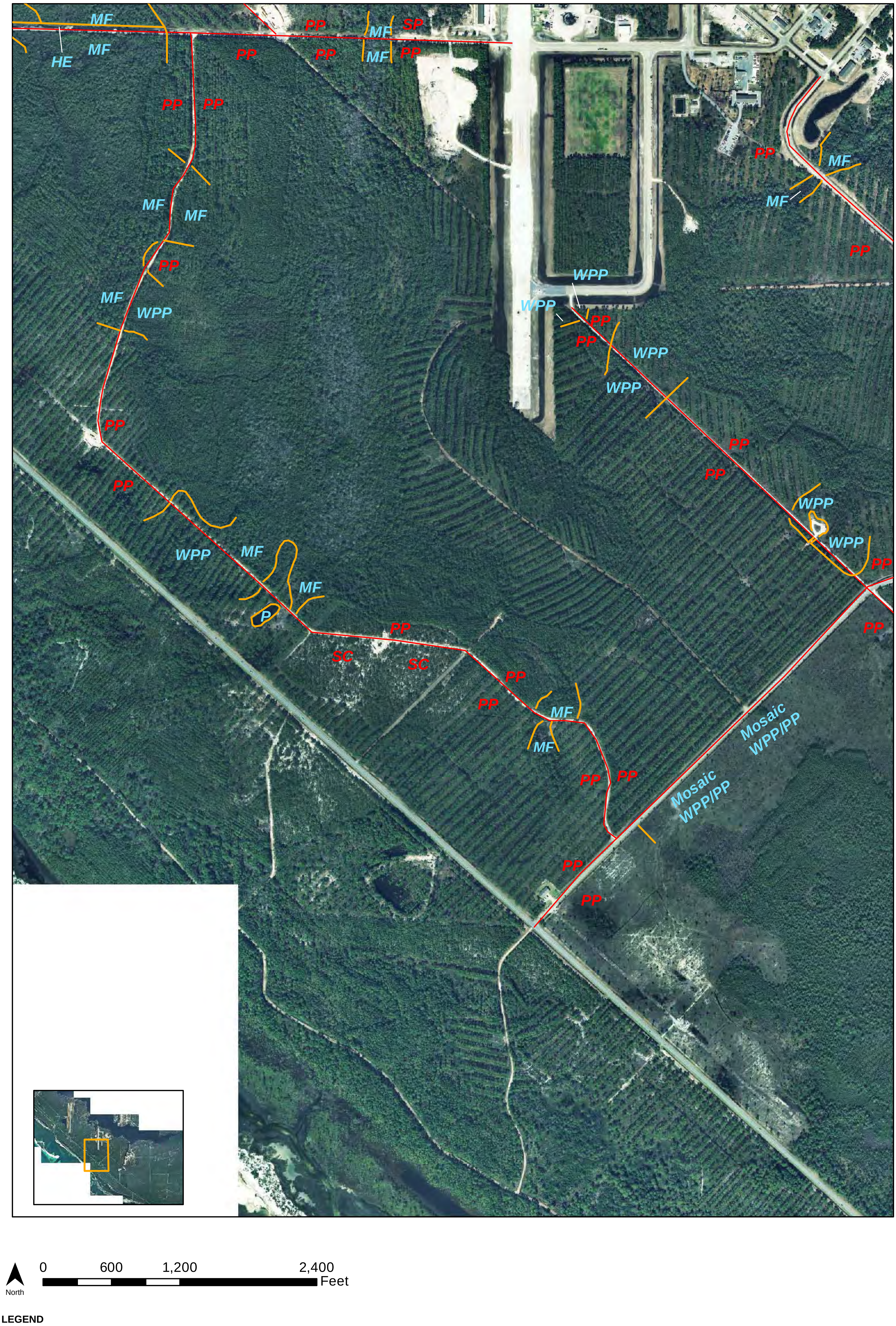
F	Field (mowed)
MS	Mesic forest
PP	Upland planted pine
SC	Scrub
SP	Sand pine
UF	Mixed upland forest

Wetlands/Surface Waters

C	Freshwater creek
HE	Herbaceous wetland
MF	Mixed forested wetland
P	Freshwater pond
SH	Shrub wetland
SM	Salt marsh
TC	Tidal creek
WPP	Wet (hydric) planted pine

Mosaic - Mix of wetlands and uplands

FIGURE 3-1
Wetland and Upland Delineations
EA for Improvements to Silver Flag Training Area at Tyndall AFB



LEGEND

Existing Roads/Bridge
New Roads/Bridge

Uplands

F Field (mowed)
MS Mesic forest
PP Upland planted pine
SC Scrub
SP Sand pine
UF Mixed upland forest

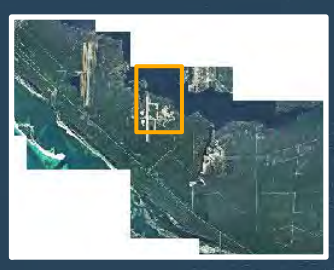
Wetlands/Surface Waters

C Freshwater creek
HE Herbaceous wetland
MF Mixed forested wetland
P Freshwater pond
SH Shrub wetland
SM Salt marsh
TC Tidal creek
WPP Wet (hydric) planted pine

Mosaic - Mix of wetlands and uplands

FIGURE 3-2
Wetland and Upland Delineations
EA for Improvements to Silver Flag Training Area at Tyndall AFB

ES080712161942TPA F3-2 Wetland and Upland Delineations.ai



SP
SP
PP
SP
PP
MF
SP
PP
MF
PP
3a
SM/TC
MF
UF
MS
UF
MS
SM/TC
MF
PP
MF
MF
3b
PP
PP
PP
MF/H
WPP
PP

Source: 2010 FDOT Natural Color Imagery

North

0 600 1,200 2,400 Feet

LEGEND

- Existing Roads/Bridge
- New Roads/Bridge

Uplands

F	Field (mowed)
MS	Mesic forest
PP	Upland planted pine
SC	Scrub
SP	Sand pine
UF	Mixed upland forest

Wetlands/Surface Waters

C	Freshwater creek
HE	Herbaceous wetland
MF	Mixed forested wetland
P	Freshwater pond
SH	Shrub wetland
SM	Salt marsh
TC	Tidal creek
WPP	Wet (hydric) planted pine

Mosaic - Mix of wetlands and uplands

FIGURE 3-3
Wetland and Upland Delineations
EA for Improvements to Silver Flag Training Area at Tyndall AFB

LEGEND

- Existing Roads/Bridge
- New Roads/Bridge

Uplands

F	Field (mowed)
MS	Mesic forest
PP	Upland planted pine
SC	Scrub
SP	Sand pine
UF	Mixed upland forest

Wetlands/Surface Waters

C	Freshwater creek
HE	Herbaceous wetland
MF	Mixed forested wetland
P	Freshwater pond
SH	Shrub wetland
SM	Salt marsh
TC	Tidal creek
WPP	Wet (hydric) planted pine

Mosaic - Mix of wetlands and uplands

FIGURE 3-4
Wetland and Upland Delineations
EA for Improvements to Silver Flag Training Area at Tyndall AFB

Source: 2010 FDOT Natural Color Imagery

0 600 1,200 2,400 Feet

North

LEGEND

- Existing Roads/Bridge
- New Roads/Bridge

Uplands

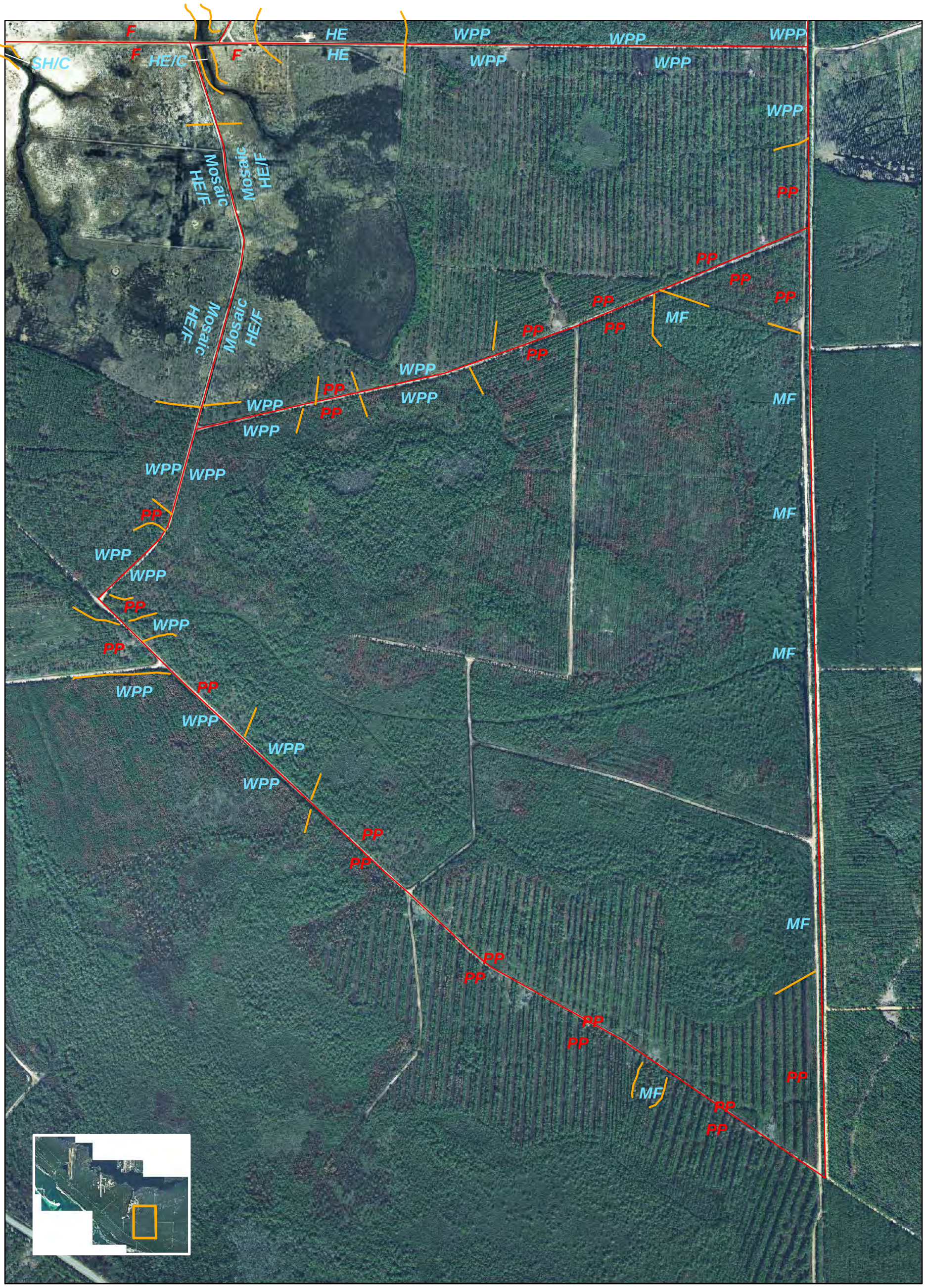
F	Field (mowed)
MS	Mesic forest
PP	Upland planted pine
SC	Scrub
SP	Sand pine
UF	Mixed upland forest

Wetlands/Surface Waters

C	Freshwater creek
HE	Herbaceous wetland
MF	Mixed forested wetland
P	Freshwater pond
SH	Shrub wetland
SM	Salt marsh
TC	Tidal creek
WPP	Wet (hydric) planted pine

Mosaic - Mix of wetlands and uplands

FIGURE 3-5
Wetland and Upland Delineations
EA for Improvements to Silver Flag Training Area at Tyndall AFB



Source: 2010 FDOT Natural Color Imagery

North

0 600 1,200 2,400 Feet

LEGEND

- Existing Roads/Bridge
- New Roads/Bridge

Uplands

F	Field (mowed)
MS	Mesic forest
PP	Upland planted pine
SC	Scrub
SP	Sand pine
UF	Mixed upland forest

Wetlands/Surface Waters

C	Freshwater creek
HE	Herbaceous wetland
MF	Mixed forested wetland
P	Freshwater pond
SH	Shrub wetland
SM	Salt marsh
TC	Tidal creek
WPP	Wet (hydric) planted pine

Mosaic - Mix of wetlands and uplands

FIGURE 3-6
Wetland and Upland Delineations
EA for Improvements to Silver Flag Training Area at Tyndall AFB

3.6 Surface Water

Tyndall AFB is located within the St. Andrews Bay Watershed. The surface water bodies that surround the Tyndall AFB peninsula are St. Andrews Bay, East Bay, St Andrews Sound, and the Gulf of Mexico. These systems are hydrologically connected to Choctawhatchee Bay to the west. In general, stormwater at Tyndall AFB drains northward in areas north of U.S. Highway 98 and southward in areas south of U.S Highway 98. The Base storm water system consists primarily of drainage ditches in undeveloped areas and underground piping in developed areas.

Based on the wetland/surface water delineations conducted for this EA, no surface water bodies exist within or adjacent to any of the proposed sites for the non-road facilities. The nearest surface water bodies to these project sites are East Bay to the north of the Silver Flag cantonment area, bayous/tidal creeks near the cantonment area, and the two permitted stormwater retention ponds within the cantonment area. Stormwater within the Silver Flag cantonment area is conveyed aboveground by a network of ditches and swales, and underground by piping. The stormwater is ultimately discharged into either of the two permitted stormwater retention ponds within the cantonment area.

Some of the roads currently used for MRAP vehicle training as well as the site for the new bridge that would be constructed under Alternative 3a are located over surface water bodies. The wetland/surface water delineations conducted within the road network of the Silver Flag area are shown on Figures 3-1 through 3-6. The following surface water types were delineated during the surveys: freshwater creek, freshwater pond, and tidal creek.

Two roads used for MRAP vehicle training are constructed over freshwater creeks. The creeks flow under these roads through corrugated metal pipe culverts. A small freshwater pond is located adjacent to one road used for MRAP vehicle training. As discussed in Section 2.3.1, there is an existing vehicular bridge in the central part of the road network (see Figure 2-5) that is proposed to be upgraded under all the alternatives. This bridge is constructed over a tidal creek that is connected to East Bay. The width of the creek channel at the location of the bridge is approximately 30 ft. As discussed in Section 2.3.3, a new vehicular bridge would be constructed across a tidal creek located along the eastern boundary of the cantonment area under Alternative 3a (see Figures 2-5 and 2-7). This tidal creek is connected to East Bay and its channel is approximately 25 ft wide at the location of the proposed bridge.

Most of the existing roads that are currently used for MRAP vehicle training have drainage ditches and some have drainage culverts. Most of the drainage culverts are corrugated metal pipes of various sizes. The physical and biological characteristics of the roadside ditches vary considerably and are largely influenced by the habitat types in which the ditches are located. The ditches within well drained, upland areas are typically narrow in width (1 to 3 ft), have shallow to moderately sloped banks, and contain little or no hydric vegetation. During the field investigations conducted for this EA (October 5 - 6, 2011; June 26 – July 3, 2012), many of these ditches did not contain water. In contrast, the ditches located within poorly drained uplands and in wetlands are typically wider, steeper in slope, and more distinct in overall appearance. The widths of these ditches vary considerably, ranging from approximately 3 ft to 10 ft. Most of these ditches are moderately to steeply sloped and contain hydric vegetation. During the field investigations conducted for this EA, most of these ditches contained water. In some wetland areas, the ditch may not be discernible from the adjacent wetland during the wet season, or there may be no ditch at all.

3.7 Floodplains

EO 11988, *Floodplain Management* (signed May 24, 1977) directs Federal agencies to avoid, to the extent possible, the long- and short-term adverse impacts associated with the occupancy and modification of floodplains and to avoid direct or indirect support of floodplain development wherever there is a practicable alternative.

A 100-year flood is defined as a flood that has a one percent chance of being equaled or exceeded in magnitude in any given year. The 100-year floodplain is the area covered by water in the event of a 100-year flood. The 100-year floodplain and other floodplain classifications are mapped on Federal Emergency Management Agency (FEMA) Flood Insurance Rate Maps (FIRMs).

Based on the FEMA FIRMs that cover Tyndall AFB, a relatively large amount of the total area occupied by the Base is mapped as 100-year floodplain (Figure 3-7). Most of the coastline of Tyndall AFB is mapped as 100-year floodplain because it is prone to flooding as a result of heavy tidal surges that occur during strong storms such as hurricanes. Many parts of the Base outside the mapped 100-year floodplain areas are also prone to tidal surge flooding. Within the interior portions of the Base, 100-year floodplains are primarily associated with creeks and wetland systems.

Based on Figure 3-7, none of the proposed sites for the non-road facilities are located within the 100-year floodplain. Portions of the existing road network currently used for MRAP vehicle training are located within the 100-year floodplain. A small portion of the route for the new road that would be constructed under Alternative 2a and the bridge that would be constructed under Alternative 3a are located within 100-year floodplain; the remaining routes for the new roads proposed under Alternatives 2 and 3 are not located within 100-year floodplain.

3.8 Vegetation

Much of the historical vegetation of the Tyndall AFB peninsula has been altered by past human activity. The native vegetation of the peninsula has been impacted primarily by past agricultural and silvicultural practices. Slash and sand pine plantations have replaced much of the native longleaf pine communities, as these species are considered more favorable for timber production. Although Tyndall AFB continues to maintain pine plantations for commercial harvest, its forestry management program focuses less on commercial harvesting and more on restoring historical vegetative conditions and natural processes through selective thinning, natural regeneration of native species, and prescribed fire.

As discussed in Section 3.7, the field investigations conducted for this EA (October 5 - 6, 2011; June 26 – July 3, 2012) included wetland delineations and characterizations at the proposed project sites via aerial photo interpretation and ground truthing. During these field investigations, upland habitats were also delineated and characterized via aerial photo interpretation and ground truthing. The dominant plant species within the wetland and upland communities were recorded during these surveys to determine the general vegetative composition of each community type.

The dominant plant species that occur in the wetland types that exist within the Silver Flag road network are presented in Table 3-2. Many of the more hydric roadside drainage ditches are also dominated by the same plant species that occur in the herbaceous and shrub wetland types.

The proposed sites for the MRAP vehicle parking area and latrine/shower/laundry facility are entirely developed and devoid of vegetation. The only vegetation at the proposed site for the new Silver Flag entrance gate is mowed grass within and beyond the ROW of Silver Flag Road. The existing domestic wastewater spray field that is proposed to be converted to a bed-down training site consists entirely of mowed grass. The proposed site for the urban warfare village consists of patchy upland forest and areas of exposed sand that are devoid of vegetation (see Figure 2-4). The upland forest at this site is dominated by sand pine (*Pinus clausa*) and also includes sand live oak (*Quercus geminata*), Chapman oak (*Quercus chapmanii*), turkey oak (*Quercus laevis*), saw palmetto (*Serenoa repens*), and bracken fern (*Pteridium aquilinum*). The proposed site for the MRAP vehicle obstacle course consists mostly of a cleared sandy area that is devoid of vegetation (see Figure 2-3). This cleared area is surrounded by upland forest that is dominated by sand pine and also includes sand live oak, Chapman oak, turkey oak, myrtle oak (*Quercus myrtifolia*), longleaf pine (*Pinus palustris*), saw palmetto, and rusty lyonia (*Lyonia ferruginia*). A small portion of the proposed obstacle course route is located within this upland forest. A small portion of the route is also located within the adjacent ROW of the training runway, which consists of mowed grass.

The upland delineations conducted within the Silver Flag road network are shown on Figures 3-1 through 3-6. The following upland types were identified during the surveys: field (mowed), mesic forest, upland planted pine, scrub, sand pine, and mixed upland forest. Planted pine is by far the most dominant upland type within the Silver Flag road network. As discussed in Section 3.5, a few areas of planted pine within the road network qualify as wetland habitat. These wet (hydric) pine plantations consist exclusively of slash pine (*Pinus elliottii*) and

LEGEND

- Runway
- Road
- Highway
- Lake
- Tyndall AFB Boundary
- County Boundary
- 100 Year Floodplain

Source: Tyndall AFB INRMP

North

0 0.5 1 2 3 Miles

FIGURE 3-7
100-Year Floodplains at Tyndall AFB
EA for Improvements to Silver Flag Training Area at Tyndall AFB

ES080712161942TPA F3-7 100-yr Floodplains.ai

have moister soil regimes than the upland pine plantations. Most of the upland pine plantations within the Silver Flag road network and throughout the rest of the Base are also planted with slash pine. Some upland pine plantations within areas of well drained, drier soils consist instead of longleaf pine or sand pine. The shrub and herbaceous species composition of upland pine plantations varies depending on soil moisture. Slash pine plantations are typically dominated by gallberry (*Ilex glabra*), saw palmetto, and broomsedge (*Andropogon virginicus*), and may include other species that also commonly occur in wetlands.

The overall coverage of the remaining upland types within the area is relatively low. Scrub is xeric habitat that occurs only in areas having very dry, excessively drained soils, typically at the highest elevations on the Base. Scrub habitat within the road network is dominated by sand live oak, Chapman oak, myrtle oak, turkey oak, saw palmetto, and rosemary (*Ceratiola ericoides*), and may also include sand pine, longleaf pine, rusty lyonia, and bracken fern. Areas of sand pine within the road network typically consist of planted sand pine with understories of saw palmetto, rusty lyonia, bracken fern, and other species that also occur in xeric scrub. Field (mowed) exists primarily in the drone recovery area and consists of various upland herbs/shrubs that are regularly mowed. One area each of mesic forest and mixed upland forest was identified within the road network. The mesic forest area is dominated by slash pine, magnolia (*Magnolia grandiflora*), sweetbay (*Magnolia virginiana*), and saw palmetto. The mixed upland forest area is dominated by slash pine, live oak (*Quercus virginiana*), magnolia, and sand pine.

TABLE 3-2
Dominant Plant Species that Occur in Wetland Types that Exist Within the Silver Flag Road Network
EA for Improvements to Silver Flag Training Area at Tyndall AFB

Wetland Type	Dominant Plant Species
Mixed Forest Wetland	Slash pine (*Pinus elliottii*)
	Sweet bay (*Magnolia virginiana*)
	Buckwheat tree (*Cliftonia monophylla*)
	Titi (*Cyrilla racemiflora*)
	Wax myrtle (*Myrica cerifera*)
	Myrtle holly (*Ilex myrtifolila*)
	Fetterbush (*Lyonia lucida*)
	Chapman's St. John's wort (*Hypericum chapmanii*)
	Broomsedge (*Andropogon virginicus*)
	Laurel-leaf greenbrier (*Smilax laurifolia*)
	Muscadine grape (*Vitis rotundifolia*)
Wet (Hydric) Planted Pine	Slash pine (*Pinus elliottii*)
	Buckwheat tree (*Cliftonia mon*ophylla)
	Titi (*Cyrilla racemiflora*)
	Gallberry (*Ilex glabra*)
	Chapman's St. John's wort (*Hypericum chapmanii*)
	Broomsedge (*Andropogon virginicus*)
	Yellow-eyed grass (*Xyris caroliniana*)
	Redroot (*Lachnanthes caroliniana*)
Shrub Wetland	Buckwheat tree (*Cliftonia monophylla*)
	Titi (*Cyrilla racemiflora*)
	Wax myrtle (*Myrica cerifera*)
	Fetterbush (*Lyonia lucida*)
	Laurel-leaf greenbrier (*Smilax laurifolia*)

TABLE 3-2
Dominant Plant Species that Occur in Wetland Types that Exist Within the Silver Flag Road Network
EA for Improvements to Silver Flag Training Area at Tyndall AFB

Wetland Type	Dominant Plant Species
Herbaceous Wetland	Gallberry (*Ilex glabra*)
	Fetterbush (*Lyonia lucida*)
	Broomsedge (*Andropogon virginicus*)
	White-head bogbutton (*Lachnocaulon anceps*)
	Yellow-eyed grass (*Xyris caroliniana*)
Salt marsh	Black needlerush (*Juncus roemeranus*)

3.9 Fish and Wildlife

Tyndall AFB provides habitat for a wide variety of fish and wildlife species. Inventories of Tyndall AFB's fish and wildlife species are based mainly on studies conducted by the 325th Civil Engineer Asset Management Flight Natural Resources Element (325 CES/CEAN) Natural Resources Section and FNAI. The Base has a freshwater fisheries management program and wildlife management programs for both game and non-game wildlife species.

Tyndall AFB's fish and wildlife management program has several components, including species and habitat protection; prevention of conflicts with mission-related activities; fishing, hunting, and other recreation (e.g., bird watching); education; and nuisance/invasive species control. The game wildlife species managed by Tyndall AFB include white-tailed deer, wild turkey, wood duck, mourning dove, gray squirrel, and marsh rabbit. Tyndall AFB's fisheries management program is restricted to its lakes and ponds. Fish species that are managed include largemouth bass, bluegill and other *Lepomis* species, and channel catfish.

The proposed sites for the non-road facilities, all of which are located within or in the immediate vicinity of the Silver Flag cantonment area, provide relatively poor-quality wildlife habitat because they are entirely or mostly developed, and are currently used for mission operations. Some wildlife species common to Tyndall AFB are expected to use the proposed sites for the MRAP vehicle obstacle course, urban warfare village, and bed-down training site (existing spray field) on a limited basis as these sites contain some vegetation and are adjacent to forested habitat.

The road network that is currently used for MRAP vehicle training is within undeveloped land that consists primarily of pine plantations and forested wetlands. These undeveloped areas provide suitable habitat for the game and non-game wildlife species common to Tyndall AFB. The wildlife habitat quality of this land is relatively high overall because it consists of large expanses of interconnected habitats. The wetland systems in particular provide very good habitat for wildlife. The pine plantations provide lower quality wildlife habitat than the wetlands because they are periodically disturbed by planting, thinning, and harvesting, and because they have monotypic canopies and lack diverse understories. The interconnectivity of the pine plantations with the large wetland systems, and Base forestry management practices such as prescribed fire, are positive factors that increase the overall habitat quality of the pine plantations in this area.

Much of the undeveloped land that surrounds Silver Flag is open to recreational hunting. Recreational hunting is not allowed within or in the general vicinity of the Silver Flag cantonment area, nor within or in the immediate vicinities of the Sky X Explosives Test Area, drone runway, or drone recovery area.

During the field investigations conducted for this EA (October 5 - 6, 2011; June 26 – July 3, 2012) the only wildlife observed within/near the proposed sites for the non-road projects were common birds and squirrels. The following wildlife species were sighted within the road network currently used for MRAP vehicle training: six-lined racerunner (*Cnemidophorus sexlineatus*), white-tailed deer (*Odocoileus virginianus*), Florida black bear (*Ursus americanus floridanus)*, northern cardinal (*Cardinalis cardinalis*), northern mockingbird (*Mimus polyglottos*), turkey vulture

(*Cathartes aura*), blue jay (*Cyanocitta cristata*), mourning dove (*Zenaida macroura*), ground dove (*Columbina passerina*), red-bellied woodpecker (*Melanerpes carolinus*), and great egret (*Ardea alba*).

3.10 Listed Species

The ESA is the primary legislation that affords federal legal protections to plant and animal species that are federally listed as Endangered or Threatened. The ESA is administered by USFWS and the National Marine Fisheries Service (NMFS) - a department of the National Oceanic and Atmospheric Administration. Generally, USFWS manages land and freshwater species and NMFS manages marine and anadromous species, which are species that breed in freshwater but live most of their lives in the sea.

Animal species in Florida may also be awarded state listing and associated regulatory protection in accordance with Rule 68A-27, Florida Administrative Code (F.A.C). FWC maintains the State's list of such animal species. Animal species in Florida that are not federally listed but are determined to be at risk of extinction in the State are state listed as Threatened. Species that are considered vulnerable and have the potential to become threatened are listed by the State as Species of Special Concern (SSC). Plant species in Florida may also be awarded state listing and associated regulatory protection in accordance with Chapter 5B-40, Florida Administrative Code (F.A.C.). The Florida Department of Agriculture and Consumer Services (FDACS) maintains the State's list of such plant species.

Several listed species surveys have been conducted at Tyndall AFB, including surveys conducted by FNAI, various environmental consulting firms, and Tyndall natural resources personnel. Table 3-3 presents the listed species that have been documented to occur at or in the immediate vicinity of Tyndall AFB, and the primary habitat types in which they occur. As indicated in Table 3-3, a total of 16 listed plant species and 24 listed animal species have been documented at Tyndall AFB or in its immediate vicinity. Of these species, one plant species and ten animal species are federally listed.

The American alligator is federally listed as Threatened solely due to its resemblance to the federally Endangered American crocodile (*Crocodylus acutus*), which has suffered population declines and is in need of regulatory protection. On June 27, 2012, FWC delisted the Florida black bear from the list of State Threatened species.

Most of the listed species at Tyndall AFB occur on the barrier islands or within wetlands where interactions with the military mission are minimal. The beaches of the barrier islands are important nesting sites for the loggerhead sea turtle (*Caretta caretta*), as well as for listed shorebirds such as the snowy plover (*Charadrius alexandrinus tenuirostris*) and least tern (*Sterna antillarum*). The dunes are crucially important habitat for the Choctawhatchee beach mouse (*Peromyscus polionotus allophyrs*) and St. Andrews beach mouse (*Peromyscus polionotus peninsularis*). Shell Island from the western boundary of the Base to lands end (Choctawhatchee beach mouse), all of the barrier island gulf and bay/sound beaches and surrounding waters (piping plover [*Charadrius melodus*]), and the entire gulf frontage from the shoreline to 1½ miles out (Gulf sturgeon [*Acipenser oxyrhyichus desotoi*]) have been designated as Critical Habitat by USFWS. Additionally, all beach and dune habitats on Shell Island and Crooked Island East and Crooked Island West have been designated Critical Wildlife Areas from April 1 to September 15 by USFWS.

Potential listed species occurrence within the project sites addressed in this EA is assessed based on the findings of past listed species surveys, information provided by Tyndall natural resources personnel, and the field investigations conducted for this EA. The proposed sites for the non-road facilities, all of which are located within or in the immediate vicinity of the Silver Flag cantonment area, do not provide suitable habitat for any listed species because of they are entirely or mostly developed, and are currently used for mission operations.

TABLE 3-3

Listed Plant and Animal Species Documented to Occur at or in the Immediate Vicinity of Tyndall AFB

EA for Improvements to Silver Flag Training Area at Tyndall AFB

Common Name	Scientific Name	Federal Legal Status (USFWS)	State Legal Status (FFWCC or FDACS)	Global/State Rank Definitions (FNAI)	Habitat Type
PLANTS					
Apalachicola dragonhead	*Physostegia godfreyi*		T	G3/S3	Wet prairies, wet flatwoods
Chapman's crownbeard	*Verbesina chapmanii*		T	G3/S3	Wet prairies, wet flatwoods
Dew thread sundew	*Drosera filiformis*		E	G4/S1	Wet prairies
Giant water dropwort	*Oxypolis greenmanii*		E	G3/S3	Wet prairies, wet flatwoods, ditches, marshes
Godfrey's golden aster	*Chrysopsis godfreyi*		E	G2/S2	Dunes, scrub
Gulf coast lupine	*Lupinus westianus*		T	G2/S2	Dunes, scrub
Harper's yellow-eyed grass	*Xyris scabrifolia*		T	G3/S3	Wet prairies, seepage slopes
Henry's spider lily	*Hymenocallis henryae*		E	G2/S2	Wet flatwoods, cypress swamps
Karst pond yellow-eyed grass	*Xyris longisepala*		E	G2/S2	Upland lake margins, seepage slopes, wet prairies
Large-leaved jointweed	*Polygonella macrophylla*		T	G3/S3	Scrub
Quillwort yellow-eyed grass	*Xyris isoetifolia*		E	G1/S1	Upland lake margins, seepage slopes, wet prairies
Southern milkweed	*Asclepias viridula*		T	G2/S2	Wet prairies, wet flatwoods, seepage slopes
Spoon-leafed sundew	*Drosera intermedia*		T	G5/S3	Wet prairies
Thick-leaved water willow	*Justicia crassifolia*		E	G3/S3	Wet prairies, wet flatwoods, cypress swamps
Violet-flowered butterwort	*Pinguicula ionantha*	T	E	G2/S2	Wet prairies, wet flatwoods, ditches, seepage slopes, cypress swamps
White-flowered wild petunia	*Ruellia noctiflora*		E	G2/S2	Wet prairies, wet flatwoods, seepage slopes

Common Name	Scientific Name	Federal Legal Status (USFWS)	State Legal Status (FFWCC or FDACS)	Global/State Rank Definitions (FNAI)	Habitat Type
BIRDS					
American oystercatcher	*Haematopus palliates*		SSC	G5/S2	Coastlines
Black skimmer	*Rhychops niger*		SSC	G5/S3	Coastlines, coastal lakes
Brown pelican	*Pelecanus occidentalis*		SSC	G4/S3	Coastlines, coastal lakes
Least tern	*Sterna antillarum*		T	G4/S3	Coastlines, barrier islands, coastal lakes
Little blue heron	*Egretta caerulea*		SSC	G5/S4	Lakes, marshes, wet prairies, ditches
Peregrine falcon	*Falco peregrinus tundrius*		E	G4/S2	Open habitats
Piping plover	*Charadrius melodus*	T /CH	T	G3/S2	Barrier islands
Reddish egret	*Egretta rufescens*		SSC	G4/S2	Coastlines, salt marshes, marshes
Snowy egret	*Egretta thula*		SSC	G5/S3	Coastlines, lakes, marshes, wet prairies, ditches
Snowy plover	*Charadrius alexandrinus tenuirostris*		T	G4/S1	Barrier islands
Southeastern American kestrel	*Falco sparverius paulus*		T	G5/S3	Open habitats, partly open habitats
Tricolor heron	*Egretta tricolor*		SSC	G5/S4	Lakes, marshes, wet prairies, ditches
White ibis	*Eudocimus albus*		SSC	G5/S4	Coastlines, lakes, marshes, wet prairies, ditches
REPTILES					
Alligator snapping turtle	*Macroclemys temmincki*		SSC	G3/S3	Lakes
American alligator	*Alligator mississippiensis*	T (S/A)	SSC	G5/S4	Lakes, rivers, swamps, marshes
Gopher tortoise	*Gopherus polyphemus*		T	G3/S3	Sandhill, scrub
Green sea turtle	*Chelonia mydas mydas*	E	E	G3/S2	Marine, barrier islands
Kemp's ridley sea turtle	*Lepidochelys kempi*	E	E	G1/S1	Marine, barrier islands
Leatherback sea turtle	*Dermochelys coriacea*	E	E	G2/S2	Marine, barrier islands
Loggerhead sea turtle	*Caretta caretta*	T	T	G3/S3	Marine, barrier islands
MAMMALS					
Choctawatchee beach mouse	*Peromyscus polionotus allophyrs*	E / CH	E	G5/S1	Barrier islands
Manatee	*Trichechus manatus*	E	E	G2/S2	Marine, estuaries
St. Andrews beach mouse	*Peromyscus polionotus peninsularis*	E	E	G5/S1	Barrier islands
FISH					
Gulf sturgeon	*Acipenser oxyrhyichus desotoi*	T / CH	SSC	G3/S2	Marine, large rivers

Sources

Tyndall AFB Integrated Natural Resources Management Plan, Tyndall AFB, 2006.
Rare Plant Survey of Flatwoods and Prairies on Tyndall AFB, Bay County, Florida, FNAI, September 2001.
FNAI Website, Species Tracking List, http://www.fnai.org/bioticssearch.cfm, Updated June 2012.

Federal Legal Status

E	Endangered: species in danger of extinction throughout all or a significant portion of its range.
T	Threatened: species likely to become Endangered within the foreseeable future throughout all or a significant portion of its range.
T(S/A)	Treated as threatened due to similarity of appearance to a species that is federally listed such that enforcement personnel have difficulty in attempting to differentiate between the listed and unlisted species.
CH	Critical Habitat Designated

State Legal Status

Animals:

E	Endangered: species, subspecies, or isolated population so few or depleted in number or so restricted in range that it is in imminent danger of extinction.
T	Threatened: species, subspecies, or isolated population facing a very high risk of extinction in the future.
SSC	Species of Special Concern is a species, subspecies, or isolated population which is facing a moderate risk of extinction in the future.

Plants:

E	Endangered: species of plants native to Florida that are in imminent danger of extinction within the state, the survival of which is unlikely if the causes of a decline in the number of plants continue; includes all species determined to be endangered or threatened pursuant to the U.S. Endangered Species Act.
T	Threatened: species native to the state that are in rapid decline in the number of plants within the state, but which have not so decreased in number as to cause them to be Endangered.

FNAI Global Rank Definitions

G1	Critically imperiled globally because of extreme rarity (5 or fewer occurrences or less than 1000 individuals) or because of extreme vulnerability to extinction due to some natural or man-made factor.
G2	Imperiled globally because of rarity (6 to 20 occurrences or less than 3000 individuals) or because of vulnerability to extinction due to some natural or man-made factor.
G3	Either very rare and local throughout its range (21-100 occurrences or less than 10,000 individuals) or found locally in a restricted range or vulnerable to extinction from other factors.
G4	Apparently secure globally (may be rare in parts of range).
G5	Demonstrably secure globally.

FNAI State Rank Definitions

S1	Critically imperiled in Florida because of extreme rarity (5 or fewer occurrences or less than 1000 individuals) or because of extreme vulnerability to extinction due to some natural or man-made factor.
S2	Imperiled in Florida because of rarity (6 to 20 occurrences or less than 3000 individuals) or because of vulnerability to extinction due to some natural or man-made factor.
S3	Either very rare and local in Florida (21-100 occurrences or less than 10,000 individuals) or found locally in a restricted range or vulnerable to extinction from other factors.
S4	Apparently secure in Florida (may be rare in parts of range).

Agencies/Organizations:

FDACS	Florida Department of Agriculture & Consumer Services
FNAI	Florida Natural Areas Inventory
FFWCC	Florida Fish & Wildlife Conservation Commission
USFWS	U.S. Fish & Wildlife Service

Several listed species have the potential to occur within and in the vicinity of the road network that is currently used for MRAP vehicle training. Many of the listed plant species documented to occur in wetland habitats at Tyndall AFB, particularly those that have been found in wet prairies and wet pine flatwoods at the Base (see Table 3-3) have the potential to occur within the roadside ditches and within the freshwater wetlands that border the roads. During a rare plant species survey conducted at the Base from September 2000 to August 2001, FNAI documented the occurrence of several listed/rare plant species within wetland habitats in the vicinity of the road network, including the following listed species: violet-flowered butterwort (*Pinguicula ionantha*), giant water dropwort (*Oxypolis greenmanii*), Chapman's crownbeard *(Verbesina chapmanii*), and thick-leaved water willow (*Justicia crassifolia*) (FNAI, 2001). The roadside ditches and wetlands that border the roads also provide suitable habitat for several state-listed wading bird species, such as the little blue heron (*Egretta caerulea*), snowy egret (*Egretta thula*), tricolor heron (*Egretta tricolor*), and white ibis (*Eudocimus albus*).

The listed plant species documented to occur in scrub habitats at the Base (see Table 3-3), such as the Godfrey's golden aster (*Chrysopis godfreyi*), Gulf Coast lupine (*Lupinus westianus*), and large-leaved jointweed (*Polygonella macrophylla*) have the potential to occur in the xeric habitats that exist within the road network, which include scrub and sand pine habitats (see Figures 3-1 through 3-6). The state-listed gopher tortoise (*Gopherus polyphemus*) is known to occur within some of the parcels of scrub that exist within the road network. Tyndall AFB regularly conducts gopher tortoise surveys in these and other xeric habitats to inventory the gopher tortoise population at the Base. All the parcels of scrub within the road network known to contain gopher tortoise burrows were visually inspected during the field investigations conducted for this EA. The visual inspections were conducted out to 30 ft or more from the road edge. Gopher tortoise burrows were sighted in only one of the parcels of scrub inspected and all the burrows sighted were well beyond 30 feet from the road edge. The visual inspections conducted for this EA are not equivalent to formal gopher tortoise surveys, which must be conducted by licensed surveyors per specific protocols. The locations of gopher tortoise burrows change over time as old burrows are abandoned and new ones are created. The Eastern indigo snake (*Drymarchon couperi*), gopher frog (*Rana capito*), and Florida pine snake (*Pituophis melanoleucus mugitus*), which are listed commensal species that utilize gopher tortoise burrows have not been documented to occur on Tyndall AFB, although they have been documented to occur in Bay County, Florida.

3.11 Land Use

Based on the Tyndall AFB General Plan (Tyndall AFB, 2004), the Silver Flag cantonment area and its general vicinity, including the training runway, are classified as Training land use. All of the proposed sites for the non-road facilities are located within the areas classified as Training land use. Much of the undeveloped land that surrounds Silver Flag is classified as Open Space land use. Other land uses within the surrounding area include Industrial (Sky X Explosives Test Area and vicinity) and Airfield (drone runway and drone recovery area) (see Figure 2-5). Most of the existing roads currently used for MRAP vehicle training are located within the areas classified as Open Space land use; a relatively small percentage of this road network is located within the areas classified as Industrial land use or Airfield land use (drone recovery area). The route for the new road that would be constructed under Alternative 2a is located within Airfield land use (ROW of drone runway) and the site for the new bridge that would be constructed under Alternative 3a is located within Training land use. The routes for the new roads proposed under Alternatives 2b, 2c, 3b, and 3c are all located within Open Space land use.

Most of the roads that are currently used for MRAP vehicle training are currently designated as Base forestry roads and some are currently designated as Base mission roads. All of these roads are currently used for both forestry and mission operations.

3.12 Recreation

Tyndall AFB offers the public numerous outdoor recreational activities, including boating, canoeing, fishing, wood cutting, hunting, and trail walking. The Base has nine fishing lakes, three nature trails, and large amounts of land open to hunting. Elevated boardwalks in several natural areas allow the public to observe habitat and wildlife. DoD personnel are afforded additional recreational opportunities at the Base, including access to the Bonita Bay

Outdoor Recreation Complex, Tyndall AFB Marina Club on St. Andrews Bay, skeet range, archery range, Aero Club, family campground, and a variety of sports facilities.

Much of the undeveloped land that surrounds Silver Flag is open to recreational hunting. The roads in these recreational hunting areas, many of which are currently used for MRAP vehicle training, are allowed to be used by hunters who have received Tyndall AFB hunting permits. Recreational hunting is not allowed within or in the general vicinity of the Silver Flag cantonment area, nor within or in the immediate vicinities of the Sky X Explosives Test Area, drone runway, or drone recovery area. Hunting is the only type of recreational activity that is available within the undeveloped land that surrounds Silver Flag.

3.13 Cultural Resources

Cultural resources are prehistoric and historic sites, structures, districts, artifacts, or any other physical source of human activity considered to be culturally important. Cultural resources include historic resources (historic buildings and structures) and archaeological resources (prehistoric, historic, and traditional).

The Tyndall AFB Integrated Cultural Resources Management Plan (ICRMP) provides guidance on how to identify, evaluate, and treat cultural resources at the Base in compliance with DoD and state regulations (Tyndall AFB, 2010). Development and approval requirements for the Base ICRMP are included in Air Force Policy Directive 32-70, *Environmental Quality*, and AFI 32-7065, *Cultural Resources Management*.

Numerous cultural resources surveys have been conducted at Tyndall AFB over the last 100 years. Cultural resources sites identified during surveys are recommended as either being eligible, potentially eligible, or ineligible for listing in the National Register of Historic Places (NRHP). The recommended eligibility status of an identified site is coordinated with SHPO, which either concurs with the recommended eligibility status or makes a different eligibility status determination.

Several archaeological surveys have been conducted in the Silver Flag area in recent years. These surveys have encompassed all the proposed sites for the new non-road facilities and much of the existing road network currently used for MRAP vehicle training. The surveys have included the route for the new road proposed under Alternative 2c, the site for the new bridge proposed under Alternative 3a, and portions of the routes for the new roads proposed under Alternatives 3b and 3c. The routes for the new roads proposed under Alternatives 2a and 2b have not been surveyed.

Based on the surveys conducted, there are no historic structures or archaeological sites within the proposed construction sites for the non-road facilities. An archaeological site exists just north of the proposed site for the MRAP vehicle obstacle course; this site has been recommended as being potentially eligible for NRHP listing. An archaeological site also exists adjacent to the proposed site for the urban warfare village; this site has been recommended as being ineligible for NRHP listing. A few archaeological sites (no historic structures) have been identified in the immediate vicinities of some of the roads currently used for MRAP vehicle training; two of these sites have been recommended as being potentially eligible for NRHP listing and the remaining ones have been recommended as being ineligible or have not been completely evaluated for NRHP eligibility listing. No historic structures or archaeological sites have been identified by surveys within or in the immediate vicinity of the route/site for the new road/bridge proposed under Alternative 2c or 3a. No historic structures or archaeological sites have been identified within or in the immediate vicinities of the portions of the routes for the new roads proposed under Alternatives 3b and 3c that have been surveyed.

Standard Operating Procedures (SOPs) 4 or 5 of the Tyndall AFB ICRMP are required to be implemented in the event that cultural materials are discovered during construction activities. SOP 4, *All Undertakings: Unanticipated Discovery of Archaeological Deposits*, and SOP 6, *Inadvertent Discovery of Native American Human Remains and Associated Funerary Objects, Sacred Objects, or Objects of Cultural Patrimony*, provide policy and procedures for the protection, evaluation, and coordination of archaeological deposits and Native American remains, respectively, in the event they are unexpectedly discovered at Tyndall AFB.

3.14 Environmental Compliance

The 325 CES/CEAN Compliance Section has primary responsibility for the management of air emissions; wastewater and storm water discharge; solid waste disposal and recycling; fuels storage; hazardous substances (e.g., hazardous materials and hazardous waste) authorization, storage, and disposal; petroleum, oil, and lubricant (POL) contamination compliance; and the Installation Restoration Program (IRP) for Tyndall AFB, including the Silver Flag Training Area.

As discussed in Section 3.1, Bay County currently meets the air quality standards for all criteria pollutants and, therefore, is currently designated as being "in attainment." Tyndall AFB operates under a minor air operation permit issued by the State of Florida. There are no stationary sources of air emissions at the Silver Flag Training Area that are regulated under the Base air permit.

All domestic wastewater generated at the Silver Flag Training Area is discharged directly to the Bay County sewer treatment plant. The existing domestic wastewater treatment plant and spray field at Silver Flag are no longer operated or needed. Stormwater pollution prevention measures are implemented at Silver Flag to ensure that facility activities do not result in the discharge of contaminated stormwater. Stormwater drainage at Silver Flag is discussed in detail in Section 3.5.

Non-hazardous solid waste that is generated at Silver Flag is properly collected, handled, managed, transported, and disposed of off base by a contractor. Bay County operates a waste-to-energy incinerator that uses trash from Tyndall AFB and other communities. The 325 Force Support Squadron conducts the Base recycling program; collection points for aluminum, plastic, paper, newspaper, and cardboard are located throughout the Base. Recycling in the housing areas is managed by the housing contractor.

The Tyndall AFB Hazardous Materials Management Office is responsible for the management of hazardous materials at the Base, including the Silver Flag Training Area. Hazardous substances used at Silver Flag primarily include paint products, stripping elements, acids, fuels, solvents, and pesticides. The hazardous wastes that are generated are temporarily stored at hazardous waste accumulation points within the training area. Hazardous waste is transported off base by a contractor and disposed of in accordance with applicable regulations. Tyndall AFB has separate plans that provide guidance on managing asbestos-containing materials (ACM) and lead-based paint (LBP) at the Base in accordance with all applicable regulations. ACM or LBP is not expected to exist within any of the project sites addressed in this EA.

Tyndall AFB has several sites where POL contamination of the soil and/or groundwater has been identified. Investigations of these sites are managed by the 325 CES/PMO Environmental Restoration Section under a Resource Conservation Recovery Act Administrative Order issued by USEPA in 2007. These sites are in various stages of investigation, cleanup, monitoring, and closure. There are no POL-contaminated sites within or in the vicinity of any of the project sites addressed in this EA.

The IRP was developed by DoD to identify, characterize, and remediate contamination from past hazardous waste disposal operations and hazardous materials spills at DoD facilities. At present, Tyndall AFB has 61 active IRP sites, including 25 Areas of Concern under investigation. None of the IRP sites are located within or in the vicinity of the project sites addressed in this EA.

3.15 Socioeconomics

In 2010, the population of Bay County, Florida was 168,852, the median age was 39.5, the total labor force was 87,101, the median household income was $47,770, and the per capita income was $25,033 (U.S. Census Bureau, 2010).

The economic base of Bay County is a mixture of military, tourism, lumbering, trades, services, manufacturing, construction and commercial fishing. Tyndall AFB and the Navy Coastal Systems Station are the largest contributors to the economy of the County. Tyndall AFB employs more than 4,000 military personnel, 600 DoD and contract civilians, and 460 Non-Appropriated Fund and other employees (Tyndall AFB, 2012). The estimated economic

impact of Tyndall AFB on the local area (within a 50-mile radius of the Base) for fiscal year 2010 was more than $654 million annually (Tyndall AFB, 2012).

3.16 Traffic Flow

The Tyndall AFB peninsula is bisected by U.S. Highway 98, which serves as the primary artery for access to and from the Base. Access to the main Base property north of the highway is provided through Tyndall Gate. Access to the main Base property south of the highway is provided by Sabre and Illinois Gates.

The primary vehicular access to the Silver Flag Training Area is Silver Flag Road, which is a paved road off of U.S. Highway 98. Silver Flag Road runs northward from U.S. Highway 98 directly to the Silver Flag cantonment area. There is no security gate at the intersection of Silver Flag Road and U.S. Highway 98; a security gate (Silver Flag main entrance gate) is located on Silver Flag Road approximately 1,600 ft south of the cantonment area (see Section 2.1.4). Most of the road network within the cantonment area is paved. The network of dirt, semi-improved, and paved roads outside the cantonment area that is used for MRAP vehicle training as well as for forestry operations is described in Section 2.1.1 and shown on Figure 2-1. The road network in the Silver Flag area experiences very low levels of traffic except during the Readiness Challenge when over 2,000 visitors are present. The Readiness Challenge takes place every two years and lasts approximately one week.

3.17 Environmental Justice and Protection of Children

On February 11, 1994, the President issued EO 12898, *Federal Actions to Address Environmental Justice in Minority and Low-Income Populations*. This EO requires federal agencies to address disproportionate environmental and human health impacts from federal actions on minority populations and low-income populations. The President directed all federal agencies to analyze the environmental effects on minority and low-income communities, including human health, social, and economic effects.

The Air Force's *Guide for Environmental Justice Analysis with the Environmental Impact Analysis Process (EIAP)* provides guidance on how environmental justice should be analyzed in conjunction with EIAP in accordance with NEPA (Department of the Air Force, 1997). According to this guidance, if the Proposed Action would have no impact on human populations, or if the impact that it would have would not be adverse, the Proposed Action would not disproportionately impact minority or low-income populations and no environmental justice analysis would be required. If the Proposed Action is determined to have an adverse impact on human populations, then the environmental justice analysis should be conducted in accordance with the guidance to determine if it would disproportionately impact minority or low-income populations.

Guidelines for the protection of children are specified in EO 13045, *Protection of Children from Environmental Health Risks and Safety Risk* (FR: 23 April 1997, Volume 62, Number 78). This EO requires that federal agencies make it a high priority to identify and assess environmental health and safety risks that may disproportionately affect children, and ensure that policies, programs, and standards address disproportionate risks to children that result from environmental health or safety risks.

SECTION 4

Environmental Consequences

This section provides a detailed analysis of the potential environmental consequences associated with the implementation of the three action alternatives (Alternatives 1, 2, and 3) and the No-Action Alternative. The magnitude of the impact of an action is considered regardless of whether the impact is adverse or beneficial. The following terms are used to describe the magnitude of impacts:

- No Effect: The action would not cause a detectable change.
- Negligible: The impact would be at the lowest level of detection; the impact would not be significant.
- Minor: The impact would be slight but detectable; the impact would not be significant.
- Moderate: The impact would be readily apparent; the impact would not be significant.
- Major: The impact would be clearly adverse or positive; the impact has the potential to be significant. The significance of adverse and positive impacts is subject to interpretation and should be determined based on the final proposal. In cases of adverse impacts, the impact may be reduced to less than significant by mitigation, design features, and/or other measures that may be taken.

4.1 Air Quality

4.1.1 Alternative 1

Alternative 1 would not add any new stationary sources of air emissions that would be regulated under the Base air permit. Construction activities under Alternative 1 would result in short-term, minor impacts to air quality. Fugitive dust (particulate matter) and construction equipment exhaust emissions would be generated during demolition/construction and would vary daily, depending on the level and type of work conducted. Fugitive dust would be generated by construction vehicle and equipment travel on dirt surfaces and by wind action on stockpiled materials. Generated fugitive dust would consist primarily of nontoxic particulate matter and would be controlled at the sites using best management practices (BMPs). Pollutants that would be emitted from the internal combustion engine exhausts of construction vehicles and equipment include carbon monoxide, nitrogen oxide, particulate matter, and volatile organic compounds. These types of exhaust emissions would be temporary, and at their expected generation levels, would not significantly impact air quality.

Under Alternative 1, improvements to the road network used for MRAP vehicle training would not change the amount or type of training that is currently conducted on the roads; therefore, there would be no change in the levels of vehicle exhaust emissions currently generated during training. Under Alternative 1, the conversion of dirt roads to crushed concrete roads and the stabilization of semi-improved roads via application of crushed concrete would result in generation of lower levels of fugitive dust than that which is currently generated during training.

Under Alternative 1, operation of the new non-road facilities would result in minor increases in air emissions. Operation of the MRAP vehicles on the new MRAP vehicle obstacle course would result in minor increases in vehicle exhaust emissions based on the amount of obstacle training proposed to be conducted. Low levels of fugitive dust emissions would be generated during obstacle course training because the MRAP vehicles would be driven at very slow speeds (5 miles per hour or less) and on crushed concrete surfaces. Training at the new urban warfare village would not result in increased air emissions because the training would replace training that would otherwise occur in urban warfare villages outside the cantonment area. Live explosives or munitions would not be used at the new urban warfare village.

Based on the analysis conducted, Alternative 1 would have a minor impact on air quality.

4.1.2 Alternative 2

The assessment of the potential air quality impacts that would result from construction and operation of the non-road facilities and from improvements to the existing road network used by MRAP vehicles under Alternative 2 is the same as the assessment made for Alternative 1.

Alternative 2 would not add any new stationary sources of air emissions that would be regulated under the Base air permit. Construction of the new road proposed under Alternative 2a, 2b, or 2c would result in short-term, minor impacts to air quality. Fugitive dust (particulate matter) and construction equipment exhaust emissions would be generated during construction and would vary daily, depending on the level and type of work conducted. Fugitive dust would be generated by construction vehicle and equipment travel on dirt surfaces and by wind action on stockpiled materials. Generated fugitive dust would consist primarily of nontoxic particulate matter and would be controlled at the sites using BMPs. Pollutants that would be emitted from the internal combustion engine exhausts of construction vehicles and equipment include carbon monoxide, nitrogen oxide, particulate matter, and volatile organic compounds. These types of exhaust emissions would be temporary, and at their expected generation levels, would not significantly impact air quality.

The new roads under Alternatives 2a and 2b would be approximately the same length and longer than the new road under Alternative 2c. Therefore, Alternative 2a and 2b would generate similar construction-related air emissions and slightly more construction-related air emissions than Alternative 2c. Alternatives 2a, 2b, and 2c would all generate more construction-related air emissions than Alternative 1. The new road under Alternatives 2a, 2b, or 2c would not change the amount or type of MRAP vehicle training that is currently conducted in the road network; therefore, there would be no change in the levels of vehicle exhaust emissions currently generated during training.

Based on the analysis conducted, Alternatives 2a, 2b, and 2c would each have a minor impact on air quality.

4.1.3 Alternative 3

The assessment of the potential air quality impacts that would result from construction and operation of the non-road facilities and from improvements to the existing road network used by MRAP vehicles under Alternative 3 is the same as the assessment made for Alternative 1.

Alternative 3 would not add any new stationary sources of air emissions that would be regulated under the Base air permit. Construction of the new road/bridge proposed under Alternative 3a, 3b, or 3c would result in short-term, minor impacts to air quality. Fugitive dust (particulate matter) and construction equipment exhaust emissions would be generated during construction and would vary daily, depending on the level and type of work conducted. Fugitive dust would be generated by construction vehicle and equipment travel on dirt surfaces and by wind action on stockpiled materials. Generated fugitive dust would consist primarily of nontoxic particulate matter and would be controlled at the sites using BMPs. Pollutants that would be emitted from the internal combustion engine exhausts of construction vehicles and equipment include carbon monoxide, nitrogen oxide, particulate matter, and volatile organic compounds. These types of exhaust emissions would be temporary, and at their expected generation levels, would not significantly impact air quality.

The new road under Alternatives 3b would be longer than the new road under Alternative 3c; therefore, Alternative 3b would generate slightly more construction-related air emissions than Alternative 3c. Both Alternative 3b and 3c would generate more construction-related air emissions than Alternative 3a. Alternatives 3a, 3b, and 3c would all generate more construction-related air emissions than Alternative 1. The new road under Alternatives 3a, 3b, or 3c would not change the amount or type of MRAP vehicle training that is currently conducted in the road network; therefore, there would be no change in the levels of vehicle exhaust emissions currently generated during training.

Based on the analysis conducted, Alternatives 3a, 3b, and 3c would each have a minor impact on air quality.

4.1.4 No-Action Alternative

Under the No-Action Alternative, no construction activities would occur and there would be no change to how training is conducted in the Silver Flag area. Therefore, the No-Action Alternative would have no effect on air quality.

4.2 Noise

4.2.1 Alternative 1

Under Alternative 1, construction of the new non-road facilities and improvements to the existing roads used for MRAP vehicle training would temporarily increase ambient noise levels in and around the construction sites. The increased noise levels would be intermittent and limited to normal working hours and the overall construction period. As discussed in Section 3.2, typical construction work generates noise levels in the range of 78 to 89 dBA approximately 50 ft from the construction area (USEPA, 1971). Therefore, noise generated during construction activities under Alternative 1 would at times be above 65 dBA, which is generally considered the maximum acceptable noise level for most residential land uses. Based on the estimates of noise dissipation discussed in Section 3.2, construction noise under Alternative 1 would not be audible in the nearest on-base noise-sensitive areas, which are located several miles to the west, or in the nearest off-base noise-sensitive areas, which are located approximately two miles to the northeast.

Under Alternative 1, improvements to the road network used for MRAP vehicle training would not change the amount or type of training that is currently conducted on the roads; therefore, there would be no change in the levels of noise currently generated during training. Under Alternative 1, operation of the new non-road facilities would result in minor increases in noise levels. Operation of the MRAP vehicles on the new MRAP vehicle obstacle course would result in increased noise levels in the immediate area; the noise would be generated primarily by the MRAP vehicles and the levels would be relatively low. Training at the new urban warfare village would result in increased noise levels in the immediate area; however, there would not be a net increase in noise levels because the training would replace training that would otherwise occur in urban warfare villages outside the cantonment area. The potential noise impacts that Alternative 1 would have on wildlife and listed species are discussed in Sections 4.9.1 and 4.10.1, respectively.

Based on the analysis conducted, Alternative 1 would have a minor noise impact.

4.2.2 Alternative 2

The assessment of the potential noise impacts that would result from construction and operation of the non-road facilities and from improvements to the existing road network used by MRAP vehicles under Alternative 2 is the same as the assessment made for Alternative 1.

Construction of the new road proposed under Alternative 2a, 2b, or 2c would temporarily increase ambient noise levels in and around the construction site. The increased noise levels would be intermittent and limited to normal working hours and the overall construction period. Based on the estimates of noise dissipation discussed in Section 3.2, construction noise under Alternative 2a, 2b, or 2c would not be audible in the nearest on-base noise-sensitive areas, which are located several miles to the west, or in the nearest off-base noise-sensitive areas, which are located approximately two miles to the northeast. The new road under Alternative 2a, 2b, or 2c would not change the amount or type of MRAP vehicle training that is currently conducted in the road network; therefore, there would be no change in the levels of noise currently generated during training. The potential noise impacts that Alternative 2 would have on wildlife and listed species are discussed in Sections 4.9.2 and 4.10.2, respectively.

Based on the analysis conducted, Alternatives 2a, 2b, and 2c would each have a minor noise impact.

4.2.3 Alternative 3

The assessment of the potential noise impacts that would result from construction and operation of the non-road facilities and from improvements to the existing road network used by MRAP vehicles under Alternative 3 is the same as the assessment made for Alternative 1.

Construction of the new road/bridge proposed under Alternative 3a, 3b, or 3c would temporarily increase ambient noise levels in and around the construction site. The increased noise levels would be intermittent and limited to normal working hours and the overall construction period. Based on the estimates of noise dissipation discussed in Section 3.2, construction noise under Alternative 3a, 3b, or 3c would not be audible in the nearest on-base noise-sensitive areas, which are located several miles to the west, or in the nearest off-base noise-sensitive areas, which

are located approximately two miles to the northeast. The new road/bridge under Alternative 3a, 3b, or 3c would not change the amount or type of MRAP vehicle training that is currently conducted in the road network; therefore, there would be no change in the levels of noise currently generated during training. The potential noise impacts that Alternative 3 would have on wildlife and listed species are discussed in Sections 4.9.3 and 4.10.3, respectively.

Based on the analysis conducted, Alternatives 3a, 3b, and 3c would each have a minor noise impact.

4.2.4 No-Action Alternative

Under the No-Action Alternative, no construction activities would occur and there would be no change to how training is conducted in the Silver Flag area. Therefore, the No-Action Alternative would have no noise-related effects.

4.3 Air Installation Compatible Use Zone

4.3.1 Alternative 1

None of the construction sites for the new non-road facilities or existing roads used for MRAP vehicle training are located within the CZs or APZs of the main runway or drone runway. Therefore, no activity under Alternative 1 would occur within any established CZ or APZ. The ends of two of the roads currently used for MRAP vehicle training abut the easternmost edge of the maintained vegetated ROW of the drone runway (see Figure 2-6). Road improvements near the drone runway under Alternative 1 would be conducted in compliance with all applicable AICUZ requirements and in coordination with Tyndall AFB airfield management. Provided that all applicable AICUZ and airfield coordination requirements are met, the proposed road improvements near the drone runway would not affect operation of the drone runway.

Based on the analysis conducted, Alternative 1 would have no effect on the Tyndall AFB AICUZ program.

4.3.2 Alternative 2

The assessment of the potential AICUZ impacts that would result from construction and operation of the non-road facilities and from improvements to the existing road network used by MRAP vehicles under Alternative 2 is the same as the assessment made for Alternative 1.

The routes for the new roads proposed under Alternative 2a, 2b, and 2c are not located within the CZs or APZs of the main runway or drone runway. Therefore, construction and operation of the new road under Alternatives 2a, 2b, or 2c would not occur within any established CZ or APZ. The route for the new road proposed under Alternative 2a is located along the easternmost edge of the drone runway ROW; the routes for the new roads under Alternatives 2b and 2c are not located near the drone runway. Construction and operation of the road proposed under Alternative 2a would be conducted in compliance with all applicable AICUZ requirements and in coordination with Tyndall AFB airfield management. Provided that all applicable AICUZ and airfield coordination requirements are met, construction and operation of the new road under Alternative 2a would not affect operation of the drone runway.

Based on the analysis conducted, Alternatives 2a, 2b, and 2c would each have no effect on the Tyndall AFB AICUZ program.

4.3.3 Alternative 3

The assessment of the potential AICUZ impacts that would result from construction and operation of the non-road facilities and from improvements to the existing road network used by MRAP vehicles under Alternative 3 is the same as the assessment made for Alternative 1.

The routes/site for the new roads/bridge under Alternatives 3a, 3b, and 3c are not located within the CZs or APZs of the main runway or drone runway. Therefore, construction and operation of the new road/bridge under Alternative 3a, 3b, or 3c would not occur within any established CZ or APZ. The routes/site for the new roads/bridge under Alternatives 3a, 3b, and 3c are not located near the drone runway; therefore construction and operation of the new road/bridge under Alternative 3a, 3b, or 3c would not affect operation of the drone runway.

Based on the analysis conducted, Alternatives 3a, 3b, and 3c would each have no effect on the Tyndall AFB AICUZ program.

4.3.4 No-Action Alternative

Under the No-Action Alternative, no construction activities would occur and there would be no change to how training is conducted in the Silver Flag area. Therefore, the No-Action Alternative would have no effect on the Tyndall AFB AICUZ program.

4.4 Soils

4.4.1 Alternative 1

Under Alternative 1, construction of the new non-road facilities would directly impact soils. Soil impacts would vary depending on the facility being constructed, and would result from construction activities such as excavation, contouring, grading, filling, and paving. Most of the soils within the construction sites for the non-road facilities have been previously disturbed. Road stabilization and road drainage system improvements under Alternative 1 would directly impact soils. The conversion of dirt roads to crushed concrete roads and the stabilization of semi-improved roads would reduce the level of soil erosion experienced on the roads.

Appropriate BMPs and erosion/sedimentation controls would be implemented during construction activities under Alternative 1 to minimize potential indirect impacts to soils. In Florida, stormwater discharges that are associated with construction projects that disturb one or more acres of land are regulated under the FDEP National Pollution Discharge Elimination System (NPDES) *Generic Permit for Stormwater Discharge from Large and Small Construction Activities* (stormwater construction permit). Tyndall AFB would obtain a FDEP NPDES stormwater construction permit and would implement an associated Stormwater Pollution Prevention Plan (SWPPP) for the projects implemented under Alternative 1 that would disturb one or more acres of land.

Under Alternative 1, operation of the new non-road facilities would have little potential to impact soils based on the nature of the activities that would be conducted. Operation of the MRAP vehicles on the new MRAP vehicle obstacle course would result in negligible impacts to soils because the MRAP vehicles would be driven only on the crushed concrete obstacle course road and at very slow speeds (5 miles per hour or less). Training at the new urban warfare village would result in minor, temporary disturbances to surface soils, primarily from foot traffic. Training at the new bed-down training site would also result in minor, temporary disturbances to surface soils, primarily from foot traffic and tent assembly/disassembly exercises.

Based on the analysis conducted, Alternative 1 would have a moderate impact on soils.

4.4.2 Alternative 2

The assessment of the potential soil impacts that would result from construction and operation of the non-road facilities and from improvements to the existing road network used by MRAP vehicles under Alternative 2 is the same as the assessment made for Alternative 1.

Soils within the footprints of the new roads proposed under Alternatives 2a, 2b, and 2c would be disturbed via excavation and application of crushed concrete. The new roads under Alternatives 2a and 2b would be approximately the same length and longer than the new road under Alternative 2c. Therefore, Alternative 2a and 2b would result in similar amounts of soil disturbance and slightly more soil disturbance than Alternative 2c. Unlike Alternative 2a and 2b, Alternative 2c would not utilize any previously cleared corridor; therefore, it would impact soils that have not been previously disturbed. Alternatives 2a, 2b, and 2c would each result in greater soil impacts than Alternative 1. Appropriate BMPs and erosion/sedimentation controls would be implemented during construction of Alternative 2a, 2b, or 2c to minimize potential indirect impacts to soils. A FDEP NPDES stormwater construction permit would not be required for any of the new roads because none of them would disturb more than one acre of land.

Based on the analysis conducted, Alternatives 2a, 2b, and 2c would each have a moderate impact on soils.

4.4.3 Alternative 3

The assessment of the potential soil impacts that would result from construction and operation of the non-road facilities and from improvements to the existing road network used by MRAP vehicles under Alternative 3 is the same as the assessment made for Alternative 1.

Soils within the footprints of the new roads proposed under Alternatives 3b and 3c would be disturbed via excavation and application of crushed concrete. The new bridge proposed under Alternative 3a would not impact surface soils but would impact sediments within the channel of the tidal creek it would cross. The new road under Alternatives 3b would be longer than the new road under Alternative 3c; therefore, Alternative 3b would result in slightly more soil disturbance than Alternative 3c. However, unlike Alternative 3b, Alternative 3c would not utilize any previously cleared corridor; therefore, it would impact soils that have not been previously disturbed. The soil disturbance under both Alternative 3b and 3c would be considerably greater than the sediment disturbance under Alternative 3a. Alternatives 3a, 3b, and 3c would each result in greater soil/sediment impacts than Alternative 1. Appropriate BMPs and erosion, sedimentation, and turbidity controls would be implemented during construction of Alternative 3a, 3b, or 3c to minimize potential indirect impacts to soils. A FDEP NPDES stormwater construction permit would not be required for any of the new roads/bridge because none of them would disturb more than one acre of land.

Based on the analysis conducted, Alternatives 3a, 3b, and 3c would each have a moderate impact on soils.

4.4.4 No-Action Alternative

Under the No-Action Alternative, no construction activities would occur and there would be no change to how training is conducted in the Silver Flag area. Therefore, the No-Action Alternative would have no effect on soils.

4.5 Wetlands

4.5.1 Alternative 1

Based on the wetland delineations conducted for this EA, no wetlands exist within or adjacent to any of the construction sites for the new non-road facilities. Therefore, construction of the new non-road facilities under Alternative 1 would not result in direct impacts to wetlands. Appropriate BMPs and erosion/sedimentation controls would be implemented during construction of the non-road facilities under Alternative 1 to minimize potential indirect impacts to offsite wetlands. Tyndall AFB would obtain a FDEP NPDES stormwater construction permit and would implement an associated SWPPP for the non-road facilities that would disturb one or more acres of land. Operation of the new non-road facilities would have little potential to impact wetlands based on the nature of the activities that would be conducted and the lack of wetlands within or adjacent to the proposed facilities.

As discussed in Sections 3.5 and 3.6, and shown on Figures 3-1 through 3-6, some of the roads currently used for MRAP vehicle training are bordered by wetlands and are located over surface water bodies. Under Alternative 1, improvements to these existing roads would result in impacts to jurisdictional wetlands and surface waters. Wetland/surface water impacts would result from improvements to the drainage systems of the roads, which would include as-needed dredging of existing roadside drainage ditches, construction of new drainage ditches, replacement of existing drainage culverts, and construction of new drainage culverts. Assessments of the conditions of the ditches and culverts would be conducted to determine which systems need to be improved and the improvements would be conducted in phases based on priority. The impacts associated with the drainage improvements would primarily be to jurisdictional drainage ditches; however, impacts would also result in the wetland/surface water systems within which some of the ditches/culverts are located, which include herbaceous wetland, mixed forested wetland, shrub wetland, salt marsh, wet (hydric) planted pine, freshwater creek, freshwater pond, and tidal creek. Of these systems, mixed forested wetland and wet planted pine are expected to be impacted the most because they are the dominant wetland types within the Silver Flag road network. Wetland/surface water impacts would also result from upgrading the existing vehicular bridge in the central part of the road network. Upgrades to the bridge would result in impacts to salt marsh and tidal creek. Little to no road widening is expected to be conducted as part of the proposed improvements to the existing roads; therefore, the

potential for wetland/surface water impacts to result from road widening is considered to be relatively low under Alternative 1.

In Florida, projects that involve dredge and fill activities in state and federal jurisdictional wetlands and surface waters are regulated under the State Environmental Resource Permit (ERP) program and the federal Clean Water Act Section 404 program. These activities require an Individual ERP Permit or General Permit from FDEP per Chapter 62-346 F.A.C., and a federal Dredge and Fill Permit from USACE, unless they qualify to be exempted. These state and federal permits are often authorized by the respective regulatory agencies through the joint FDEP/USACE Permit Application Form 62-312.900(1), *Joint Application for Works in the Waters of Florida*. In addition to dredging and filling in wetlands and surface waters, the ERP Program regulates activities in uplands that generate stormwater runoff or otherwise alters surface water flows. These regulations are discussed in Section 4.6.

Under Alternative 1, road drainage improvements that would occur entirely within uplands and would not have the potential to affect wetlands/surface waters would be exempt from state and federal wetland permitting requirements. Drainage improvements that would occur within jurisdictional wetlands/surface waters or have the potential to affect jurisdictional systems would require federal and/or state permits, unless they qualify to be exempted. Small/minor drainage ditch improvements may qualify to be authorized by General Permit 62-341.475, *General Permit for Minor Activitie*s, depending on the type and size of the improvements proposed. Small/minor culvert improvements may qualify to be authorized by General Permit 62-330.439, *General Permit for the Construction or Maintenance of Culverted Driveway or Roadway Crossings, and Bridges of Artificial Waterways*, depending on the type and size of the improvements proposed. Drainage improvements that exceed the thresholds of these General Permits would require an Individual ERP Permit from FDEP as well as a federal Dredge and Fill Permit from USACE, unless federal permit exemptions apply. The conversion of the forestry roads to mission roads (change in primary-use designation only) under Alternative 1 would have no bearing on the permitting requirements for the drainage improvements. The permitting requirements for drainage improvements would be identical for forestry roads and mission roads.

Under Alternative 1, upgrading the existing vehicular bridge in the central part of the road network would require a federal Dredge and Fill Permit from USACE and either an Individual ERP Permit or General Permit from FDEP, depending on the total surface area of the pilings that are replaced and the type and extent of work that occurs within the tidal creek. A bridge permit from the U.S. Coast Guard may also be required for upgrading this bridge.

Under Alternative 1, improvements to the drainage systems (ditches and culverts) of existing roads within the Silver Flag area would result in relatively minor impacts to jurisdictional wetlands/surface waters based on the expected nature and extent of the activities and impacts. Improvements to ditches and culverts are expected to result in only temporary impacts without loss of wetland/surface water area or function. The drainage improvements would have positive impacts on stormwater drainage and water quality. The stabilization of existing unpaved roads under Alternative 1 would reduce the level of soil erosion experienced on the roads and the potential for associated sedimentation impacts to wetlands and surface waters adjacent to the roads.

Upgrading the existing vehicular bridge in the central part of the road network under Alternative 1 would also result in relatively minor impacts to jurisdictional wetlands/surface waters based on the type and size of the bridge. This bridge is only 30 ft long and consists of relatively few support pilings. Only minor temporary impacts to wetlands/surface waters are expected to result from piling replacement and embankment stabilization. The tidal creek channel is not expected to be widened, dredged, or otherwise altered to upgrade the bridge. No loss of wetland/surface water area or function is expected to result from the bridge upgrades.

Compensatory wetland mitigation requirements are determined by regulatory agencies on a case-by-case basis based on the type of activities proposed and the nature and extent of the wetland impacts that would result from the activities. Typical improvements to road drainage systems usually do not require compensatory wetland mitigation; compensatory mitigation may be required for drainage improvements that are not typical, such as those that result in permanent wetland impacts. Modifications to existing bridges that involve only piling replacement/upgrades and embankment stabilization also usually do not require compensatory mitigation because the impacts are relatively minor and entirely or mostly temporary. The road drainage improvements under Alternative 1 are expected to be typical and to result in only minor temporary impacts to jurisdictional

wetlands/surface waters; therefore, they are not expected to require mitigation. The bridge upgrades under Alternative 1 are also expected to result in only minor temporary impacts to jurisdictional wetlands/surface waters; therefore, they are not expected to require mitigation. The mitigation requirements for the drainage improvements and bridge upgrades would be determined during project permitting and any required mitigation would be provided by Tyndall AFB during the permitting phases of the projects.

Under Alternative 1, there are no practicable alternatives to improving the existing road drainage systems or upgrading the existing vehicular bridge. Road ditches and culverts are essential for stormwater drainage and regular ditch/culvert maintenance, repair, and upgrades are required for proper drainage system function. The existing bridge that is proposed to be upgraded was once able to support the weight of the MRAP vehicles; however, it no longer can due to deterioration of its pilings. This bridge is essential to the MRAP vehicle training program because it is the only route that provides unrestricted access to the eastern part of the road network. The only other route that provides access to the eastern part of the road network is at times not allowed to be used by the MRAP vehicles due to operations in the Sky X Explosives Test Area (see Section 2.3.3). Under Alternative 1, the proposed road drainage system improvements and bridge upgrades would be designed and implemented to avoid and minimize wetland/surface water impacts to the maximum extent possible. To minimize the impact to wetlands/surface waters, road drainage improvements would be conducted only to the extent needed to allow for proper functioning of the drainage systems. The vehicular bridge would be sized only to the extent needed to support the MRAP vehicles. The road drainage improvements and bridge upgrades would be conducted in compliance with the state and federal regulatory permitting requirements discussed above. The drainage improvements and bridge upgrades would be implemented in strict compliance with the conditions specified in the respective permits, in coordination with the 325 CES/CEAN Environmental Element, and in accordance with all Tyndall AFB environmental plans and policies pertaining to the protection of wetlands/surface waters. Appropriate BMPs and erosion, sedimentation, and turbidity controls specified in the state and federal permits would be implemented to minimize potential indirect impacts to wetlands/surface waters. Tyndall AFB would obtain a FDEP NPDES stormwater construction permit and would implement an associated SWPPP for any activity that would disturb one or more acres of land. Tyndall AFB would provide any required mitigation for the drainage improvements and bridge upgrades during the permitting phases of the projects.

Based on the analysis conducted, Alternative 1 would have a minor impact on wetlands.

4.5.2 Alternative 2

The assessment of the potential wetland impacts that would result from construction and operation of the non-road facilities and from improvements to the existing road network used by MRAP vehicles under Alternative 2 is the same as the assessment made for Alternative 1.

Wetlands within the footprints of the new roads proposed under Alternatives 2a, 2b, and 2c would be permanently impacted. The new roads under Alternatives 2a and 2b would both be approximately 2,450 ft long, and the new road under Alternative 2c would be approximately 2,150 ft long. The roads under all three alternatives would be approximately 15 ft wide (excluding roadside ditches). Based on the amount of wetland area within the footprints of the roads as determined by the wetland delineations conducted for this EA, Alternative 2a would impact approximately 0.46 acre of wetlands, Alternative 2b would impact approximately 0.32 acre of wetlands, and Alternative 2c would impact approximately 0.10 acre of wetlands.

The types of wetlands that would be impacted by the roads proposed under Alternatives 2a, 2b, and 2c are shown on Figures 3-1 through 3-6. The 0.46 acre of impact that would result from the construction of the road proposed under Alternative 2a would be to herbaceous wetland. This road would be constructed within the maintained vegetated ROW of the drone runway. The herbaceous wetlands within the footprint of this road are periodically disturbed by mowing of the drone runway ROW and are hydrologically impacted by a large adjacent ditch; therefore, there overall quality is relatively low.

The 0.32 acre of impact that would result from the construction of the road proposed under Alternative 2b would be to mixed forested wetland. This road would be constructed over the footprint of an existing firebreak that is infrequently maintained. Despite the disturbance associated with the firebreak, the mixed forested wetlands within

this road footprint are of relatively high quality. These wetlands are part of large forested wetland system that is relatively undisturbed.

The 0.10 acre of impact that would result from the construction of the road proposed under Alternative 2c would be to mixed forested wetland. Unlike the roads under Alternatives 2a and 2b, the road under Alternative 2c would not utilize any previously cleared corridor. The mixed forested wetlands within the road footprint of Alternative 2c are of very high quality. These wetlands are part of a large forested wetland system that is relatively undisturbed.

Construction of the road proposed under Alternatives 2a, 2b, or 2c would have a moderate impact on wetlands based on the nature and extent of the wetland impacts that would result. The total amount of wetland impact that would be incurred under each alternative would not be extensive (each less than 0.5 acre). Although wetland area would be permanently lost under each alternative, the loss of wetland area would occur within a long, narrow corridor. Each road would have a negligible impact on the functionality and quality of the wetlands it would impact. Ditches and culverts would be installed to provide stormwater drainage and to maintain the hydrology of the wetlands. Among the alternatives, Alternative 2a would result in the most wetland impacts and Alternative 2c would result in the least wetland impacts. As discussed above, the wetlands that would be impacted by Alternative 2a are of relatively low quality because they are periodically disturbed by mowing and are hydrologically impacted by a large adjacent ditch. The wetlands that would be impacted under Alternative 2b or 2c are of high quality and are part of a large wetland system that is relatively undisturbed. When wetland quality, functionality, and wildlife utilization is considered, the overall magnitude of the wetland impacts under Alternative 2b or 2c would be greater than that under Alternative 2a. Alternatives 2a, 2b, and 2c would each result in greater wetland impacts than Alternative 1.

Construction of the road proposed under Alternative 2a, 2b, or 2c would require a federal Dredge and Fill Permit from USACE and an Individual ERP Permit from FDEP. Compensatory wetland mitigation would be required under each alternative and the mitigation requirements would be determined during project permitting.

Under Alternative 2, there are no practicable alternatives to the identified options for creating a contiguous looping route for the MRAP vehicles in the northwestern part of the road network. There are no other route alternatives that would be as functional as the identified options, or that would result in no wetland impacts or significantly less wetland impacts than the identified options. Under Alternative 2a, 2b, or 2c, the proposed new road would be designed to avoid and minimize wetland impacts to the maximum extent possible. To minimize the impact to wetlands, the road footprint under each alternative would be sized only to the extent needed to support the MRAP vehicles. Under each alternative, the width of the road would be 15 ft, which is the minimum width that can accommodate the MRAP vehicles, and length of the road would be the shortest distance between the existing road segments that would be connected. The new roads under each alternative would be constructed in compliance with the state and federal regulatory permitting requirements discussed above. Construction activities would be implemented in strict compliance with the conditions specified in the respective permits, in coordination with the 325 CES/CEAN Environmental Element, and in accordance with all Tyndall AFB environmental plans and policies pertaining to the protection of wetlands. Appropriate BMPs and erosion/sedimentation controls specified in the state and federal permits would be implemented to minimize potential indirect impacts to wetlands. A FDEP NPDES stormwater construction permit would not be required for any of the new roads because none of the roads would disturb one or more acres of land. Tyndall AFB would satisfy all compensatory wetland mitigation requirements for the new road during the permitting phase of the project.

Based on the analysis conducted, Alternatives 2a, 2b, and 2c would each have a moderate impact on wetlands.

4.5.3 Alternative 3

The assessment of the potential wetland impacts that would result from construction and operation of the non-road facilities and from improvements to the existing road network used by MRAP vehicles under Alternative 3 is the same as the assessment made for Alternative 1.

Wetlands within the footprints of the new roads proposed under Alternative 3b and 3c would be permanently impacted. The new road under Alternative 2b would be approximately 1,850 ft long and the new road under Alternative 2c would be approximately 1,300 ft long. The roads under each of these alternatives would be

approximately 15 ft wide (excluding roadside ditches). Based on the amount of wetland area within the footprints of the roads as determined by the wetland delineations conducted for this EA, Alternatives 3b and 3c would each impact approximately 0.16 acre of wetlands. The new vehicular bridge under Alternative 3a would be approximately 25 ft long and 15 ft wide. Wetlands/surface waters at the site for the new bridge would be permanently impacted by the support pilings that would be installed for the bridge; some impacts may also result for embankment stabilization. A very small amount of wetland/surface water area would be impacted by Alternative 3a based on the small number of support pilings that would be installed.

The types of wetlands/surface waters that would be impacted by the roads/bridge proposed under Alternatives 3a, 3b, and 3c are shown on Figures 3-1 through 3-6. Most of the 0.16 acre of impact that would result from the construction of the road proposed under Alternative 3b would be to mixed forested wetland; a small percentage of the impact would be to herbaceous wetland. This road would be constructed over the footprint of an existing dirt trail. Despite the disturbance associated with the trail, the wetlands within this road footprint are of relatively high quality.

Most of the 0.16 acre of impact that would result from the construction of the road proposed under Alternative 3c would be to mixed forested wetland and shrub wetland; a small percentage of the impact would be to herbaceous wetland. Unlike the road under Alternative 3b, the road under Alternative 3c would not utilize any previously cleared corridor. The wetlands within the road footprint of Alternative 3c are of relatively high quality.

The impact that would result from the construction of the bridge proposed under Alternative 3a would be to salt marsh and tidal creek. The salt marsh and tidal creek that are located at the site are of high quality.

Construction of the road proposed under Alternatives 3b or 3c would have a moderate impact on wetlands based on the nature and extent of the wetland impacts that would result. The total amount of wetland impact that would be incurred under each alternative would not be extensive (each less than 0.2 acre). Although wetland area would be permanently lost under each alternative, the loss of wetland area would occur within a long, narrow corridor. Each road would have a negligible impact on the functionality and quality of the wetlands it would impact. Ditches and culverts would be installed to provide stormwater drainage and to maintain the hydrology of the wetlands. Impacts to wetland area and quality would be the similar under both alternatives. The overall magnitude of the wetland impacts under Alternative 3b or 3c would be greater than that under Alternative 3a. Alternatives 3a, 3b, and 3c would each result in greater wetland impacts than Alternative 1.

Construction of the bridge proposed under Alternative 3a would have a minor impact on wetlands/surface waters based on the type and size of the bridge that would be constructed. The bridge would be only approximately 25 ft long and would require few support pilings. A very small amount of wetland/surface water area would be impacted by the support pilings that would be installed and any embankment stabilization that is conducted. The tidal creek channel is not expected to be widened, dredged, or otherwise altered to construct the bridge. No loss of wetland/surface water function is expected to result from the bridge construction.

Construction of the road proposed under Alternative 3b or 3c would require a federal Dredge and Fill Permit from USACE and an Individual ERP Permit from FDEP. Construction of the bridge proposed under Alternative 3a would require a federal Dredge and Fill Permit from USACE and either an Individual ERP Permit or General Permit from FDEP, depending on the total surface area of the pilings that are installed and the type and extent of work that occurs within the tidal creek. Compensatory wetland mitigation would be required under Alternative 3b or 3c, and potentially under Alternative 3a. Mitigation requirements would be determined during project permitting.

Under Alternative 3, there are no practicable alternatives to the identified options for creating a new route in the north central part of the road network. There are no other route alternatives that would be as functional as the identified options, or that would result in no wetland/surface water impacts or significantly less wetland/surface water impacts than the identified options. Under Alternative 3a, 3b, or 3c, the proposed new road/bridge would be designed to avoid and minimize wetland/surface water impacts to the maximum extent possible. To minimize the impact to wetlands, the road footprint under Alternative 3b or 3c would be sized only to the extent needed to support the MRAP vehicles. Under each alternative, the width of the road would be 15 ft, which is the minimum width that can accommodate the MRAP vehicles, and length of the road would be the shortest distance between

the existing road segments that would be connected. Under Alternative 3a, the bridge would be sized only to the extent needed to support the MRAP vehicles. The new road/bridge under each alternative would be constructed in compliance with the state and federal regulatory permitting requirements discussed above. Construction activities would be implemented in strict compliance with the conditions specified in the respective permits, in coordination with the 325 CES/CEAN Environmental Element, and in accordance with all Tyndall AFB environmental plans and policies pertaining to the protection of wetlands/surface waters. Appropriate BMPs and erosion, sedimentation, and turbidity controls specified in the state and federal permits would be implemented to minimize potential indirect impacts to wetlands/surface waters. A FDEP NPDES stormwater construction permit would not be required for any of the new roads/bridge because none of the roads/bridge would disturb one or more acres of land. Tyndall AFB would satisfy all compensatory wetland mitigation requirements for the road/bridge during the permitting phase of the project.

Based on the analysis conducted, Alternative 3a would have a minor impact on wetlands and Alternatives 3b and 3c would each have a moderate impact on wetlands.

4.5.4 No-Action Alternative

Under the No-Action Alternative, no construction activities would occur and there would be no change to how training is conducted in the Silver Flag area. Therefore, the No-Action Alternative would have no effect on wetlands.

4.6 Surface Water

4.6.1 Alternative 1

In addition to dredging and filling in wetlands and surface waters, the ERP Program regulates activities in uplands that generate stormwater runoff or otherwise alter surface water flows. Per these regulations, activities that increase the imperviousness of a given area require an Individual ERP Permit (or General Permit depending on the extent of the modifications and other applicable conditions) from FDEP, unless they qualify to be exempted. Affected areas less than 4,000 sq ft are exempt from permitting; however, fragmenting a contiguous area that exceeds 4.000 sq ft is not allowed. Activities that increase the imperviousness of an area include physical compaction of the area, application of materials to the area, or paving of the area.

Based on the wetland/surface water delineations conducted for this EA, no surface water bodies exist within or adjacent to any of the construction sites for the new non-road facilities. Therefore, construction the new non-road facilities under Alternative 1 would not result in direct impacts to surface waters. Construction of some of the non-road facilities would result in a net increase in impervious area. These facilities would require an Individual ERP Permit or General Permit, unless they qualify to be exempted (e.g., if the affected area is less than 4,000 sq ft), and unless they are located within the permitted stormwater treatment area of the cantonment area (treatment provided by the two permitted stormwater retention ponds). No compensatory mitigation would be required for increases in impervious area; however, Tyndall AFB would be required to comply with FDEP regulations regarding post-condition stormwater runoff discharge rates for the increases in impervious area. The types of new stormwater management systems (e.g., ditches and culverts) or modifications to existing systems that would be required for the new non-road facilities would be determined during the design and permitting phases of the projects. Appropriate BMPs and erosion/sedimentation controls would be implemented during construction of the non-road facilities under Alternative 1 to minimize potential indirect impacts to offsite surface waters. Tyndall AFB would obtain a FDEP NPDES stormwater construction permit and would implement an associated SWPPP for the non-road facilities that would disturb one or more acres of land. Operation of the new non-road facilities would have little potential to impact surface waters based on the nature of the activities that would be conducted and the lack of surface waters within or adjacent to the proposed facilities.

The potential impacts to jurisdictional surface waters that would result from improving the drainage systems of existing roads and upgrading the existing bridge in the central part of the road network under Alternative 1 are discussed in Section 4.5.1. Under Alternative 1, road improvements that would involve the conversion of existing dirt roads to crushed concrete roads and the stabilization of existing semi-improved roads via application of crushed concrete would increase the imperviousness of the roads and, therefore, would require an Individual ERP Permit or General Permit, unless the affected area is less than 4,000 sq ft. The current porosity of the existing semi-

improved roads would have no bearing on the permitting requirements for these types of road improvements. The conversion of the forestry roads to mission roads (change in primary-use designation only) under Alternative 1 would also have no bearing on the permitting requirements of these types of road improvements. The permitting requirements for these types of road improvements would be identical for forestry roads and mission roads. No compensatory mitigation would be required for increases in impervious area; however, Tyndall AFB would be required to comply with FDEP regulations regarding post-condition stormwater runoff discharge rates for the increases in impervious area. Tyndall AFB would obtain a FDEP NPDES stormwater construction permit and would implement an associated SWPPP for road improvements that would disturb one or more acres of land. The stabilization of existing unpaved roads under Alternative 1 would reduce the level of soil erosion experienced on the roads and the potential for associated sedimentation impacts to surface waters adjacent to the roads.

Based on the analysis conducted, Alternative 1 would have a minor impact on surface water.

4.6.2 Alternative 2

The assessment of the potential surface water impacts that would result from construction and operation of the non-road facilities and from improvements to the existing road network used by MRAP vehicles under Alternative 2 is the same as the assessment made for Alternative 1.

Based on the wetland/surface water delineations conducted for this EA, there are no surface water bodies within the footprints of the new roads proposed under Alternatives 2a, 2b, and 2c. Construction of the road under Alternative 2a, 2b, or 2c would result in a net increase in impervious area and, therefore, would require an Individual ERP Permit. No compensatory mitigation would be required for the increase in impervious area; however, Tyndall AFB would be required to comply with FDEP regulations regarding post-condition stormwater runoff discharge rates for the increase in impervious area. The types of new stormwater management systems (e.g., ditches and culverts) or modifications to existing systems that would be required for the road would be determined during the design and permitting phases of the project. Appropriate BMPs and erosion, sedimentation, and turbidity controls would be implemented during construction to minimize potential indirect impacts to offsite surface waters. A FDEP NPDES stormwater construction permit would not be required for any of the new roads because none of the roads would disturb more than one acre of land.

Based on the analysis conducted, Alternatives 2a, 2b, and 2c would each have a minor impact on surface water.

4.6.3 Alternative 3

The assessment of the potential surface water impacts that would result from construction and operation of the non-road facilities and from improvements to the existing road network used by MRAP vehicles under Alternative 3 is the same as the assessment made for Alternative 1.

The potential impacts to jurisdictional surface waters that would result from the construction of the new vehicular bridge under Alternative 3a are discussed in Section 4.5.3. Based on the wetland/surface water delineations conducted for this EA, there are no surface water bodies within the footprints of the new roads proposed under Alternatives 3b and 3c. Construction of the road under Alternative 3b or 3c would result in a net increase in impervious area and, therefore, would require an Individual ERP Permit. No compensatory mitigation would be required for the increase in impervious area; however, Tyndall AFB would be required to comply with FDEP regulations regarding post-condition stormwater runoff discharge rates for the increase in impervious area. The types of new stormwater management systems (e.g., ditches and culverts) or modifications to existing systems that would be required for the road would be determined during the design and permitting phases of the project. Appropriate BMPs and erosion, sedimentation, and turbidity controls would be implemented during construction to minimize potential indirect impacts to offsite surface waters. A FDEP NPDES stormwater construction permit would not be required for either road because neither of them would disturb one or more acres of land.

Based on the analysis conducted, Alternatives 3a, 3b, and 3c would each have a minor impact on surface water.

4.6.4 No-Action Alternative

Under the No-Action Alternative, no construction activities would occur and there would be no change to how training is conducted in the Silver Flag area. Therefore, the No-Action Alternative would have no effect on surface water.

4.7 Floodplains

4.7.1 Alternative 1

Based on the FEMA FIRMs that cover Tyndall AFB, none of the construction sites for the non-road facilities are located within the 100-year floodplain (see Figure 3-7). Therefore, construction of the new non-road facilities under Alternative 1 would not displace floodplain area or otherwise impact floodplains. Operation of the new non-road facilities would have no effect on floodplains based on the nature of the activities that would be conducted.

Portions of the existing road network currently used for MRAP vehicle training are located within the 100-year floodplain (see Figure 3-7). Under Alternative 1, road improvements that would involve the conversion of existing dirt roads to crushed concrete roads and the stabilization of existing semi-improved roads via application of crushed concrete have the potential to displace floodplain area, depending on the post-condition imperviousness of the roads and the elevations of the roads relative to the floodplain elevation. These types of road improvements would have a negligible impact on floodplains based on the nature and extent of the impacts that would result. The road improvements would involve a relatively small amount of floodplain area and they would have no effect on the flooding potential in the area. Improvements to existing road drainage systems under Alternative 1 are not expected to displace floodplain area or otherwise impact floodplains. The road drainage system improvements are expected to decrease localized flooding potential in some areas by improving surface water drainage. Upgrades to the existing bridge in the central part of the road network under Alternative 1 are not expected to displace floodplain area, alter the tidal creek channel, affect flooding potential, or otherwise impact floodplains.

Under Alternative 1, there are no practicable alternatives to conducting road improvements within floodplains. Portions of the existing roads are located within the 100-year floodplain and it is not practicable to improve only the portions of the roads that are located outside floodplains. The road improvements would be designed and implemented to avoid and minimize floodplain impacts to the maximum extent possible. They would be conducted only to the extent needed to support MRAP vehicle training and in compliance with all applicable regulatory requirements pertaining to floodplain construction.

Based on the analysis conducted, Alternative 1 would have a negligible impact on floodplains.

4.7.2 Alternative 2

The assessment of the potential floodplain impacts that would result from construction and operation of the non-road facilities and from improvements to the existing road network used by MRAP vehicles under Alternative 2 is the same as the assessment made for Alternative 1.

A small portion of the route for the new road that would be constructed under Alternative 2a is located within 100-year floodplain; the routes for the new roads that would be constructed under Alternatives 2b and 2c are not located within 100-year floodplain. Construction of the new road proposed under Alternative 2a has the potential to displace floodplain area, depending on the post-condition imperviousness of the road and the elevation of the road relative to the floodplain elevation. Construction of this road would have a negligible impact on floodplains based on the nature and extent of the impacts that would result. A relatively small amount of floodplain area would be involved and the road would have no effect on the flooding potential in the area.

There is no practicable alternative to constructing the road proposed under Alternative 2a within floodplains based on the location of the route. Alternatives 2b and 2c are practicable alternatives to Alternative 2a that would not involve floodplains. If Alternative 2a is selected for implementation, the proposed new road would be designed and constructed to avoid and minimize floodplain impacts to the maximum extent possible. The new road would be constructed in compliance with all applicable regulatory requirements pertaining to floodplain construction.

Based on the analysis conducted, Alternatives 2a, 2b, and 2c would each have a negligible impact on floodplains.

4.7.3 Alternative 3

The assessment of the potential floodplain impacts that would result from construction and operation of the non-road facilities and from improvements to the existing road network used by MRAP vehicles under Alternative 3 is the same as the assessment made for Alternative 1.

The site for the new vehicular bridge that would be constructed under Alternative 3a is located within the 100-year floodplain; the routes for the new roads that would be constructed under Alternatives 3b and 3c are not located within the 100-year floodplain. Construction of the new bridge proposed under Alternative 3a is not expected to displace floodplain area, alter the tidal creek channel, affect flooding potential, or otherwise impact floodplains.

There is no practicable alternative to constructing the bridge proposed under Alternative 3a within floodplains based on the location of the site for the bridge. Alternatives 3b and 3c are practicable alternatives to Alternative 3a that would not involve floodplains. If Alternative 3a is selected for implementation, the proposed new bridge would be designed and constructed to avoid and minimize floodplain impacts to the maximum extent possible. The new bridge would be constructed in compliance with all applicable regulatory requirements pertaining to floodplain construction.

Based on the analysis conducted, Alternatives 3a, 3b, and 3c would each have a negligible impact on floodplains.

4.7.4 No-Action Alternative

Under the No-Action Alternative, no construction activities would occur and there would be no change to how training is conducted in the Silver Flag area. Therefore, the No-Action Alternative would have no effect on floodplains.

4.8 Vegetation

4.8.1 Alternative 1

Under Alternative 1, construction of the MRAP vehicle parking area and latrine/shower/laundry facility would have no effect on vegetation because the construction sites for these facilities are entirely developed and devoid of vegetation. Construction of the new Silver Flag entrance gate and bed-down training site would result in impacts only to mowed grass. Construction of the urban warfare village would involve removal of some or all the upland forest vegetation at the site; the amount that would be removed would be determined during project design. Approximately 3.5 acres of patchy upland forest exists at the site. The maximum impact scenario of removing all the upland forest at the site would result in a moderate impact on vegetation based on the amount of vegetation that would be impacted. Construction of the MRAP vehicle obstacle course would impact mowed grass and a small amount of upland forest vegetation. Upland forest vegetation would be removed during the widening of the existing dirt road that extends from the runway ROW to the cleared area at the site. Widening of this road is expected to remove less than 0.1 acre of vegetation. Under Alternative 1, operation of the new non-road facilities would have little potential to impact vegetation based on the nature of the activities that would be conducted.

Under Alternative 1, stabilization of the existing roads used for MRAP vehicle training would have a negligible impact on vegetation. Road stabilization would impact only the small amounts of herbaceous vegetation that exists within the footprints of the dirt roads that would be converted to crushed concrete roads. The stabilization of existing unpaved roads under Alternative 1 would reduce the level of soil erosion experienced on the roads and the potential for associated sedimentation impacts to vegetation adjacent to the roads. Improvements to the drainage systems of existing roads under Alternative 1 would result in minor impacts to upland and wetland vegetation. The types of vegetation communities that would potentially be impacted are discussed in Section 3.8 and shown on Figures 3-1 through 3-6. The impacts would be to vegetation within and around existing drainage ditches and culverts and in areas where new drainage ditches and culverts would be constructed. Little to no road widening is expected to be conducted as part of the proposed improvements to the existing roads; therefore, the potential for vegetation impacts to result from road widening is considered to be relatively low under Alternative 1. Upgrades to the existing bridge in the central part of the road network under Alternative 1 would have minor impacts to salt marsh vegetation and any submerged vegetation that exists within the tidal creek.

Based on the analysis conducted, Alternative 1 would have a moderate impact on vegetation.

4.8.2 Alternative 2

The assessment of the potential vegetation impacts that would result from construction and operation of the non-road facilities and from improvements to the existing road network used by MRAP vehicles under Alternative 2 is the same as the assessment made for Alternative 1.

Upland and wetland vegetation within the footprints of the new roads proposed under Alternatives 2a, 2b, and 2c would be permanently impacted. The new roads under Alternatives 2a and 2b would both be approximately 2,450 ft long, and the new road under Alternative 2c would be approximately 2,150 ft long. The roads under all three alternatives would be approximately 15 ft wide (excluding roadside ditches). Based on the amount of upland and wetland area within the footprints of the roads as determined by the wetland/upland delineations conducted for this EA, Alternative 2a would impact approximately 0.38 acre of upland vegetation and 0.46 acre of wetland vegetation. Alternative 2b would impact approximately 0.52 acre of upland vegetation and 0.32 acre of wetland vegetation. Alternative 2c would impact approximately 0.64 acre of upland vegetation and 0.10 acre of wetland vegetation.

The types of vegetation communities that would be impacted by the roads proposed under Alternatives 2a, 2b, and 2c are discussed in Section 3.8 and shown on Figures 3-1 through 3-6. Construction of the road proposed under Alternative 2a would impact mowed upland field vegetation and herbaceous wetland vegetation. Construction of the roads proposed under Alternatives 2b and 2c would impact upland planted pine vegetation and mixed forested wetland vegetation. The road under Alternative 2a, 2b, or 2c would have a moderate impact on vegetation based on the amount of vegetation that each road would impact. Alternatives 2a and 2b would impact similar amounts of vegetation, and slightly more vegetation than Alternative 2c. Each of these alternatives would impact more vegetation than Alternative 1.

Based on the analysis conducted, Alternatives 2a, 2b, and 2c would each have a moderate impact on vegetation.

4.8.3 Alternative 3

The assessment of the potential vegetation impacts that would result from construction and operation of the non-road facilities and from improvements to the existing road network used by MRAP vehicles under Alternative 3 is the same as the assessment made for Alternative 1.

Upland and wetland vegetation within the footprints of the new roads proposed under Alternatives 3b and 3c would be permanently impacted. The new road under Alternative 3b would be approximately 1,850 ft long and the new road under Alternative 3c would be approximately 1,300 ft long. The roads under each of these alternatives would be approximately 15 ft wide (excluding roadside ditches). Based on the amount of upland and wetland area within the footprints of the roads as determined by the wetland/upland delineations conducted for this EA, Alternative 3b would impact approximately 0.48 acre of upland vegetation and 0.16 acre of wetland vegetation. Alternative 3c would impact approximately 0.29 acre of upland vegetation and 0.16 acre of wetland vegetation. Wetland vegetation at the site of the new vehicular bridge proposed under Alternative 3a would be permanently impacted by the support pilings that would be installed for the bridge; some impacts may also result for embankment stabilization. A very small amount of wetland vegetation would be impacted by Alternative 3a based on the small number of support pilings that would be installed.

The types of vegetation communities that would be impacted by the roads/bridge proposed under Alternatives 3a, 3b, and 3c are discussed in Section 3.8 and shown on Figures 3-1 through 3-6. Construction of the road proposed under Alternative 3b would impact upland planted pine vegetation, mesic forest vegetation, mixed forested wetland vegetation, and herbaceous wetland vegetation. Construction of the road proposed under Alternatives 3c would impact upland planted pine vegetation, mixed forested wetland vegetation, shrub wetland vegetation, and herbaceous wetland vegetation. Construction of the bridge proposed under Alternative 3a would impact salt marsh vegetation and any submerged vegetation that exists within the tidal creek. Based on the amount of vegetation that would be impacted, the road under Alternatives 3b or 3c would have a moderate impact on vegetation and the

bridge under Alternative 3c would have a minor impact on vegetation. Each of these alternatives would impact more vegetation than Alternative 1.

Based on the analysis conducted, Alternatives 3a, 3b, and 3c would each have a moderate impact on vegetation.

4.8.4 No-Action Alternative

Under the No-Action Alternative, no construction activities would occur and there would be no change to how training is conducted in the Silver Flag area. Therefore, the No-Action Alternative would have no effect on vegetation.

4.9 Fish and Wildlife

4.9.1 Alternative 1

Under Alternative 1, construction of the new non-road facilities would have a negligible impact on wildlife. The construction sites for the new non-road facilities, all of which are located within or in the immediate vicinity of the Silver Flag cantonment area, provide relatively poor-quality wildlife habitat because they are entirely or mostly developed, and are currently used for mission operations. Under Alternative 1, the potential for incidental animal mortality occurring during construction exists but is considered to be relatively low and any losses would have a negligible effect on on-base or regional wildlife populations. Noise generated during construction activities may temporarily disturb wildlife species that occur in the vicinities of the construction sites. Any disturbance experienced by wildlife species would be limited to the construction period and is expected to be negligible. Wildlife species that occur at Tyndall AFB are adapted to existing operational noise and wildlife species throughout the Base are accustomed to high noise levels generated by jets. As discussed in Section 4.2.1, operational noise levels that would be generated by the new facilities would be relatively low. Therefore, operation of the new non-road facilities would have little to no effect on wildlife that occurs in the vicinities of these areas.

The road network that is currently used for MRAP vehicle training is within undeveloped land that provides relatively high quality wildlife habitat (see Section 3.9). Much of this undeveloped land is open to recreational hunting. Under Alternative 1, improvements to the existing road network would have a minor impact on wildlife. Road stabilization would have very little potential to directly impact wildlife because the stabilization work would occur entirely within the footprints of the existing roads. Improvements to the drainage systems of existing roads would have a minor impact on fish and wildlife habitat that exists within and around existing drainage ditches and culverts and in areas where new drainage ditches and culverts would be constructed. Little to no road widening is expected to be conducted as part of the proposed improvements to the existing roads; therefore, the potential for fish and wildlife habitat impacts to result from road widening is considered to be relatively low under Alternative 1. Upgrades to the existing bridge in the central part of the road network would have a minor impact on the fish and wildlife habitat provided by the salt marsh and tidal creek at the site.

Noise generated during road/bridge improvements may temporarily disturb wildlife species that occur in nearby areas. Any disturbance experienced by wildlife species would be limited to the construction period and is expected to be negligible. The potential for incidental animal mortality to occur during the road/bridge improvements is considered to be relatively low and any losses would have a negligible effect on on-base or regional fish and wildlife populations. Under Alternative 1, improvements to the road network would not change the amount or type of training that is currently conducted on the roads; therefore, there would be no change in the levels of noise currently generated during training. The conversion of the forestry roads to mission roads (change in primary-use designation only) under Alternative 1 is not expected to impact recreational hunting in the area. The roads would continue to be available to hunters who have received Tyndall AFB hunting permits. Mission-related restrictions on recreational hunting are not expected to increase under Alternative 1 because there would be no change in the amount or type of training that is currently conducted on the roads.

Based on the analysis conducted, Alternative 1 would have a minor impact on fish and wildlife.

4.9.2 Alternative 2

The assessment of the potential fish and wildlife impacts that would result from construction and operation of the non-road facilities and from improvements to the existing road network used by MRAP vehicles under Alternative 2 is the same as the assessment made for Alternative 1.

Wildlife habitat within the footprints of the new roads proposed under Alternatives 2a, 2b, and 2c would be permanently impacted. As discussed in Section 4.8.2, Alternative 2a would impact approximately 0.38 acre of uplands and 0.46 acre of wetlands; Alternative 2b would impact approximately 0.52 acre of uplands and 0.32 acre of wetlands; and Alternative 2c would impact approximately 0.64 acre of uplands and 0.10 acre of wetlands.

Construction of the road proposed under Alternative 2a would impact mowed upland field and herbaceous wetland. This road would be constructed within the maintained vegetated ROW of the drone runway. The uplands and wetlands within the footprint of this road are periodically disturbed by mowing of the drone runway ROW and are hydrologically impacted by a large adjacent ditch; therefore, there overall wildlife habitat quality is relatively low.

Construction of the road proposed under Alternative 2b would impact upland planted pine and mixed forested wetland. This road would be constructed over the footprint of an existing firebreak that is infrequently maintained. Despite the disturbance associated with the firebreak, the uplands and wetlands within this road footprint are of relatively high quality, particularly the wetlands. These wetlands are part of large forested wetland system that is relatively undisturbed.

Construction of the road proposed under Alternative 2c would impact upland planted pine and mixed forested wetland. Unlike the roads under Alternatives 2a and 2b, the road under Alternative 2c would not utilize any previously cleared corridor. The uplands and wetlands within the road footprint of Alternative 2c are of relatively high quality, particularly the wetlands. These wetlands are part of a large forested wetland system that is relatively undisturbed.

Based on the amount and quality of habitat that exists within the road footprints, construction of the road proposed under Alternative 2a would have a minor impact on wildlife habitat and construction of the roads proposed under Alternatives 2b and 2c would have a moderate impact on wildlife habitat. Alternatives 2a, 2b, and 2c would each impact more wildlife habitat than Alternative 1. Under Alternative 2a, 2b, or 2c, the displacement of wildlife habitat would occur within a long, narrow corridor. Each road would have a negligible impact on the functionality and quality of the habitats it would impact and would not permanently impact wildlife usage of the habitats. The potential for incidental animal mortality occurring during construction exists under each alternative but is considered to be relatively low and any losses would have a negligible effect on on-base or regional wildlife populations. Noise generated during construction activities may temporarily disturb wildlife species; however, any disturbance experienced by wildlife species would be limited to the construction period and is expected to be negligible. Usage of the new road proposed under Alternative 2a, 2b, or 2c for MRAP vehicle training would result in relatively minor impacts to wildlife. MRAP vehicles would be driven only on the road surface and training noise would be intermittent and at relatively low levels.

Based on the analysis conducted, Alternative 2a would have a minor impact on fish and wildlife and Alternatives 2b and 2c would each have a moderate impact on fish and wildlife.

4.9.3 Alternative 3

The assessment of the potential fish and wildlife impacts that would result from construction and operation of the non-road facilities and from improvements to the existing road network used by MRAP vehicles under Alternative 3 is the same as the assessment made for Alternative 1.

Wildlife habitat within the footprints of the new roads proposed under Alternatives 3b and 3c would be permanently impacted. As discussed in Section 4.8.3, Alternative 3b would impact approximately 0.48 acre of uplands and 0.16 acre of wetlands, and Alternative 3c would impact approximately 0.29 acre of uplands and 0.16 acre of wetlands. Fish and wildlife habitat at the site of the new vehicular bridge proposed under Alternative 3a would be permanently impacted by the support pilings that would be installed for the bridge; some impacts may

also result for embankment stabilization. A very small amount of fish and wildlife habitat would be impacted by Alternative 3a based on the small number of support pilings that would be installed.

Construction of the road proposed under Alternative 3b would impact upland planted pine, mesic forest, mixed forested wetland, and herbaceous wetland. This road would be constructed over the footprint of an existing dirt trail. Despite the disturbance associated with the trail, the uplands and wetlands within this road footprint are of relatively high quality.

Construction of the road proposed under Alternatives 3c would impact upland planted pine, mixed forested wetland, shrub wetland, and herbaceous wetland. Unlike the road under Alternative 3b, the road under Alternative 3c would not utilize any previously cleared corridor. The uplands and wetlands within the road footprint of Alternative 3c are of relatively high quality.

Construction of the bridge proposed under Alternative 3a would impact salt marsh and tidal creek. The salt marsh and tidal creek that are located at the site are of high quality.

Based on the amount and quality of habitat that exists within the road/bridge footprints, construction of the bridge proposed under Alternative 3a would have a minor impact on fish and wildlife habitat and construction of the roads proposed under Alternatives 3b and 3c would have a moderate impact on wildlife habitat. Alternatives 3a, 3b, and 3c would each impact more wildlife habitat than Alternative 1. Under Alternatives 3b or 3c, the displacement of wildlife habitat would occur within a long, narrow corridor. Each road would have a negligible impact on the functionality and quality of the habitats it would impact and would not permanently impact wildlife usage of the habitats. Under Alternative 3c, a very small amount of fish and wildlife habitat would be displaced by the support pilings that would be installed and any embankment stabilization that is conducted. The tidal creek channel is not expected to be widened, dredged, or otherwise altered to construct the bridge. The bridge is not expected to result in the loss of wetland/surface water function and would not permanently impact fish and wildlife usage of the habitats.

The potential for incidental animal mortality occurring during construction exists under each alternative but is considered to be relatively low and any losses would have a negligible effect on on-base or regional fish and wildlife populations. Noise generated during construction activities may temporarily disturb wildlife species; however, any disturbance experienced by wildlife species would be limited to the construction period and is expected to be negligible. Usage of the new road/bridge proposed under Alternative 3a, 3b, or 3c for MRAP vehicle training would result in relatively minor impacts to wildlife. MRAP vehicles would be driven only on the road/bridge surface and training noise would be intermittent and at relatively low levels.

Based on the analysis conducted, Alternative 3a would have a minor impact on fish and wildlife and Alternatives 3b and 3c would each have a moderate impact on fish and wildlife.

4.9.4 No-Action Alternative

Under the No-Action Alternative, no construction activities would occur and there would be no change to how training is conducted in the Silver Flag area. Therefore, the No-Action Alternative would have no effect on fish and wildlife.

4.10 Listed Species

4.10.1 Alternative 1

Under Alternative 1, construction of the new non-road facilities would have very little potential to impact listed species. The construction sites for the new non-road facilities, all of which are located within or in the immediate vicinity of the Silver Flag cantonment area, do not provide suitable habitat for any listed species because of they are entirely or mostly developed, and are currently used for mission operations. Noise generated during construction activities may temporarily disturb listed animal species that may occur in the general vicinities of the construction sites. Any disturbance experienced by listed species would be limited to the construction period and is expected to be relatively minor. All wildlife species that occur at Tyndall AFB are adapted to existing operational noise and wildlife species throughout the Base are accustomed to high noise levels generated by jets. As discussed in Section

4.2.1, operational noise levels that would be generated by the new facilities would be relatively low. Therefore, operation of the new non-road facilities would have little to no effect on listed animal species that may occur in the general vicinities of these areas.

Several listed species have the potential to occur within and in the vicinity of the road network that is currently used for MRAP vehicle training (see Section 3.10). Many of the listed plant species documented to occur in wetland habitats at Tyndall AFB, particularly those that have been found in wet prairies and wet pine flatwoods at the Base have the potential to occur within the roadside ditches and within the freshwater wetlands that border the roads. The ditches and wetlands that border the roads also provide suitable habitat for several state-listed wading bird species. The listed plant species documented to occur in scrub habitats at the Base have the potential to occur in the xeric habitats that exist within the road network, which include scrub and sand pine habitats. The state-listed gopher tortoise is known to occur within some of the parcels of scrub that exist within the road network.

Under Alternative 1, improvements to the drainage systems of existing roads would have the potential to directly impact listed plant and animal species that may occur within and around existing drainage ditches and culverts, and in freshwater wetlands and xeric habitats where new drainage ditches and culverts would be constructed. Listed plant species would be more susceptible to impacts than listed animal species because they are sessile. Stabilization of the existing roads would have little potential to directly impact listed plant or animal species because the stabilization work would occur entirely within the road footprints. Little to no road widening is expected to be conducted as part of the proposed road improvements; therefore, the potential for listed species impacts to result from road widening is considered to be relatively low under Alternative 1. Upgrades to the existing bridge in the central part of the road network is expected to have no potential to directly impact listed plant species based on the habitat types at the site (salt marsh and tidal creek); the bridge upgrades would have little potential to directly impact listed animal species.

Under Alternative 1, all road improvements would be required to be coordinated with the 325 CES/CEAN Environmental Element prior to implementation. 325 CES/CEAN staff would assess the potential for listed species occurrence within the proposed work areas and determine the listed species protection measures that would need to be implemented before and during the work. Such measures may include listed species surveys, regulatory agency consultation, avoidance of certain areas, restrictions on certain types of activities, worker training, signage, and measures to minimize indirect impacts to listed species. Provided that the road improvements are conducted under the guidance of 325 CES/CEAN staff, and in accordance with all Tyndall AFB environmental plans and policies pertaining to the protection of listed species, they are expected to have little potential to directly impact listed species. Noise generated during road/bridge improvements may temporarily disturb listed animal species that may occur in the general vicinities of the construction sites. Any disturbance experienced by listed species would be limited to the construction period and is expected to be negligible. Under Alternative 1, improvements to the road network would not change the amount or type of training that is currently conducted on the roads; therefore, there would be no change in the levels of noise currently generated during training.

Based on the analysis conducted, Alternative 1 would have a negligible impact on listed species.

4.10.2 Alternative 2

The assessment of the potential listed species impacts that would result from construction and operation of the non-road facilities and from improvements to the existing road network used by MRAP vehicles under Alternative 2 is the same as the assessment made for Alternative 1.

Some of the listed plant species documented to occur in wetland habitats at Tyndall AFB and certain listed wading bird species have the potential to occur in the freshwater wetlands that exist within the footprints of the new roads proposed under Alternatives 2a, 2b, and 2c. None of road footprints contain xeric habitat; therefore, listed plant species documented to occur in scrub habitats at the Base and the listed gopher tortoise are not expected to occur within or in the immediate vicinities of any of the road footprints.

Construction of the roads proposed under Alternatives 2a, 2b, and 2c would have the potential to directly impact listed plant and animal species that may occur within the freshwater wetlands that exist with the road footprints. Listed plant species would be more susceptible to impacts than listed animal species because they are sessile.

Under Alternative 2a, 2b, or 2c, construction of the new road would be required to be coordinated with the 325 CES/CEAN Environmental Element prior to construction. 325 CES/CEAN staff would assess the potential for listed species occurrence within the proposed work areas and determine the listed species protection measures that would need to be implemented before and during the work. Such measures may include listed species surveys, regulatory agency consultation, avoidance of certain areas, restrictions on certain types of activities, worker training, signage, and measures to minimize indirect impacts to listed species. Provided that construction activities are conducted under the guidance of 325 CES/CEAN staff, and in accordance with all Tyndall AFB environmental plans and policies pertaining to the protection of listed species, they are expected to have little potential to directly impact listed species. Noise generated during road construction may temporarily disturb listed animal species. Any disturbance experienced by listed species would be limited to the construction period and is expected to be negligible.

Based on the analysis conducted, Alternatives 2a, 2b, and 2c would each have a negligible impact on listed species.

4.10.3 Alternative 3

The assessment of the potential listed species impacts that would result from construction and operation of the non-road facilities and from improvements to the existing road network used by MRAP vehicles under Alternative 3 is the same as the assessment made for Alternative 1.

Some of the listed plant species documented to occur in wetland habitats at Tyndall AFB and certain listed wading bird species have the potential to occur in the freshwater wetlands that exist within the footprints of the new roads proposed under Alternatives 3b and 3c. Neither of the road footprints contain xeric habitat; therefore, listed plant species documented to occur in scrub habitats at the Base and the listed gopher tortoise are not expected to occur within or in the immediate vicinity of either road footprint. No listed plant species are expected to occur in the salt marsh or tidal creek habitats at the site for the new bridge proposed under Alternative 3a; certain listed wading bird species may occur in these habitats.

Construction of the roads proposed under Alternatives 3b and 3c would have the potential to directly impact listed plant and animal species that may occur within the freshwater wetlands that exist with the road footprints. Listed plant species would be more susceptible to impacts than listed animal species because they are sessile. Construction of the bridge proposed under Alternative 3a is expected to have no potential to directly impact listed plant species and little potential to directly impact listed animal species.

Under Alternative 3a, 3b, or 3c, construction of the new road/bridge would be required to be coordinated with the 325 CES/CEAN Environmental Element prior to construction. 325 CES/CEAN staff would assess the potential for listed species occurrence within the proposed work areas and determine the listed species protection measures that would need to be implemented before and during the work. Such measures may include listed species surveys, regulatory agency consultation, avoidance of certain areas, restrictions on certain types of activities, worker training, signage, and measures to minimize indirect impacts to listed species. Provided that construction activities are conducted under the guidance of 325 CES/CEAN staff, and in accordance with all Tyndall AFB environmental plans and policies pertaining to the protection of listed species, they are expected to have little potential to directly impact listed species. Noise generated during road construction may temporarily disturb listed animal species. Any disturbance experienced by listed species would be limited to the construction period and is expected to be negligible.

Based on the analysis conducted, Alternatives 3a, 3b, and 3c would each have a negligible impact on listed species.

4.10.4 No-Action Alternative

Under the No-Action Alternative, no construction activities would occur and there would be no change to how training is conducted in the Silver Flag area. Therefore, the No-Action Alternative would have no effect on listed species.

4.11 Land Use

4.11.1 Alternative 1

Under Alternative 1, construction and operation of the new non-road facilities and improvements to the existing Silver Flag road network would be compatible with, and would not change, the land-use classifications of the areas within which they would occur. Under Alternative 1, conversion of the existing forestry roads to mission roads (change in primary-use designation only) would transition responsibility for maintenance of the roads from the Base forestry management program to RED HORSE. The change in primary-use designation of the roads is not expected to affect current usage of the roads or any operation currently conducted within or in the vicinity of the road network. The roads would continue to be jointly used for forestry and mission operations.

Based on the analysis conducted, Alternative 1 would have no effect on land use.

4.11.2 Alternative 2

The assessment of the potential land use impacts that would result from construction and operation of the non-road facilities and from improvements to the existing road network used by MRAP vehicles under Alternative 2 is the same as the assessment made for Alternative 1.

Construction and operation of the new roads proposed under Alternatives 2a, 2b, and 2c would be compatible with, and would not change, the existing land-use classifications of the areas within which they would occur. The new road under Alternative 2a, 2b, or 2c is not expected to affect any operation currently conducted within or in the vicinity of the road network. The new road under each alternative would be jointly used for forestry and mission operations.

Based on the analysis conducted, Alternatives 2a, 2b, and 2c would each have no effect on land use.

4.11.3 Alternative 3

The assessment of the potential land use impacts that would result from construction and operation of the non-road facilities and from improvements to the existing road network used by MRAP vehicles under Alternative 3 is the same as the assessment made for Alternative 1.

Construction and operation of the new roads/bridge proposed under Alternatives 3a, 3b, and 3c would be compatible with, and would not change, the existing land-use classifications of the areas within which they would occur. The new road/bridge under Alternative 3a, 3b, or 3c is not expected to affect any operation currently conducted within or in the vicinity of the road network. The new road/bridge under each alternative would be jointly used for forestry and mission operations.

Based on the analysis conducted, Alternatives 3a, 3b, and 3c would each have no effect on land use.

4.11.4 No-Action Alternative

Under the No-Action Alternative, no construction activities would occur and there would be no change to how training is conducted in the Silver Flag area. Therefore, the No-Action Alternative would have no effect on land use.

4.12 Recreation

4.12.1 Alternative 1

No recreational activities, including recreational hunting, are allowed within or in the general vicinity of the Silver Flag cantonment area. Therefore, construction and operation of the new non-road facilities proposed under Alternative 1 would have no effect on recreation.

Much of the undeveloped land that surrounds Silver Flag is open to recreational hunting. The roads in these recreational hunting areas, many of which are currently used for MRAP vehicle training, are allowed to be used by hunters who have received Tyndall AFB hunting permits. Hunting is the only type of recreational activity that is available within the undeveloped land that surrounds Silver Flag. Under Alternative 1, improvements to the existing road network would have no effect on recreation. The conversion of the forestry roads to mission roads (change in

primary-use designation only) under Alternative 1 is not expected to impact recreational hunting in the area. The roads would continue to be available to hunters who have received Tyndall AFB hunting permits. Mission-related restrictions on recreational hunting are not expected to increase under Alternative 1 because there would be no change in the amount or type of training that is currently conducted in the road network.

Based on the analysis conducted, Alternative 1 would have no effect on recreation.

4.12.2 Alternative 2

The assessment of the potential recreation impacts that would result from construction and operation of the non-road facilities and from improvements to the existing road network used by MRAP vehicles under Alternative 2 is the same as the assessment made for Alternative 1.

The areas within which the routes for the new roads proposed under Alternatives 2b and 2c are located are open to recreational hunting. Hunting is the only type of recreational activity that is available in these areas. The area within which the route for the new road proposed under Alternative 2a is located is not open to recreational hunting or any other recreational activity because it is near the drone runway. Construction of the new road under Alternative 2b or 2c would have no effect on recreation. The operation and military designation of either road are not expected to impact recreational hunting in the area. Either road is expected to be available to hunters who have received Tyndall AFB hunting permits. Mission-related restrictions on recreational hunting are not expected to increase under Alternative 2a, 2b, or 2c because there would be no change in the amount or type of training that is currently conducted in the road network.

Based on the analysis conducted, Alternatives 2a, 2b, and 2c would each have no effect on recreation.

4.12.3 Alternative 3

The assessment of the potential recreation impacts that would result from construction and operation of the non-road facilities and from improvements to the existing road network used by MRAP vehicles under Alternative 3 is the same as the assessment made for Alternative 1.

The area within which the route for the new road proposed under Alternative 3c is located is open to recreational hunting. Hunting is the only type of recreational activity that is available in this area. The areas within which the route/site for the new road/bridge proposed under Alternatives 3a and 3b are located are not open to recreational hunting or any other recreational activity because they are near the Silver Flag cantonment area. Construction of the new road proposed under Alternative 3c would have no effect on recreation. The operation and military designation of this road are not expected to impact recreational hunting in the area. This road is expected to be available to hunters who have received Tyndall AFB hunting permits. Mission-related restrictions on recreational hunting are not expected to increase under Alternative 3a, 3b, or 3c because there would be no change in the amount or type of training that is currently conducted in the road network.

Based on the analysis conducted, Alternatives 3a, 3b, and 3c would each have no effect on recreation.

4.12.4 No-Action Alternative

Under the No-Action Alternative, no construction activities would occur and there would be no change to how training is conducted in the Silver Flag area. Therefore, the No-Action Alternative would have no effect on recreation.

4.13 Cultural Resources

4.13.1 Alternative 1

Based on the findings of archaeological surveys conducted in the Silver Flag area, there are no historic structures or archaeological sites within the proposed sites for the non-road facilities. Therefore, construction and operation of the new non-road facilities are not expected to impact cultural resources. An archaeological site exists just north of the proposed site for the MRAP vehicle obstacle course; this site has been recommended as being potentially eligible for NRHP listing. An archaeological site also exists adjacent to the proposed site for the urban warfare village; this site has been recommended as being ineligible for NRHP listing. These archaeological sites would not be

impacted under Alternative 1 because construction and operation of the MRAP vehicle obstacle course and urban warfare village would be confined within the boundaries of the respective facility sites.

A few archaeological sites (no historic structures) have been identified by surveys in the immediate vicinities of some of the roads currently used for MRAP vehicle training; two of these sites have been recommended as being potentially eligible for NRHP listing and the remaining ones have been recommended as being ineligible or have not been completely evaluated for NRHP eligibility listing. Under Alternative 1, improvements to existing road drainage systems would have the potential to impact cultural resources, particularly construction of new drainage ditches and culverts in undeveloped areas that have not been surveyed. Stabilization of the existing roads under Alternative 1 would have very little potential to impact cultural resources because the stabilization work would occur entirely within the footprints of the existing roads. Little to no road widening is expected to be conducted as part of the proposed improvements to the existing roads; therefore, the potential for cultural resources impacts to result from road widening is considered to be relatively low under Alternative 1. Upgrades to the existing bridge in the central part of the road network is expected to have little potential to impact cultural resources because the upgrades would involve only piling replacement and embankment stabilization within a tidal creek channel that has been previously disturbed by the existing bridge.

Under Alternative 1, all road improvements would be required to be coordinated with the 325 CES/CEAN Environmental Element prior to implementation. 325 CES/CEAN staff would assess the potential for archaeological site occurrence within the proposed work areas and determine the protection measures that would need to be implemented before and during the work. Such measures may include avoidance of certain areas, restrictions on certain types of activities, worker training, signage, and measures to minimize indirect impacts to cultural resources. SOPs 4 or 5 of the Tyndall AFB ICRMP would be required to be implemented in the event that cultural materials are discovered during construction activities. SOP 4, *All Undertakings: Unanticipated Discovery of Archaeological Deposits*, and SOP 6, *Inadvertent Discovery of Native American Human Remains and Associated Funerary Objects, Sacred Objects, or Objects of Cultural Patrimony*, provide policy and procedures for the protection, evaluation, and coordination of archaeological deposits and Native American remains, respectively, in the event they are unexpectedly discovered at Tyndall AFB. Provided that the road improvements are conducted under the guidance of 325 CES/CEAN staff, and in accordance with all Tyndall AFB plans and policies pertaining to the protection of cultural resources, they are expected to have no effect on cultural resources.

Based on the analysis conducted, Alternative 1 would have no effect on cultural resources.

4.13.2 Alternative 2

The assessment of the potential cultural resources impacts that would result from construction and operation of the non-road facilities and from improvements to the existing road network used by MRAP vehicles under Alternative 2 is the same as the assessment made for Alternative 1.

Based on the findings of archaeological surveys conducted in the Silver Flag area, there are no historic structures or archaeological sites within or in the immediate vicinity of the route for the new road proposed under Alternative 2c. Therefore, construction of the new road under Alternative 2c is not expected to impact cultural resources. SOPs 4 or 5 of the Tyndall AFB ICRMP would be required to be implemented in the event that cultural materials are discovered during construction of the road proposed under Alternative 2c.

Archaeological surveys have not been conducted in the areas where the new roads proposed under Alternatives 2a and 2b would be constructed. The route for the new road proposed under Alternative 2a is located within the maintained vegetated ROW of the drone runway. The route consists of approximately 0.38 acre of upland field and 0.46 acre of herbaceous wetland that are regularly mowed. The land within the route has likely experienced past disturbance from construction of the drone runway. The route is not in the immediate vicinity of any water body. For these reasons, construction of the new road under Alternative 2a is not expected to impact cultural resources. An archaeological survey would be required to be conducted prior to construction of the road under Alternative 2a. Final authorization for the construction of the road would be provided if no archaeological sites are identified by the survey. SOPs 4 or 5 of the Tyndall AFB ICRMP would be required to be implemented in the event that cultural materials are discovered during construction of the road.

The route for the new road proposed under Alternative 2b is located over the footprint of an existing firebreak. The route consists of approximately 0.52 acre of upland planted pine and 0.32 acre of mixed forested wetland. The land within the route has been disturbed by the firebreak and the upland planted pine within the route is regularly disturbed by forestry operations. The route is not in the immediate vicinity of any water body. For these reasons, construction of the new road under Alternative 2b is not expected to impact cultural resources. An archaeological survey would be required to be conducted prior to construction of the road under Alternative 2b. Final authorization for the construction of the road would be provided if no archaeological sites are identified by the survey. SOPs 4 or 5 of the Tyndall AFB ICRMP would be required to be implemented in the event that cultural materials are discovered during construction of the road.

Based on the analysis conducted, Alternatives 2a, 2b, and 2c would have no effect on cultural resources.

4.13.3 Alternative 3

The assessment of the potential cultural resources impacts that would result from construction and operation of the non-road facilities and from improvements to the existing road network used by MRAP vehicles under Alternative 3 is the same as the assessment made for Alternative 1.

Based on the findings of archaeological surveys conducted in the Silver Flag area, there are no historic structures or archaeological sites within or in the immediate vicinity of the site for the new bridge proposed under Alternative 3a. Therefore, construction of the new bridge under Alternative 3a is not expected to impact cultural resources. SOPs 4 or 5 of the Tyndall AFB ICRMP would be required to be implemented in the event that cultural materials are discovered during construction of the bridge proposed under Alternative 3a.

Archaeological surveys have included portions of the routes for the new roads proposed under Alternatives 3b and 3c; the entire route of each road has not been surveyed. No historic structures or archaeological sites have been identified within or in the immediate vicinity of the portion of each route that has been surveyed. The route for the new road proposed under Alternative 3b is located over the footprint of an existing dirt trail. The route consists of approximately 0.48 acre of upland planted pine and mesic forest, and 0.16 acre of mixed wetland forest and herbaceous wetland. Approximately half of the route has been surveyed. The portion of the route that has not been surveyed consists of upland planted pine and mesic forest. This portion has been disturbed by the firebreak and the upland planted pine within this portion is regularly disturbed by forestry operations. This portion is not in the immediate vicinity of any water body. For these reasons, construction of the new road under Alternative 3b is not expected to impact cultural resources. An archaeological survey would be required to be conducted in the portion of the route that has not been previously surveyed prior to construction of the road under Alternative 2b. Final authorization for the construction of the road would be provided if no archaeological sites are identified by the survey. SOPs 4 or 5 of the Tyndall AFB ICRMP would be required to be implemented in the event that cultural materials are discovered during construction of the road.

The route for the new road proposed under Alternative 3c consists of approximately 0.29 acre of upland planted pine and 0.16 acre of mixed wetland forest, shrub wetland, and herbaceous wetland. Approximately a quarter of the route has been surveyed. The portion of the route that has not been surveyed consists of upland planted pine, mixed forested wetland, and shrub wetland. The upland planted pine within this portion is regularly disturbed by forestry operations. This portion is not in the immediate vicinity of any water body. For these reasons, construction of the new road under Alternative 3c is not expected to impact cultural resources. An archaeological survey would be required to be conducted in the portion of the route that has not been previously surveyed prior to construction of the road under Alternative 3c. Final authorization for the construction of the road would be provided if no archaeological sites are identified by the survey. SOPs 4 or 5 of the Tyndall AFB ICRMP would be required to be implemented in the event that cultural materials are discovered during construction of the road.

Based on the analysis conducted, Alternatives 3a, 3b, and 3c would have no effect on cultural resources.

4.13.4 No-Action Alternative

Under the No-Action Alternative, no construction activities would occur and there would be no change to how training is conducted in the Silver Flag area. Therefore, the No-Action Alternative would have no effect on cultural resources.

4.14 Environmental Compliance

4.14.1 Alternative 1

Under Alternative 1, construction of the new non-road facilities and improvements to the existing roads used for MRAP vehicle training would be conducted in coordination with the 325 CES/CEAN Compliance Section and in accordance with all applicable Tyndall AFB environmental management plans.

The construction sites for the new non-road facilities and the existing roads used for MRAP vehicle training are not expected to contain ACM or LBP. There are no POL-contaminated sites or IRP sites within or in the vicinities of the non-road construction sites or the existing Silver Flag road network. All solid waste generated during construction activities under Alternative 1 would be collected, handled, managed, transported, and disposed of off base by a solid waste disposal contractor.

Under Alternative 1, conversion of the domestic wastewater spray field at Silver Flag to a bed-down training site would have no effect on wastewater treatment because the spray field and domestic wastewater treatment plant at Silver Flag are no longer operated or needed. All domestic wastewater generated at Silver Flag is currently discharged via a force main directly to the Bay County sewer treatment plant. Soil constituents at the spray field site would be tested to determine if they are at levels acceptable for human habitation. Any soil treatment to reduce constituent levels, if necessary, would be conducted prior to further site preparation. Site preparation would primarily include adding a layer of crushed concrete to provide a stable surface for bed-down training.

Based on the analysis conducted, Alternative 1 would have no effect on environmental compliance.

4.14.2 Alternative 2

The assessment of the potential environmental compliance impacts that would result from construction and operation of the non-road facilities and from improvements to the existing road network used by MRAP vehicles under Alternative 2 is the same as the assessment made for Alternative 1.

Construction of the new road under Alternative 2a, 2b, or 2c would be conducted in coordination with the 325 CES/CEAN Compliance Section and in accordance with all applicable Tyndall AFB environmental management plans. None of the proposed road routes is expected to contain ACM or LBP, and there are no POL-contaminated sites or IRP sites within or in the vicinities of the routes. All solid waste generated during construction activities under Alternative 2a, 2b, or 2c would be collected, handled, managed, transported, and disposed of off base by a solid waste disposal contractor.

Based on the analysis conducted, Alternatives 2a, 2b, and 2c would each have no effect on environmental compliance.

4.14.3 Alternative 3

The assessment of the potential environmental compliance impacts that would result from construction and operation of the non-road facilities and from improvements to the existing road network used by MRAP vehicles under Alternative 3 is the same as the assessment made for Alternative 1.

Construction of the new road/bridge under Alternative 3a, 3b, or 3c would be conducted in coordination with the 325 CES/CEAN Compliance Section and in accordance with all applicable Tyndall AFB environmental management plans. Neither of the proposed road routes or bridge site is expected to contain ACM or LBP, and there are no POL-contaminated sites or IRP sites within or in the vicinities of either road route or bridge site. All solid waste generated during construction activities under Alternative 3a, 3b, or 3c would be collected, handled, managed, transported, and disposed of off base by a solid waste disposal contractor.

Based on the analysis conducted, Alternatives 3a, 3b, and 3c would each have no effect on environmental compliance.

4.14.4 No-Action Alternative

Under the No-Action Alternative, no construction activities would occur and there would be no change to how training is conducted in the Silver Flag area. Therefore, the No-Action Alternative would have no effect on environmental compliance.

4.15 Socioeconomics

4.15.1 Alternative 1

Under Alternative 1, construction and operation of the new non-road facilities and improvements to the existing roads used for MRAP vehicle training would not involve permanent personnel relocations or permanent employee hires. Non-local construction personnel who may be hired are not expected to permanently relocate to the area given that the construction work would be temporary. Therefore, Alternative 1 would not permanently change the number of persons working at Tyndall AFB or living in the local area.

Construction work associated with Alternative 1 would have a minor, short-term, positive impact on the local economy. Direct expenditures for construction-related materials would benefit local suppliers and secondary spending by workers would benefit businesses near Tyndall AFB such as gas stations and restaurants. Construction work would have a negligible impact on the total labor force and employment in the region as a result of the small number of jobs that would be created. Any increase in employment would be temporary.

Based on the analysis conducted, Alternative 1 would have a minor impact on socioeconomics.

4.15.2 Alternative 2

The assessment of the potential socioeconomic impacts that would result from construction and operation of the non-road facilities and from improvements to the existing road network used by MRAP vehicles under Alternative 2 is the same as the assessment made for Alternative 1.

Construction of the new road proposed under Alternative 2a, 2b, or 2c, would not involve permanent personnel relocations or permanent employee hires. Non-local construction personnel who may be hired are not expected to permanently relocate to the area given that the construction work would be temporary. Therefore, Alternative 2a, 2b, or 2c would not permanently change the number of persons working at Tyndall AFB or living in the local area.

Construction work associated with Alternative 2a, 2b, or 2c would have a minor, short-term, positive impact on the local economy. Direct expenditures for construction-related materials would benefit local suppliers and secondary spending by workers would benefit businesses near Tyndall AFB such as gas stations and restaurants. Construction work would have a negligible impact on the total labor force and employment in the region as a result of the small number of jobs that would be created. Any increase in employment would be temporary.

Based on the analysis conducted, Alternatives 2a, 2b, and 2c would each have a minor impact on socioeconomics.

4.15.3 Alternative 3

The assessment of the potential socioeconomic impacts that would result from construction and operation of the non-road facilities and from improvements to the existing road network used by MRAP vehicles under Alternative 3 is the same as the assessment made for Alternative 1.

Construction of the new road/bridge proposed under Alternative 3a, 3b, or 3c would not involve permanent personnel relocations or permanent employee hires. Non-local construction personnel who may be hired are not expected to permanently relocate to the area given that the construction work would be temporary. Therefore, Alternative 3a, 3b, or 3c would not permanently change the number of persons working at Tyndall AFB or living in the local area.

Construction work associated with Alternative 3a, 3b, or 3c would have a minor, short-term, positive impact on the local economy. Direct expenditures for construction-related materials would benefit local suppliers and secondary

spending by workers would benefit businesses near Tyndall AFB such as gas stations and restaurants. Construction work would have a negligible impact on the total labor force and employment in the region as a result of the small number of jobs that would be created. Any increase in employment would be temporary.

Based on the analysis conducted, Alternatives 3a, 3b, and 3c would each have a minor impact on socioeconomics.

4.15.4 No-Action Alternative

Under the No-Action Alternative, no construction activities would occur; therefore, the No-Action Alternative would have no effect on socioeconomics.

4.16 Traffic Flow

4.16.1 Alternative 1

Under Alternative 1, construction and operation of the new non-road facilities and improvements to the existing roads used for MRAP vehicle training would not involve permanent personnel relocations or permanent employee hires. Therefore, there would be no permanent change in traffic levels at the Base or in the local area under Alternative 1. Construction work associated with Alternative 1 would temporarily increase traffic at Tyndall AFB and in the local area. The projected increase in traffic is expected to be minor and traffic levels would return to current levels after the work is completed.

Improvements to the existing road network and conversion of the existing forestry roads to mission roads (change in primary-use designation only) under Alternative 1 would not change the amount or type of training that is currently conducted on the roads or usage of the roads for forestry operations and, therefore, would have no effect on traffic levels on the roads.

Based on the analysis conducted, Alternative 1 would have a minor impact on traffic flow.

4.16.2 Alternative 2

The assessment of the potential traffic flow impacts that would result from construction and operation of the non-road facilities and from improvements to the existing road network used by MRAP vehicles under Alternative 2 is the same as the assessment made for Alternative 1.

Construction of the new road under Alternative 2a, 2b, or 2c would not involve permanent personnel relocations or permanent employee hires. Therefore, there would be no permanent change in traffic levels at the Base or in the local area under Alternative 2a, 2b, or 2c. Construction work associated with each alternative would temporarily increase traffic at Tyndall AFB and in the local area. The projected increase in traffic is expected to be minor and traffic levels would return to current levels after the work is completed.

Construction of the new road under Alternative 2a, 2b, or 2c would not change the amount or type of training that is currently conducted in the road network or usage of the road network for forestry operations and, therefore, would have no effect on traffic levels in the road network.

Based on the analysis conducted, Alternative 2a, 2b, and 2c would each have a minor impact on traffic flow.

4.16.3 Alternative 3

The assessment of the potential traffic flow impacts that would result from construction and operation of the non-road facilities and from improvements to the existing road network used by MRAP vehicles under Alternative 3 is the same as the assessment made for Alternative 1.

Construction of the new road/bridge under Alternative 3a, 3b, or 3c would not involve permanent personnel relocations or permanent employee hires. Therefore, there would be no permanent change in traffic levels at the Base or in the local area under Alternative 3a, 3b, or 3c. Construction work associated with each alternative would temporarily increase traffic at Tyndall AFB and in the local area. The projected increase in traffic is expected to be minor and traffic levels would return to current levels after the work is completed.

Construction of the new road/bridge under Alternative 3a, 3b, or 3c would not change the amount or type of training that is currently conducted in the road network or usage of the road network for forestry operations and, therefore, would have no effect on traffic levels in the road network.

Based on the analysis conducted, Alternative3a, 3b, and 3c would each have a minor impact on traffic flow.

4.16.4 No-Action Alternative

Under the No-Action Alternative, no construction activities would occur and there would be no change to how training is conducted in the Silver Flag area. Therefore, the No-Action Alternative would have no effect on traffic flow.

4.17 Environmental Justice and Protection of Children

4.17.1 Alternative 1

Under Alternative 1, construction and operation of the new non-road facilities and improvements to the existing roads used for MRAP vehicle training would have no effect, or only minor impacts, on the resources most relevant for assessing impacts on human populations, which are air quality, noise, groundwater, surface water, and hazardous materials/wastes. The minor impacts that Alternative 1 would have on these resources would not adversely affect human populations. Therefore, Alternative 1 would not have disproportionately high or adverse human health or environmental effects on minority or low-income populations. Construction areas associated with Alternative 1 would be secured against unauthorized entry; therefore, Alternative 1 would not result in environmental health or safety risks to children.

4.17.2 Alternative 2

The assessment of the potential environmental justice and children impacts that would result from construction and operation of the non-road facilities and from improvements to the existing road network used by MRAP vehicles under Alternative 2 is the same as the assessment made for Alternative 1.

Construction and operation of the road proposed under Alternative 2a, 2b, or 2c would have no effect, or only minor impacts, on the resources most relevant for assessing impacts on human populations, which are air quality, noise, groundwater, surface water, and hazardous materials/wastes. The minor impacts that each of these alternatives would have on these resources would not adversely affect human populations. Therefore, Alternative 2a, 2b, or 2c would not have disproportionately high or adverse human health or environmental effects on minority or low-income populations. Construction areas associated with Alternative 2a, 2b, or 2c would be secured against unauthorized entry; therefore, none of these alternatives would result in environmental health or safety risks to children.

4.17.3 Alternative 3

The assessment of the potential environmental justice and children impacts that would result from construction and operation of the non-road facilities and from improvements to the existing road network used by MRAP vehicles under Alternative 3 is the same as the assessment made for Alternative 1.

Construction and operation of the road/bridge proposed under Alternative 3a, 3b, or 3c would have no effect, or only minor impacts, on the resources most relevant for assessing impacts on human populations, which are air quality, noise, groundwater, surface water, and hazardous materials/wastes. The minor impacts that each of these alternatives would have on these resources would not adversely affect human populations. Therefore, Alternative 3a, 3b, or 3c would not have disproportionately high or adverse human health or environmental effects on minority or low-income populations. Construction areas associated with Alternative 3a, 3b, or 3c would be secured against unauthorized entry; therefore, none of these alternatives would result in environmental health or safety risks to children.

4.17.4 No-Action Alternative

Under the No-Action Alternative, no construction activities would occur and there would be no change to how training is conducted in the Silver Flag area. Therefore, the No-Action Alternative would have no effect on environmental justice or children.

4.18 Cumulative Impacts

A "cumulative impact" is defined in 40 CFR 1508.7 as "the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions." Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time.

Each of the alternatives analyzed in this EA would occur entirely within the boundaries of Tyndall AFB and would have little potential to interact with any actions outside the Base. Actions that have occurred in the Silver Flag area within the past five years have primarily involved facility construction/demolition and road/utility infrastructure improvements within and in the immediate vicinity of the Silver Flag cantonment area. These actions have primarily resulted in minor, temporary impacts that typically occur during construction/ demolition such as temporary increases in air emissions, noise, and traffic. Most of these actions has occurred within or immediately adjacent to developed areas and, therefore, have resulted in relatively minor impacts to biological resources. None of the alternatives analyzed in this EA would adversely interact with any of these past actions, nor would they result in adverse cumulative impacts when combined with one or more of these past actions.

The new non-road facilities, road improvements, and new roads/bridge proposed under the alternatives analyzed in this EA constitute the primary actions that are proposed to be undertaken over the next five years in the in Silver Flag area. Other foreseeable/planned actions in the Silver Flag area primarily include infrastructure improvements (facilities, roads, and utilities) in and around the cantonment area that are smaller in scale than the infrastructure improvements proposed under each alternative analyzed in this EA. These foreseeable projects are expected to result in typical construction-related impacts similar to those that would result under each of the alternatives analyzed in this EA, such as temporary increases in noise, air emissions, and traffic. These other projects would occur within or adjacent to developed areas and, therefore, are expected to have negligible/minor impacts or no effect on soils, wetlands, surface water, floodplains, vegetation, and wildlife. In the event that one or more of these foreseeable projects are implemented during the same time that one of the alternatives analyzed in this EA is implemented, generated noise and air emissions would be greater but the cumulative effect would be temporary and is not expected to be significantly adverse. There is the potential for heavy traffic to occur if one or more of these other projects are implemented at the same time as one of the alternatives; however, the cumulative effect would be temporary and could be minimized by making most or all Base access gates and routes available during the work period. Based on the nature and extent of the impacts that would result under each alternative analyzed in this EA and under the foreseeable projects, adverse cumulative impacts to soils, wetlands, surface water, floodplains, vegetation, or wildlife would not occur. The combined effect of any of the alternatives analyzed in this EA and other infrastructure improvement projects in the Silver Flag area, regardless of their timing, would have positive cumulative impacts on the local economy resulting from short-term, temporary increases in employment and expenditures.

4.19 Mitigation Measures

Under Alternative 1, improvements to the drainage systems of existing roads used for MRAP vehicle training and upgrades to the existing bridge in the central part of the Silver Flag road network are expected to result in only minor temporary impacts to jurisdictional wetlands/surface waters without loss of wetland/surface water area or function. Based on the nature and extent of the impacts that would result, the drainage improvements and bridge upgrades under Alternative 1 are not expected to require compensatory wetland mitigation. The mitigation requirements for the drainage improvements and bridge upgrades under Alternative 1 would be determined during project permitting and any required mitigation would be provided by Tyndall AFB during the permitting phases of the projects.

Construction of the new road under Alternative 2a, 2b, or 2c would result in the permanent loss of 0.46 acre, 0.32 acre, or 0.10 acre of jurisdictional wetlands, respectively. Based on the nature and extent of the impacts that would result, compensatory wetland mitigation would be required under each alternative. The mitigation requirements of the new road under Alternative 2a, 2b, or 2c would be determined during project permitting and the required mitigation would be provided by Tyndall AFB during the permitting phase of the project.

Construction of the new road proposed under Alternative 3b or 3c would result in the permanent loss of 0.16 acre of jurisdictional wetlands. Construction of the new bridge proposed under Alternative 3a would result in only minor impacts to jurisdictional wetlands/surface waters without loss of wetland/surface water function; the impacts would result from the installation of a small number of support pilings and any embankment stabilization that is conducted. Based on the nature and extent of the impacts that would result, compensatory wetland mitigation would be required under Alternative 3b or 3c, and potentially under Alternative 3a. The mitigation requirements of the new road/bridge under Alternative 3a, 3b, or 3c would be determined during project permitting and the required mitigation would be provided by Tyndall AFB during the permitting phase of the project.

4.20 Summary of Environmental Consequences

The potential environmental consequences of the three action alternatives (Alternatives 1, 2, and 3) and the No-Action Alternative are summarized in Table 4-1.

TABLE 4-1
Summary of Environmental Consequences
EA for Improvements to Silver Flag Training Area at Tyndall AFB

Resource	Alternative 1	Alternative 2	Alternative 3	No-Action Alternative
Air Quality	Minor Impact	2a - Minor Impact	3a - Minor Impact	No Effect
		2b – Minor Impact	3b - Minor Impact	
		2c – Minor Impact	3c - Minor Impact	
Noise	Minor Impact	2a - Minor Impact	3a - Minor Impact	No Effect
		2b – Minor Impact	3b - Minor Impact	
		2c – Minor Impact	3c - Minor Impact	
AICUZ	No Effect	2a - No Effect	3a - No Effect	No Effect
		2b - No Effect	3b - No Effect	
		2c - No Effect	3c - No Effect	
Soils	Minor Impact	2a - Moderate Impact	3a - Moderate Impact	No Effect
		2b - Moderate Impact	3b - Moderate Impact	
		2c - Moderate Impact	3c - Moderate Impact	
Wetlands	Minor Impact	2a - Moderate Impact	3a - Minor Impact	No Effect
		2b - Moderate Impact	3b - Moderate Impact	
		2c - Moderate Impact	3c - Moderate Impact	
Surface Water	Minor Impact	2a - Minor Impact	3a - Minor Impact	No Effect
		2b – Minor Impact	3b - Minor Impact	
		2c – Minor Impact	3c - Minor Impact	
Floodplains	Negligible Impact	2a - Negligible Impact	3a - Negligible Impact	No Effect
		2b - Negligible Impact	3b - Negligible Impact	
		2c - Negligible Impact	3c - Negligible Impact	
Vegetation	Moderate Impact	2a - Moderate Impact	3a - Moderate Impact	No Effect
		2b - Moderate Impact	3b - Moderate Impact	
		2c - Moderate Impact	3c - Moderate Impact	
Fish and Wildlife	Minor Impact	2a - Minor Impact	3a - Minor Impact	No Effect
		2b - Moderate Impact	3b - Moderate Impact	

TABLE 4-1

Summary of Environmental Consequences

EA for Improvements to Silver Flag Training Area at Tyndall AFB

Resource	Alternative 1	Alternative 2	Alternative 3	No-Action Alternative
		2c - Moderate Impact	3c - Moderate Impact	
Listed Species	Negligible Impact	2a - Negligible Impact	3a - Negligible Impact	No Effect
		2b - Negligible Impact	3b - Negligible Impact	
		2c - Negligible Impact	3c - Negligible Impact	
Land Use	No Effect	2a - No Effect	3a - No Effect	No Effect
		2b - No Effect	3b - No Effect	
		2c - No Effect	3c - No Effect	
Recreation	No Effect	2a - No Effect	3a - No Effect	No Effect
		2b - No Effect	3b - No Effect	
		2c - No Effect	3c - No Effect	
Cultural Resources	No Effect	2a – No Effect	3a - No Effect	No Effect
		2b – No Effect	3b – No Effect	
		2c - No Effect	3c – Not Assessed	
Environmental Compliance	No Effect	2a - No Effect	3a - No Effect	No Effect
		2b - No Effect	3b - No Effect	
		2c - No Effect	3c - No Effect	
Socioeconomics	Minor Impact	2a - Minor Impact	3a - Minor Impact	No Effect
		2b – Minor Impact	3b - Minor Impact	
		2c – Minor Impact	3c - Minor Impact	
Traffic Flow	Minor Impact	2a - Minor Impact	3a - Minor Impact	No Effect
		2b – Minor Impact	3b - Minor Impact	
		2c – Minor Impact	3c - Minor Impact	
EJ and Children	No Effect	2a - No Effect	3a - No Effect	No Effect
		2b - No Effect	3b - No Effect	
		2c - No Effect	3c - No Effect	
Adverse Cumulative Impacts	No	2a – No	3a – No	No
		2b – No	3b – No	
		2c – No	3c – No	

No Effect: The action would not cause a detectable change.
Negligible: The impact would be at the lowest level of detection; the impact would not be significant.
Minor: The impact would be slight but detectable; the impact would not be significant.
Moderate: The impact would be readily apparent; the impact would not be significant.
Major: The impact would be clearly adverse or positive; the impact has the potential to be significant. The significance of adverse and positive impacts is subject to interpretation and should be determined based on the final proposal. In cases of adverse impacts, the impact may be reduced to less than significant by mitigation, design features, and/or other measures that may be taken.

SECTION 5

List of Preparers

Name	Organization	Title	Primary Responsibility
Tunch Orsoy	CH2M HILL	Environmental Scientist	Project Manager
Rich Reaves	CH2M HILL	Environmental Scientist	Senior Reviewer
Kathy Fitos	CH2M HILL	GIS Technician	GIS Mapping and Analysis
Robin Nagy	CH2M HILL	Word Processor	Document Editing
Marian Stuart	CH2M HILL	Graphics Specialist	Document Graphics

SECTION 6

List of Persons and Agencies Consulted

Diane Bateman, 325 CES/CEA, Tyndall AFB, Florida

Daniel Childs, 325 CES/CEANN, Tyndall AFB, Florida

Jose Cintron, 325 CES/CEANC, Tyndall AFB, Florida

Craig Dengel, 325 CES/CEANN, Tyndall AFB, Florida

MSgt Aris Dirodio, Det 1, 823rd RED HORSE, Tyndall AFB, Florida

Donald Jenkins, 325 CES/CEANN, Tyndall AFB, Florida

Wendy Jones, 325 CES/CEANN, Tyndall AFB, Florida

Joseph Mclernan, 325 CES/CEA, Tyndall AFB, Florida

SMSgt Arthur Roy, Det 1, 823rd RED HORSE, Tyndall AFB, Florida

CMSgt Dave Sosa, Det 1, 823rd RED HORSE, Tyndall AFB, Florida

Francine Swan, 325 FW/JA, Tyndall AFB, Florida

Richard Turner, 325 CES/CEANN, Tyndall AFB, Florida

List of agencies consulted to be added after consultations are completed.

SECTION 7

References

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Appendix A
IICEP Correspondence

DISTRIBUTION LIST

Environmental Assessment

Improvements to Silver Flag Training Area at Tyndall Air Force Base

FEDERAL

- U.S. Fish and Wildlife Service

STATE AND LOCAL (Review coordinated by the Florida State Clearinghouse)

- Florida Department of Environmental Protection
- Florida Fish and Wildlife Conservation Commission
- Florida State Historic Preservation Office
- Northwest Florida Water Management District
- West Florida Regional Planning Council
- Other entities through the Florida State Clearinghouse

NATIVE AMERICAN TRIBES

- Miccosukee Tribe of Indians of Florida
- Muscogee (Creek) Nation
- Poarch Band of Creek Indians
- Seminole Tribe of Florida

DEPARTMENT OF THE AIR FORCE

325TH FIGHTER WING (ACC)
TYNDALL AIR FORCE BASE FLORIDA

Mr. Joseph V. Mclernan
Chief, Environmental Element
325th Civil Engineer Squadron
119 Alabama Ave
Tyndall AFB, FL 32403-5014

Joyce A. Bear
Manager, Cultural Preservation
Muscogee (Creek) Nation
P.O Box 580
Okmulgee, OK 74447

Dear Ms. Bear,

The draft Environmental Assessment (EA) and draft Finding of No Significant Impact (FONSI) for a proposal to modify the Silver Flag Training Area at Tyndall Air Force Base, Florida are attached for your review and comment. The draft EA was prepared in accordance with the National Environmental Policy Act of 1969, as amended. Your comments are requested in accordance with Executive Order 12372, Intergovernmental Review of Federal Programs.

The draft EA addresses the Proposed Action, alternatives of the Proposed Action, and the No-Action Alternative. The Proposed Action involves construction of new facilities and modifications to existing facilities within and in the vicinity of the Silver Flag Training Area. Under the No-Action Alternative, the Silver Flag Training Area would not be modified in any manner.

A list of federal, state, and local agencies, and Native American Tribes asked to comment on the draft documents is also attached. Comments should be submitted within 30 days after receipt of this letter to Mr. Jose J. Cintron, 325 CES/CEANC, 119 Alabama Ave., Tyndall AFB, FL, 32403; email: jose.cintron@tyndall.af.mil.; telephone: (850) 283-4341.

Sincerely,

Joseph V. Mc Lernan

JOSEPH V. MCLERNAN

Attachments:
1. Draft EA and FONSI
2. List of Agencies Contacted

DEPARTMENT OF THE AIR FORCE

325TH FIGHTER WING (ACC)
TYNDALL AIR FORCE BASE FLORIDA

Mr. Joseph V. Mcleman
Chief, Environmental Element
325th Civil Engineer Squadron
119 Alabama Ave
Tyndall AFB, FL 32403-5014

Mr. Don Imm
US Fish and Wildlife Service
1601 Balboa Avenue
Panama City, FL 32405

Dear Mr. Imm,

The draft Environmental Assessment (EA) and draft Finding of No Significant Impact (FONSI) for a proposal to modify the Silver Flag Training Area at Tyndall Air Force Base, Florida are attached for your review and comment. The draft EA was prepared in accordance with the National Environmental Policy Act of 1969, as amended. Your comments are requested in accordance with Executive Order 12372, Intergovernmental Review of Federal Programs.

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Sincerely,

Joseph V. Mc Lernon

JOSEPH V. MCLERNAN

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325TH FIGHTER WING (ACC)
TYNDALL AIR FORCE BASE FLORIDA

Mr. Joseph V. Mclernan
Chief, Environmental Element
325th Civil Engineer Squadron
119 Alabama Ave
Tyndall AFB, FL 32403-5014

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

Dear Ms. Milligan,

The draft Environmental Assessment (EA) and draft Finding of No Significant Impact (FONSI) for a proposal to modify the Silver Flag Training Area at Tyndall Air Force Base, Florida are attached for your review and comment. The draft EA was prepared in accordance with the National Environmental Policy Act of 1969, as amended. Your comments are requested in accordance with Executive Order 12372, Intergovernmental Review of Federal Programs.

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Joseph V. Mc Lernan

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325TH FIGHTER WING (ACC)
TYNDALL AIR FORCE BASE FLORIDA

Mr. Joseph V. Mclernan
Chief, Environmental Element
325th Civil Engineer Squadron
119 Alabama Ave
Tyndall AFB, FL 32403-5014

Bill Steele
Tribal Historic Preservation Officer
Seminole Tribe of Florida
Ah-tah-thi-ki Museum
34725 West Boundary Road
Clewiston, FL 33440

Dear Mr. Steele,

The draft Environmental Assessment (EA) and draft Finding of No Significant Impact (FONSI) for a proposal to modify the Silver Flag Training Area at Tyndall Air Force Base, Florida are attached for your review and comment. The draft EA was prepared in accordance with the National Environmental Policy Act of 1969, as amended. Your comments are requested in accordance with Executive Order 12372, Intergovernmental Review of Federal Programs.

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Sincerely,

Joseph V Mc Lernan

JOSEPH V. MCLERNAN

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DEPARTMENT OF THE AIR FORCE

325TH FIGHTER WING (ACC)
TYNDALL AIR FORCE BASE FLORIDA

Mr. Joseph V. Mclernan
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Tyndall AFB, FL 32403-5014

Steven Terry
NAGPRA and Section 106 Coordinator
Miccosukee Tribe of Indians of Florida
P.O. Box 440021
Miami, Florida 33144-0021

Dear Mr. Terry,

The draft Environmental Assessment (EA) and draft Finding of No Significant Impact (FONSI) for a proposal to modify the Silver Flag Training Area at Tyndall Air Force Base, Florida are attached for your review and comment. The draft EA was prepared in accordance with the National Environmental Policy Act of 1969, as amended. Your comments are requested in accordance with Executive Order 12372, Intergovernmental Review of Federal Programs.

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Sincerely,

Joseph V McLernan

JOSEPH V. MCLERNAN

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DEPARTMENT OF THE AIR FORCE

325TH FIGHTER WING (ACC)
TYNDALL AIR FORCE BASE FLORIDA

Mr. Joseph V. Mclernan
Chief, Environmental Element
325th Civil Engineer Squadron
119 Alabama Ave
Tyndall AFB, FL 32403-5014

Robert Thrower
Tribal Historic Preservation Officer
Poarch Band of Creek Indians
5811 Jack Springs Road
Atmore, AL 36502

Dear Mr. Thrower,

The draft Environmental Assessment (EA) and draft Finding of No Significant Impact (FONSI) for a proposal to modify the Silver Flag Training Area at Tyndall Air Force Base, Florida are attached for your review and comment. The draft EA was prepared in accordance with the National Environmental Policy Act of 1969, as amended. Your comments are requested in accordance with Executive Order 12372, Intergovernmental Review of Federal Programs.

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Sincerely,

Joseph V. McLernan

JOSEPH V. MCLERNAN

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Appendix B
Public Involvement

To Be Provided after Public Review