FINAL
ENVIRONMENTAL ASSESSMENT FOR BARRIERS AND INTRUSION DETECTION SYSTEMS AND SECURITY FENCING EGLIN AIR FORCE BASE, FLORIDA

(RCS 02-314, 02-315 and 02-646)

DEPARTMENT OF THE AIR FORCE
Eglin Air Force Base, Florida

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FINDING OF NO SIGNIFICANT IMPACT

FOR

BARRIERS AND INTRUSION DETECTION SYSTEMS AND SECURITY FENCING
EGLIN AIR FORCE BASE, FLORIDA
RCS 02-314, 02-315 and 02-646

Pursuant to the Council on Environmental Quality regulations for implementing the procedural provisions of the National Environmental Policy Act (40 Code of Federal Regulations 1500-1508), 32 CFR Part 989, and Department of Defense Directive 6050.1, the Department of the Air Force has conducted an Environmental Assessment (EA) of the probable environmental consequences for the installation of security fencing, barriers and intrusion detection systems on Eglin Air Force Base (AFB).

DESCRIPTION OF PROPOSED ACTION AND ALTERNATIVES

Proposed Action: In order to decrease installation vulnerability to terrorist attack, the proposed action is for the Air Force to provide barriers and deterrents at the Army Ranger Camp, Navy EOD School, Site C-6, Duke Field and specific locations on Eglin AFB, Florida. Barrier systems for the proposed action include the use of retaining walls, bollards, planters and anti-vehicle barriers. The proposed action will also require the Air Force to install security fencing around various perimeters of the installation, the flight line, certain range sites and specified facilities on Eglin AFB to protect against intrusion and create legal boundaries. This project was set forth to meet the criteria and scope specified in Air Force Handbook 32-1084, "Facility Requirements."

Alternative Action 1: Alternative Action 1 is the same as the proposed action, with several buildings on Eglin Main Base utilizing only retaining walls for barrier systems.

Alternative Action 2: Alternative Action 2 is the same as the proposed action, with several buildings on main base utilizing bollards for barrier systems.

No Action Alternative: The No Action Alternative would be to not construct the security fencing, barriers and intrusion detection.

SUMMARY OF THE ANTICIPATED ENVIRONMENTAL EFFECTS

Land Use: The proposed action that will take place within Eglin Main Base is primarily in an "industrialized" area, with heavy anthropogenic presence. Conflicts with motorists, traffic movement, or pedestrians are unlikely.

Soils: Best Management Practice (BMPs) for erosion control would be implemented during construction activities. A National Pollutant Discharge Elimination System (NPDES) construction permit would be required if five or more acres of soil surface were disturbed. After March 2003, if disturbing more than one acre, an NPDES permit will be submitted. Clearing the

fence construction area by mowing vegetation would not require a permit, whereas bulldozing would.

Water and Wetland Resources: Security fence construction procedures stipulate that the fence would not be placed within 300 feet of either side of Tom's Creek. This would minimize or avoid altogether disturbance to Tom's Creek. Constraint areas have been delineated near Weekly Bayou that may potentially contain wetlands or are located within the floodplain. Some disturbance of wetland soils and vegetation could occur if fence construction were to occur within these areas; thus any activities within these constraint areas would first require coordination between the proponent and AAC/EMC. The proposed action would involve implementing sedimentation and erosion controls (silt screens and hay bales) to detour any sedimentation of wetlands/surface water if sediment transport is noted at any time during construction.

Biological Resources: Where appropriate, security fencing would be placed along roads and pathways to minimize impacts to undisturbed, natural areas. Where appropriate, BMPs such as weed-free hay bales and seeds and cleaning of equipment prior to entering the facility should be employed to prevent the introduction of non-native species.

Cultural Resources: High probability cultural resource areas are located near the Duke Field gate. Coordination of road design with AAC/EMH to avoid these areas would negate impacts. Historical buildings are located within the project area and coordination of design for barrier installation would be made with AAC/EMH for historical buildings and in historical districts. Construction of any barrier or fencing other than hydraulic bollards at National Register of Historic Places (NRHP) listed buildings 1, 11, 44, and 440 require consultation with the State Historical Preservation Officer (SHPO).

Hazardous Materials: Installation Restoration Project (IRP) areas SS-104 (Eglin Pipeline Spill Site, Pit 0), ST-58 (Military Gas Station), and SS-85 (Radar Burial Site) are located within proposed action locations. No impacts are anticipated from the proposed or alternative actions. However, should wellheads, piping, air sparging equipment or groundwater be disturbed, AAC/EMR would be contacted immediately.

Non-hazardous Solid Waste: Non-hazardous solid waste includes old fencing and land clearing debris. Cut vegetation must not be put into the solid waste stream (dumpsters or roll-offs). It may be taken to the wood yard on Eglin Main or to the closed Wright Landfill for mulching and soil stabilization. Waste will be recycled to the maximum extent possible.

MANAGEMENT REQUIREMENTS

An NPDES construction permit would be required if five or more acres of soil surface were disturbed. After March 2003, if disturbing more than one acre, an NPDES permit will be submitted. Clearing the fence construction area by mowing vegetation would not require a permit, whereas bulldozing would. Under the proposed action, fence construction would proceed with the least impactive means possible in addition to utilizing available cleared areas.

Disturbance of wetland soils and vegetation may occur in identified constraint areas; activities within these areas would first require coordination between the proponent and AAC/EMC.

BMPs, including the use of silt screens and certified weed-free hay bales, would be initiated during construction to minimize potential erosion impacts and minimize the threat of invasive species. Where appropriate, weed-free hay bales and seeds and cleaning of equipment prior to entering the facility should be employed to prevent the introduction of non-native species. Paved areas would be graded to allow storm water to flow away from sensitive areas (e.g., wetland and erosion-prone areas). Apron lighting connections would be placed along road and pathways to minimize impacts to undisturbed areas.

Aesthetics will be considered when selecting fencing material to be used in residential areas near the East Gate.

Consultation and mitigation processes must take place with AAC/EMH in order to comply with the National Historic Preservation Act (NHPA) and Air Force Instruction 32-7065 at the Duke Field gate area. Consultation with AAC/EMH is also required for installation of barriers and fencing near historical buildings or within historical districts (Building 1315). Construction of any barrier or fencing other than hydraulic bollards at NRHP listed buildings 1, 11, 44, and 440 requires consultation with the SHPO.

In addition to NHPA and AFI 32-7065, The Secretary of the Interior's Standards for Rehabilitation & Illustrated Guidelines for Rehabilitating Historic Buildings is required to be adhered to for the design of the barriers in and around Historic Districts or Structures.

Site plan designers would coordinate efforts with AAC/EMH during initial design at the Duke Field gate and at historical buildings and within historical districts on Eglin Main. Construction of any barrier or fencing other than hydraulic bollards at NRHP listed buildings 1, 11, 44, and 440 requires consultation with the SHPO.

FINDING OF NO SIGNIFICANT IMPACT

After a review of the EA by the Air Armament Center, Environmental Impact Analysis Process Committee, it has been concluded that the proposed construction of security fencing, barriers, and intrusion detection systems on Eglin AFB, Florida, would not have a significant adverse impact of a long-term nature to the quality of the human or natural environment. Therefore, an Environmental Impact Statement will not be prepared. This analysis fulfills the requirements of the National Environmental Policy Act, the President's Council on Environmental Quality, and codified at 32 CFR Part 989.

JAMES D. SIRMANS, GS-15
Director, Environmental Management

09 JAN 2003

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LIST OF ACRONYMS, ABBREVIATIONS, AND SYMBOLS

96 AMDS/SGPB	96th Bioenvironmental Engineering Flight
96 CEG/CERX	96th Civil Engineer Group/Long Range Plans
AAC	Air Armament Center
AAC/EMCE	Air Armament Center/ Environmental Management Directorate, Environmental Engineering Branch
AAC/EMH	Air Armament Center/Environmental Management Directorate, Cultural Resources Division
AAC/EM-PAV	Air Armament Center/Environmental Public Affairs
AAC/EMR	Air Armament Center/Environmental Management Directorate, Restoration Division
AAC/EMSN	Air Armament Center/Environmental Management Directorate, Stewardship Division, Natural Resources Branch
AAC/EMSP	Air Armament Center/Environmental Management Directorate, Stewardship Division, Environmental Analysis Branch
AAC/JAV	Air Armament Center/Environmental Law Division
AAC/SEOG	Air Armament Center/Ground Safety Element
AAC/SEU	Air Armament Center/Range Safety Section
AF	Air Force
AFB	Air Force Base
AFI	Air Force Instruction
AOC	Area of Concern
BMP	Best Management Practice
CEC	Cation Exchange Capacity
CEQ	Council of Environmental Quality
CFR	Code of Federal Regulations
CO	Carbon Monoxide
CY	Calendar Year
DoD	Department of Defense
DP	Disposal Pit
EA	Environmental Assessment
EIAP	Environmental Impact Analysis Process
EO	Executive Order
EOD	Explosive Ordnance Disposal
EPA	Environmental Protection Agency
ESA	Endangered Species Act
FAC	Florida Administrative Code
FDEP	Florida Department of Environmental Protection
FEMA	Federal Emergency Management Agency
FFWCC	Florida Fish and Wildlife Conservation Commission
FGFWFC	Florida Game and Fresh Water Fish Commission (now the Florida Fish and Wildlife Conservation Commission)
FONSI	Finding of No Significant Impact
ft^2	Square Feet
g/cm^3	Grams Per Cubic Centimeter
GIS	Geographic Information System
gm	Grams
IRP	Installation Restoration Program
JP4/JP8	Jet Propulsion Fuels
lbs	Pound(s)
LTM	Long Term Maintenance
MCL	Maximum Contaminant Level
meq	Milliequivalents
mg/L	Milligrams Per Liter
NAAQS	National Ambient Air Quality Standards
NEPA	National Environmental Policy Act
NFA	No Further Action
NHMEL	National Historical Mechanical Engineering Landmark

LIST OF ACRONYMS ABBREVIATIONS, AND SYMBOLS CONT'D

NHPA	National Historic Preservation Act
NO_X	Nitrogen Oxides
NPDES	National Pollutant Discharge Elimination System
NRHP	National Register of Historic Places
O&M	Operation and Maintenance
ORC	Oxygen Release Compound
OVA	Organic Vapor Analysis
PCB	Polychlorinated Biphenyl
pH	Measure of Acidity
PM_{10}	Particulate Matter Equal to or Less Than 10 Microns in Diameter
$PM_{2.5}$	Particulate Matter Equal to or Less Than 2.5 Microns in Diameter
POI	Point of Interest
RCRA	Resource Conservation and Recovery Act
RCW	Red-cockaded Woodpecker
ROI	Region of Influence
SCI	Scrub Tier I Habitat
SHPO	State Historical Preservation Officer
SI	Site Investigation
SIP	State Implementation Plan
SOC	Synthetic Organic Compound
SS	Spill Site
ST	Storage Tank
TA	Test Area
TCE	Trichloroethylene
USACE	U.S. Army Corps of Engineers
USEPA	U.S. Environmental Protection Agency
USFWS	U.S. Fish and Wildlife Service
UST	Underground Storage Tank
VOC	Volatile Organic Compound

1. PURPOSE AND NEED FOR ACTION

1.1 PROPOSED ACTION

The Proposed Action is to install security fencing, barriers, and intrusion detection systems at various locations on Eglin, AFB (Figure 1-1). Physical barriers, deterrents, and intrusion detection would be constructed at specified facilities. Security fencing would be placed along cleared areas of the perimeter of the installation and specified base facilities on the interior of the base to provide a legal boundary, protect against intrusion, and deter terrorist attacks.

1.2 NEED FOR PROPOSED ACTION

Currently, no permanent barriers or deterrents exist at facilities identified by the Vulnerability Assessment Team and the Joint Staff Installation Vulnerability Assessment per the requirements of Air Force Manual AFI-31-101. Additionally, the barriers were identified as needed for the areas that were identified by the Threat Working Group. Barriers and deterrents are required at locations on Eglin Main Base, the Army Ranger Camp, Navy EOD School (Site D-51), Site C-6 Radar Facility, and Duke Field Gate. Without such devices, these areas will continue to be vulnerable and remain a potential target for terrorist attacks.

No significant security fencing exists at the proposed locations. Fencing that is in place does not comply with current standards for protection and is inadequate to provide full protection to the perimeter and the flight line. Certain interior facilities that require fencing currently have none. Without security fencing, the installation is vulnerable to attack or intrusion. Currently, Security Forces personnel are required to make judgment calls as to the intent of individuals, without the legal boundary of a fence. However, when fencing is in place, Security Forces can clearly establish malicious intent upon intrusion.

1.3 OBJECTIVE OF THE PROPOSED ACTION

The objective of the Proposed Action is to provide barriers as deterrents to terrorist attacks and to install security fencing (with cleared sight distances and signage as required) around the perimeter of the installation, the flight line, and other range sites and specific facilities in order to protect against intrusion and create legal boundaries.

1.4 RELATED ENVIRONMENTAL DOCUMENTS

None.

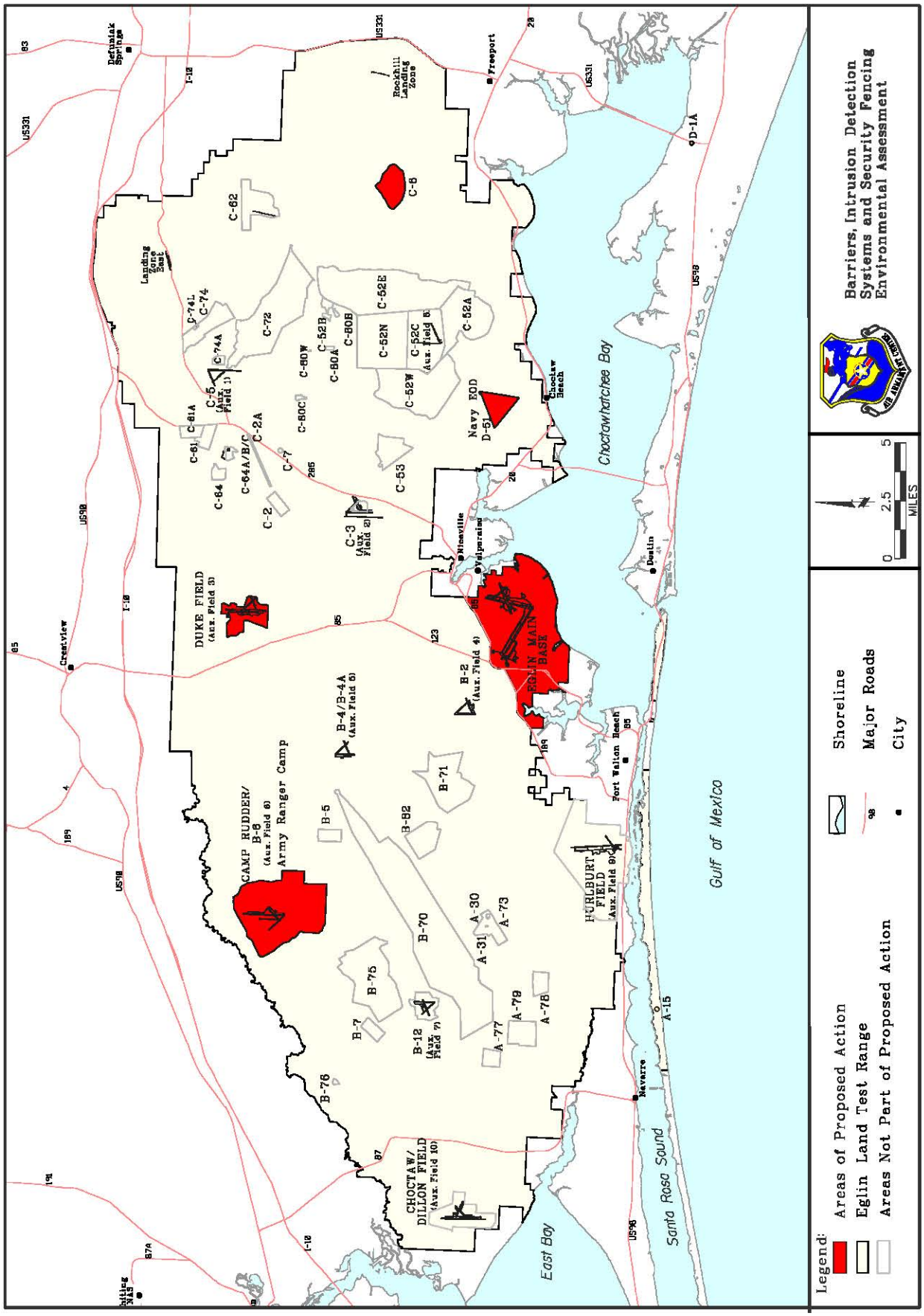

Figure 1-1. Location of Proposed Action

1.5 SCOPE OF THE ENVIRONMENTAL ASSESSMENT

This document was prepared in accordance with the requirements of the National Environmental Policy Act (NEPA) of 1969, the Council on Environmental Quality (CEQ) regulations of 1978, and 32 CFR Part 989. To initiate the environmental analysis, the proponent (96 CEG/CERX) submitted an Air Force (AF) Form 813 – Request for Environmental Impact Analysis– to the Air Armament Center / Environmental Management Directorate, Stewardship Division, Environmental Analysis Branch (AAC/EMSP). A review of the AF Form 813 by EMSP determined that the Environmental Impact Analysis Process (EIAP) Working Group should address the Proposed Action. The Working Group consists of representatives of the Environmental Analysis (AAC/EMSP), Environmental Engineering (AAC/EMCE), Natural Resources (AAC/EMSN), Cultural Resources Division (AAC/EMH), Bioenvironmental Engineering Flight (96 AMDS/SGPB), Legal (AAC/JAV), Safety (AAC/SEOG), Civil Engineer Group/Long Range Plans (96 CEG/CERX), Public Affairs (AAC/EM-PAV), and Safety Office (AAC/SE) functions at Eglin AFB.

1.5.1 Issues Eliminated from Detailed Analysis

Air Quality

Air quality was eliminated as a potential issue. A preliminary analysis of project generated air emissions was conducted to determine if:

- There would be a violation of a National Ambient Air Quality Standard (NAAQS).
- Emissions contributed to an existing or projected air quality violation.
- Sensitive receptors were exposed to substantial pollutant concentrations.
- There was an increase of 10 percent or more in Okaloosa County criteria pollutants emissions.
- Any significance criteria established by the Florida State Implementation Plan (SIP) was exceeded.
- A permit to operate was required.
- A change to the Title V permit was required.

Under existing conditions, the ambient air quality in Okaloosa County is classified as attainment for all national ambient air quality standards as defined in the Clean Air Act.

The primary emission source associated with the Proposed and Alternative Actions is the construction activity associated with the minor guardhouse expansions at the Ranger Camp and Duke Field and the installation of barriers and fencing at selected range sites and facilities on Eglin AFB. Intermittent construction-related effects would result from fugitive dust (particulate matter) and combustive emissions generated by guardhouse expansion and associated construction equipment. Emission effects would be temporary and would fall off rapidly with distance from affected sites. Due to the short-term effect of construction-related fugitive and combustive emissions and the small area affected, there would be no potential adverse

cumulative impacts on air quality associated with construction-related activities associated with the Proposed Action.

Preliminary emissions calculations for modification of the guardhouses and installation of the barrier systems under the Proposed and Alternative Actions resulted in emission values of approximately 426 pounds of carbon monoxide (CO) and about 1,030 pounds of nitrogen oxides (NO_x).

In accordance with Section 176(c), EPA promulgated the General Conformity Rule that is codified as 40 CFR 51, Subpart W. The provisions of this rule apply to state review of all federal general conformity determinations submitted to the state pursuant to 40 CFR 51, Subpart W and incorporated by reference at Rule 62-204.800 Florida Administrative Code. The Conformity Rule only affects federal actions occurring in nonattainment and maintenance areas. Since the Proposed and Alternative Actions are located in an attainment area, the Air Force would not need to prepare a conformity determination for the Proposed or Alternative Actions on Okaloosa Island.

Even though a conformity determination is not required, the federal action must still comply with the conformity requirements of Section 176(c); that is, the federal action may not exceed the threshold and criteria outlined above. For impacts screening in this analysis, more restrictive criteria than required in the General Conformity Rule was used. Rather than comparing emissions from construction activities to regional inventories, emissions were compared to 10 percent of Okaloosa County's 2000 emissions (a smaller area). The estimated emissions are significantly less than 10 percent of Okaloosa County's emissions and would not pose any potential adverse cumulative decrease in air quality as shown in Table 1-1.

Table 1-1. Emissions from Proposed Action (Tons)

Pollutant Emission Source	CO	*NO_X	PM_{10}	SO_X	*VOCs
Security Fence and Barrier Installation	0.19	0.46	0.17	0.05	0.03
Okaloosa County Total Emissions (CY1999)	91,359.9	8,709.1	3,756.5	405.5	11,957.7
Eglin AFB Total Emissions (CY2000)	95.4	117.7	114.6	17	105.7
Percent Change Okaloosa County	2 E-04	5.3 E-03	0.004	0.012	2.5 E-04

Source: FDEP, pers. comm., 2001; U.S. Air Force, 2000
* Includes mobile sources

Noise

Noise associated with this project would result from the use of augers and vegetation-clearing equipment. This equipment would be used within Eglin property that receives high volume traffic and heavy noise from air and vehicle traffic. Additionally, construction equipment would be used for a short duration and would be intermittent. As a result, noise associated with the use of project-related equipment would not significantly contribute to the existing noise environment. As a result, noise analysis was not conducted for this assessment.

Safety/Restricted Access

All activities associated with barrier and fencing construction would be conducted in accordance with OSHA safety standards. Project activities would not require any road closures or access restrictions in areas normally open to the public. Therefore, further analysis for this issue was not accomplished.

Environmental Justice

Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low Income Populations, requires federal agencies to identify community issues of concern during the NEPA process, particularly those issues relating to decisions that may have an impact on low-income or minority populations. Environmental Justice has been considered and is not an issue with this proposal because the construction of the security fencing, barriers and intrusion detection systems on Eglin Air Force Base will not effect any low-income or minority populations adjacent to the property.

1.5.2 Issues Studied in Detail

Preliminary analysis based on the scope of the Proposed Action identified the following potential environmental issues warranting detailed analysis:

Land Use

Because the barriers, deterrents, intrusion detection systems, and fencing will be placed within close proximity to other existing structures, it is necessary to evaluate potential conflicts during construction. Analysis focuses on identifying, to the extent possible, existing structures in the area and identifying potential conflicts and procedures for conflict resolution.

Physical Resources

Physical resources are described as the physical environment as it relates to the atmosphere (air quality, climate, and meteorology), geomorphology (landforms, terrain, topography, and soils), geology (underlying land formations), and hydrology (surface and ground waters). Analysis in this area focuses on identifying those resources that would be impacted by the Proposed Action and the resulting consequences to the quality and utility of those resources.

Soils

Construction of the barriers and the reconfigured parking lots and intersections may contribute to the erosion potential of soils in the project area. Erosion-prone soils in the project area, as well as potential impacts, will be identified, and management requirements for minimizing this potential will be identified.

Wetlands

The environmental assessment will identify wetland areas within the project area, determine the potential for impacts, and establish management requirements in order to ensure that wetland impacts are avoided.

Biological Resources

Biological resources (plants and animals) and related habitats (foraging and nesting areas) may be directly affected by the Proposed Action and alternative. Impacts analysis focuses on the potential for actions to directly, physically affect sensitive biological organisms (threatened and endangered species) and the potential for actions to alter/affect the quality and utility of the sensitive habitats (i.e. wetlands and foraging areas) frequented by those species.

Habitat Alteration/Direct Physical Impacts to Sensitive Species

Project-related activities may result in habitat alteration and/or impacts to sensitive or threatened and endangered species. Analysis focuses on quantifying, to the extent possible, habitat alteration (i.e., tree clearing), identifying any sensitive species within the project area, analyzing the potential for impacts, and establishing management requirements for the avoidance and/or minimization of identified potential impacts.

Hazardous Materials/Waste

For the purposes of this document, hazardous materials/waste refers to Installation Restoration Program (IRP) and other contaminated sites. Potential impacts are defined as the degree to which activities under the Proposed Action may disturb IRP or other contaminated sites identified within the project area. Analysis will identify potential IRP and other contaminated sites within the project area and the potential for project activities to impact these areas. Management requirements are then established for avoidance and impact minimization.

Cultural Resources

Cultural resources are defined as archaeological areas and historical architectural properties. Potential impacts are identified if the Proposed Action extends into the boundaries of identified cultural resource areas, resulting in the disturbance of such resources. Analysis focuses on identifying potential cultural resource sites within or adjacent to the project area, evaluating the potential for impacts, and establishing management requirements for avoidance and impact minimization.

1.6 APPLICABLE REGULATORY REQUIREMENTS AND COORDINATION

A digging permit is required prior to project implementation. Within thirty days of digging permit application, all adjacent utility easement holders should be contacted so that they may identify the exact location of underground utility lines prior to digging. A design and

construction permit will be required due to the increase in impervious surface area created by the paved roadways, parking lot, and structures associated with the Duke Field Gate. Total area impacted by the proposed security fencing and barriers will be approximately 50 acres. Consequently, a National Pollutant Discharge Elimination System Permit (NPDES permit) for construction activities disturbing five or more acres is required for storm water management. Both the Proposed and Alternative Actions are near historical and archeological sites that are listed or eligible for listing in the National Register of Historic Places (NRHP). Consultation with the State Historical Preservation Officer (SHPO) is required for any barrier or fencing other than hydraulic bollards at NRHP listed buildings 1, 11, 44, and 440. Coordination with AAC/EMH is also required for installation of barriers and fencing near historical buildings or within historical districts (building 1315). Placement of barriers and fencing in locations other than those specified in this EA will require consultation with AAC/EMH.

The preliminary site plan footprint for the Proposed Action at the Duke Field Gate is close to archaeological sites identified by AAC/EMH. As a result, activities may impact this area. However, coordination of site plan design with AAC/EMH for avoidance of cultural resource areas would allow construction to take place unhindered. Installation Restoration Project (IRP) areas SS-104 (Eglin Pipeline Spill Site, Pit 0), ST-58 (Military Gas Station), and SS-85 (Radar Burial Site) are located within Proposed Action locations. Wellheads, piping, air sparging equipment, or groundwater should not be disturbed. (In the event of such occurrence, AAC/EMR should be contacted immediately.)

1.7 DOCUMENT ORGANIZATION

This environmental assessment follows the organization established by the Council of Environmental Quality (CEQ) regulations (40 CFR, Parts 1/500-1508). This document consists of the following chapters:

1.0 Purpose and Need for Action
2.0 Description of the Proposed Action and Alternatives
3.0 Affected Environment
4.0 Environmental Consequences
5.0 Plan, Permit, and Management Requirements
6.0 List of Preparers
7.0 List of Contacts and Correspondence
8.0 References

Appendix A – Photographs
Appendix B – Specifications
Appendix C – Draft FONSI and FONPA

2. DESCRIPTION OF PROPOSED ACTION AND ALTERNATIVES

As required by federal regulation, this Environmental Assessment (EA) addresses the possible environmental impacts of the Proposed Action, including a no-action alternative. Section 2.5 provides a summary of the issues and potential impacts associated with the Proposed Action and no action.

2.1 PROPOSED ACTION (PREFERRED ALTERNATIVE)

In order to decrease installation vulnerability to terrorist attack, the Proposed Action is to provide barriers and deterrents at the Army Ranger Camp, Navy Explosive Ordnance Disposal (EOD) School, Site C-6 Radar Facility, Duke Field, and specific locations on Eglin AFB, Florida. Barrier systems for the Proposed Action include the use of retaining walls, bollards, planters, bar swing gates, and anti-vehicle barriers. Deterrents include an underground intrusion detection system (Test Area [TA] C-6 Radar Facility) and apron lighting (Eglin Main Base). The Proposed Action will also require 96 CEG/CERX to install security fencing around various perimeters of the installation, the flight line, certain range sites, and specified facilities on Eglin AFB to protect against intrusion and create legal boundaries. Costs associated with installation of the portion of fence shown in Figure 2-1 would be covered under the Florida Defense Infrastructure Grant Program through Okaloosa County.

The following sites were determined to be in need of barriers and/or deterrents and are shown in Figures 2-1 to 2-5.

U.S. Army 6th Ranger Training Battalion (Test Area B-6). The Proposed Action (Preferred Alternative) includes the installation of Pole and Cable Barriers around the facility, Jersey Barriers posted at vulnerable sites within the camp, additional bar swing gates, and reconfiguration of the Guard House.

Pole and Cable Barriers consist of steel or wood poles with wire cable strung from pole to adjacent pole. Jersey Barriers are approximately 32 inches in height with the first two inches from the base rising vertically, the next ten inches rising at a 55-degree angle and the remainder at an eighty-four degree angle (as measured from horizontal). These are shown in Appendix A.

The Guard Station would be expanded to allow for entrance and exit lanes and placement of the Guard House in the center of the entrance. Approximately eight bar swing gates would be installed to control entry and access to the facility.

Duke Field Gate. Under the Proposed Action, road improvements and barrier and lighting installation would occur at Duke Field Gate. Preferred construction includes the addition of a parking and truck inspection/turn area and sidewalk. The inbound and outbound lanes will be expanded to provide more spacing from the guard house door to the road. A raised flowerbed would be erected to protect the guardhouse from high-speed vehicles. A rail/barrier would be placed along the outbound lane. Lighting improvements would include replacement of existing transformer with a larger transformer and installation of approximately six pole-mounted overhead light fixtures.

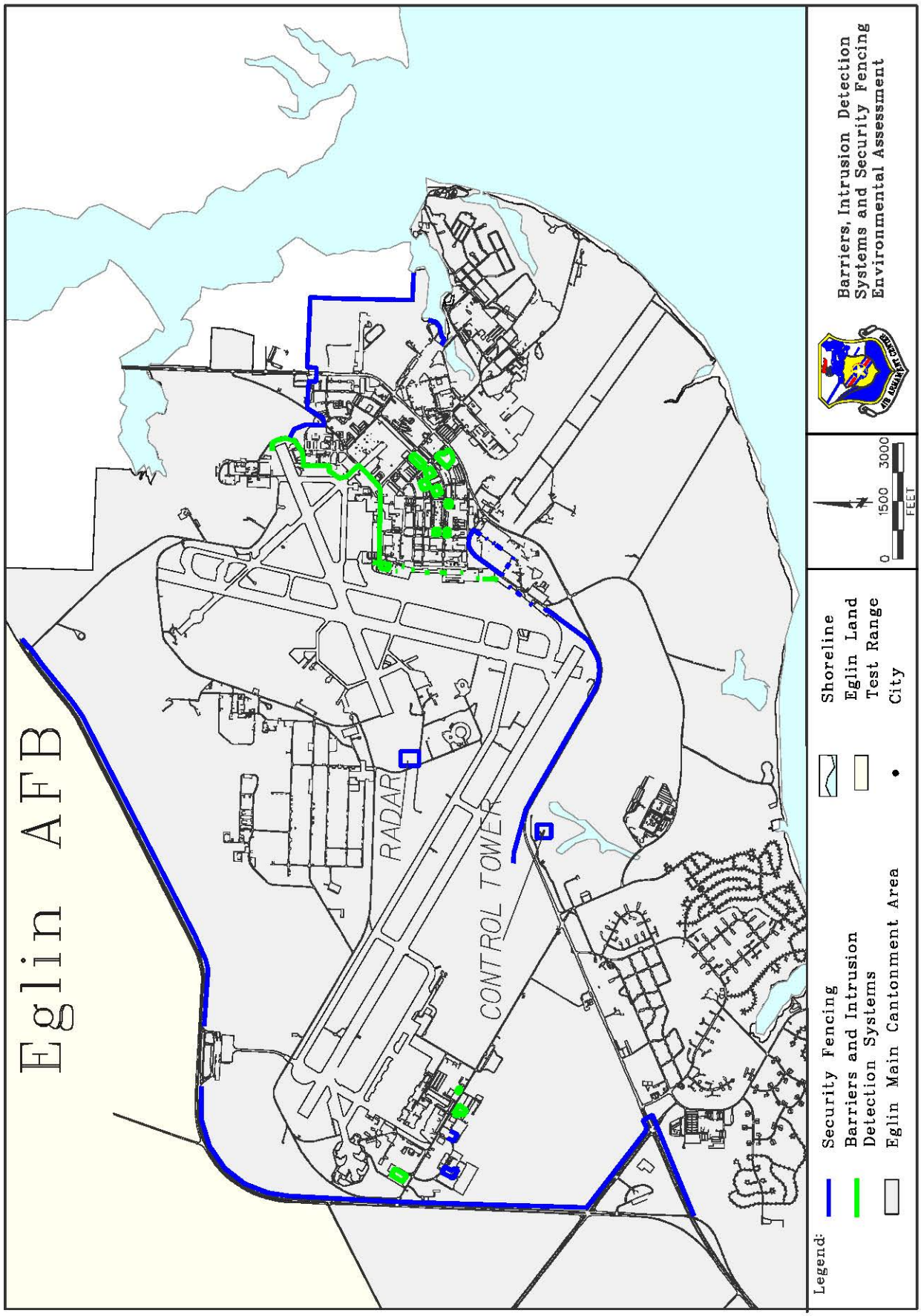

Figure 2-1. Location of Proposed Action Eglin Main Base

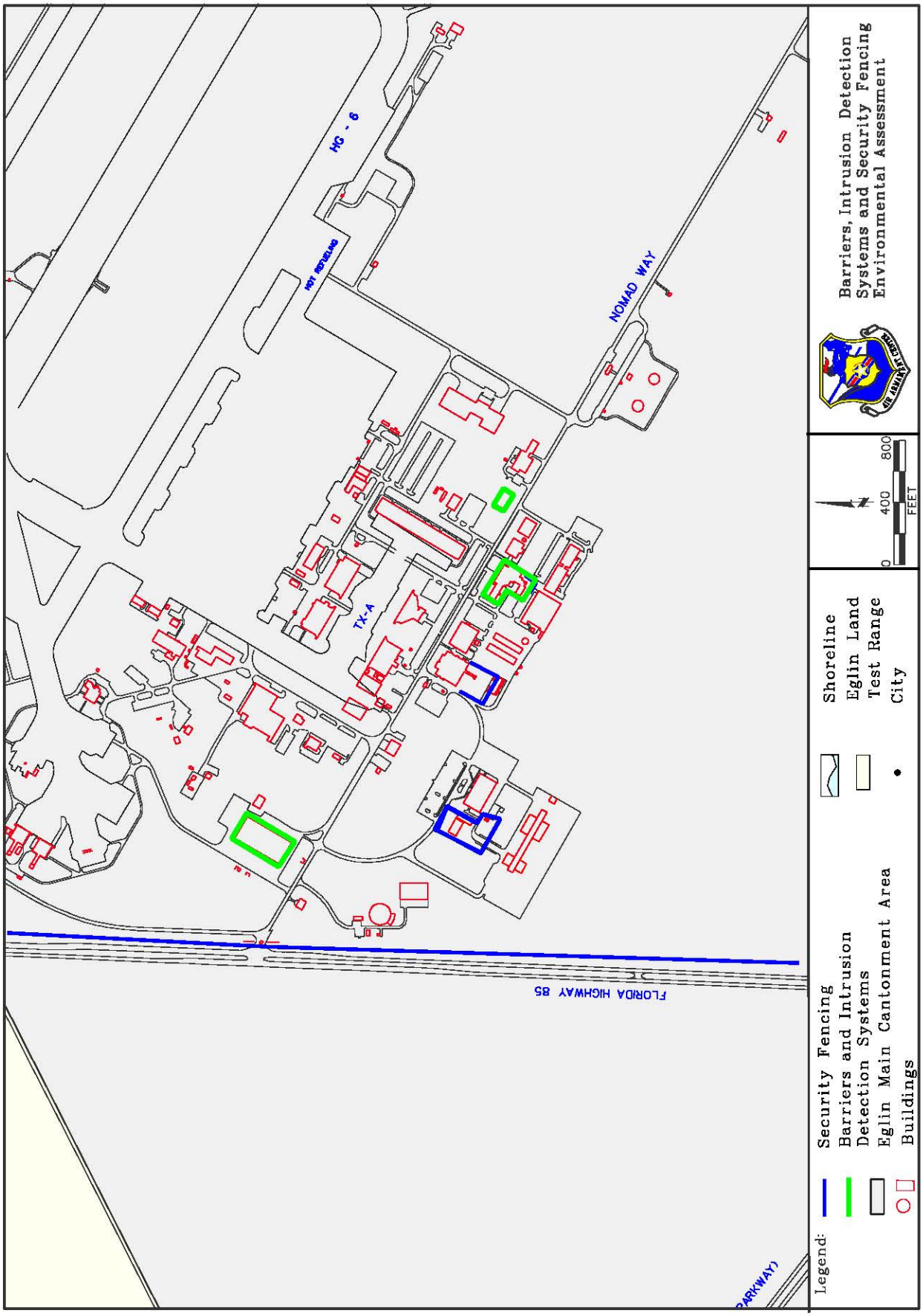

Figure 2-2. Location of Proposed Action Eglin Main Base West Gate Area

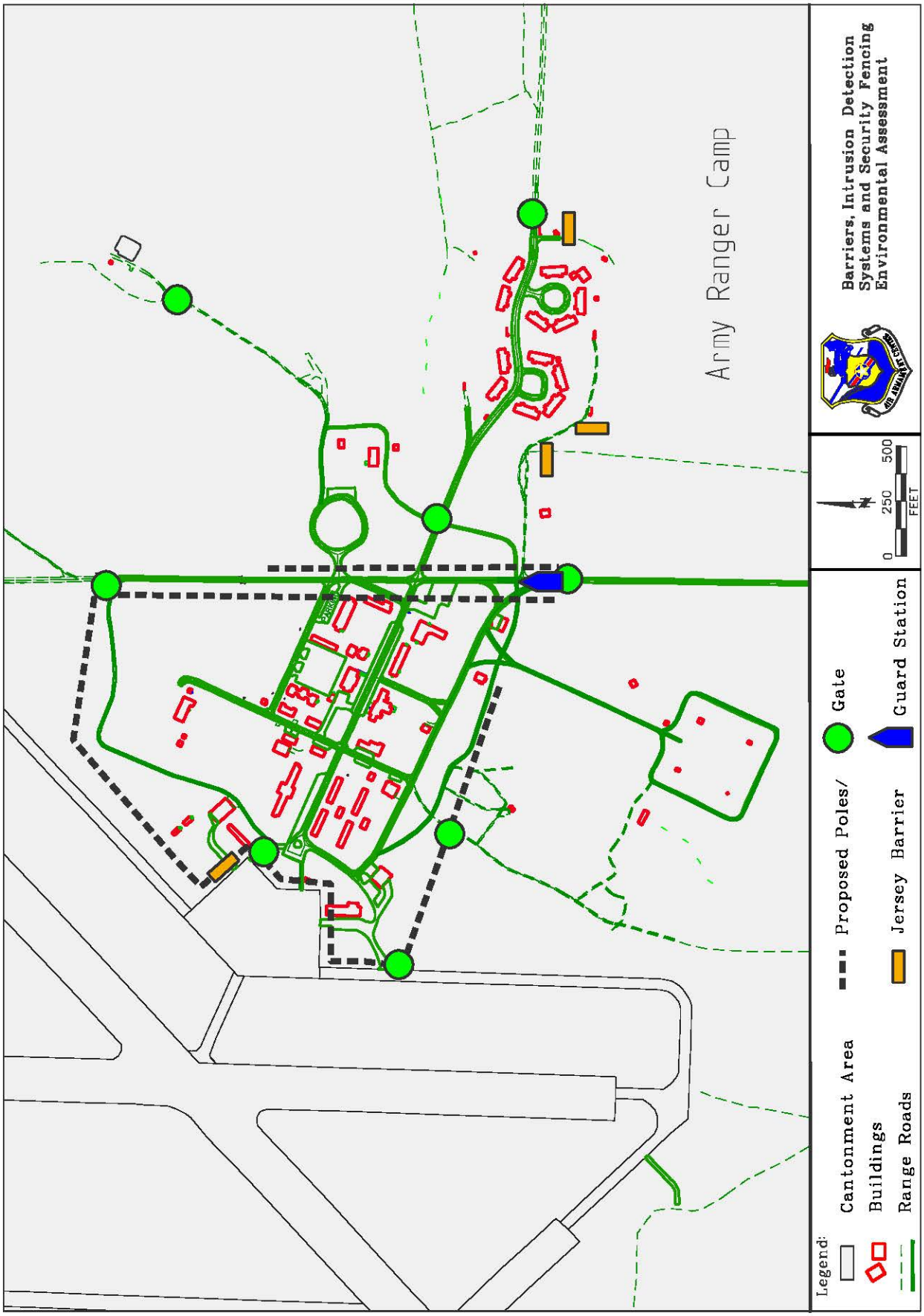

Figure 2-3. Location of Proposed Action Army Ranger Camp

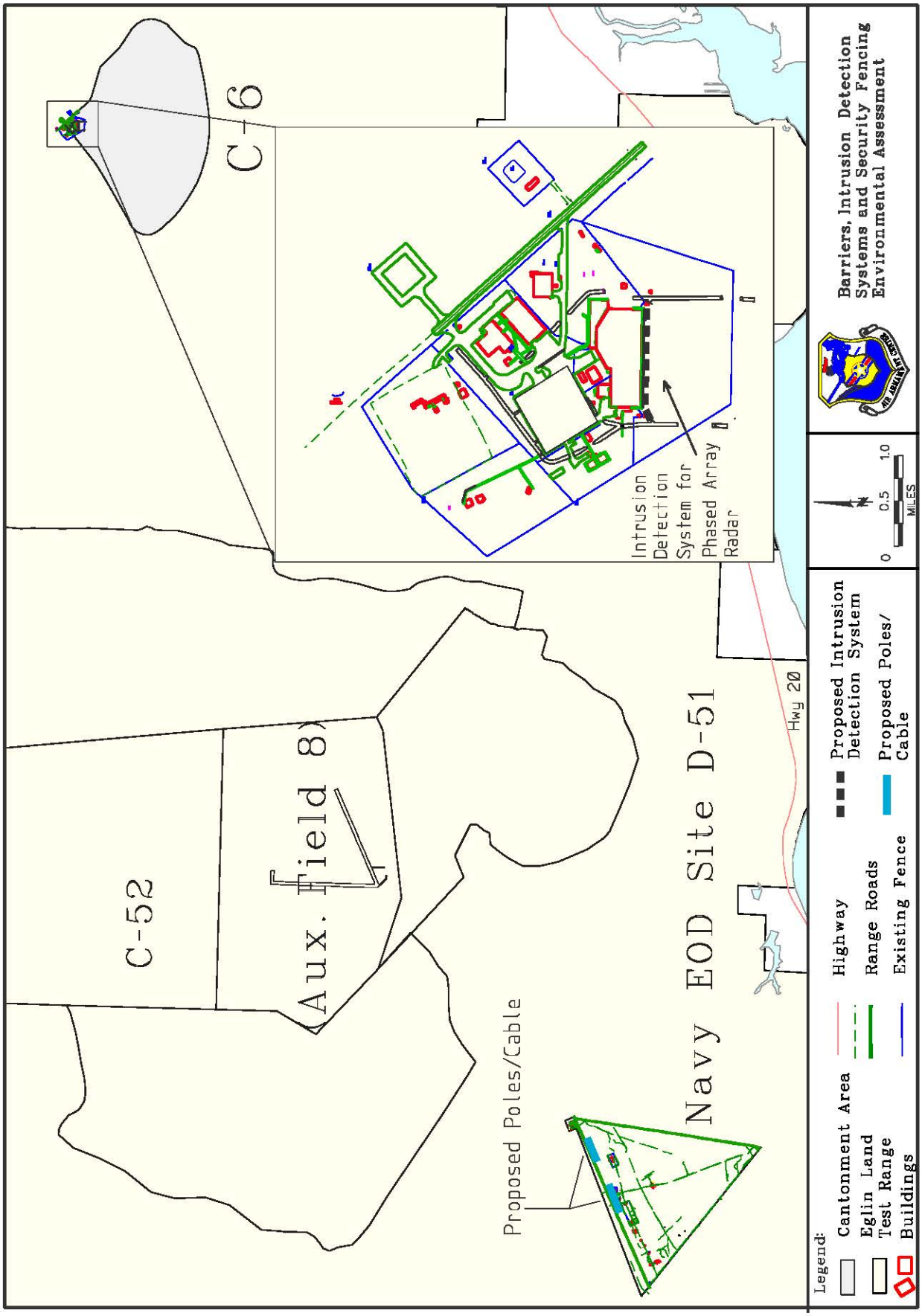

Figure 2-4. Location of Proposed Action Navy EOD School and Test Area C-6

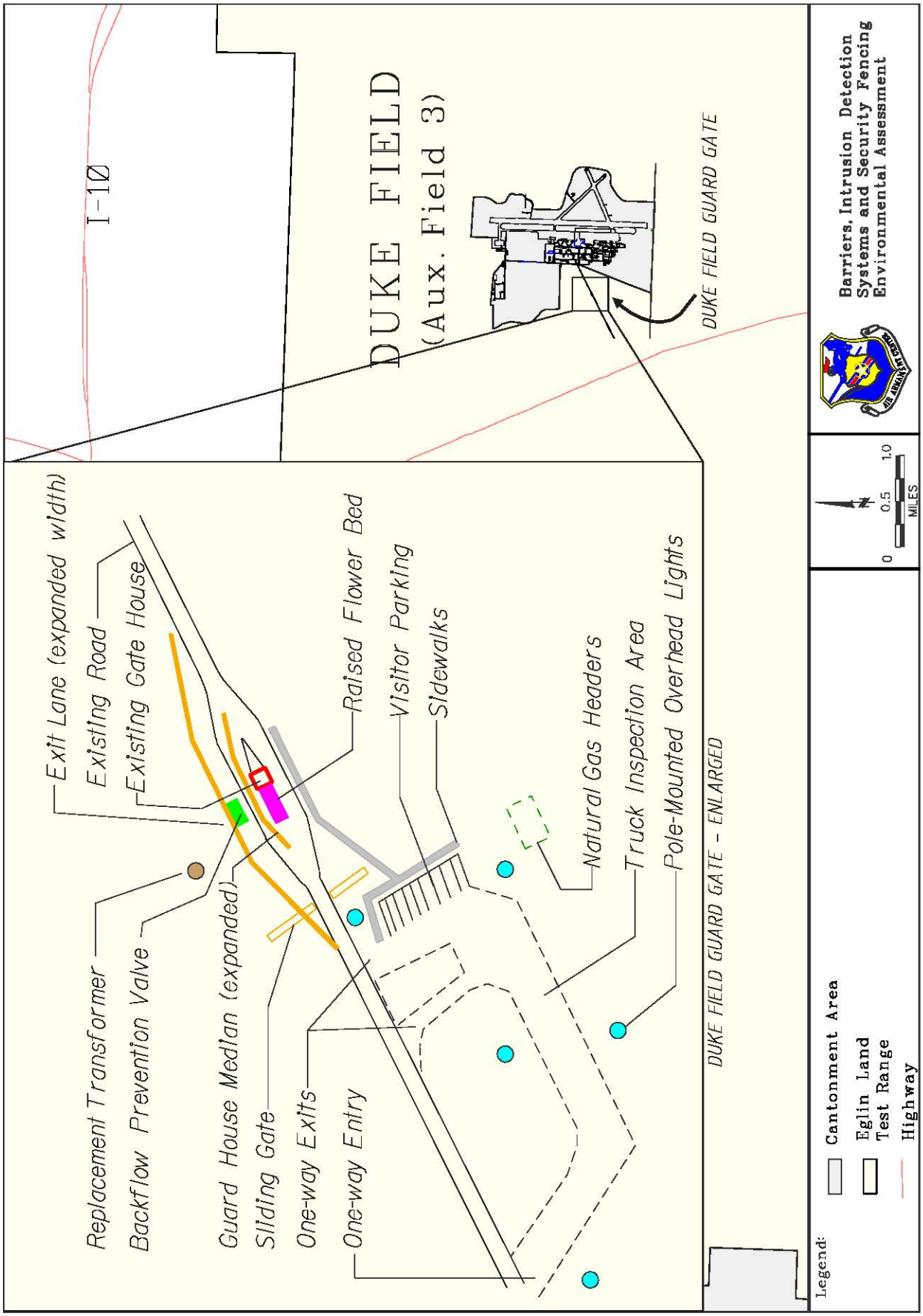

Figure 2-5. Location of Proposed Action Duke Field

Test Area C-6. The Proposed Action (Preferred Alternative) for the Phased Array Radar site entails construction of an intrusion detection system. The system would be composed of a 20 to 30 foot long detection cable buried one foot deep and placed in close proximity to the radar dish.

Eglin Main Cantonment –Facilities Buildings 1, 11, 13, 44, 68, 104, 252, 253, 272, 349, 350, 351, 374, 380, 440
Eglin Main 33rd Area Buildings 1306, 1315, 1355, 1392
Eglin Main Runway/Cantonment
U.S. Navy Explosive Ordnance Disposal School (Test Area D-51)

Barrier systems at the above-proposed locations would include the installation of a combination of retaining walls, bollards, planters, bar swing gates and anti-vehicle barriers. Apron lighting will be erected at specific locations.

Retaining walls can be constructed of brick, block or solid concrete. Height and depth vary depending upon project specifications. Retaining walls located on Eglin Main Base are shown in Appendix A.

Bollards are any of a series of short posts set at intervals to delimit an area or to exclude vehicles (Appendix A). Bollard systems operate individually in groups up to ten and are used for intermediate level security applications. Individual bollards may measure up to 13 inches in diameter and up to 35 inches high. They are usually mounted on 3-foot centers. Hydraulic versions can be operated by a variety of control systems. Manual versions are counter balanced and lock in the up or down position. All models are crash rated and may be lowered to allow passage of authorized vehicles (Delta Scientific, 2002).

Planters may be raised landscaped beds; planter boxes or large concrete planters designed to prevent vehicle access to areas but will allow efficient pedestrian flow and added aesthetic value near buildings as shown in Appendix A (Stoneware, 2002). Planters may be plastic or concrete and most are portable (Design Pro, 2002). Flowers and shrubs may be planted as directed by Security Forces for maximum protection.

Anti-vehicle barriers (Tiger Claws) control access and exit in high-security areas, increase perimeter protection for sensitive facilities and, when activated, can trap potential criminals or terrorists by shredding vehicle tires (Appendix A).

Security gates are activated upon correct access code or card entry to limit entry to sensitive areas to authorized personnel only (Appendix A).

Hospital/West Gate to 33rd Gate
33rd Gate to Okaloosa Regional Airport
Okaloosa Regional Airport to North Gate
Control Tower to King Hangar
East Gate Area
Climatic Lab Apron

The construction of security fencing would define legal boundaries and protect against intrusion at the above locations and are shown in Appendix A.

Specifications for the proposed Security Fencing are contained in The Air Force Security Program, AFI 31-101, and detailed in Appendix B. Installations must use 9-guage woven, steel wire, and chain-link fabric, with 2-inch square mesh. The aboveground height of the mesh fabric must measure 7-feet and be mounted on metal (or concrete) posts of appropriate height set in concrete with additional bracing at corners and gate openings. Aesthetics will be considered when selecting fencing material to be used in residential areas near the East Gate. Representations of fencing for the proposed locations are shown in Appendix A.

2.2 ACTION ALTERNATIVES

Table 2-1. Action Alternatives

Site	Proposed Action	Alternative Action 1	Alternative Action 2
Eglin Main Base	Installation of a combination of Retaining Walls, Bollards, Raised Bed Planters, Anti-vehicle Devices, and Bar Swing Gates as barrier systems	Retaining Walls as barrier systems	Bollards as barrier systems
Army Ranger Camp	Poles and Cable at specific locations around perimeter Jersey Barriers- 20ft (35) Guard Station Expansion Bar Swing Gates (8)		
Duke Field Gate	Raised Flower Bed Rail/Barrier on exit lane side • Expand width of Guard House • Modify gate as required • Provide parking and truck inspection/turn area • Expand length/width of inbound and outbound lane Install pole-mounted overhead lighting (6)		
Site C-6	Underground Intrusion Detection Cable – 20-30 feet		
Hospital/West Gate to 33rd Gate 33rd Gate to Okaloosa Regional Airport Okaloosa Regional Airport to North Gate East Gate Area Climatic Lab Apron	Security Fencing (specifications located in Appendix B) Apron Lighting		

2.3 NO ACTION ALTERNATIVE

The No-Action Alternative would be to not construct the barriers, intrusion detection systems, and security fencing.

2.4 ALTERNATIVES CONSIDERED BUT NOT CARRIED FORWARD

Significant changes to the public and base transportation system were considered. However, implementation of the changes was deemed unnecessary based on adequacy of other alternatives in meeting the needs. Additionally, significant changes may create conflicts with pedestrian flow and transportation. As a result, this alternative was not carried forward for analysis.

2.5 COMPARISON OF ALTERNATIVES

Table 2-2. Summary Matrix of Issues, Proposed Action and Alternatives, and Potential Impacts

Issue	Proposed Action	Alternative 1	Alternative 2	No Action
Land Use	Installation will take place in primarily "industrialized" areas on Eglin AFB, with heavy human presence. Conflicts with the users on Base property during fencing and barrier construction would primarily consist of potential effects to traffic movement due to the proximity of project activity to roadways. However, project activities would take place along shoulders and right-of-ways along roadways and along exterior perimeters of buildings and parking areas. It is not anticipated that traffic stoppage would occur. Conflicts with motorists, traffic movement, or pedestrians are unlikely.	Same as Proposed Action	Same as Proposed Action	No Impact
Soils	Proper BMPs will be implemented during barrier and fence installation to minimize soil erosion near wetland areas and drainages. These include silt fencing and hay bales. All disturbed ground would be reseeded with native grasses. An NPDES construction permit would be required if five or more acres of soil surface is disturbed. Clearing the fence construction area by mowing vegetation would not require a permit, whereas bulldozing would. Under the Proposed Action, fence construction would proceed with the least impactive means possible in addition to utilizing available cleared areas.	Same as Proposed Action	Same as Proposed Action	No Impact
Water Quality	Utilization of BMPs during fence installation would minimize potential impacts to adjacent water bodies. No adverse impacts are anticipated.	Same as Proposed Action	Same as Proposed Action	No Impact
Wetlands	The Proposed Action involves ground disturbance and clearing of vegetation that if conducted in or near water and wetland areas would potentially create erosion, temporarily affecting the water quality of these areas. Areas identified as possibly susceptible to impacts from the Proposed Action include a wetland area associated with Smith Branch and an estuarine wetland area near Weekly Bayou. No impacts are anticipated at Smith Branch, and project constraint areas have been established near Weekly Bayou to avoid wetland impacts in that area.	Same as Proposed Action	Same as Proposed Action	No Impact
Habitat Alteration Direct Physical Impacts to Sensitive Species	Smith Branch, an Okaloosa darter stream, and a wetland area associated with Smith Branch occur approximately 600 feet north of the D-51 site but would not be affected by the proposed pole/cable placement at D-51. Tom's Creek is habitat for the Okaloosa darter, a federally and state listed endangered species that is susceptible to sedimentation and water quality impacts caused by activities that create erosion. Since fence construction would be halted within 300 feet of either side of Tom's Creek, impacts to the Okaloosa darter from erosion should not occur. An inactive red-cockaded woodpecker (RCW) cavity tree exists approximately 400 feet from the Duke site where the Proposed Action would occur. No inactive or active cavity trees would be removed as a result of the Proposed Action. Thus no impacts to RCWs would occur. BMPs such as weed-free hay bales and seeds and cleaning of equipment prior to entering facility should be employed to prevent the introduction of non-native species.	Same as Proposed Action	Same as Proposed Action	No Impact
Cultural Resources	High probability cultural resource areas are located at the Army Ranger Camp and the Duke Field Gate. No impacts would occur to cultural resources at the Army Ranger Camp should current barrier designs be followed. Impacts to cultural resource areas at the Duke Field Gate are dependent upon final road and parking lot design. Consultation with Cultural Resource Management is required to avoid impacts. Historical Buildings are listed among various sites on Eglin Main Base. (Formal consultation with SHPO is advised for use of any barrier system other than hydraulic bollards at Buildings 1, 11, 44 and 440.) Consultation cannot be completed until initial design for the site is complete. No adverse impacts are anticipated pending formal preliminary design drawings showing the least impact to historical areas.	Same as Proposed Action	Same as Proposed Action	No Impact
Hazardous Materials/Waste	For the purposes of this document, hazardous materials/waste refers to IRP and other contaminated sites. IRP sites were identified within the project area. Active IRP sites SS-104, ST-58 and SS-85 are located within areas of concern. If wellheads, air sparging equipment, piping and groundwater are disturbed during barrier and fencing installation, consultation with AAC/EMR is required. No impacts from hazardous materials are anticipated. Non-hazardous solid waste includes removed old fencing and land clearing debris. Cut vegetation must not be put into the solid waste stream (dumpsters or roll-offs). It may be taken to the wood yard on Eglin Main or to the closed Wright Landfill for mulching and soil stabilization. Recycle waste to the maximum extent possible.	Same as Proposed Action	Same as Proposed Action	No Impact

3. AFFECTED ENVIRONMENT

3.1 LAND USE

Eglin AFB

Eglin AFB is located on the Florida Panhandle between Pensacola and Panama City. It is bordered on the south by the Gulf of Mexico (Figure 1-1). Eglin AFB is comprised of more than 724 square miles of land ranges and facilities and more than 86,500 square miles of water ranges in the Gulf of Mexico. Eglin Main Base is located in the southwestern portion of Eglin AFB in Okaloosa County, Florida. It is approximately 0.8 miles and 1.5 miles southwest of Valparaiso and Niceville, Florida, respectively, and 4 miles northeast of Fort Walton Beach, Florida. U.S. Highway 85 and State Route 123 converge at Eglin Main. Eglin Main Base hosts the main testing, administrative, and living facilities, along with the major airfield, and is home to Air Armament Center, a unit of the Air Force Materiel Command.

Eglin AFB supports approximately 50 associate units, including the 33rd Fighter Wing, Aeronautical Systems Center, Air Force Reserve (Duke Field), Air Force Special Operations Command (Hurlburt Field), Air Force Space Command (Space Surveillance), U.S. Army Ranger Camp, U.S. Navy (Naval Explosive Ordnance Disposal School and Choctaw Field), Federal Bureau of Investigation, and Federal and Okaloosa County Prisons. The Eglin land reservation consists of 27 ranges and 10 auxiliary fields of which three remain active: Eglin Main, Duke Field and Hurlburt Field.

Eglin Main Base

The affected environments for the following areas are shown in Figures 3-1 to 3-3.

Building 1 – Air Armament Center Headquarters

Building 11 – Andrews Hall, Research and Development

Building 13 – Air Force Research Laboratory, Research and Development

Building 44 – Communications, main communication hub for installation

Building 68 – 46th Test Squadron, Test and Evaluation

Building 104 – 46th Ops Group, radar approach

Building 252 – 96th Communications Squadron, Base Communications

Building 253 – 96th Communication Squadron, Base Network Control Center

Building 272 – 96th Security Forces Squadron, Headquarters, Armory and Control Center

Building 349 – 46th Test Wing, ADP, Electronic Design and Fabrication

Building 350 – Mixed occupancy specialized groups

Building 351 – 53rd Wing, Test and Evaluation

Building 374 – 46th Test Wing, Guided Weapons Evaluation Facility

Building 380 – 96th Communications Group, Freeman Computer Sciences Center, Test and Development.

Building 440 – McKinley Climatic Laboratory

This facility tests weapon systems in climatic extremes, i.e., a temperature range from -65 degrees Fahrenheit to 165 degrees Fahrenheit, and snow, rain, wind, ice, humidity, sand, dust, and salt fog conditions. The largest of its six chambers is an insulated hangar with an enclosed volume exceeding three million cubic feet. What makes this facility unique is its ability to support testing that requires engine(s) running and/or while operating aircraft systems to include the aircraft guns under these climatic conditions.

33rd Fighter Wing (Buildings 1306, 1315, 1355, 1392)

The 33rd Fighter Wing under Air Combat Command is an air-to-air combat wing that can rapidly mobilize and deploy worldwide to gain and maintain air superiority by engaging and destroying enemy forces. The wing has three squadrons, each with F-15 aircraft. At Eglin AFB, missions involve air-to-air combat training. The 728th Air Control Squadron under the 33rd Fighter Wing provides forward air control by using a mobile, combat-rated radar element that can be deployed worldwide. The squadron trains at Eglin AFB and is deployed to provide command and control for joint air operations. The squadron conducts surveillance and identification of enemy movement and provides weapons control, battle management, and tactical communications. Areas of concern are shown in Figure 3-2.

Duke Field (Building 3009 and Gate 3049)

The 919th Special Operations Wing, an Air Force Reserve wing, is located at Duke Field, which lies ~9 miles north of Eglin Main Base (Figure 3-4). Their mission ranges from close air support, armed reconnaissance, and armed interdiction to Air Refueling and Special Operations Support. Humanitarian missions are also conducted by the 919th Special Operations Wing, providing medical and other assistance to countries of the western hemisphere. When called to active duty, the wing is attached to the Air Force Special Operations Command.

U.S. Army 6th Ranger Training Battalion

The 6th Ranger Training Battalion, located at the Army Ranger Camp (Test Area B-6), is located ~14 miles northwest of Eglin Main and provides jungle training for the Army Rangers (Figure 3-5). Training includes parachute jumps and ground maneuvers throughout the Eglin AFB complex.

U.S. Navy Explosive Ordnance Disposal School

The U.S. Navy Explosive Ordnance Disposal School (Test Area D-51) provides initial and proficiency training in the disposal of explosive ordnance and ordnance-related waste for the Department of Defense. It is located ~7 miles east of Eglin Main Base (Figure 3-6).

Test Area C-6 Radar Facility (Building 8640)

This test area, located ~17½ miles northeast of Eglin Main Base, is a dedicated deep space tracking station, which operates continuously (Figure 3-6).

3.2 PHYSICAL RESOURCES

3.2.1 Soils

Soil formation is an on-going process that is determined by the nature of the parent material and influence of environmental factors such as climate, geology, topography, and vegetation. Soils on the project area belong to the Lakeland Association and are primarily excessively drained, brownish-yellow sands that have developed along the broad ridge and tops and slopes. Typically, they have sandy surface layers with sandy subsoils that are more than 80 inches deep.

Overall, the majority of Lakeland association soils are well drained, sandy, and low in organic matter content and cation exchange capacity (CEC). Soil pH values range from 4.5 to 6.0 and contain less than one percent organic matter in the top 0 to 40 inches of soil. Reported CEC values for the top six inches of Lakeland soils were variable (3.5 to 17 meq/100 gms soil) and likely reflect variability in sampling sites (e.g., amount of surface organic matter, disturbed versus undisturbed surface). Permeability ratings are moderate to very rapid (6.0 to 20 inches per hour) for Lakeland soils (U.S. Department of Agriculture, 1995). Rainfall and runoff investigations at Eglin showed that due to the high permeability of Eglin soils, rainfall sequences were required before overland flow and runoff occurred (Becker et al., 1994). Lakeland soils have a bulk or particle density of 1.48 grams per cubic centimeter (g/cm^3) (U.S. Department of Agriculture, 1995).

The Lakeland soils are easily eroded because they lack cohesiveness and have limited water-holding capacity. The establishment and maintenance of vegetation is difficult because the soils are too sandy, low in productivity, or are on steep slopes (U.S. Air Force, 1996).

3.2.2 Water and Wetland Resources

Water resources and wetlands, components of the affected environment for some of the sites of the Proposed Action, are identified in this section. The affected environment includes only the main base sites since no water resources or wetland areas are located near the C-6 (nearest is 460 feet away), D-51 (500 feet away), Duke Field (1,700 feet away) or Ranger Camp sites (400 feet away). Resource topics discussed in this section include surface waters and water quality, groundwater, wetlands and floodplains. Figures 3-1 through 3-6 depict the affected environment including water and wetland resources.

3.2.3 Regulatory Overview

Water resources are protected by a number of federal and state water quality acts, a floodplain management directive, and implementing regulations. With respect to the Proposed Action, major regulations include:

- Clean Water Act
- Executive Order 11988, Floodplain Management (implemented for the Air Force as part of Air Force Instruction 32-7060)
- Air Force Instruction (AFI) 32-7041, Water Quality Compliance

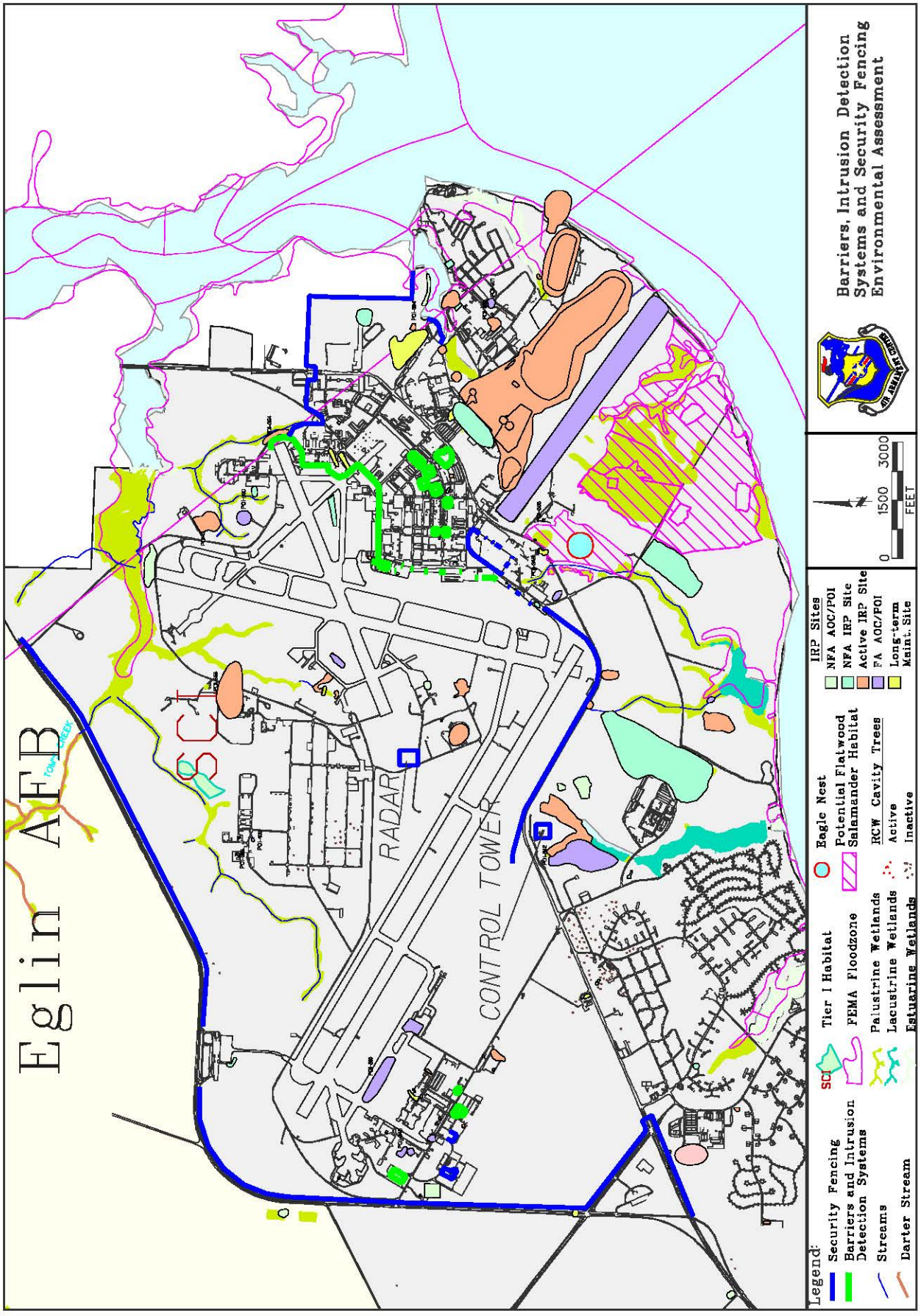

Figure 3-1. Affected Environment of Eglin Main Base

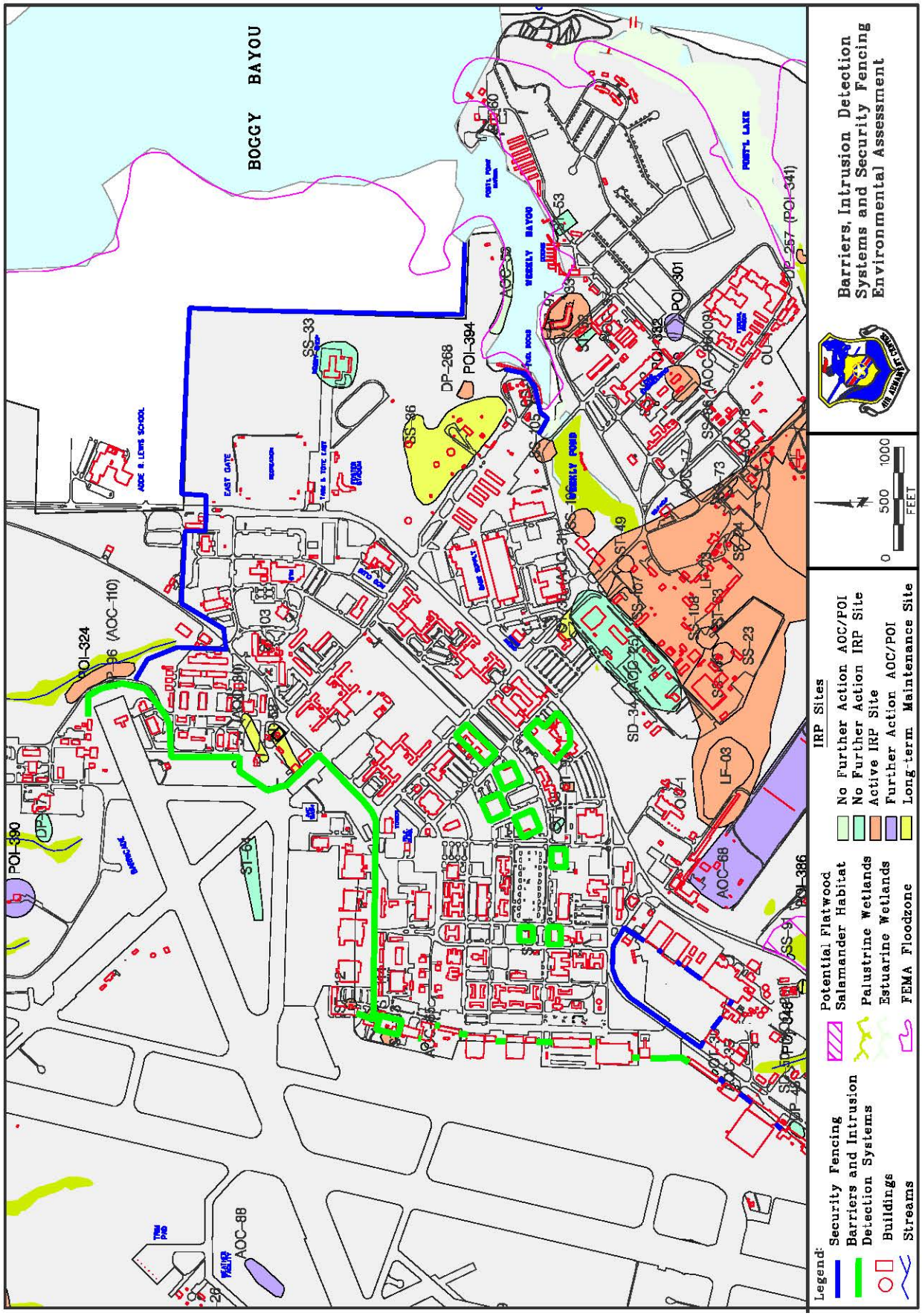

Figure 3-2. Affected Environment of Eglin Main Base – East Gate

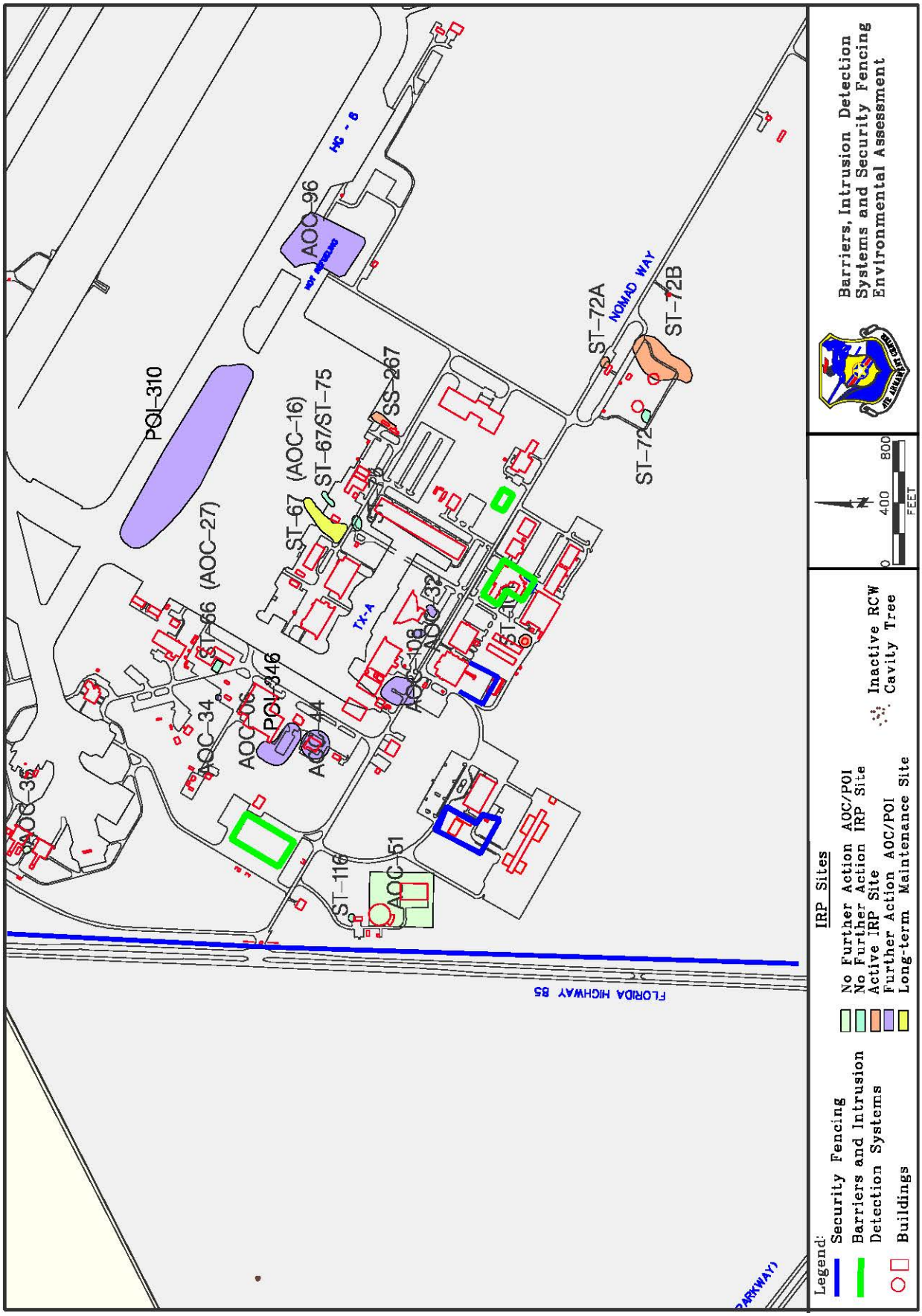

Figure 3-3. Affected Environment of Eglin Main Base – West Gate

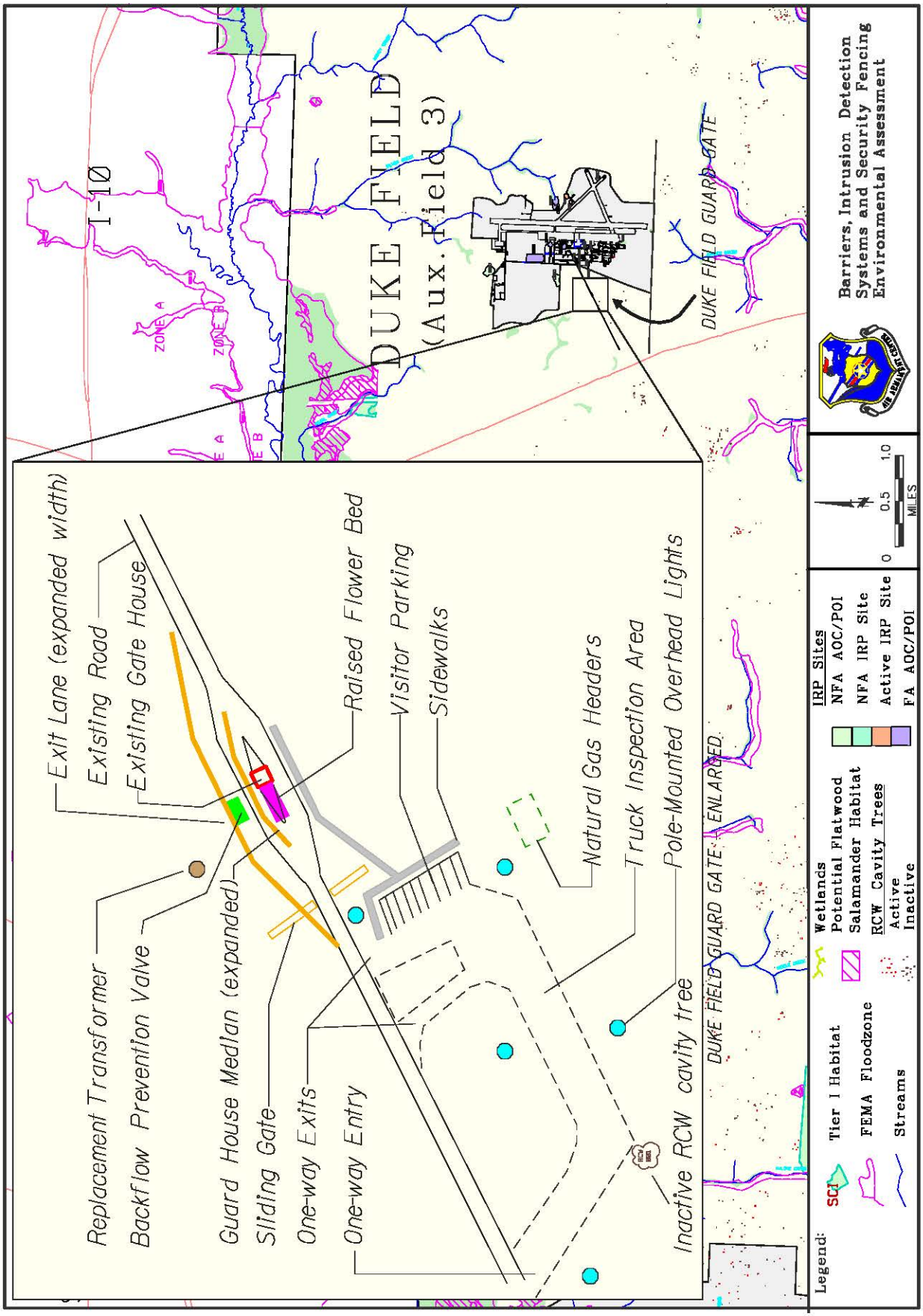

Figure 3-4. Affected Environment of Duke Field Site

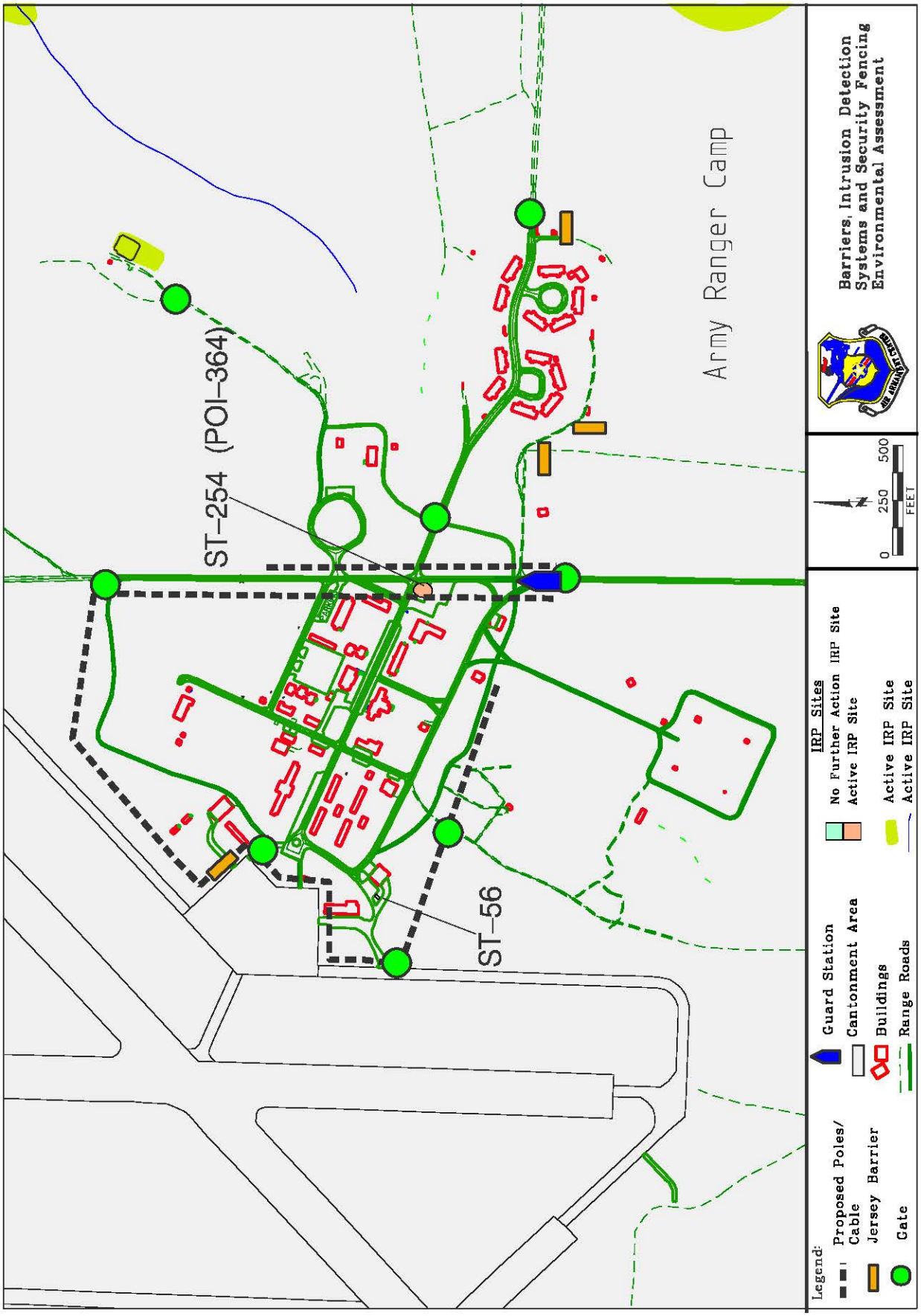

Figure 3-5. Affected Environment of Army Ranger Camp

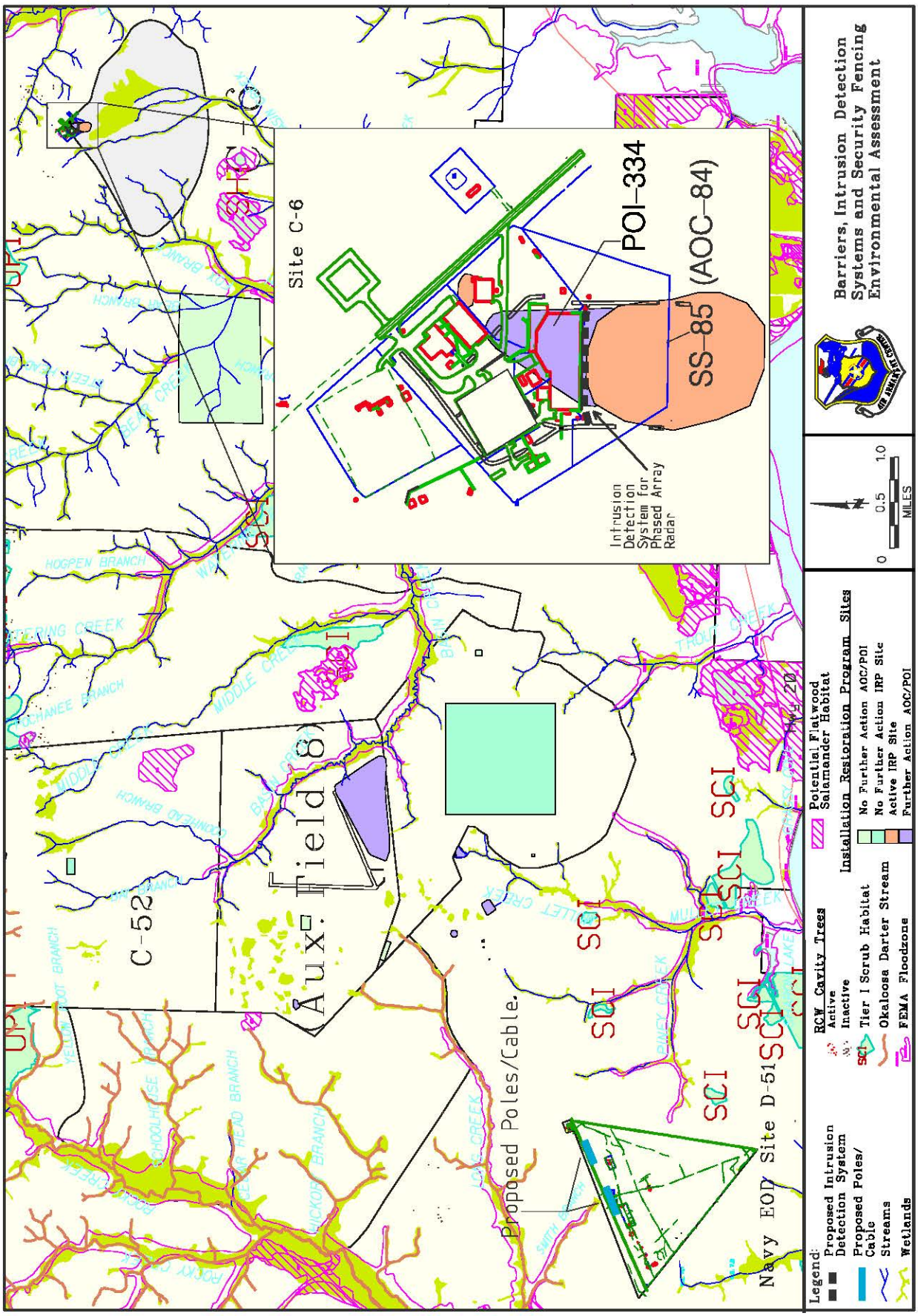

Figure 3-6. Affected Environment of Test Site C-6 and Test Area D-51

The U.S. Environmental Protection Agency (USEPA) is responsible for implementing regulations for the Safe Drinking Water and Clean Water Acts. On Eglin Air Force Base (AFB), AFI 32-7041 instructs the Air Force on how to assess, attain, and sustain compliance with the Clean Water Act; other federal, state, and local environmental regulations; and related Department of Defense (DoD) and Air Force water quality directives. Any actions being considered by federal agencies must be evaluated to determine whether they would occur within a floodplain (Executive Order 11988, Floodplain Management). Floodplains that must be considered include those areas that have a one percent or greater probability of being flooded in a given year (also known as a 100-year floodplain). In part, Executive Order 11988 stipulates that federal agencies proposing actions in floodplains consider alternative actions to avoid adverse effects (e.g., destruction of the floodplains); avoid incompatible development in the floodplains; provide opportunity for early public review of any plans or proposals; and, if adverse effects are unavoidable, include mitigation measures in the action to minimize the impacts.

Executive Order (EO) 11988, Floodplain Management (1977, 42 Fed. Reg. 26951), requires federal agencies to avoid adverse impacts associated with the occupancy and modification of floodplains and to avoid floodplain development whenever possible. Additionally, EO 11988 requires federal agencies to make every effort to reduce the risk of flood loss, minimize the impact of floods on human health, safety, and welfare, and preserve the natural beneficial value of floodplains.

Additionally, EO 11990, Protection of Wetlands (1977, 42 Fed. Reg. 26961), places additional requirements on floodplains when considered as wetlands in the EO. It requires federal agencies to avoid undertaking or providing assistance for new construction located in wetlands unless there are no practicable alternatives, and all practicable measures to minimize harm to wetlands have been implemented. It also precludes federal entities from leasing space in wetland areas unless there are no practicable alternatives.

Parts of the floodplain that are also considered wetlands will, in addition to floodplain zonings, receive protection from federal, state, and local wetland laws. These laws, such as the U.S. Army Corps of Engineers section 404 Permit Program, regulate alterations to wetlands to preserve both the amount and integrity of the nation's remaining wetland resources.

Eglin AFB has an existing National Pollutant Discharge Elimination System (NPDES) permit for industrial discharge of storm water, but construction activities greater than five acres in scope that may potentially create erosion would require an additional NPDES construction permit. After March 2003, the regulation will change to require that construction activities greater than one acre in scope have an NPDES construction permit.

3.2.4 Surface Water

Surface water resources of the affected environment include the waters of streams, ponds, and estuaries within or near the Proposed Action sites.

Surface Water Quality

Several water bodies on or adjacent to the reservation have been defined as Outstanding Florida Waters (FAC 62-302.700) because they have exceptional recreational or ecological significance (FDNR, 1991). It is the FDEP's policy to afford the highest protection to Outstanding Florida Waters. No degradation of water quality, other than that allowed in Rule 62-4.2.4.2(1) and (2), is permitted in these waters.

The National Biological Service has informally requested that all Okaloosa darter streams be included within the Outstanding Florida Waters program.

Surface Water Quality Assessment

The FDEP, Bureau of Surface Water Management, utilizes an extensive water quality database known as STORET to compile the quality of surface waters in Florida. This database is generated by various governmental agencies throughout Florida and across the country (FDEP, 1999). Also included were other reports, databases, and special studies conducted by universities and private organizations. The results of this study are presented in *the Florida Water Quality Assessment, 2000 305 (b) Report* (FDEP, 2000). A scoring system based on these data is used by FDEP to rate the quality of surface waters of the state. Florida surface waters were rated as follows:

Fully Meets Use

Partially Meets Use

Does Not Meet Use

Insufficient Data

Based on the above system, the surface water quality of rivers, streams, creeks, bayous, and bays in the region of influence (ROI) was rated by the state. The report delineated large basins and numerous sub-basins for each of the five water districts in the state. Water quality of many of the basins on the Eglin Military Complex has apparently improved, achieving a rating from partially meeting water quality standards in 1996 to fully meeting FDEP water quality standards in 2000. However, water quality data for several sub-basins on the Eglin Military Complex was lacking such that an assessment could not be made for either year. In addition, the number of sub-basins on the Eglin Military Complex categorized as having insufficient data has increased.

Several central and eastern sub-basins of the Eglin Military Complex were generally deficient in data necessary for a 305(b) water quality evaluation.

There are several areas on Eglin AFB where surface water quality may be degraded. Among these are eroded areas of range roads and associated drainage ditches, test range areas that have been cleared near streams, and numerous IRP sites and areas of concern (AOCs).

The pollutants may enter the surface waters by either washing off the surface during heavy rains or by percolating through the sandy soils of the reservation into the groundwater. Once in the groundwater, pollutants can migrate laterally and enter the surface waters through the base flow,

which provides most of the water to area streams and creeks. Lateral migration can occur at the water table or at the discontinuous clay layers common in area soils above or within the water table. Once these pollutants enter the surface waters, they can affect the quality of the vegetation and wildlife habitat that these streams provide.

Main Base

The main base sites include fencing along the perimeter and fencing and intrusion detection near the east and west gates. Water bodies and wetland areas are located near the end of the runway section nearest the east gate, the northern perimeter of the main base, and the south end of the runway.

Tom's Creek

Water quality monitoring performed in the 1970s indicated that Tom's Creek was meeting its designated use according to Florida DEP water quality indicators; however, the 2000 FDEP 305(b) report on water quality of Florida watersheds lacked sufficient data on Tom's Creek to make a current determination. Tom's Creek is one of just a few creeks on Eglin that are habitat for the federally endangered Okaloosa darter, *Etheostoma okaloosae*, which requires clear, fast-moving water. More information on the Okaloosa darter is presented in the Threatened and Endangered Species section.

3.2.5 Groundwater

There are two significant aquifers at Eglin AFB and the surrounding area: the Surficial Aquifer, also known as the Sand and Gravel Aquifer, and the Floridan Aquifer. The Sand and Gravel Aquifer is a generally unconfined, near-surface unit segregated from the underlying limestone Floridan Aquifer by the low-permeability Pensacola Clay confining bed.

Sand and Gravel Aquifer

The Sand and Gravel Aquifer consists of the Citronelle Formation and marine terrace deposits, which thicken to the southwest, reaching a maximum thickness of 1,200 feet at Mobile Bay, Alabama. Both of these geologic units occur at the land surface. The thickness of the Sand and Gravel Aquifer in the ROI ranges from 25 to 300 feet. The aquifer is composed of clean, fine-to-coarse sand and gravel but locally contains silt, silty clay, and peat beds. In the vicinity of Fort Walton Beach, the aquifer consists of several distinct sandy units, the lowest of which is the main producing zone. Yields from wells within this zone vary considerably but are generally in the range of 200-400 gallons per minute (U.S. Army Corps of Engineers, 1994).

In the Coastal Lowlands region, the water table is at or within a few feet of land surface. In the Western Highlands region, the water table may occur at considerable depth below land surface. In this area, lakes and perched waters occur where local shallow clay and silt layers restrict the downward movement of water to the regional water table. On the installation, some of the range area wells draw relatively small amounts of water from this aquifer for operational uses. The Sand and Gravel Aquifer has been identified as an important source of water for Escambia, Okaloosa, and Santa Rosa counties. It is used primarily for irrigation in Okaloosa and Walton counties (FDEP, 2000).

Water quality of the Sand and Gravel Aquifer is good, being very soft and relatively demineralized. Raw water from the aquifer has a pH ranging from 3.0 to 10.2, although it is usually acidic. Its average pH is 4.9 in the upper zone and 7.2 in the lower (production) zone. The nitrate average for the upper zone is 0.81 milligram per liter (mg/L) and 0.11 mg/L for the lower zone. Iron content of the aquifer ranges from 0.07 mg/L to 95 mg/L with a median of 2.05 mg/L (Maddox et al., 1992).

On Eglin AFB there are numerous shallow aquifer groundwater monitoring wells. These groundwater monitoring wells are generally associated with either FDEP permitted facilities requiring a groundwater monitoring plan (open burn/open detonation, landfills and wastewater spray fields) or with IRP sites. At IRP sites, groundwater wells are installed where groundwater contamination may have occurred.

The Sand and Gravel Aquifer is vulnerable to contamination from surface pollutants. Several IRP sites on base have been reported as having various amounts of petroleum hydrocarbons, pesticides, heavy metals, and a wide variety of other compounds associated with the groundwater. Additional aquifer contamination may have occurred from AOCs not yet assessed under the IRP. AOCs are generally associated with former landfills, hardfills, spill sites, disposal areas, industrial operations, oil/water separators, open burn/open detonation areas, and munitions testing.

Floridan Aquifer

The ROI for water supply systems includes portions of Santa Rosa, Okaloosa, and Walton counties. This section discusses the regulatory requirements and management of Floridan Aquifer potable water supply, followed by a discussion of local water supply systems and Eglin AFB water supply systems.

The Floridan Aquifer, which occurs beneath most of the state of Florida, consists of a thick sequence of interbedded limestones and dolomites overlain by the Pensacola Clay confining bed. The Bucatunna Formation confining bed separates the Floridan Aquifer into upper and lower limestone units. The lower limestone unit is saline and is not used as a water source.

The upper limestone of the Floridan Aquifer is the principal source of water used at Eglin AFB and in the surrounding communities. The water used is not returned to the aquifer; it is "consumed" by AAC and associate unit activities and base residents. The Northwest Florida Water Management District regulates the consumption of water from the Floridan Aquifer through consumptive use permits. Eglin operates 61 water wells, requiring 18 consumptive use permits. Many nearby cities and businesses also have wells that draw water from the same aquifer. Conservation of water is therefore essential to protect a valuable resource and to ensure the usage limits identified in our permits are not exceeded. Water conservation measures taken at Eglin include restricting irrigation and installing low-flow plumbing fixtures during housing and office renovations and new construction. Irrigation systems are also being converted to withdraw water from the shallow Sand And Gravel Aquifer. The use of drought-resistant landscaping is encouraged. These efforts will protect the Eglin water supply by reducing consumptive uses of water withdrawn from the Floridan Aquifer (U.S. Air Force, 2001). The Floridan Aquifer is the main potable water source for Eglin AFB and surrounding municipalities.

Eglin AFB has over 43 permitted wells that use the Floridan Aquifer waters. These wells are required to be sampled on a regular basis as part of their operating permit. Water from these wells is sampled for all state and federal primary and seconding drinking water standards. All operating production wells currently meet drinking water standards set by the state.

Groundwater storage and movement in the upper limestone of the Floridan Aquifer occurs in interconnected, intergranular pore spaces, small solution fissures, and larger solution channels and cavities. Yields from wells are large, ordinarily in the range of 250 to more than 1,000 gallons per minute, and the water is found under confined conditions throughout the Eglin AFB area (USGS, 2002).

3.2.6 Wetlands

Wetlands are defined in the U.S. Army Corps of Engineers (ACE) Wetland Delineation Manual as "those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions" (U.S. Army Corps of Engineers, 1987). All jurisdictional wetlands in the United States meet three wetland delineation criteria (hydrophytic vegetation, hydric soils, and wetland hydrology) and are protected under Section 404 of the Clean Water Act (33 United States Code Section 1344) and its implementing regulations found in 40 Code of Federal Regulations 230. Wetlands on federal lands are further protected under Executive Order (EO) 11990, which states "...each federal agency shall provide leadership and shall take action to minimize the destruction, loss or degradation of wetlands...."

The Florida Department of Environmental Protection (FDEP) has a permitting program called the Environmental Resource Permit under Part IV, Florida Statutes Section 373, which includes wetlands regulations. Florida's wetland program regulates dredge and fill activities in both fresh and salt waters under their jurisdiction. Waters adjoining Florida's coastline are also under the state's jurisdiction. Permit applications made to the FDEP can also serve as joint applications to initiate concurrent review by the ACE.

When considering a ground-disturbing project or action occurring in a wetland, numerous steps are required. First, the presence or absence of a wetland within the project site determines the potential for impacts and the need for necessary permits. Once potential impacts have been identified, this action cannot be taken if a practicable alternative exists. If, however, no practicable alternative exists to the proposed action, mitigation must be taken to minimize impacts in or adjacent to wetlands, and should be implemented early in the site planning process to reduce or eliminate direct and indirect impacts. The ACE and FDEP both have a formal process for determining a jurisdictional wetland. This delineation process should be accomplished in coordination with AAC/EMCE, AAC/EMSN, and the proponent or his contractor.

If no practicable alternative to the proposed action exists, mitigation measures may be necessary to minimize impacts. In order for the project to proceed, the Deputy Assistant Secretary for Environment, Safety and Occupational Health must be notified in accordance with Executive Order 11990. Additionally, an environmental assessment or a finding of no practicable

alternatives report must be prepared and public notice of intent must be made before proceeding with ACE consultation.

At this point, informal consultation with the ACE is recommended to determine if the project impacting wetlands qualifies under any nationwide permits. If the project qualifies, the state may require additional paperwork to be filed with the FDEP. If the project does not qualify under the nationwide permit, ACE and FDEP consultation under Section 404 of the Clean Water Act will be required to complete the necessary joint-permit process. If the project is approved, the action will likely include mitigation such as site replacement of wetlands at a ratio determined by the ACE and the FDEP, re-creation of wetlands elsewhere on the site, or purchase and fencing of wetland off site, and monitoring (until wetlands become established) of replacement wetlands.

According to Eglin GIS files, an estuarine wetland area is present adjacent to Weekly Bayou near where a section of the proposed security fence would be placed. For the proposed action, constraint areas have been created such that any activity within these areas would require coordination between the proponent and Eglin Environmental Compliance to avoid impacts to wetlands and also to avoid locating the activity in a floodplain. The constraint areas are illustrated in Figure 3-7.

3.2.7 Floodplains

Floodplains are lowland areas adjacent to surface water bodies (i.e., lakes, wetlands and rivers) that are periodically covered by water during flooding events. Floodplains carry and store floodwaters during flood events. The majority of the installation is above the Federal Emergency Management Agency (FEMA) 100-year flood zone. Most or all of the perennial streams on base are included within areas expected to be inundated by 100-year floods. The 100-year floodplain is considered a Wetland Resource Area under the Wetlands Protection Act.

Floodplains and riparian habitat are biologically unique and highly diverse ecosystems providing a rich diversity of aquatic and terrestrial species, acting as a functional part of natural systems. Floodplain vegetation and soils act as water filters, intercepting surface water runoff before it reaches lakes, streams, or rivers. This process aids in the removal of excess nutrients, pollutants and sediments from the water and helps reduce the need for costly cleanups and sediment removal. Floodplains also reduce downstream flooding by increasing upstream storage in wetlands, sloughs, back channels, side channels and former channels.

3.2.8 Ecological Associations

Eglin has seven major ecological associations. The Sandhills or forested areas, Open Grassland/Shrubland (as represented by cleared areas), and Wetlands/Riparian ecological associations are found within the Project Area. Wetland areas are designated as sensitive habitats.

Sandhills

The Sandhills ecological association is underlain primarily by Lakeland soils. These soils are deep, sandy, and well drained, creating a dry condition. It is characterized by rolling sandhill ridges dissected by streams and includes pockets of habitat ranging from steeply sloped to flat

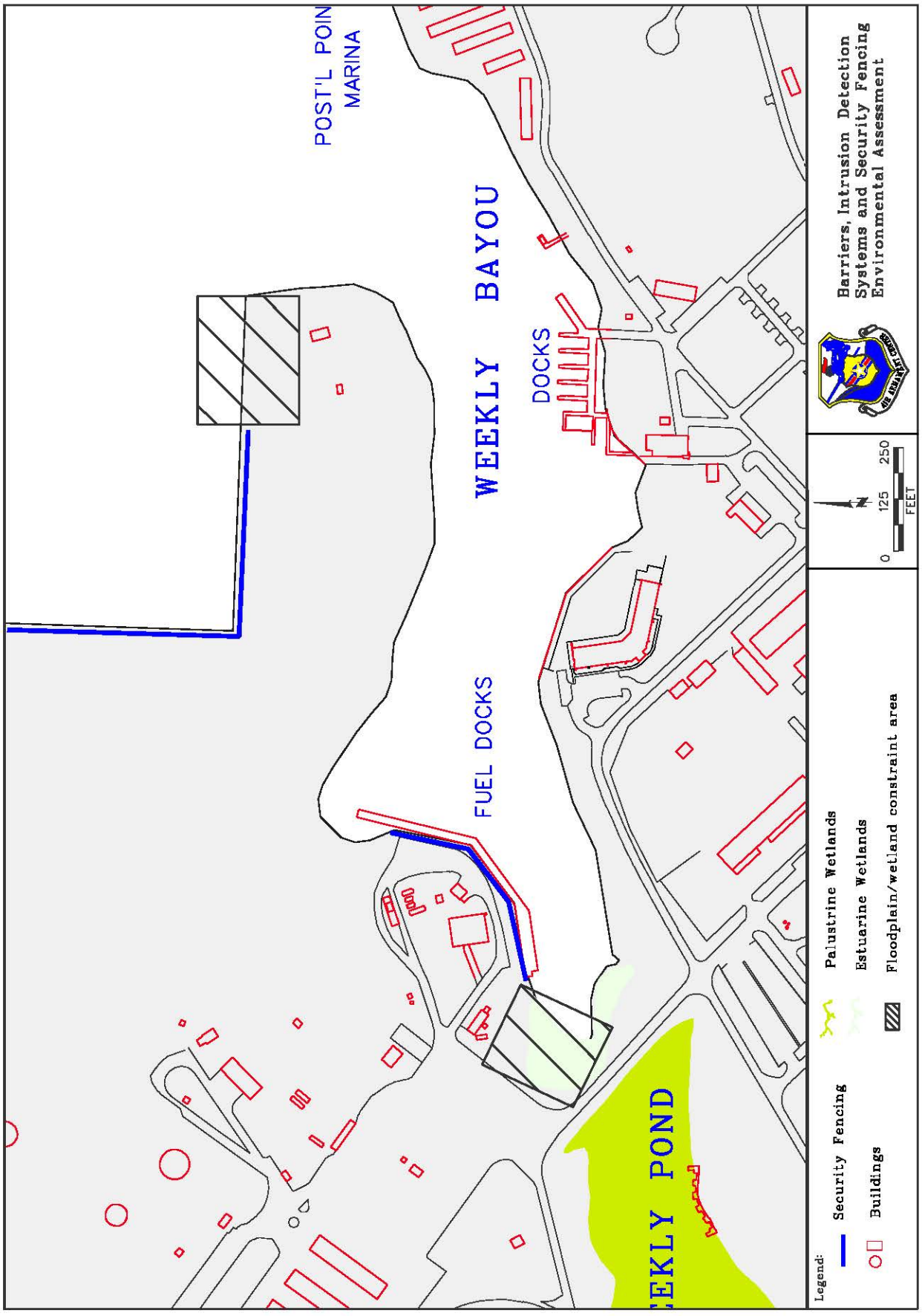

Figure 3-7. Floodplain and Wetland Constraint Areas Near Weekly Bayou

and xeric (dry) to mesic (moist) (U.S. Air Force, 1996). Loamy sands, sandy loams, clay loams, and muck soils are found in lower lying areas. Dominant trees include stands of longleaf pine and sand pine, along with oaks and magnolia. Low shrubs comprise an important group and include saw palmetto, persimmon, dwarf huckleberry, gopher apple, and various oaks (U.S. Air Force, 1996). Vegetation surrounding ponds and the shoreline of creeks can include grasses and herbs or a dense shrub thicket. Typical plants include panicums, rushes, arrowheads, yellow-eyed grass, meadow beauty, and spike-rush. Floating plants such as water lilies can cover much of the water surface of quiet waters (U.S. Air Force, 1996).

Open Grassland/Shrubland

This association is found on sites that are artificially maintained, such as the test areas. This ecological association is found in disturbed areas of the Sandhills ecological association. Mechanical methods and fire are employed to remove and prevent reestablishment of tall vegetation. Vegetative species included in this association are switch grass, broomsedge, bluestem, love grass, and woolly panicum. Riparian zones are found throughout these areas. Young scrub oaks can be found in areas that are no longer being maintained.

3.3 SENSITIVE HABITATS

Wetlands

The management of sensitive habitats is the responsibility of the AAC/EMSN Stewardship Division, Natural Resources Branch of the Environmental Management Directorate. Activities that may affect wetlands (protected by the Clean Water Act and Executive Order 11990) go through a permit process with the state as well as with the U.S. Army Corps of Engineers (USACE). Activities affecting wetlands are to be avoided if possible and the planning process should reduce or minimize ground-disturbing projects or actions occurring in a wetland (U.S. Air Force, 1996). Eglin's jurisdictional wetland areas are shown in Figure 3-1, and are located throughout the Project Area. These wetland areas consist of drainages along roadways and some ephemeral streams.

3.3.1 Wildlife

While the Eglin Reservation supports a rich diversity of game and nongame wildlife due to the variety of habitats found on the base. Project Areas on Eglin Main are mainly located in disturbed areas near buildings or running along established roadways on the base. Areas that would support wildlife would be within the wooded areas near Duke Field, the Army Ranger Camp, the Navy EOD School, and TA C-6.

The ecological associations associated with these areas may provide habitat for birds, reptiles, amphibians, fish, and mammals. The characterizations provided below are not comprehensive or exclusive listings since the species utilize a variety of communities (U.S. Air Force, 1996).

Open Grassland/Shrubland

Representative reptiles present in the clearings and grasslands include the eastern diamondback rattlesnake, the eastern coachwhip, the southern black racer snake, the gopher tortoise, the eastern box turtle, and the slender glass lizard. Gopher tortoises are part of a habitat that

includes the sensitive indigo snake and gopher frog as well as several other species (U.S. Air Force, 1996). The southern pocket gopher, cotton mouse, oldfield mouse, feral pig, and eastern cottontail rabbit are present in clearings and other similar habitats.

Raptors include the screech owl, red-shouldered hawk, and the great horned owl, which forage over the open areas (U.S. Air Force, 1996). The southeastern American kestrel preys on small rodents, reptiles, and insects in the clearings.

Sandhills

The barking tree frog and central newt are representative amphibians to the Sandhills ecological association. Leopard frogs are found in swales containing wetlands. Reptiles include the gray rat snake, coral snake, six-lined racerunner, eastern fence lizard, gopher tortoises, and box turtles. The armadillo, feral pig, and several types of squirrels (fox, gray, and flying) also live in the Sandhills. Characteristic predators include the gray fox and bobcat (U.S. Air Force, 1996).

Raptors include the screech owl, red-shouldered hawk, and great horned owl, which nest and hunt rodents in the woodlands of the Sandhills (U.S. Air Force, 1996). Other indigenous birds include warblers, vireos, red-cockaded woodpeckers, pileated woodpeckers, white-breasted nuthatches, Bachman's sparrows, and pine siskins (bird).

Wetlands

Wetlands support both aquatic and terrestrial organisms. Large varieties of microbes, vegetation, insects, amphibians, reptiles, birds, fish, and mammals can be found living in concert in wetland ecosystems. Through a combination of high nutrient levels, fluctuations in water depth, and primary productivity of plant life, wetlands provide the base of a complex food web, supporting the feeding and foraging habits of these animals for part of or all of their life cycle. During migration and breeding, many nonresident and transient bird and mammal species also rely on wetlands for food, water, and shelter.

3.3.2 Sensitive Species

Sensitive species include those with federal endangered or threatened status, federal candidate species, and state endangered, threatened, and species of special concern status (U.S. Air Force, 1996). Sensitive species have been found to occur within the habitats associated with the project area and are listed in Table 3-1. An endangered species is one that is in danger of extinction throughout all or a significant portion of its range. A threatened species is any species that is likely to become endangered within the future throughout all or a significant portion of its range due to loss of habitat, anthropogenic effects, or other causes. Federal candidate species and state species of concern are those that should be given consideration during planning of projects, but have no protection under the Endangered Species Act. Once legally protected, it is a federal offense to "take" (import, export, kill, harm, harass, possess, or remove) protected animals from the wild without a permit. Similar regulations are in place for state-listed species (endangered, threatened, or species of special concern). While these state regulations do not apply on federal lands, Eglin, in 1992, along with the USFWS and the Florida Fish and Wildlife Conservation Commission (FFWCC), entered into a cooperative agreement to manage individual species on the installation, including both federal and state listed species.

Table 3-1. Federal and State Listed Plant and Animal Species Near Project

Federal	
Endangered	
Sensitive Species	**Habitat**
Okaloosa darter (*Etheostoma okaloosae*)	Wetland and Riparian
Red-cockaded woodpecker (*Picoides borealis*)	Longleaf pine forests over most of Eglin AFB. RCW densities are high near ranges due to the beneficial effect of range fires controlling the underbrush in these areas.
Threatened	
Flatwoods salamander (*Ambystoma cingulatum*)	Flatwoods, Wetland and Riparian
Eastern indigo snake *(Drymarchon corais couperi)*	May winter in gopher tortoise burrows or stump holes.
State	
Endangered	
Sensitive Species	**Habitat**
Panhandle lily *(Lilium iridolae)*	Streamside baygalls throughout Eglin AFB.
White-topped pitcher plant (*Sarracenia leucophylla*)	Common in wet prairies and wet flatwood.
Threatened	
Southeastern American kestrel *(Falco sparverius paulus)*	Preys on animals in clearings and woodland edges.
Red-cockaded woodpecker (*Picoides borealis*)	Longleaf pine forests over most of Eglin AFB. RCW densities are high near ranges due to the beneficial effect of range fires controlling the underbrush in these areas.
Pineland wild indigo (*Baptisia calycosa* var *villosa*)	Found in areas with an open canopy and sandy soils.
Florida black bear *(Ursus americanus floridanus)*	Utilizes riparian areas.
Species of Special Concern	
Sensitive Species	**Habitat**
Bachman's Sparrow *(Aimphila aestivalis)*	Uncommon year round resident that may be found on or near any test area. May inhabit Sandhills, Open Grassland/Shrubland or Sand Pine habitats.
Gopher tortoise *(Gopherus polyphemus)*	Primarily found in longleaf pine and xerophytic oak woodlands and open grasslands of the test areas.
Gopher frog (*Rana capito servosa*)	Need to stay near seasonally flooded ponds that lack large predatory fish populations.
Florida bog frog (*Rana okaloosae*)	Inhabits shallow, non-stagnant acid seeps along boggy overflows of larger seepage streams, seepage slopes, or in flatwoods and swamp ecological associations.

Source: Florida Game and Fresh Water Fish Commission, 1997

Under 16 USC 1531 to 1544; 1997-Supp; Endangered Species Act 1973 (ESA), Federal agencies must ensure that their actions (including permitting) do not jeopardize the continued existence of any endangered or threatened species or destroy or adversely modify the habitat of such species without a permit, and must set up a conservation program. A Section 7 consultation with the USFWS would be required if a take, which is defined as pursuing, molesting or harming a protected species, were to occur. If the Proposed Action were likely to adversely affect a federally protected species, the USFWS would determine whether jeopardy or non-jeopardy to the species population would occur.

Air Force projects that may affect federally protected species, species proposed for federal listing, and critical habitat for protected species are subject to Sections 7 and 10 of the Endangered Species Act prior to the irreversible or irretrievable commitment of these resources (U.S. Air Force, 1996). Eglin has developed an overall goal within the Integrated Natural Resources Management Plan to continue to protect and maintain populations of native threatened and endangered plant and animal species within the guidelines of ecosystem management (U.S. Air Force, 1997).

Special incidental take permits and re-location permits may be granted from the Florida Fish and Wildlife Conservation Commission (FFWCC) (formerly the Florida Game and Fresh Water Fish Commission) for state-listed species. These permits are only granted if the "taking" does not prove detrimental to the survival potential of the species. If military mission activities are going to be performed that might lead to the incidental take of a species of special concern, a permit is required. The accidental killing of a species of special concern should be documented and reported to the FFWCC. Incidental "takes" (authorized by special permit) of threatened species are permitted only if the activity does not have a negative effect on the survival potential of the species. The pursuing, molesting, harming, harassing, capturing, or possession of any endangered species or parts of their nests or eggs except as authorized by special permit are allowed only when the activity clearly enhances the survival potential of the species. The killing or wounding of an endangered species is punishable as a second-degree misdemeanor under State of Florida Laws and Regulations, Wildlife Code (Chapter 39, Florida Administrative Code).

3.4 HAZARDOUS MATERIALS/WASTE

According to the Resource Conservation and Recovery Act (RCRA), Section 6903(5), hazardous materials and waste are defined as substances that, because of "quantity, concentration, or physical, chemical, or infectious characteristics may cause or significantly contribute to increases in mortality or serious illnesses, or pose a substantial threat to human health or the environment." In the context of this document, since no hazardous materials are associated with the actual implementation of the Proposed Action, this section pertains to identification of Installation Restoration Program (IRP) sites within the Project Area.

The IRP is used by the Air Force to identify, characterize, and remediate past environmental contamination on Air Force installations. Although widely accepted at one time, the procedures followed for managing and disposing of wastes resulted in contamination of the environment. The IRP has established a process to evaluate past disposal sites, control the migration of contaminants, identify potential hazards to human health and the environment, and remediate the sites. There are no IRP sites located within the following areas at which proposed construction activities are to take place: Army Ranger Camp, Navy EOD School (D-51), or Duke Field.

IRP sites of concern are detailed in Figures 3-1 through 3-6 and are listed in Table 3-2 (U.S. Air Force, 2000a).

Non-Hazardous Solid Waste

Non-hazardous solid waste includes removed materials (such as old fencing) and land clearing debris produced from installation of fencing or barriers.

Table 3-2. IRP Site Locations

Site	Description
TA C-6 Bldg 8640 (TA C-6)	**Active IRP SS-85 (AOC-84), Radar Burial Site.** This site was identified based on the potential burial of polychlorinated biphenyl (PCB) transformers and other materials associated with the former radar building that was destroyed by a fire in 1965. It was reported that after the fire, the facility and its contents (including PCB transformers and other electronic components) might have been bulldozed into an open pit on site. Another source refuted the previous account and indicated that the recyclable building materials and transformers were recovered and transported off site leaving only minimal inert debris (concrete, steel beams, and scrap materials). This inert debris may have been buried in water trenches that were constructed for temporary fire protection. The results of a Site Investigation (SI) performed in 1995 and 1996 indicated the presence of trichloroethylene (TCE) in the most down gradient monitoring well (no PCBs detected). The TCE concentration was below the federal MCL. Based on EPA comments on the SI report, additional down gradient groundwater monitoring wells were installed and soil samples were collected as part of SI Addendum activities in 1999. The results of these additional field activities indicated that TCE has impacted the intermediate zone of the Surficial Aquifer up to 250 feet down gradient of the TCE-impacted shallow groundwater (near the water table). The results of the SI Addendum soil investigation indicated no soil impacts. Two further down gradient monitoring wells are scheduled to be installed as part of the ongoing SI Addendum to further evaluate groundwater quality with respect to TCE.
Gas Pumps NW Bldg 84	**Active IRP LTM ST-58.** Site ST-58, the Military Gas Station, is located directly southeast of Taxiway 11 at the intersection of Daytona Road and Okaloosa Avenue. The Military Gas Station consists of a canopy sheltering two pump islands, an unmanned kiosk, and a tank field containing three 15,000-gallon fiberglass underground storage tanks (USTs). The former USTs were excavated in September 1991, and over-excavated ~400 yd^3 when analysis revealed excessively contaminated soil (>50 ppm). Contaminants included volatile and synthetic organic compounds (VOCs and SOCs) (e.g. benzene and toluene) in soils and VOCs (e.g. ethylbenzene, xylenes, and naphthalenes) in groundwater. A Contamination Assessment has been completed, reviewed by the FDEP, and additional data acquired to satisfy FDEP review comments. A Remedial Action Plan has been approved and aqueous air sparging and soil vapor extraction systems have been installed to remediate the site. AFCEE performed a Natural Attenuation Study for the site in March 1998. Semi-annual groundwater monitoring is ongoing. The semi-annual groundwater monitoring will continue until cleanup goals have been achieved. O&M of the system will continue.
East Gate Area	**Active SS-104, Eglin Pipeline Spill Site.** Site SS-104 is also known as Pit 0 of the abandoned five-mile jet fuel pipeline that runs along the south side of the runway at Eglin AFB. It is located near the bulk fuel storage terminal and is within 50 feet of Weekly Bayou. SS-104 is a pit along the five-mile abandoned JP8 fuel pipeline. The pipeline formerly conveyed JP4 fuel. The pit consists of a concrete pit (usually covered with a metal cover), which contains a closed valve of the pipeline. Depth to water at the site is estimated to be between 1 and 5 feet. The site covers approximately 1,360 square feet. The five-mile pipeline was used to convey jet fuel from the tank farm to various fueling dispensers/tanks for aircraft refueling operations. The pipeline formerly transported the JP4 until 1993 when the fuel was replaced by JP8. Eglin AFB personnel abandoned the pipeline in place in 1996 by first purging the pipeline of JP8 fuel and then flushing the line with water until all of the residual fuel was removed from the pipeline. The ends of the line were capped and abandoned in place. Contaminants include petroleum products (e.g. benzene and toluene) in soils and groundwater. A Remedial Action Plan is in progress to remediate the site using Oxygen Release Compound (ORC) injected into the groundwater.

IRP – Installation Restoration Program
AOC – Area of Concern
DP – Disposal Pit
SS – Spill Site
ST – Storage Tank

3.5 CULTURAL RESOURCES

Section 106 of the National Historic Preservation Act (NHPA) requires that federal agencies analyze the impacts of federal activities on historic properties. Mitigative measures are developed to minimize impacts. Defining resources that will possibly be impacted aids project planners and managers in decision-making for project site location to avoid delays necessitated by additional investigation and/or consultation. In addition to NHPA and AFI 32-7065, The Secretary of the Interior's Standards for Rehabilitation & Illustrated Guidelines for Rehabilitating Historic Buildings are required to be adhered to for the design of the barriers in and around Historic Districts or Structures.

Past surveys of Eglin AFB have indicated the presence of archaeological sites on the installation. Survey reports are filed with the Base Historic Preservation Office (BHPO) or the Cultural Resources Division (EMH) and the SHPO. High probability areas for archeological sites were determined to be located near the Duke Field Gate and the Army Ranger Camp.

The following buildings on Eglin AFB have been investigated or are in the process of being investigated to determine eligibility for listing on the National Register of Historic Places (NRHP).

Building 1, Air Armament Center Headquarters– Historical under evaluation

Building 11, Andrews Hall – Historical under evaluation

Building 44, Communications – Historical eligible for listing on NRHP

Building 68, 46th Test Squadron – Historical ineligible for listing on NRHP

Building 440, McKinley Climatic Laboratory – Historical listed as NRHP and National Historic Mechanical Engineering Landmark (NHMEL)

Building 1315, 33rd Fighter Wing/Control Center – Historically ineligible for listing on NRHP, but within Christmas Tree Apron historical district and qualifies as an eligible resource

Building 1355, 33rd Central Command Facility –Historical eligible for listing on NRHP

Building 8640, Site C-6 Complex – Historically eligible for listing on NRHP

4. ENVIRONMENTAL CONSEQUENCES

The purpose of this chapter is to analyze the potential impacts of the Proposed Action in relation to the issues and resources identified in Chapters 1 and 3 of this document.

Issues

- Land Use
- Physical Resources
  - Soils
  - Wetlands
  - Air Quality
- Biological Resources
  - Habitat Alteration/Direct Physical Impact
- Cultural Resources
- Hazardous Materials

4.1 LAND USE

Proposed Action

The Proposed Action that will take place within primarily "industrialized" areas of Eglin AFB, with heavy human presence. Conflicts with the users on base property during fencing and barrier construction would primarily consist of potential effects to traffic movement due to the proximity of project activity to roadways. However, project activities would take place along shoulders and right-of-ways along roadways and along exterior perimeters of buildings and parking areas. It is not anticipated that traffic stoppage would occur, and no conflicts with motorists, traffic movement, or pedestrians would be encountered.

Alternative Action 1

Alternative Action 1 proposes the use of retaining walls at Eglin Main Base buildings. Minor pedestrian movement would be inconvenienced in these areas. However, no adverse impacts are anticipated.

Alternative Action 2

Alternative Action 2 proposes the installation of bollard systems at Eglin Main Base buildings. It is not anticipated that traffic stoppage would occur, and no conflicts with motorists, traffic movement, or pedestrians would be encountered.

No Action Alternative

Installation of barriers, security fencing, and intrusion detection would not be performed. Therefore, no impacts would occur.

4.2 PHYSICAL RESOURCES

This section analyzes potential impacts to physical resources such as soils and wetland areas resulting from the Proposed Action and Alternatives. The Proposed Action or Alternatives would not involve activities within surface waters, nor would it involve activities that pose potential adverse impacts to groundwater. As a result, impacts to the quality and utility of surface and ground waters are not anticipated, and further analysis was not accomplished. Impacts to surface water areas from potential erosion are analyzed under the Soils Section.

4.2.1 Soils

Proposed Action

The construction of the proposed security fencing on Eglin Main Base would involve approximately 50 acres of land area for installation of security fencing. If not currently cleared, a 50-foot (30 foot interior and 20 foot exterior) swath must be established per security fencing specifications. Less than one acre of land area would be cleared during construction activities at the Duke Field Gate and Army Ranger Camp. Excavation of soil would occur for fence posts, pole and cable barriers, retaining walls, bollards, planters, bar swing gates, anti-vehicle barriers, and the intrusion detection system at TA C-6 Radar Facility. Displaced soils would be replaced as construction progresses. To minimize erosion potentials near surface waters and wetland areas during activities, best management practices (BMPs) should be employed, such as use of hay bales or silt fencing. Additionally, disturbed areas would be reseeded with native grasses. BMPs such as weed-free hay bales and seeds and cleaning of equipment prior to entering the facility should be implemented to prevent the introduction of non-native species. An NPDES construction permit would be required if five or more acres of soil surface were disturbed. Clearing the fence construction area by mowing vegetation would not require a permit, whereas bulldozing would.

With the implementation of the aforementioned BMPs, adverse impacts to soils from the Proposed Action are not probable.

Alternative Action 1

Excavation of soil would be the same as the Proposed Action at all areas with the exception of several buildings on Eglin Main Base that would utilize only retaining walls for barrier systems. Even though soil excavation at Eglin Main Base building locations would be increased for this action, the use of BMPs as described previously would minimize soil erosion. No adverse impacts are anticipated.

Alternative Action 2

Excavation of soil would be the same as the Proposed Action with the exception that several buildings on main base would utilize bollards for barrier systems. This Alternative Action would displace the least amount of soil and adverse impacts are not expected.

No Action Alternative

Security fencing, barriers, and intrusion detection would not be constructed. Therefore, adverse impacts would not occur.

4.2.2 Water and Wetland Resources

The Proposed Action involves ground disturbance and clearing of vegetation that, if conducted in or near water and wetland areas, would potentially create erosion, temporarily affecting the water quality of these areas. The Proposed Action will involve implementing sedimentation and erosion controls (slit screens and hay bales) to detour any sedimentation of wetlands/surface water if sediment transport is noted anytime during construction. Most of the security fence placement, intrusion detection system and bollard construction, and erection of poles and cables under the Proposed Action occurs primarily in areas away from water and wetland areas. However, there are a few areas where security fence construction is proposed to occur near water or wetlands, warranting further analysis.

Areas identified as possibly susceptible to impacts from the Proposed Action include Tom's Creek and an estuarine wetland area near Weekly Bayou where security fence is proposed, and groundwater at the C-6 Site where the intrusion detection system is proposed. Security fence construction procedures stipulate that the fence would not be placed within 300 feet of either side of Tom's Creek. This would minimize, or avoid altogether, disturbance to Tom's Creek. The Proposed Action will involve implementing sedimentation and erosion controls (silt screens and hay bales) to detour any sedimentation of wetlands/surface water if sediment transport is noted anytime during construction.

For the proposed action, constraint areas have been delineated near Weekly Bayou that may potentially contain wetlands or are located within the floodplain. Some disturbance of wetland soils and vegetation could occur if fence construction were to occur within these areas; thus any activities within these constraint areas would first require coordination between the proponent and AAC Environmental Compliance.

Smith Branch, an Okaloosa darter stream and a wetland area associated with Smith Branch occur approximately 600 feet north of the D-51 site but would not be affected by the proposed pole/cable placement at D-51. The Proposed Action will involve implementing sedimentation/erosion controls (silt screens and hay bales) to detour any sedimentation of wetlands/surface water if sediment transport is noted anytime during construction.

Groundwater near the proposed C-6 intrusion detection area is located approximately 0.7 feet from the surface and may be encountered during construction of the intrusion detection system. Digging would be required to place the intrusion detection cable at the proper one-foot depth

and, as a result, some disturbance to the soil and underlying groundwater would occur. Once in place, the site would be covered with gravel. No changes to water quality would result. The Proposed action will involve implementing sedimentation/erosion controls (silt screens and hay bales) to detour any sedimentation of wetlands/surface water if sediment transport is noted anytime during construction.

Floodplain

A floodplain area has been identified adjacent to the project area, based on the best available data (Figure 3-2). Under Executive Order 11988, Floodplain Management (1977), federal agencies are required to evaluate the effects of potential actions on floodplains. Additionally, Executive Order 11990, Protection of Wetlands (24 May 1977, 42 Fed. Reg. 26961) places additional requirements on floodplains when considered as wetlands. As previously mentioned, constraint areas (Figure 3-7) were delineated to identify areas within which wetlands or floodplains are located. Any activity within these constraint areas would require prior coordination with Eglin Environmental Compliance to avoid impacts to wetlands and avoid placement of the proposed action within the floodplain. These delineated areas will be coordinated with AAC/EMCE to ensure concurrence that these areas are indeed wetlands or floodplains.

Permits Required

An NPDES construction permit would be required if five or more acres of soil surface were disturbed. Clearing the fence construction area by mowing vegetation would not require a permit, whereas bulldozing would. Under the Proposed Action, fence construction would proceed with the least impactive means possible in addition to utilizing available cleared areas. Due to recent rule changes, if more than one acre is cleared after March 2003, then that site will apply for a NPDES permit as well.

Alternative 1

Alternative 1 would not differ from the Proposed Action in terms of potential impacts to water and wetland areas. Potential impacts of the Proposed Action are related to the placement of a security fence along the perimeter of the main base, which would not change under Alternative 1.

Alternative 2

Alternative 2 would not differ from the Proposed Action in terms of potential impacts to water and wetland areas. Potential impacts of the Proposed Action are related to the placement of a security fence along the perimeter of the main base, which would not change under Alternative 2.

No Action

Under the No Action alternative, no change with respect to the current condition of water quality and wetland areas would occur.

4.3 BIOLOGICAL RESOURCES

4.3.1 Habitat Alteration/Direct Physical Impact

This section analyzes potential impacts resulting from habitat alteration and impacts to sensitive, threatened, and endangered species that may be present within or adjacent to the Project Area.

Proposed Action

Tom's Creek is habitat for the Okaloosa darter, a federally and state listed endangered species that is susceptible to sedimentation and water quality impacts caused by activities that create erosion. Since fence construction would be halted within 300 feet of either side of Tom's Creek, no impacts to the Okaloosa darter would occur from erosion.

An inactive red-cockaded woodpecker (RCW) cavity tree exists approximately 400 feet from the Duke site where the Proposed Action would occur. No inactive or active cavity trees would be removed as a result of the Proposed Action. Thus no impacts to RCWs would occur.

Alternative 1

Under this alternative potential impacts to protected species would not change over the Proposed Action. No impacts to RCWs would occur from activities at the Duke Field site.

Alternative 2

Under this alternative potential impacts to protected species would not change over the Proposed Action. No impacts to RCWs would occur from activities at the Duke Field site.

No Action Alternative

There would be no impacts to protected species under the No Action Alternative.

4.4 CULTURAL RESOURCES

Proposed Action

High probability cultural resource sites are located near the Duke Field Gate and the Army Ranger Camp. However, if current design plans are followed at the Army Ranger Camp, project activities will not infringe upon the identified cultural resource areas. Two high probability cultural resource areas are located near the Duke Field Gate. Consultation with AAC/EMH is required during road design prior to construction activities to alleviate impacts to potential archeological sites.

Several historical buildings are located within the project areas. Building 440, McKinley Climatic Laboratory, is listed in the NRHP and NHMEL. Building 44 (Communications), Building 1355 (33rd Central Command Facility), and Building 8640 (TA C-6 Complex) are eligible for listing on the NRHP. Two buildings under evaluation that should be treated as

eligible for NRHP listing are Building 1 (Air Armament Center Headquarters) and Building 11 (Andrews Hall). Historical Building 68 (46th Test Squadron) and 1315 (33rd Command Headquarters) were found ineligible for NRHP listing. However, Building 1315 is located within the Christmas Tree Apron Historical District.

No impacts would occur from the Proposed Action for Historical Building 8640. Based on communication with the Cultural Resources Division, use of any type of barrier other than hydraulic bollards for Building 440, Building 1, Building 11, and Building 44 would result in consultation with the State Historical Preservation Officer (SHPO) (Shreve, 2002, personal communication). No impacts would occur at Building 1355 with the use of hydraulic bollards and planters. Coordination with the Base Historic Preservation Officer is required during the design and installation process for historical buildings and buildings located within the Historical District. Placement of barriers and fencing in locations other than those specified in this EA will require consultation with AAC/EMH.

Alternative Action 1

The use of retaining walls for Alternative Action 1 would create impacts to historical buildings on Eglin Main Base and impact the aesthetic quality of historical districts. Use of retaining walls for Building 440, Building 1, Building 11, and Building 44 would result in consultation with the State Historical Preservation Officer (SHPO) (Shreve, 2002, personal communication). Building 1315, although found ineligible for NRHP listing, lies within the Christmas Tree Apron historical district. Retaining walls may create cultural resource impacts and require coordination with the Cultural Resources Division (AAC/EMH) during project design. All other activities are the same as the Proposed Action, and require coordination with AAC/EMH during project design.

Alternative Action 2

No cultural resource impacts are anticipated with the use of hydraulic bollards for Building 440, Building 1, Building 11, and Building 44. All other activities are the same as the Proposed Action and require coordination with AAC/EMH during project design.

No Action Alternative

Security fencing, barriers and intrusion detection systems would not be installed. No impacts would occur.

4.5 HAZARDOUS MATERIALS/WASTE

Proposed Action

For the purposes of this document, hazardous materials/waste refers to IRP and other contaminated sites. Three Active IRP sites were found within the areas of concern.

SS-104, Eglin Pipeline Spill Site, Pit 0. This site, which lies near the bulk fuel storage terminal and is within 50 feet of the western end of Weekly Bayou, has shown contamination from petroleum products in soil and groundwater (Figure 4-1). The pit is usually covered with a metal cover and is being remediated with Oxygen Release Compound. Depth to groundwater at the site is from 1 to 5 feet. No impacts are anticipated from the installation of security fencing as long as contact with groundwater is avoided. Notification of groundwater contact to the AAC/EMR IRP site manager is required.

ST-58, the Military Gas Station. ST-58 is located directly southeast of Taxiway 11 at the intersection of Daytona Road and Okaloosa Avenue (Figure 4-2). Former USTs were excavated in September 1991, and over-excavated ~400 yd^3 when organic vapor analysis (OVA) revealed excessively contaminated soil (>50 ppm) of volatile and synthetic organic compounds (VOCs and SOCs) (e.g. benzene and toluene). VOCs (e.g. ethylbenzene, xylenes, and naphthalenes) were found in groundwater. Aqueous air sparging and soil vapor extraction systems have been installed to remediate the site. Semi-annual groundwater monitoring is ongoing. Personnel should avoid wellheads, piping and air sparge systems during barrier installation (Matthews, 2002, personal communication). No impacts from the Proposed Action are anticipated. In the event that remediation equipment is disturbed, the AAC/EMR IRP manager should be notified.

SS-85 (AOC-84), Radar Burial Site. SS-85 is located in the eastern sector of the Eglin range on TA C-6 Radar Facility (Figure 4-3). The volatile organic compound tetrachloroethylene (TCE) in groundwater is being evaluated in an ongoing Site Investigation (SI). Placement of the intrusion detection device would lie approximately 1 to 2 feet from the contaminant plume. Groundwater levels are from 0.7 to 4.5 feet in the area. Groundwater samples from wells #04 and #02 were below required standards during a sampling event in April 2000. Groundwater in well #3 revealed levels of TCE above standards (Bjorklund, 2002, personal communication). Personnel should be aware of wells during construction activities and avoid contact with groundwater. No impacts are anticipated if placement of the intrusion detection system remains 20 feet from the facility and up gradient of the groundwater plume. Notification of groundwater contact should be reported to the AAC/EMR IRP site manger.

Non-Hazardous Solid Waste

Non-hazardous solid waste includes removed old fencing and land clearing debris. Cut vegetation must not be put into the solid waste stream (dumpsters or roll-offs). It may be taken to the wood yard on Eglin Main or to the closed Wright Landfill for mulching and soil stabilization. Recycle waste to the maximum extent possible.

Alternative Action 1

Although the use of retaining walls would disturb more soil in the areas of concern at which IRP sites are located, no impacts from Alternative Action 1 are anticipated if no contact with groundwater is made and personnel avoid wellheads, piping and air sparge systems during installation activities.

Alternative Action 2

Excavation activities would be the same as the Proposed Action with the exception that several buildings on main base would utilize bollards for barrier systems. No impacts would occur from Alternative Action 2 provided no contact with groundwater is made and personnel avoid wellheads, piping and air sparge systems during installation activities.

No Action Alternative

Security fencing, barriers, and intrusion detection would not be constructed. Therefore, no impacts would occur.

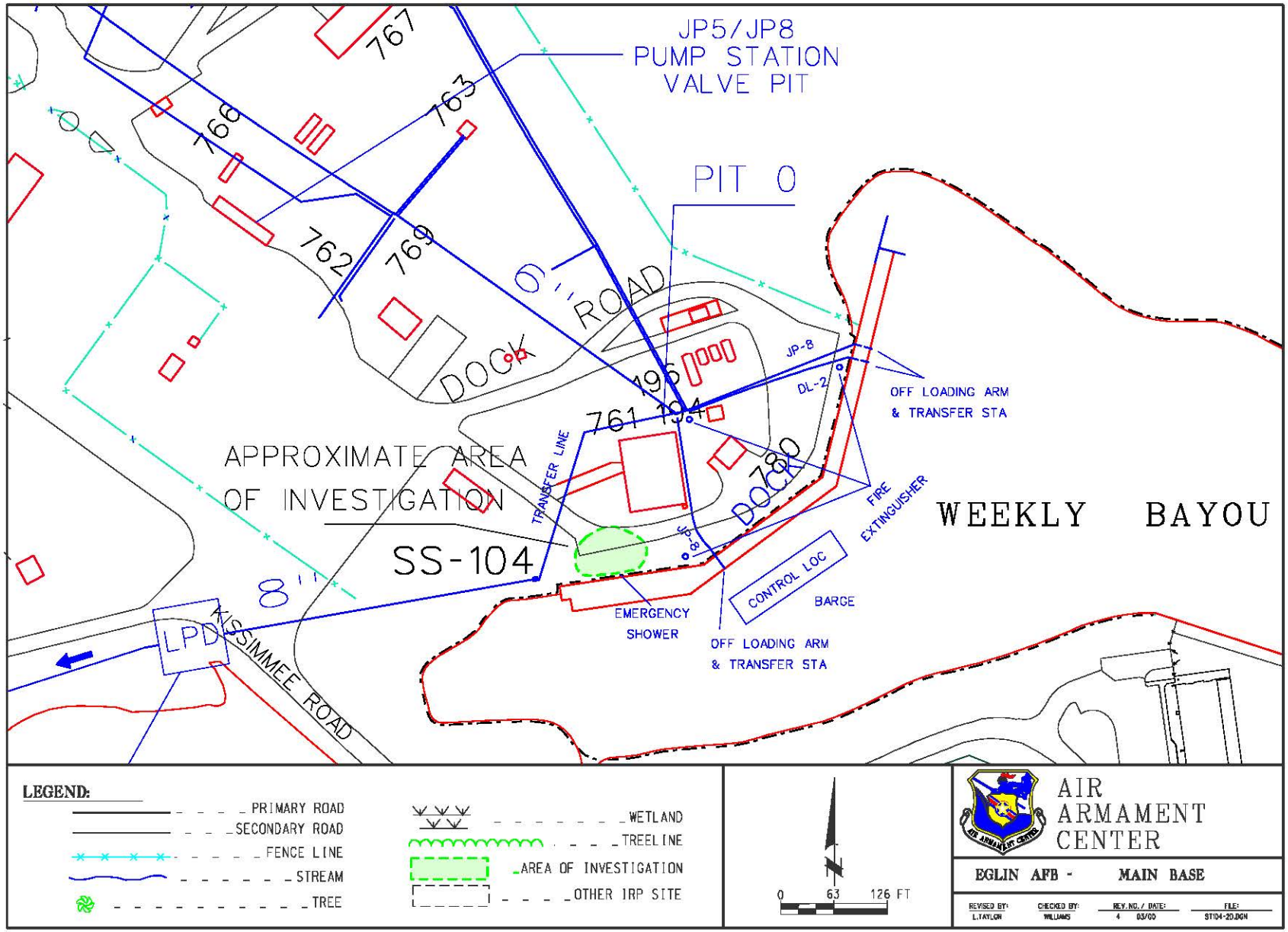

Figure 4-1. Location of Site SS-104

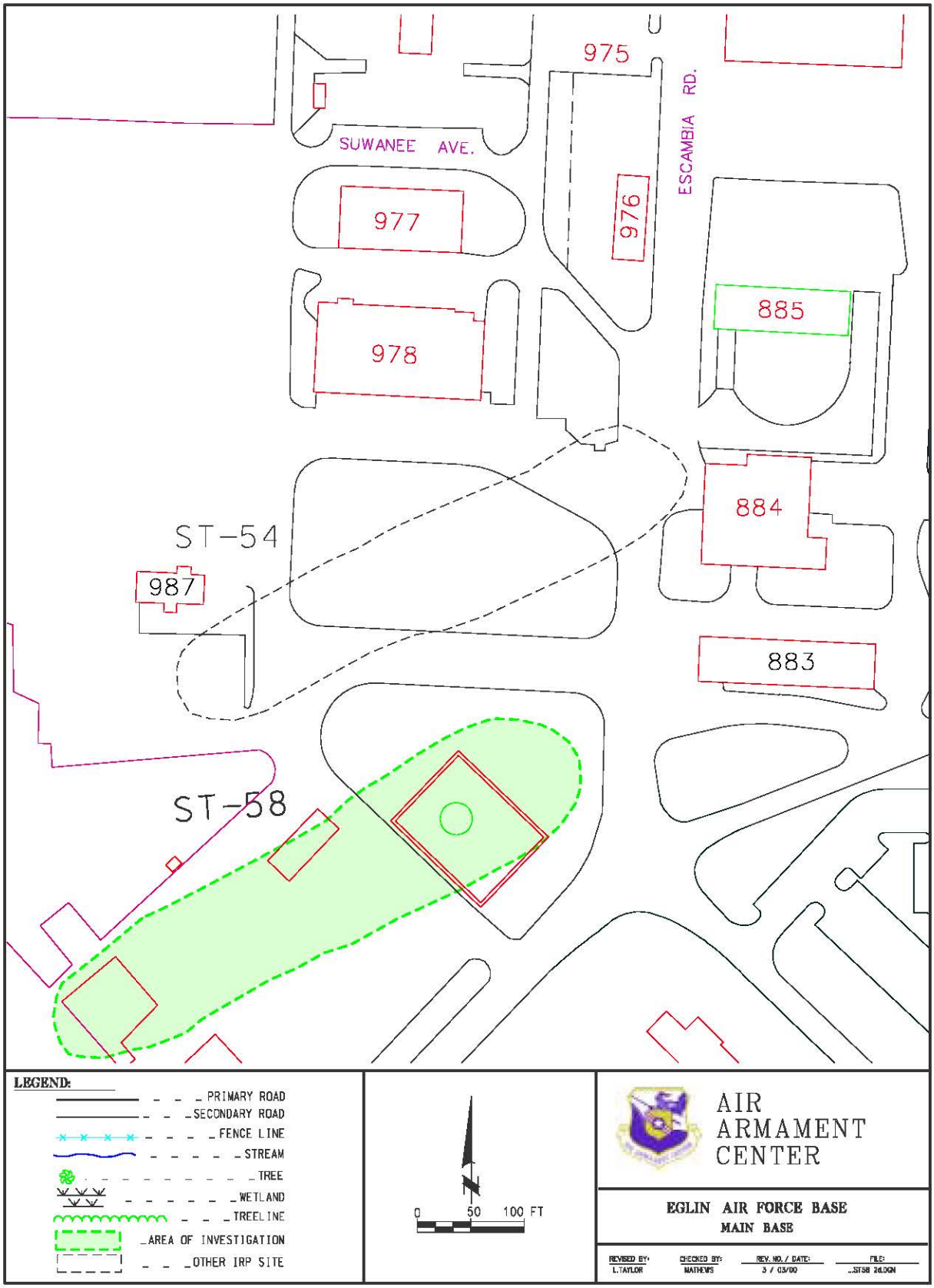

Figure 4-2. Location of Site ST-58

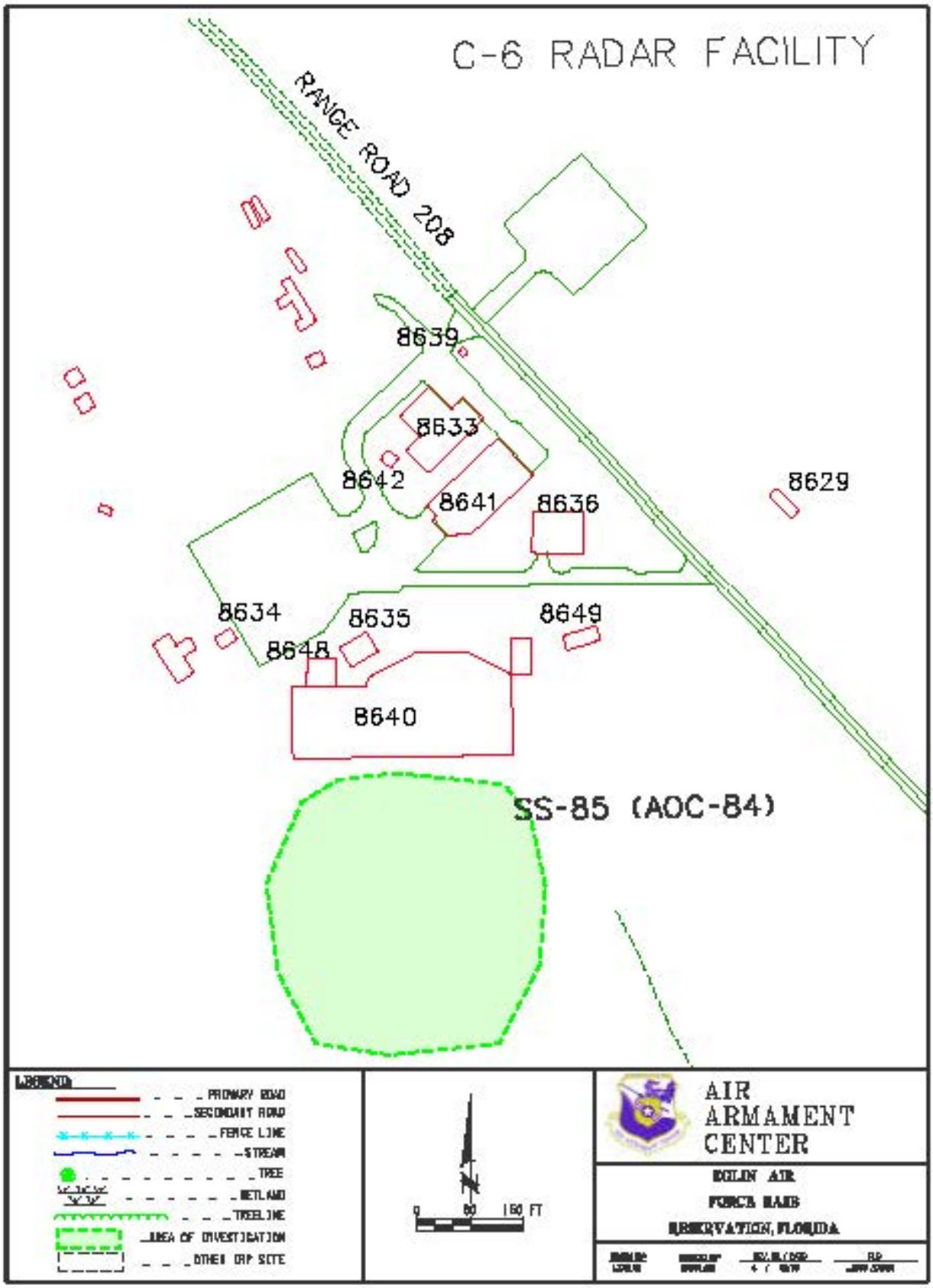

Figure 4-3. Location of Site SS-85

5. PLANS, PERMITS, AND MANAGEMENT REQUIREMENTS

The following is a list of the plan, permit, and management requirements associated with the Proposed Action. The need for these requirements were identified by the environmental analysis process in this environmental assessment, and were developed through cooperation between the proponent and interested parties involved in the Proposed Action. These requirements are, therefore, to be considered as part of the Proposed Action and would be implemented through the Proposed Action's initiation.

Plans

Site Design Plan

Permits

Design and Construction Permit
National Pollutant Discharge Elimination System Permit (NPDES permit)

Management Requirements

Soils/Erosion

Where appropriate, BMPs, including the use of silt screens and certified weed-free hay bales, would be initiated during installation of security fencing, barriers, and intrusion detection systems to minimize potential erosion impacts and the spread of invasive species. An NPDES construction permit would be required if five or more acres of soil surface were disturbed. Clearing the fence construction area by mowing vegetation would not require a permit, whereas bulldozing would.

Cultural Resources

Site plan designers should coordinate efforts with AAC/EMH during initial design to accommodate archaeological site avoidance at Duke Field Gate. Consultation with AAC/EMH is also required for installation of barriers and fencing near historical building or within historical districts (Building 1315). Construction of any barrier or fencing other than hydraulic bollards at NRHP listed buildings 1, 11, 44, and 440 require consultation with the State Historical Preservation Officer (SHPO).

Water and Wetland Resources

Paved areas would be graded to allow storm water to flow away from sensitive areas (e.g., wetland and erosion-prone areas). Security fence construction procedures stipulate that the fence would not be placed within 300 feet of either side of Tom's Creek. This is reasonably expected to minimize or avoid altogether disturbance to Tom's Creek. Disturbance to wetland soils and vegetation would be avoided by the establishment of project constraint areas near Weekly Bayou.

Biological Resources

Where feasible, security fencing would be placed along roads and pathways to minimize impacts to undisturbed, natural areas.

Where appropriate, BMPs such as weed-free hay bales and seeds and cleaning of equipment prior to entering facility should be employed to prevent the introduction of non-native species.

Hazardous Materials

Installation Restoration Program (IRP) areas SS-104 (Eglin Pipeline Spill Site, Pit 0), ST-58 (Military Gas Station), and SS-85 (Radar Burial Site) are located within Proposed Action locations. Coordination by AAC/EMR with FDEP and USEPA Region 4 for approval of activities on active IRP sites is required. No impacts are anticipated from the proposed or alternative actions. Wellheads, piping, air sparging equipment, or groundwater should not be disturbed. In the event of such an occurrence or if any unusual odor or soil or groundwater coloring is encountered, AAC/EMR should be contacted immediately.

Non-Hazardous Solid Waste

Non-hazardous solid waste includes removed old fencing and land clearing debris. Cut vegetation must not be put into the solid waste stream (dumpsters or roll-offs). It may be taken to the wood yard on Eglin Main or to the closed Wright Landfill for mulching and soil stabilization. Recycle waste to the maximum extent possible.

6. LIST OF PREPARERS

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APPENDIX A

SECURITY FENCING AND BARRIERS

Jersey Barriers

Retaining Walls

Bollards

Raised Beds and Planters

Anti-Vehicle Device

Bar Swing Gate

Security Fencing – Chain Link

Security Fencing – Brick and Vinyl

APPENDIX B

SECURITY FENCING SPECIFICATIONS

SECURITY FENCING SPECIFICATIONS

AFI 31-101, The Air Force Installation Security Program

11.5.2. Fence Fabric. Installations must use woven 9-gauge (.1483 inches or 3.7 mm), steel-wire, chain-link fabric for type A fencing, with 2-inch (5.1 cm) square mesh. Steel-wire fabric must have a steel core that measures 9 gauge, not including the coating. Use non-reflective paint for fences to reduce glare that could affect remote camera and visual assessment. NOTE: Coated steel wire purchased or installed before 1 January 1980 meets the 9-gauge steel core requirement as long as the core wire is a least 11 gauge (.1205 inches or 3.1 mm). EXCEPTION: At North Atlantic Treaty Organization (NATO) sites, the Supreme Headquarters Allied Powers Europe criteria for steel fabric apply.

11.5.3. Fence Height. The above ground height of the mesh fabric must measure 7 feet (approximately 2.13 m).

11.5.4. Fence Mounting. Fences are mounted as follows.

11.5.4.1. Mount fence fabrics on metal posts of appropriate height set in concrete with additional bracing at corners and gate openings, as necessary. EXCEPTION: Use reinforced concrete posts if metal posts are not available.

11.5.4.2. Put posts, bracing, and other structural members on the inside (site side) of the fence fabric.

11.5.4.3. Secure the fence fabric to fence posts, rails, or other anchoring material with fasteners of tensile strength at least equal to that of the fence fabric. Firmly secure fence fabric to tension wires with 12-gauge galvanized tie wire incorporating at least a 540-degree tightened loop.

11.5.5. Fence Topping. Acceptable toppings are as follows. EXCEPTION: For existing systems with unique configuration, i.e., split view camera placement, an 18-inch vertical outrigger with 3 or more strands of barbed wire is permissible in lieu of a "Y" outrigger.

11.5.5.1. Install two 15-inch outriggers, each having three strands of barbed wire, at intervals along the top of the fence.

11.5.5.2. Install the outriggers at 45-degree angles in a "Y" configuration.

11.5.5.3. Units may install a type of barbed tape or concertina roll between the "Y" outriggers. NOTE: Exercise caution when considering installation of barbed, tape, or concertina roll between outriggers of fences with sensors. This may generate nuisance alarms.

11.5.5.4. Secure the topping tape to every post and no less than every 18 inches along the fence fabric to the top rail reinforcing wire or barbed wire strand.

11.5.5.5. Units may use fences installed with single vertical arm taut wire sensor systems on top of a fence instead of standard 15-inch, three-strand, barbed-wire outriggers.

11.5.5.6. Install a top rail or taut reinforcing wire near the top of the fence to stabilize the fence fabric.

11.5.6. Anchoring and Stabilizing Fences. Extend the bottom of the fence fabric to within 2 inches (5 cm) of firm ground and anchor it to prevent intruders from lifting the fabric and creating an opening more than 5 inches (12.5 cm) in height. To do this, use horizontal bottom rails, concrete curbs or sills, sheet piling, piping, or other inexpensive materials.

11.5.6.1. Stabilize surfaces in areas where loose sand, shifting soils, or surface waters cause erosion that could allow an intruder to penetrate the perimeter security system.

11.5.6.2. Where you can't stabilize the surface, provide concrete curbs, sills, or other similar types of anchoring devices and extend them below ground level. NOTE: In cases where terrain, soil, surface waters, and other environmental factors make it impossible to meet type A anchoring and stabilization criteria, installations need not request a formal deviation. Document the deficiencies and compensatory measures in appropriate security force instructions.

11.5.6.3. During installation, stabilize fencing that also serves as a sensor system platform to meet sensor-sighting requirements.

11.5.7. Gates. The gate fabric or support must reach to within 5 inches of paved surfaces and to within 2 inches of other surfaces. It must prevent someone from lifting the fabric to create an opening more than 5 inches high. The maximum allowable distance between the gateposts and gate is 5 inches when the gate is closed.