

**ENVIRONMENTAL ASSESSMENT FOR 8 CONSTRUCTION  
SITES**

**TYNDALL AIR FORCE BASE, FLORIDA**

**DRAFT ENVIRONMENTAL ASSESSMENT**



PREPARED FOR:

**Department of the Air Force**

**Contract W9127819D0025/Task Order W9127821F0147**

July 2022

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**Environmental Assessment for 8 Construction Sites Tyndall Air Force Base, Florida**

**COVER SHEET**

**Responsible Agency:** 325th Civil Engineer Squadron (325 CES), Tyndall Air Force Base (AFB), Florida

**Proposed Action:** Implementation of Eight Near-term Construction Projects at Tyndall AFB, Bay County, Florida

**Points of Contact:** 325 CES/CEIEC, 101 Mississippi Road Building 36233 Tyndall AFB, FL 32403

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

**Abstract:** 325 CES has identified and programmed a series of eight near-term improvements at Tyndall AFB (i.e., Proposed Actions), which are expected to be implemented beginning in Fiscal Year (FY) 2023 (Calendar Year 2022 – Calendar Year 2023). The Proposed Actions include new facility and infrastructure construction and renovation, recreational facility enhancements, and management of natural resources. The purpose of implementing the Proposed Actions is to provide facility, infrastructure and functionality improvements necessary to provide continued mission support for host and tenant units at Tyndall AFB. The Proposed Actions are needed to improve and maintain function and capability in the facilities and infrastructure at the installation, and to prevent deterioration of these functions and capabilities that can occur over time due to obsolescence and evolving mission needs. There would be no new missions or personnel assigned to Tyndall AFB as a result of the Proposed Actions.

The following resources were identified for study in this EA: Air Quality, Noise, Safety and Occupational Health, Land Use, Soils, Water Resources, Biological Resources, Cultural Resources, Hazardous Materials and Wastes.

**Privacy Act Advisory:** As required by law, substantive comments will be addressed in the Final Environmental Assessment and made available to the public. Any personal information provided will be kept confidential. Private addresses will be compiled to develop a mailing list for those requesting copies of the Final Environmental Assessment. Names, personal home addresses and phone numbers will not be published in the Final Environmental Assessment.

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**DRAFT FINDING OF NO SIGNIFICANT IMPACT AND  
FINDING OF NO PRACTICABLE ALTERNATIVE  
ENVIRONMENTAL ASSESSMENT FOR 8 CONSTRUCTION SITES, TYNDALL AFB,  
FLORIDA**

Pursuant to the Council on Environmental Quality (CEQ) regulations for implementing the procedural provisions of the National Environmental Policy Act of 1969 (NEPA) (Title 40 of the Code of Federal Regulations [CFR] §§ 1500-1508). The September 14, 2020 version of CEQ NEPA rules is being used (85 FR 43304-43376), as modified by the CEQ NEPA Implementing Regulations Revisions Final Rule that became effective 20 May 2022, and the Air Force Environmental Impact Analysis Process Regulations (32 CFR Part 989), the U.S. Air Force (Air Force) has prepared this Environmental Assessment (EA) to evaluate the potential impacts on the natural and human environment associated with implementing improvements at eight (8) proposed construction sites at Tyndall Air Force Base (AFB), Florida.

**Purpose and Need**

The purpose of implementing the proposed improvements (Proposed Actions) is to provide facility, infrastructure and functionality improvements necessary to provide continued mission support for host and tenant units at Tyndall AFB. The Proposed Actions are needed to improve and maintain function and capability in the facilities and infrastructure at the installation, and to prevent deterioration of these functions and capabilities that can occur over time due to obsolescence and evolving mission needs.

**Proposed Action**

Under the Proposed Actions, eight (8) individual projects would be implemented, spanning the four planning districts at Tyndall AFB.

1. Construct New Explosive Ordnance Disposal (EOD) Gravel Road: The current EOD Range and detonation site is appropriately sited and fully approved to dispose of heavy ordnance. However, under existing conditions, heavy ordnance must be transported in via the main EOD road and lowered into the detonation site from atop an earthen berm on the north side of the detonation site, adding time and effort to completion of detonation activities by assigned personnel. The Proposed Action seeks to implement an efficiency improvement to current heavy ordnance offloading and disposal activities.
2. Dredge the 325th Weapons Evaluation Group (325 WEG) Small Boathouse Area: 325 WEG operations in the 9700 Area of Tyndall AFB are facilitated by both roadway access and maritime access points. The WEG Boathouse (Building 9709) is the primary access point for small boats to this area, which sustained significant damage during Hurricane Michael in 2018. Repair of the boathouse dock area has been separately approved and environmentally evaluated and is in the process of being implemented.<sup>1</sup> However, current bottom conditions in this area are not conducive

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<sup>1</sup> The WEG Boat Dock restoration project involved the repair by replacement of an existing facility that was destroyed by Hurricane Michael. The facility and docks were replaced within the same footprint of the previous structures. The project has independent utility from the Proposed

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to access by small boats during low tide, and therefore dredging is required once the boat docks are again operational. The area must be dredged to a depth of between 3 and 5 feet below present bottom elevation to provide access during low tide operations.

3. Replace WEG Tower 1802: WEG Communications Tower 1802 was damaged and rendered unusable due to Hurricane Michael in 2018. Prior to being damaged, the tower provided communications functions required for mission readiness by the 83rd Fighter Weapons Squadron (83 FWS). 83 FWS requires restoration of the previous functions, and also seeks better coverage and line-of-sight for communications during unmanned drone missions. Functionality of this facility needs to be replaced to accomplish these objectives.
4. Improve Expeditionary/Encampment Roads: Expeditionary Road and Encampment Road, located north of U.S. Highway 98 and west of Florida Avenue on Tyndall AFB, have historically been gravel forestry roads. Since commencing reconstruction activities after Hurricane Michael in 2018, these roads have seen an increase in traffic. Aside from the main Flightline gates there is not another ingress point to areas north of Florida Avenue (e.g., the Flightline and the 6000 area). Construction of these roadways to 12-foot asphalt roads has been separately approved and environmentally evaluated and is in the process of being implemented.<sup>2</sup> Further improvements are needed to accommodate construction traffic. The Proposed Action seeks to expand lanes along these roadways and install Entry Control Facilities (ECF) to help facilitate construction traffic and secure access.
5. Expand Family Camp (FAMCAMP) Site: FAMCAMP is located west of U.S. Highway 98, north of Sabre Drive. FAMCAMP is a significant revenue generator for Tyndall AFB and provides many morale, welfare and readiness (MWR) programs and amenities to airmen, their families, and the public. The goal of the Proposed Action is to increase the number of Recreational Vehicle (RV) hookups and parking pads to increase residential capacity at the site and create kayak launches/landings to give users better access to the water. Another objective of the Proposed Action is to install additional egress pathways for emergency response scenarios.
6. Construct Water Main Along North Side of Flightline: Airfield and Flightline drainage improvements are ongoing as part of the Hurricane Michael reconstruction efforts. Additional connectivity is needed to provide water quality and conveyance to support these improvements. The Proposed Action would connect the lines running from Florida Avenue and Ammo Road to form a Flightline Water Loop along the northside of the airfield. The goal of this Proposed Action is to improve water quality issues and provide water utilities for future development of the North Flightline area.
7. Construct Fishing/Observation Pier at Heritage Club (Building 1454): Future plans for the Heritage Club facilities, which have gone unused since Hurricane Michael in 2018, include installation of

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Actions and alternatives and can function without the Proposed Actions and alternatives being approved. The project was eligible for Categorical Exclusion under the Air Force EIAP due to the low potential for environmental impacts to be incurred.

<sup>2</sup> The initial Expeditionary/Encampment Road improvement project was required to repair the existing gravel road and make it an asphalt road due to large vehicles that would use it for the MILCON rebuild, has independent utility from the Proposed Actions and alternatives, and can function without the Proposed Actions and alternatives being approved. The project was eligible for Categorical Exclusion under the Air Force EIAP due to the low potential for environmental impacts to be incurred

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outdoor amenities such as an amphitheater and other public outdoor use areas. Although these development plans are not part of the Proposed Action in this EA and will be addressed at a future time, the Proposed Action seeks to increase near-term use of the facility in a way that is compatible with the planned future construction, by constructing a fishing and observation pier.

8. Renovate the UNITE Site: The UNITE Program at Tyndall AFB is managed by the 325 Force Support Squadron (FSS) as a means to build cohesion for active-duty troops, reserve and civilians at Tyndall AFB. The Proposed Action involves creating outdoor recreational facilities and supporting infrastructure that can be utilized by these parties in order to increase MWR opportunities and revenue at Tyndall.

## **Alternatives**

Action Alternatives for projects in each of the planning areas were evaluated against a set of selection standards to determine which alternatives would be carried forward for detailed environmental impact analysis. Multiple Action Alternatives were evaluated against selection standard criteria for the Proposed Actions. Only the Action Alternatives that meet all selection standards were analyzed in detail for potential environmental impacts within the EA. The proposed Construct EOD Gravel Road, Improve Expeditionary/Encampment Roads, and Construct Water Main Along North Side of Flightline projects are subjected to unique constraints due to the nature of the projects and the areas in which they would be implemented. Reconstructing/refurbishing, rather than replacing, the damaged WEG Tower 1802 would not accomplish mission objectives. Therefore, only a single Action Alternative was analyzed in detail for each of these projects.

Multiple Action Alternatives were considered for the remaining projects:

- Dredge the WEG Small Boathouse (Alternative 1): Dredge the small boathouse docks to a depth of between three and five feet below present bottom elevation, and place clean dredge spoils immediately to the north and to the west of Buildings 9700 and 9706.
- Dredge the WEG Small Boathouse (Alternative 2): Dredge the small boathouse docks to a depth of between three and five feet below present bottom elevation, and place either clean or contaminated dredge spoils in an area north of Research Road.
- Expand FAMCAMP Site (Alternative 1): Construct a new gravel emergency access road and controlled access gates on both the proposed and existing entrances. Replace two existing RV pads that would be displaced due to planned construction activities such that there is no net loss of currently available RV slots. Construct 30 additional 350- to 400-SF concrete RV parking pads with new water, electrical, and sewage utility connections and install a site containment fence. Construct a new kayak launch in the northwest area of the FAMCAMP site with stairs leading down to the water.
- Expand FAMCAMP Site (Alternative 2): Construct a new gravel emergency access road and controlled access gates on both the proposed and existing entrances. Replace one existing RV pad that would be displaced due to planned construction activities such that there is no net loss of currently available RV slots. Construct 30 additional 350- to 400-SF concrete RV parking pads with new water, electrical, and sewage utility connections and install a site containment fence. Construct a new kayak launch in the southwest area of the FAMCAMP site at grade with the existing waterline.

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- 1   ▪ Construct Fishing/Observation Pier (Alternative 1): Construct a new wooden pier approximately 200  
2   feet long by 15 feet wide, with a 50-foot by 20-foot observation/fishing area, including approximately  
3   40 12-inch-diameter support pylons embedded into the soil.
- 4   ▪ Construct Fishing/Observation Pier (Alternative 2): Construct a new concrete pier approximately 200  
5   feet long by 20 feet wide, with a 75-foot by 20-foot observation/fishing area, including approximately  
6   55 12-inch-diameter support pylons embedded into the soil.
- 7   ▪ Renovate UNITE Site (Alternative 1): Construct new recreational facilities (axe throwing course,  
8   paintball field, and archery range), administrative office space and a gravel parking area on a 22.5-acre  
9   site located north of Sabre Drive and west of U.S. Highway 98.
- 10  ▪ Renovate UNITE Site (Alternative 2): Construct new recreational facilities (axe throwing course,  
11  paintball field, and archery range), administrative office space and a gravel parking area on a 16-acre  
12  site at the corner of Sabre Drive and Prime Beef Road.

13   Additionally, a No-Action Alternative was analyzed for each of the Proposed Actions. The No-Action  
14   Alternative would not allow replacement of damaged facilities, improvement of infrastructure and  
15   construction of new facilities and infrastructure. Under this alternative, Tyndall AFB would not be able to  
16   meet its mission. Construction would be expected to begin and be completed in Fiscal Year (FY) 2023,  
17   which includes portions of Calendar Years 2022 and 2023.

## 18   **Environmental Consequences**

19   The Proposed Actions and Alternatives would have no effect on geology, airspace, socioeconomics,  
20   Environmental Justice and the protection of children, utilities, transportation, or visual resources. The Air  
21   Force has determined that the Proposed Actions may affect but are not likely to adversely affect threatened  
22   and endangered species known to occur on Tyndall AFB. These include the federally-listed West Indian  
23   manatee, American alligator, loggerhead sea turtle, green sea turtle, leatherback sea turtle, eastern indigo  
24   snake, red knot, piping plover, wood stork, gulf sturgeon, telephus spurge, Harper's beauty, white birds-in-  
25   a-nest, Godfrey's butterwort, and Florida skullcap. State-listed/protected species include the Florida black  
26   bear, gopher tortoise, snowy plover, little blue heron, tri-colored heron, American oystercatcher, black  
27   skimmer, least tern, small spreading pogonia, dew thread sundew, spoon-leafed sundew, Apalachicola aster,  
28   wiregrass gentian, thick-leaved water willow, gulf coast lupine, giant water dropwort, Apalachicola  
29   dragonhead, yellow-flowered butterwort, Chapman's butterwort, snakemouth orchid, nightflowering wild  
30   petunia, parrot pitcher plant, purple pitcher plant, Chapman's crownbeard, quillwort yellow-eyed grass, and  
31   karst pond yellow-eyed grass. Prior to an Air Force decision on the EA, Section 7 Consultation under the  
32   Endangered Species Act is ongoing and will be fully completed to identify and confirm conservation  
33   measures necessary to offset these impacts.

34   Negligible to minor impacts would occur on air quality; ambient noise levels; safety and occupational  
35   health; land use; soils; vegetation/wildlife habitat; ground and surface water supplies and quality; wildlife  
36   populations; cultural resources, and hazardous and solid waste. Potential impacts to these environmental  
37   resources are summarized below.

- 38   ▪ Air Quality and Climate Change: The Proposed Actions would generate negligible additional  
39   operational emissions compared to the No Action Alternative. Operational emissions would not

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exceed insignificance thresholds and would be limited to space heating and emergency generator operation for newly constructed structures. Annual construction emissions would not exceed insignificance thresholds and would be temporary in nature.

- Noise: Implementation of the Proposed Actions would not result in any aircraft noise related impacts on sensitive noise receptors in the vicinity of Tyndall AFB. Construction and demolition activities associated with the Proposed Actions are expected to result in a short-term, negligible to minor, adverse impact on the noise environment at Tyndall AFB.
- Safety and Occupational Health: Short-term, minor impacts on contractor health and safety could occur from implementation of the Proposed Actions during construction and dredging activities, namely in terms of exposure to unexploded ordnances in the EOD area, soil/groundwater contamination, loud noise, heavy machinery, debris, electricity, and hazardous materials used or encountered during work. Constructing the EOD gravel road would improve the long-term safety of EOD handling activities, as it would provide direct access to the EOD site.
- Land Use: Construction and operation of the Proposed Actions would not result in any significant impact on land use. Each of the individual Proposed Actions is consistent with current and future land uses as determined by Tyndall AFB.
- Soils: Site preparation and construction activities would directly disturb a maximum of approximately 166 acres of native and non-native soils depending on the alternatives selected. Erosion from the construction sites could result in additional indirect effects. No prime or unique farmland soils would be disturbed or removed from the project area. The construction contractor would be required to develop a Stormwater Pollution Prevention Plan specific to each site that would detail erosion prevention and control measures to be implemented during site preparation and construction activities. There would be minor impacts on soils upon implementation of the Proposed Actions.
- Water Resources:
  - *Groundwater*: Proposed construction activities would not involve withdrawals from, or discharges to surface water bodies or groundwater. Groundwater within the surficial aquifer may be encountered during certain types of construction activities such as excavation within the footprint of new facilities. Negligible to minor impacts on groundwater would be expected.
  - *Surface Water*: The Proposed Actions may potentially have temporary, negligible impacts on surface waters as a result of increases in erosion and sedimentation during periods of construction or demolition.
  - *Wetlands*: Although final designs and laydown footprints are not developed as yet, it is estimated that a total of up to approximately 15.85 acres of wetlands and 26.65 acres of other surface waters (stormwater pond/open water/drainage features) are located within the proposed project areas, depending on the alternatives selected. Approximately 15.85 acres of wetlands were assessed using the Uniform Mitigation Assessment Method (UMAM). Therefore, the approximate functional loss of wetland values as a result of construction of the Proposed Actions and alternatives would be up to 9.945 units.

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- 1       – *Floodplains*: A maximum total of approximately 17 acres of the Proposed Action and  
2       alternatives areas are located within the 100-year floodplain.
- 3       – *Coastal Zone Management*: The state of Florida’s concurrence with the Air Force’s  
4       preliminary determination that the Proposed Actions are consistent with the Coastal Zone  
5       Management Plan (CZMP) was requested as part of the Draft EA and the consistency review  
6       process will be completed prior to the Air Force’s decision on the Final EA
- 7       ▪ Biological Resources: Construction activities would result in permanent modifications to habitat  
8       potentially utilized by listed and protected species. No significant adverse impacts to federally- and  
9       state-listed species, critical habitat, or submerged aquatic vegetation are likely to result from the  
10      Proposed Actions.
- 11      – *Federally-Listed Species*: No significant impacts are anticipated to federally-listed floral or  
12      faunal species. The Proposed Actions would have “no effect” on species lacking suitable  
13      habitat within the individual project areas, or species whose range does not include the project  
14      areas. An ESA determination of “may affect, not likely to adversely affect” applies to species  
15      whose range includes the project areas, with suitable habitat within the project areas, but where  
16      no individuals were observed during field surveys of the project areas.
- 17      – *State-Listed Species*: No significant impacts are anticipated to state-listed floral or faunal  
18      species. The Proposed Actions would have “no effect” on species lacking suitable habitat  
19      within the individual project areas, or species whose range does not include the project areas.  
20      An ESA determination of “may affect, not likely to adversely affect” applies to species whose  
21      range includes the project areas, with suitable habitat within the project areas, but where no  
22      individuals were observed during field surveys of the project areas. Approved conservation  
23      measures will be implemented to prevent potential adverse impacts to the gopher tortoise.
- 24      – *Critical Habitat*: No critical habitat is located within the Proposed Actions’ project areas, and  
25      no adverse impacts to critical habitat are anticipated to result from the Proposed Actions.  
26      Choctawhatchee beach mouse critical habitat is located within 30 feet of the EOD range gravel  
27      road construction project area. Piping Plover critical habitat is within 950 feet from the  
28      fishing/observation pier project at Heritage Club project area. Critical Habitat for the St.  
29      Andrew beach mouse is located within approximately 1,200 feet of the WEG boathouse  
30      dredging project limits. Remaining critical habitat areas are approximately half a mile or more  
31      from the nearest project area.
- 32      – *Submerged Aquatic Vegetation*: Submerged aquatic vegetation is likely to be impacted by in-  
33      water work associated with each alternative for the WEG boathouse dredging, FAMCAMP  
34      expansion, and Observation/Fishing Pier at Heritage Club projects; however, the potential  
35      impacts are not expected to be significant. Direct impacts can likely be avoided for the WEG  
36      boathouse and FAMCAMP projects, where submerged aquatic vegetation is patchy, covering  
37      approximately 5 to 15 percent of the conceptual work areas. However, dredging and  
38      disturbance activities may induce increased turbidity in the surrounding waters which could  
39      cause indirect impacts. Submerged aquatic vegetation covers approximately 95 percent of the  
40      Observation/Fishing Pier project in-water work areas. Some impacts are likely unavoidable  
41      due to the placement of support piles for the pier. Direct impacts will be avoided to the extent  
42      possible through project planning and design.

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- Cultural Resources: The Air Force finds that no adverse effect would be incurred on archaeological or historic architectural resources. Concurrence on the archaeological conclusion from SHPO and Native American tribes has been requested as part of the Draft EA process and consultations will be completed prior to an Air Force decision on the Final EA.
- Hazardous Materials/Waste and Solid Waste: No increases or substantial changes in current quantities and types of hazardous materials or wastes would be expected upon completion of the Proposed Actions. The Proposed Actions would result in no or negligible effects regarding hazardous wastes. No or negligible effects relative to toxic substances would occur. Construction of the proposed structures would generate nonhazardous, construction-related solid waste such as building materials and rubble. Such solid waste would be disposed at an off-base landfill or recycled/reused as appropriate and managed in accordance with the Tyndall AFB Integrated Solid Waste Management Plan (ISWMP). No excavated materials would be transported off-base. Therefore, minor effects relative to solid wastes at Tyndall AFB would occur due to the Proposed Actions. A variety of Environmental Restoration Program (ERP) sites are collocated with, adjacent to, or in proximity to the Proposed Actions and planned construction activities, which have potential to cause short-term adverse impacts to ongoing remediation activities at these sites.

#### **Mitigation Measure and Permit Requirements**

The following mitigation measures and permit requirements are required in the areas of water resources, biological resources, hazardous materials/waste, and cultural resources:

##### *Noise*

- If the Renovate UNITE Site Alternative 2 is selected for implementation, the Air Force would consider implementing best management practices (BMPs) to minimize temporary construction noise exposure, such as modifying construction schedule and work hours, requiring contractors to utilize equipment with mufflers, and installing temporary barriers to aid in attenuating construction noise.

##### *Water Resources*

- Acquire all necessary wetlands and water resource permits for the Proposed Actions, including, but not limited to National Pollutant Discharge Elimination System (NPDES) stormwater permit(s), Environmental Resource Permit(s), Clean Water Act (CWA) Section 404 Dredge and Fill Permit, Section 401 water quality certification.
- Provide mitigation, as determined by regulatory agencies during the permitting process and to be verified during final design, for up to approximately 15.85 acres of wetland impact, estimated in the EA as equivalent to 9.945 functional units of mitigation credit.
- Implement BMPs as defined in a Stormwater Pollution Prevention Plan (SWPPP) to reduce or eliminate the potential for eroded soils and contaminants from entering surface water bodies and groundwater.
- Mitigate for the loss of up to approximately 17 acres of 100-year floodplain, as determined by the EA and to be verified in final design, by providing compensatory storage, excavating material

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within or adjacent to the same floodplain to be used as fill. Compensatory storage must be provided in a manner that does not disturb or impact wetlands, endangered vegetation, or potential cultural sites.

- Wherever possible as determined by final design, elevate all facilities above the base flood elevation, apply construction period erosion and sedimentation controls, and use pervious surfaces for stormwater retention and treatment.

*Biological Resources*

- To prevent potential adverse impacts to the West Indian manatee, the *2011 Standard Manatee Conditions for In-Water Work* will be adhered to during all in-water construction activities.
- To prevent potential adverse impacts to the loggerhead sea turtle, the green sea turtle, the leatherback sea turtle and the Kemp's ridley sea turtle, the *Sea Turtle and Smalltooth Sawfish Construction Conditions* (Revised March 23, 2006) will be adhered to during all in-water construction activities.
- To prevent potential adverse impacts to the loggerhead sea turtle, the green sea turtle, the leatherback sea turtle and the Kemp's ridley sea turtle, installation activities will also continue to adhere to management practices outlined in the Integrated Natural Resources Management Plan (INRMP), including but not limited to, predator control, resolution of beach lighting issues, enforcement of beach driving restrictions, and restoration/protection of nesting habitat.
- If potentially occupied gopher tortoise burrows are found during construction, Tyndall AFB, in accordance with Florida Fish and Wildlife Commission's (FWC) *Gopher Tortoise Permitting Guidelines* (revised July 2020), will maintain a minimum 25-foot radial buffer around the burrow to avoid impacts to the species. The buffer will not isolate gopher tortoise mobility. If a buffer cannot be maintained, a gopher tortoise relocation permit (10 or fewer burrows) will be obtained through FWC.
- During the design and permitting process, develop avoidance and minimization measures for impacts to submerged aquatic vegetation, which may include (but may not necessarily be limited to): pre- and post-construction submerged aquatic vegetation surveys, installation of turbidity curtains around construction areas, and development and implementation of a Turbidity Control and Monitoring Plan.

*Cultural Resources*

- If prehistoric or historic artifacts that could be associated with Native American, early European, or American settlement are encountered at any time within the project site area, cease all activities involving subsurface disturbance in the vicinity of the discovery. Contact the Tyndall AFB Cultural Resources Management team and do not resume work without verbal and/or written authorization.
- In the event that unmarked human remains are encountered during permitted activities, stop all work immediately and notify the proper authorities within 24 hours.



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*Hazardous Materials/Waste and Solid Waste*

- Report any spills or discharges discovered during the course of demolition and construction.
- Manage hazardous materials and disposal of hazardous substances in compliance with Tyndall AFB's Hazardous Waste Management Plan.
- Coordinate development on ERP sites with Air Force Civil Engineer Center (AFCEC) and address any applicable land use controls by evaluating project implementation to ensure continued protectiveness for human health and the environment.
- Ensure construction contractor compliance with 29 CFR 1910.120 to address the health and safety of its employees during construction and demolition activities, with respect to worker exposure to hazardous substances and proper management of soil and groundwater encountered during construction, including testing, handling, and disposal procedures.
- Comply with state requirements for the abandonment of any monitoring wells, injection wells, extraction wells, sparge wells, or similar treatment facilities that are found within the area of the construction and demolition activities.

As the proponent for 8 Construction Sites at Tyndall Air Force Base action the 325 CES will be responsible for ensuring that the mitigations listed above in the Environmental Consequences section and in the EA are in place prior to taking any specific action and will be responsible for any mitigation monitoring requirements identified during project design and permitting. The 325 CES will oversee and verify mitigations are fully funded by the proponent and are in place and being carried out, as identified in this Finding of No Significant Impact (FONSI)/Finding of No Practicable Alternative (FONPA). It is expected the mitigation verification will generally consist of implementing Best Management Practices (BMP) identified in the EA and securing environmental resource permits and approvals from applicable state and local permitting agencies.

**Public Review and Stakeholder Coordination**

An Early Public Notice was published in the *Panama City News Herald* announcing commencement of the EA detailing that the action would take place in a floodplain/wetland and seeking advanced public comment. A public notice was placed in the *Panama City News Herald* on announcing the availability of the Draft EA and Draft FONSI/FONPA for public review and comment. The documents were made available for review on the internet on the Tyndall AFB website, and in hard copy at the Bay County Public Library for the duration of the 30-day public comment period.

Tribal consultation letters were mailed to federally recognized tribes on 23 August 2021. On 23 August 2021, the Seminole Nation of Oklahoma responded that it would reserve judgement until it receives the archaeological assessment. As of the Draft EA's publication, no other responses or comments were received from Native American tribal governments. **Appendix A** includes records of all correspondence with the tribes.

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**Finding of No Significant Impact**

After review of the EA prepared in accordance with the requirements of National Environmental Policy Act; Council on Environmental Quality regulations; and 32 CFR Part 989, Environmental Impact Analysis Process (EIAP), and which is hereby incorporated by reference, I have determined that the proposed action and alternatives would not have a significant impact on the natural or human environment either by itself or cumulatively. The requirements of NEPA and the CEQ's regulations have been fulfilled. An Environmental Impact Statement is not required and will not be prepared.

**Finding of No Practicable Alternative**

Executive Order (EO) 11990, *Protection of Wetlands*, (24 May 1977) directs agencies to avoid to the extent possible the long- and short-term adverse impacts associated with the destruction or modification of wetlands and to avoid direct or indirect support of new construction in wetlands wherever there is a practicable alternative. Federal agencies are to avoid new construction in wetlands, unless the agency finds there is no practicable alternative to construction in the wetland and the proposed construction incorporates all possible measures to limit harm associated with development in the wetland. Agencies should use economic and environmental data, agency mission statements, and any other pertinent information when deciding whether or not to build in wetlands. EO 11990 directs each agency to provide for early public review of plans for construction in wetlands. In accordance with EO 11990 and 32 CFR Part 989, a FONPA must accompany the FONSI stating why there are no practicable alternatives to development within or affecting wetland areas.

Similarly, EO 11988, *Floodplain Management* (May 24, 1977), requires Federal agencies to avoid to the extent possible the long and short-term adverse impacts associated with the occupancy and modification of floodplains and to avoid direct and indirect support of floodplain development wherever there is a practicable alternative. If it is found that there is no practicable alternative, the agency must minimize potential harm to the floodplain and circulate a notice explaining why the action is to be located in the floodplain prior to acting. Finally, new construction in a floodplain must apply accepted flood proofing and flood protection to include elevating structures above the base flood level rather than filling in land. In accordance with EO 11988, a FONPA must accompany the FONSI stating why there are no practicable alternatives to development within or affecting floodplains.

The Proposed Actions would result in impacts to both wetlands and floodplains. The following FONPA is therefore presented with the FONSI, pursuant to EO 11990 and EO 11988.

**Wetlands:** Wetland impacts would be reduced to the maximum extent possible through project design and implementation of environmental protection measures. Pursuant to Section 404(b)(1) of the CWA, wetland impacts must be avoided to the greatest extent practicable. During the design and permitting phase of the Proposed Actions, jurisdictional wetlands would need to be delineated in accordance with the USACE's 2010 *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Atlantic and Gulf Coastal Plain Region*. Any necessary agency coordination and required permits would be acquired prior to commencing any ground-breaking activities associated with construction. Measures to minimize wetland impacts may include site plan reconfiguration, installation of buffer areas along the perimeter of wetlands, or erosion controls to prevent sedimentation in adjacent

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wetlands. Construction activities associated with these projects would be conducted in accordance with a Construction Site NPDES permit and its associated procedures as detailed in erosion and sediment control plans (ESCP); SWPPP; and Spill Prevention, Control, and Countermeasures Plans.

As noted in the attached EA, there are no practicable alternatives to the Proposed Actions that would avoid all impacts or further minimize impacts to wetlands because the objectives sought by these projects preclude the selection of any practicable alternatives due to mission requirements, installation layout constraints, and the nature of Proposed Actions. Multiple project sites were evaluated throughout the base using the selection standards identified in the EA, and potential impacts were identified and analyzed for each alternative that meets all of the selection standards. Up to approximately 15.85 acres of wetlands occur within the Proposed Action areas, depending on the alternatives selected. Other surface waters identified in the Proposed Action areas consist of approximately 26.65 acres of stormwater management pond/open water/drainage features. A formal Jurisdictional Determination of the wetlands and other surface waters will be determined during the state and Federal permitting process.

**Section 2.4** of the EA details Action Alternatives that were eliminated from detailed analysis in the EA. One Action Alternative for the EOD gravel road was eliminated. While this Alternative would avoid known wetlands, the road would provide access only to the border of the EOD Range (i.e., would not provide access to the interior of the EOD range) and would not achieve the purpose and need for the project. Additionally, the required road alignment would be located directly along the coastline, which increases the potential for road washout and diminished use during high tide conditions. This road alignment would also impact floodplains and would traverse designated critical habitat for the federally-listed endangered Choctawhatchee beach mouse. The retained Alternative could impact up to approximately 2.31 acres of wetlands.

While refurbishing the existing WEG Tower 1802 would avoid impacts to wetlands, this was not considered a practicable alternative because it would not accomplish mission objectives and would not provide comparably cost-effective infrastructure modernization and hardening that is possible with the Action Alternative analyzed in detail in the EA. The retained Action Alternative could impact up to approximately 0.60 acres of wetlands.

Some of the potential wetland impacts that could be incurred by the Expeditionary/Encampment Roads improvements would occur in the area of the proposed turnaround facility. The retained Action Alternative could impact up to approximately 1.86 acres of wetlands and 0.08 acre of other surface waters. An Action Alternative was developed that would eliminate the turnaround facility and therefore avoid some impacts to these wetlands. However, foregoing the turnaround facility could require vehicles, particularly heavy vehicles, to traverse the entire roadway length in order to change travel direction. This may create operational inefficiency, increase roadway congestion, and divert traffic back onto Florida Avenue. Therefore, installation personnel and contractors would not receive the optimal use of the proposed improvements, and this Alternative was eliminated for detailed analysis in the EA.

The purpose of the proposed Water Main project along the north side of Flightline is to develop a water line loop to provide water system redundancy and connectivity along the north side of the Flightline. Environmental and operational constraints on this portion of the Flightline limit the potential location and

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alignment of the proposed water main. Therefore, only one Action Alternative was considered. The notional alignment of the water main was developed to avoid wetland impacts to the extent possible, considering operational and environmental constraints. Approximately 3.04 acres of wetland and 26.42 acres of other surface waters intersect the notional alignment. However, wetlands may be able to be avoided using design and other measures.

Multiple Action Alternatives were analyzed in detail for the remaining projects. Some wetland impacts are unavoidable under both Dredge the WEG Small Boathouse project alternatives, due to the nature and location and of the project. Additional impacts could occur, depending on the location of dredge spoils placement. Alternative 1 would impact approximately 0.08 acre of wetlands, while Alternative 2 would not impact wetlands. Impacts to wetlands within the FAMCAMP project and alternatives areas are unavoidable because construction of the proposed kayak launch facility is required to be near a water body. Alternative 1 would impact approximately 0.65 acre of wetlands, and Alternative 2 would impact approximately 0.59 acre of wetlands. Similarly, both Action Alternatives for the proposed observation and fishing pier project would not be able to avoid all wetland impacts, due to required location adjacent to and within a water body. Both Action Alternatives would impact approximately 0.36 acre of wetlands.

The notional layout of the proposed improvements to UNITE Site, Alternative 1, intersects approximately 6.95 acres of wetlands. However, efforts would be undertaken to minimize wetland impacts during design and construction if Alternative 1 is selected. No wetlands impacts would be incurred with Alternative 2 of this project. However, approximately 0.15 acre of other surface waters occurs within the notional layout footprint.

Approximately 15.85 acres of wetlands located within the Proposed Action areas were assessed utilizing the Uniform Mitigation Assessment Method. Based on this assessment, the estimated total numeric value of functions to fish and wildlife lost as a result of construction of the Proposed Actions is 9.945. The limits of disturbance for each of the individual projects and their alternatives included in the Proposed Action intersect with wetlands, with the exception of Dredge the WEG Small Boathouse Area Alternative 2 and Renovate UNITE Site Alternative 2. As previously stated, efforts would be taken during final design, permitting, and construction to avoid wetlands impacts where possible. Taking all the environmental, economic, and other pertinent factors into account, pursuant to EO 11990, the authority delegated by Secretary of the Air Force Order 791.1, and taking into consideration the submitted information, I find that there is no practicable alternative to this action and the proposed action includes all practical measures to minimize harm to the environment.

***Floodplains:*** Similarly, there is no practicable alternative to implementing the Proposed Actions at Tyndall AFB outside of floodplains. Temporary construction activity and long-term impacts due to the construction of new structures associated with the Proposed Actions would occur within the 100-year floodplain. Construction related impacts to floodplains in general would be minimized through implementation of an approved ESCP, construction BMPs, and other appropriate environmental protection measures and through adherence to the NPDES permit and SWPPP. Long-term impacts to floodplains from the Proposed Actions would be minimized by implementing guidelines provided in EO 11988 for construction in a floodplain to the extent practicable, including site grading so that

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structures are elevated to at least one foot above the base flood level and providing compensatory storage within the floodplain.

Overall, a maximum of approximately 17.2 acres of the Proposed Action areas are located within the 100-year floodplain, depending on the alternatives selected. Approximately 0.11 acre of those floodplains occur within the proposed EOD gravel road project footprint. The Action Alternative eliminated from detailed analysis in the EA would incur additional floodplain impacts. The notional layout for WEG Tower 1802 replacement could impact approximately 0.08 acre of floodplains. While refurbishing the existing damaged tower would avoid these impacts, this alternative was eliminated from detailed analysis in the EA because it does not meet all of the selection standards. The retained Action Alternative for the Expeditionary/Encampment Roads improvements could impact approximately 0.13 acre of floodplains. The Proposed Action with the greatest potential floodplain impacts is the water main project along the north side of Flightline, which could impact up to 15.86 acres of floodplains. The location and alignment of this project is constrained by operational and environmental factors. However, the notional layout analyzed in the EA was developed to avoid floodplain impacts to the extent possible, and additional efforts would be undertaken to minimize or avoid floodplain impacts during final design, permitting, and construction. No floodplains are located within the project footprints of either Action Alternative for the proposed UNITE Site renovations.

The proposed WEG Small Boathouse dredging, FAMCAMP site improvements, and pier construction projects include elements that must be located adjacent to water bodies. Therefore, the Action Alternatives for each of these projects would include unavoidable floodplain impacts. Alternative 1 of the proposed WEG Small Boathouse dredging project would impact approximately 0.35 acre of floodplains, while Alternative 2 could impact approximately 0.78 acres of floodplains. The increased impact under Alternative 2 would result from the placement of contaminated dredging material if needed. No alternative spoils placement locations of the required size are located in the project vicinity. The Expand FAMCAMP Site project would impact approximately 0.12 acre of floodplains under both Action Alternatives, due to the construction of the kayak launch facility that must be located adjacent to the water. Alternative 1 of the proposed construction of the pier at Heritage Club would impact approximate 0.06 acre of floodplains adjacent to the ocean, while Alternative 2 has a slightly larger footprint and would impact approximately 0.08 acre of floodplains.

As noted above and in the attached EA, there are no practicable alternatives to the Proposed Actions that would avoid all impacts or further minimize impacts to floodplains because the objectives sought by these projects preclude the selection of any practicable alternatives due to mission requirements, installation layout constraints, and the nature of the Proposed Actions. In addition to the Action Alternatives, multiple project sites were evaluated throughout the base using the selection standards identified in the EA. Pursuant to EO 11988 and 11990, and considering all supporting information, I find there is no practicable alternative to the Proposed Actions which will impact floodplains and wetlands, as described in the attached EA. This finding fulfills both the requirements of the referenced EO and the EIAP regulation, 32 CFR § 989.14 for a Finding of No Practicable Alternative.

DEE JAY KATZER, Colonel

U.S. Air Force Chief, Civil Engineer Division (ACC/A4C)

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**LIST OF ACRONYMS AND ABBREVIATIONS**

325 CES	325th Civil Engineer Squadron
325 CES/CEIEC	325th Civil Engineer Squadron/Environmental Element, Compliance
325 FW	325th Fighter Wing
325 WEG	325th Weapons Evaluation Group
53 WEG	53rd Weapons Evaluation Group
83 FWS	83rd Fighter Weapons Squadron
A.D.	Anno Domini
ACAM	Air Conformity Applicability Model
ACM	Asbestos-containing Material
AFB	Air Force Base
AFCEC	Air Force Civil Engineer Center
AFI	Air Force Instruction
AFMAN	Air Force Manual
AFOSH	Air Force Occupational Safety and Health
AICUZ	Air Installations Compatible Use Zone
Air Force	United States Air Force
APE	Area of Potential Effect
BFE	Base Flood Elevation
BGEPA	Bald and Golden Eagle Protection Act
BMP	Best Management Practice
CAA	Clean Air Act
CDC	Child Development Center
CEQ	Council on Environmental Quality
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CES	Civil Engineer Squadron
CFR	Code of Federal Regulations
CH <sub>4</sub>	Methane
CO	Carbon Monoxide
CO <sub>2</sub>	Carbon Dioxide
CO <sub>2</sub> e	Carbon Dioxide Equivalent
CRAS	Cultural Resources Assessment Survey
CRMP	Cultural Resource Management Program
CWA	Clean Water Act
CZMA	Coastal Zone Management Act
CZMP	Coastal Zone Management Plan
DAFI	Department of the Air Force Instruction
dB	Decibels
dBA	A-weighted decibel
DNL	Average Day/Night Sound Level
DoD	Department of Defense
DoDI	Department of Defense Instruction
EA	Environmental Assessment
ECF	Entry Control Facility

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EFH	Essential Fish Habitat
EIAP	Environmental Impact Assessment Process
EIS	Environmental Impact Statement
EO	Executive Order
EOD	Explosive Ordnance Disposal
ERP	Environmental Resource Permit
ERP	Environmental Restoration Program
ESA	Endangered Species Act
ESCP	Erosion and Sediment Control Plan
ESQD	Explosive Safety Quantity Distance
F.A.C.	Florida Administrative Code
F.S.	Florida Statutes
FAMCAMP	Family Camp
FBBCR	Florida Black Bear Conservation Rule
FCMP	Florida Coastal Management Program
FDEP	Florida Department of Environmental Protection
FDOT	Florida Department of Transportation
FEMA	Federal Emergency Management Agency
FFA	Federal Facility Agreement
FLUCFCS	Florida Land Use, Cover and Forms Classification System
FMSF	Florida Master Site File
FONPA	Finding of No Practicable Alternative
FONSI	Finding of No Significant Impact
FSS	Force Support Squadron
FY	Fiscal Year
g	Gram
GHG	Greenhouse Gas
GIS	Geographic Information System
GWP	Global Warming Potential
HAZWOPER	Hazardous Waste, Operations, and Emergency Response
HFC	Hydrofluorocarbons
HWAS	Hazardous Waste Accumulation Site
HWMP	Hazardous Waste Management Plan
IAP	Initial Accumulation Point
IDP	Installation Development Plan
INRMP	Integrated Natural Resources Management Plan
IRP	Installation Restoration Program
ISWMP	Integrated Solid Waste Management Plan
LBP	Lead-based Paint
LF	Linear Feet
Lmax	Maximum Sound Level
LOD	Limits of Disturbance
MBTA	Migratory Bird Treaty Act
MILCON	Military Construction
MMRP	Military Munitions Response Program

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MSA	Munition Storage Area
MWR	Morale, Welfare, and Recreation
N2O	Nitrogen Oxide
NAAQS	National Ambient Air Quality Standards
NEPA	National Environmental Policy Act
NEW	Net Explosive Weight
NHPA	National Historic Preservation Act
NO2	Nitrogen Dioxide
NOA	Notice of Availability
NOx	Nitrogen Oxide
NPDES	National Pollutant Discharge Elimination System
NRHP	National Register of Historic Places
NSS	Noise Sensitive Sites
NWFWMD	Northwest Florida Water Management District
O3	Ozone
OSHA	Occupational Health and Safety Administration
OWS	Oil/Water Separator
Pb	Lead
PFC	Perfluorocarbons
PM10	Particulate Matter less than 10 microns in diameter
PM2.5	Particulate Matter less than 2.5 microns in diameter
POL	Petroleum, Oil, and Lubricants
ppb	Parts Per Billion
PPE	Personal Protective Equipment
ppm	Parts Per Million
PVC	Polyvinyl Chloride
RCRA	Resource Conservation and Recovery Act
ROI	Region of Influence
RV	Recreational Vehicle
SAV	Submerged Aquatic Vegetation
SF	Square Foot/Square Feet
SF6	Sulfur Hexafluoride
SFHA	Special Flood Hazard Area
SHPO	State Historic Preservation Officer
SIP	State Implementation Plan
SO2	Sulfur Dioxide
SPCC	Spill Prevention, Control, and Countermeasures
STP	Shovel Test Pit
SWPPP	Stormwater Pollution Prevention Plan
U.S.	United States
U.S.C.	United States Code
UFC	Unified Facilities Criteria
UMAM	Uniform Mitigation Assessment Method
USACE	United States Army Corps of Engineers
USAF	United States Air Force



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USEPA	United States Environmental Protection Agency
USFWS	United States Fish and Wildlife Service
UXO	Unexploded Ordnances
VAQ	Visiting Airmen's Quarters
VOC	Volatile Organic Compounds
VOQ	Visiting Officers Quarters
WEG	Weapons Evaluation Group
WL	Wetland
µg/m <sup>3</sup>	Micrograms Per Cubic Meter

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## CHAPTER 1 PURPOSE AND NEED

### 1.1 INTRODUCTION AND BACKGROUND

Tyndall Air Force Base (AFB) occupies approximately 29,276 acres in Bay County, Florida, approximately 13 miles southeast of Panama City (**Figure 1.1-1**). Over 30 organizations operate at Tyndall AFB including the 325th Fighter Wing (325 FW), the First Air Force, the 53rd Weapons Evaluation Group (53 WEG), and the Air Force Civil Engineer Center (AFCEC).

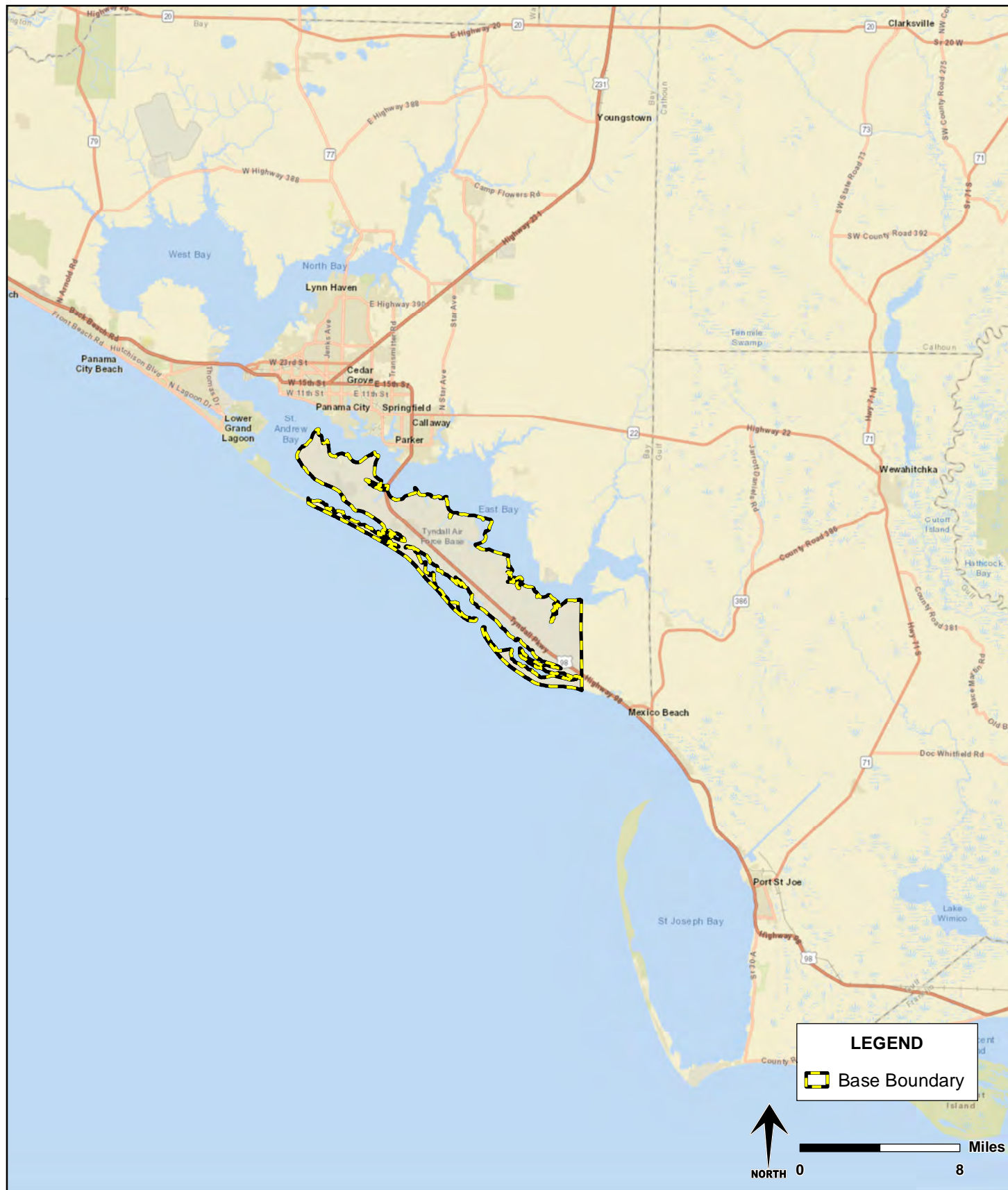
Installation development at Tyndall AFB is accomplished in accordance with the U.S. Air Force Comprehensive Planning Program established in Air Force Instruction (AFI) 32-1015, *Integrated Installation Planning*. Comprehensive Planning establishes a systematic framework for informing decision-making on the physical development of U.S. Air Force (USAF) installations and their environment. The objective of the Comprehensive Planning Process is to synthesize data and information to enable commanders to make effective development decisions affecting their installation and the surrounding community.

Through the Comprehensive Planning Process, the 325th Civil Engineer Squadron (325 CES) at Tyndall AFB has identified and programmed a series of eight near-term improvements at Tyndall AFB (i.e., Proposed Actions), which are expected to be implemented beginning in Fiscal Year (FY) 2023 (Calendar Year 2022 – Calendar Year 2023). The projects are expected to consist of new facility and infrastructure construction and renovation, recreational facility enhancements, and management of natural resources.

This Environmental Assessment (EA) was prepared to evaluate the potential environmental impacts of these Proposed Actions in compliance with the National Environmental Policy Act of 1969 (NEPA) (42 United States Code [U.S.C.] 4331 et seq.), the regulations of the President’s Council on Environmental Quality (CEQ) that implement NEPA procedures (40 Code of Federal Regulations [CFR] 1500-1508), the U.S. Air Force Environmental Impact Analysis Process (EIAP) Regulations at 32 CFR Part 989, and AFI 32-1015.

The information presented in this EA will serve as the basis for deciding whether the Proposed Actions would result in a significant impact to the human environment, requiring the preparation of an Environmental Impact Statement (EIS), or whether no significant impacts would occur, in which case a Finding of No Significant Impact (FONSI) would be appropriate. If the execution of any of the Proposed Actions would involve “construction” in a wetland as defined in Executive Order (EO) 11990, *Protection of Wetlands*, or “action” in a floodplain under EO 11988, *Floodplain Management*, the action may proceed only with a finding that the action is the only practicable alternative. In that case, a Finding of No Practicable Alternative would be prepared in conjunction with the FONSI.





**Tyndall Air Force Base, Panama City, FL**  
**ENVIRONMENTAL ASSESSMENT  
FOR 8 CONSTRUCTION SITES**

**TYNDALL AFB  
LOCATION MAP**

**FIGURE  
1.1-1**

## **1.2 PURPOSE AND NEED**

The purpose of implementing the Proposed Actions is to provide facility, infrastructure and functionality improvements necessary to provide continued mission support for host and tenant units at Tyndall AFB. The Proposed Actions are needed to improve and maintain function and capability in the facilities and infrastructure at the installation, and to prevent deterioration of these functions and capabilities that can occur over time due to obsolescence and evolving mission needs.

Implementing these Actions is required to allow host and tenant units at Tyndall AFB to successfully complete their missions, and to ensure continued Airmen readiness. Proposed Actions must be implemented in a manner that:

- Supports the Air Force mission requirements and quality of life of units and Airmen hosted by the installation;
- Meets all applicable U.S. Department of Defense (DoD), Federal, state, and local laws and regulations, such as but not limited to the Endangered Species Act (ESA), National Historic Preservation Act (NHPA), Clean Water Act (CWA), Clean Air Act (CAA), Resource Conservation and Recovery Act (RCRA), and Migratory Bird Treaty Act (MBTA). More detailed information regarding resource-specific laws and regulations is provided in the specific resource sections of this EA;
- Provides reliable infrastructure systems to support Tyndall AFB and meets current USAF requirements for functional space, consistent with Air Force Manual (AFMAN) 32-1084, *Standard Facility Requirements*;
- Reduces the consumption of fuel, energy, water, and other resources; maximizes the use of existing facilities; and reduces the footprint of unnecessary or redundant facilities and infrastructure; and
- Supports and enhances the morale, welfare and readiness (MWR) of personnel assigned to the installation, their families, and civilian staff.

## **1.3 INTERAGENCY AND INTERGOVERNMENTAL COORDINATION AND CONSULTATIONS**

### **1.3.1 INTERAGENCY COORDINATION AND CONSULTATIONS**

Scoping is an early and open process for developing the breadth of issues to be addressed in the EA and for identifying significant concerns related to a proposed action(s). Per the requirements of Intergovernmental Cooperation Act of 1968 (42 U.S.C. 4231(a)) and EO 12372, *Intergovernmental Review of Federal Programs*, Federal, state, and local agencies with jurisdiction that could be affected by the Proposed Actions were notified during the development of this EA.

**Appendix A** contains the list of agencies consulted during this analysis and copies of correspondence.

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**1.3.2 GOVERNMENT TO GOVERNMENT CONSULTATIONS**

Section 106 of the NHPA (36 CFR 800) requires federal agencies to consult with Native American tribes regarding properties of cultural and religious significance. Further, EO 13175, *Consultation and Coordination with Indian Tribal Governments* directs Federal agencies to coordinate and consult with Native American tribal governments whose interests might be directly and substantially affected by activities on federally administered lands. Consistent with that EO, Department of Defense Instruction (DoDI) 4710.02, *Interactions with Federally-Recognized Tribes*, and Department of the Air Force Instruction (DAFI) 90-2002, *Air Force Interaction with Federally-recognized Tribes*, federally-recognized tribes that are historically affiliated with the Tyndall AFB geographic region will be invited to consult on all proposed undertakings that have a potential to affect properties of cultural, historical, or religious significance to the tribes. The tribal consultation process is distinct from NEPA consultation or the interagency coordination processes, and it requires separate notification and invitation to all relevant tribes. The timelines for tribal consultation are also distinct from those of other consultations. For the purposes of this EA, the Tyndall AFB point-of-contact for Native American tribes is the 325 FW Commander.

On 23 August 2021 the Air Force solicited early comment from the six Native American tribal governments whose interests might be directly and substantially affected by the Proposed Actions. Letters informing the tribes of the intent to prepare the attached EA and requesting input from the tribes were sent to the Poarch Band of Creek Indians, Seminole Nation of Oklahoma, Miccosukee Tribe of Indians of Florida, Muscogee (Creek) Nation, Seminole Tribe of Florida, and Thlopthlocco Tribal Town. On 23 August 2021, the Seminole Nation of Oklahoma responded that it would reserve judgement until it receives the archaeological assessment. No other responses or comments were received from Native American tribal governments.

**1.3.3 OTHER AGENCY CONSULTATIONS**

This section describes Air Force consultation with the (USFWS) and the Florida State Historic Preservation Office (SHPO) under Section 106 of the NHPA.

The Air Force corresponded with the U.S. Fish and Wildlife Service (USFWS) under Section 7 of the ESA on 23 August 2021 to inform USFWS of the project and seek early comments on preparation of the Draft EA and potential impacts to biological resources. No early comments were received. The USFWS was further invited to review the EA and concur with the Air Force's effects determinations on biological resources as part of the Draft EA public review period.

The Air Force initiated NHPA consultation with the SHPO on 23 August 2021 seeking early comments on the Proposed Actions and Area of Potential Effect (APE). No early comments were received. The SHPO was requested to further review the EA and concur with the Air Force's determination of no effect on cultural resources (**Appendix C**) as part of the Draft EA public review period.

Once complete, correspondence regarding consultations with SHPO and USFWS will be included in **Appendix A** of the Final EA.

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Other state and local agencies were consulted through the Florida Department of Environmental Protection (FDEP) Office of Intergovernmental Programs State Clearinghouse Process. These agencies were also provided an opportunity to review the Draft EA (see **Section 1.4.1** for details).

#### **1.4 PUBLIC AND AGENCY REVIEW OF THE ENVIRONMENTAL ASSESSMENT**

Because some Proposed Actions and alternatives identified in this EA coincide with wetlands and/or floodplains, this EA is subject to the requirements and objectives of EO 11990 and EO 11988. The Air Force published early notice (i.e., at least 30 days prior to the release of the Draft EA) that the Proposed Actions would occur in a floodplain/wetland in the *Panama City News Herald*. The comment period for public and agency input on these projects lasted for 30 days. The notice identified state and Federal regulatory agencies with special expertise that had been contacted and solicited public comment on the Proposed Actions and any practicable alternatives.

A Notice of Availability (NOA) of the Draft EA was published in the *Panama City News Herald*, announcing the availability of the EA for review. The NOA invited the public to review and comment on the Draft EA.

Copies of the Draft EA were also made available for review at the following location:

Bay County Public Library  
898 W 11th St.  
Panama City, FL 32401

##### **1.4.1 PUBLIC AND AGENCY COMMENTS ON THE DRAFT ENVIRONMENTAL ASSESSMENT**

To be completed upon circulation of the Draft EA.

##### **1.4.2 SUMMARY OF CHANGES TO THE DRAFT ENVIRONMENTAL ASSESSMENT**

To be completed only if needed upon completion of Draft EA public/agency review process and preparation of Final EA.

#### **1.5 SUMMARY OF ENVIRONMENTAL CONSEQUENCES AND MITIGATION MEASURES**

**Table 1.5-1** summarizes the potential environmental consequences from Chapter 4 of this EA, for each environmental resource area. Mitigation measures are also identified for any significant and unavoidable impacts. Mitigation measures avoid, minimize, remediate or compensate for environmental impact. CEQ regulations (40 CFR 1508.20) define mitigation to include the following: 1) avoiding the impact altogether by not taking a certain action or parts of an action; 2) minimizing impacts by limiting the degree or magnitude of the action, and its implementation; 3) rectifying the impact by repairing, rehabilitating or restoring the affected environment; 4) reducing or eliminating the impact over time by preservation and maintenance options during the life of the action; and/or 5) compensating for the impact by replacing or providing substitute resources or environments.

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**TABLE 1.5-1 SUMMARY OF ENVIRONMENTAL CONSEQUENCES AND MITIGATION MEASURES**

Resource Area	Impact Synopsis	Mitigation/Minimization Measures
Air Quality and Climate Change (Section 4.1)	Proposed Actions would generate negligible additional operational emissions compared to the No Action Alternative. Operational emissions would not exceed insignificance thresholds and would be limited to space heating and emergency generator operation for newly constructed structures. Annual construction emissions would not exceed insignificance thresholds and would be temporary in nature.	<ul style="list-style-type: none"><li>None required.</li></ul>
Noise (Section 4.2)	Implementation of the Proposed Actions would not result in any aircraft noise related impacts on sensitive noise receptors in the vicinity of Tyndall AFB. Construction and demolition activities associated with the Proposed Actions are expected to result in a short-term, negligible to minor, adverse impact on the noise environment at Tyndall AFB.	<ul style="list-style-type: none"><li>If the Renovate UNITE Site Alternative 2 is selected for implementation, the Air Force would consider implementing best management practices (BMPs) to minimize temporary construction noise exposure, such as modifying construction schedule and work hours, requiring contractors to utilize equipment with mufflers, and installing temporary barriers to aid in attenuating construction noise.</li></ul>
Safety and Occupational Health (Section 4.3)	Short-term, minor impacts on contractor health and safety could occur from implementation of the Proposed Actions during construction and dredging activities, namely in terms of exposure to unexploded ordnances in the EOD area, soil/groundwater contamination, loud noise, heavy machinery, debris, electricity, and hazardous materials used or encountered during work. Constructing the EOD gravel road would improve the long-term safety of EOD handling activities, as it would provide direct access to the EOD site.	<ul style="list-style-type: none"><li>None required.</li></ul>
Land Use (Section 4.4)	Construction and operation of the Proposed Actions would not result in any significant impact on land use. Each of the individual Proposed Actions is consistent with current and future land uses as determined by Tyndall AFB	<ul style="list-style-type: none"><li>None required.</li></ul>
Soils (Section 4.5)	Site preparation and construction activities would directly disturb a maximum of approximately 166 acres of native and non-native soils depending on the alternatives selected. Erosion from the construction sites could result in additional indirect effects. No prime or unique farmland soils would be disturbed or removed from the project area. The construction contractor would be required to develop a Stormwater Pollution Prevention Plan specific to each site that would detail erosion prevention and control measures to be implemented during site preparation and construction activities. There would be minor impacts on soils upon implementation of the Proposed Actions.	<ul style="list-style-type: none"><li>None required.</li></ul>
Water Resources (Section 4.6)	<p><i>Groundwater:</i> Proposed construction activities would not involve withdrawals from, or discharges to surface water bodies or groundwater. Groundwater within the surficial aquifer may be encountered during certain types of construction activities such as excavation within the footprint of new facilities. Negligible to minor impacts on groundwater would be expected.</p> <p><i>Surface Water:</i> The Proposed Actions may potentially have temporary, negligible impacts on surface waters as a result of increases in erosion and sedimentation during periods of construction or demolition.</p> <p><i>Wetlands:</i> Although final designs and laydown footprints are not developed as yet, it is estimated that a total of up to approximately 15.85 acres of wetlands and 26.65 acres (stormwater pond/open water/drainage features) of other surface waters are located within the proposed project areas, depending on the alternatives selected. Approximately 15.85 acres of wetlands were assessed using UMAM. Therefore, the approximate functional loss of wetland values as a result of construction of the Proposed Actions and alternatives would be up to 9.945 units.</p> <p><i>Floodplains:</i> A maximum total of approximately 17 acres of the Proposed Action and alternatives areas are located within the 100-year floodplain.</p> <p><i>Coastal Zone Management:</i> The state of Florida’s concurrence with the Air Force determination that the Proposed Actions are consistent with the Coastal Zone Management Plan (CZMP) has been requested</p>	<ul style="list-style-type: none"><li>Acquire all necessary wetlands and water resource permits for the Proposed Actions, including, but not limited to National Pollutant Discharge Elimination System (NPDES) stormwater permit(s), Environmental Resource Permit(s) (ERP), CWA Section 404 Dredge and Fill Permit, Section 401 water quality certification.</li><li>Provide mitigation, to be determined during final design, for up to approximately 15.85 acres of wetland impact, estimated in the EA as equivalent to 9.945 functional units of mitigation credit.</li><li>Provide mitigation, as determined by regulatory agencies during the permitting process and to be verified during final design, for other surface waters, totaling approximately 26.65 acres of stormwater pond/open water/drainage features.</li><li>Implement BMPs as defined in a Stormwater Pollution Prevention Plan (SWPPP) to reduce or eliminate the potential for eroded soils and contaminants from entering surface water bodies and groundwater.</li><li>Mitigate for the loss of up to approximately 17 acres of 100-year floodplain, as determined by the EA and to be verified in final design, by providing compensatory storage, excavating material within or adjacent to the same floodplain to be used as fill. Compensatory storage must be provided in a manner that does not disturb or impact wetlands, endangered vegetation, or potential cultural sites.</li><li>Wherever possible as determined by final design, elevate all facilities above the base flood elevation, apply construction period erosion and sedimentation controls, and use pervious surfaces for stormwater retention and treatment.</li></ul>
Biological Resources (Section 4.7)	<p><i>Federally-Listed Species:</i> No significant impacts are anticipated to federally-listed floral or faunal species. The Proposed Actions would have “no effect” on species lacking suitable habitat within the individual project areas, or species whose range does not include the project areas. An ESA determination of “may affect, not likely to adversely affect” applies to species whose range includes the project areas, with suitable habitat within the project areas, but where no individuals were observed during field surveys of the project areas.</p> <p><i>State-Listed Species:</i> No significant impacts are anticipated to state-listed floral or faunal species. The Proposed Actions would have “no effect” on species lacking suitable habitat within the individual project areas, or species whose range does not include the project areas. An ESA determination of “may affect, not likely to adversely affect” applies to species</p>	<ul style="list-style-type: none"><li>To prevent potential adverse impacts to the West Indian manatee, the 2011 Standard Manatee Conditions for In-Water Work will be adhered to during all in-water construction activities.</li><li>To prevent potential adverse impacts to the loggerhead sea turtle, the green sea turtle, the leatherback sea turtle and the Kemp’s ridley sea turtle, the Sea Turtle and Smalltooth Sawfish Construction Conditions (Revised March 23, 2006) will be adhered to during all in-water construction activities.</li><li>To prevent potential adverse impacts to the loggerhead sea turtle, the green sea turtle, the leatherback sea turtle and the Kemp’s ridley sea turtle, installation activities will also continue to adhere to management practices outlined in</li></ul>



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Resource Area	Impact Synopsis	Mitigation/Minimization Measures
	<p>whose range includes the project areas, with suitable habitat within the project areas, but where no individuals were observed during field surveys of the project areas. Approved conservation measures will be implemented to prevent potential adverse impacts.</p> <p><i>Critical Habitat:</i> No critical habitat is located within the Proposed Actions’ project areas, and no adverse impacts to critical habitat are anticipated to result from the Proposed Actions. Choctawhatchee beach mouse critical habitat is located within 30 feet of the EOD range gravel road construction project area. Piping Plover critical habitat is within 950 feet from the fishing/observation pier project at Heritage Club project area. Critical Habitat for the St. Andrew beach mouse is located within approximately 1,200 feet of the WEG boathouse dredging project limits. Remaining critical habitat areas are approximately half a mile or more from the nearest project area.</p> <p><i>Submerged Aquatic Vegetation:</i> Submerged aquatic vegetation is likely to be impacted by in-water work associated with each alternative for the WEG boathouse dredging, FAMCAMP expansion, and Observation/Fishing Pier at Heritage Club projects; however, the potential impacts are not expected to be significant. Direct impacts can likely be avoided for the WEG boathouse and FAMCAMP projects. However, dredging and disturbance activities may induce increased turbidity in the surrounding waters which could cause indirect impacts. Direct impacts will be avoided to the extent possible through project planning and design.</p>	<p>the Integrated Natural Resources Management Plan (INRMP), including but not limited to, predator control, resolution of beach lighting issues, enforcement of beach driving restrictions, and restoration/protection of nesting habitat.</p> <ul style="list-style-type: none"><li>▪ If potentially occupied gopher tortoise burrows are found during construction, Tyndall AFB, in accordance with FWC’s Gopher Tortoise Permitting Guidelines (revised July 2020), will maintain a minimum 25-foot radial buffer around the burrow to avoid impacts to the species. The buffer will not isolate gopher tortoise mobility. If a buffer cannot be maintained, a gopher tortoise relocation permit (10 or fewer burrows) will be obtained through FWC.</li><li>▪ During the design and permitting process, develop avoidance and minimization measures for impacts to submerged aquatic vegetation, which may include (but may not necessarily be limited to): pre- and post-construction surveys, installation of turbidity curtains around construction areas, and development and implementation of a Turbidity Control and Monitoring Plan.</li></ul>
Cultural Resources (Section 4.8)	<p>The Air Force finds that no adverse effect would be incurred on archaeological or historic architectural resources. Concurrence on the archaeological conclusion has been requested from SHPO and Native American tribes as part of the Draft EA public review process.</p>	<ul style="list-style-type: none"><li>▪ If prehistoric or historic artifacts that could be associated with Native American, early European, or American settlement are encountered at any time within the project site area, cease all activities involving subsurface disturbance in the vicinity of the discovery. Contact the Tyndall AFB Cultural Resources Management team and do not resume work without verbal and/or written authorization.</li><li>▪ In the event that unmarked human remains are encountered during permitted activities, stop all work immediately and notify the proper authorities within 24 hours.</li></ul>
Hazardous Materials/Waste and Solid Waste (Section 4.9)	<p>No increases or substantial changes in current quantities and types of hazardous materials or wastes would be expected upon completion of the Proposed Actions. The Proposed Actions would result in no or negligible effects regarding hazardous wastes. No or negligible effects relative to toxic substances would occur. Construction of the proposed structures would generate nonhazardous, construction-related solid waste such as building materials and rubble. Such solid waste would be disposed at an off-base landfill or recycled/reused as appropriate and managed in accordance with the Tyndall AFB Integrated Solid Waste Management Plan (ISWMP). No excavated materials would be transported off-base. Therefore, minor effects relative to solid wastes at Tyndall AFB would occur due to the Proposed Actions. A variety of Environmental Restoration Program (ERP) sites are collocated with, adjacent to, or in proximity to the Proposed Actions and planned construction activities, which have potential to cause short-term adverse impacts to ongoing remediation activities at these sites.</p>	<ul style="list-style-type: none"><li>▪ Report any spills or discharges discovered during the course of demolition and construction.</li><li>▪ Manage hazardous materials and disposal of hazardous substances in compliance with Tyndall AFB’s Hazardous Waste Management Plan (HWMP).</li><li>▪ Coordinate development on ERP sites with AFCEC and address any applicable land use controls by evaluating project implementation to ensure continued protectiveness for human health and the environment.</li><li>▪ Ensure construction contractor compliance with 29 CFR 1910.120 to address the health and safety of its employees during construction and demolition activities, with respect to worker exposure to hazardous substances and proper management of soil and groundwater encountered during construction, including testing, handling, and disposal procedures.</li><li>▪ Comply with state requirements for the abandonment of any monitoring wells, injection wells, extraction wells, sparge wells, or similar treatment facilities that are found within the area of the construction activities.</li></ul>

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Avoiding, minimizing or reducing potential impacts has been a priority of the Air Force in guiding the development of the Proposed Actions studied in this EA. Mitigation measures are built or designed into the Proposed Actions (e.g., integrating design features), applied to construction activities associated with the actions (e.g., securing permits or applying Best Management Practices [BMP]s), or applied as compensatory measures (e.g., purchasing mitigation credits).

Prior to the Air Force taking any action that will induce an impact, the Air Force must ensure that all required mitigations for any impact-inducing actions are in place. Following a decision to proceed with any action that will induce an impact, a Mitigation and Monitoring Plan will be prepared in accordance with 32 CFR 989.22(d). The plan will address specific mitigations identified throughout this EA and summarized on **Table 1.5-1**. The Mitigation and Monitoring Plan will include actions necessary to fully satisfy special purpose environmental regulations such as the NHPA and the ESA prior to taking any action, for which project-specific consultations may continue to advance.

## **1.6 DECISION TO BE MADE**

The Air Force will make one of the following three decisions regarding the Proposed Action:

- Select the No Action Alternative and do not implement the Proposed Action.
- Prepare a FONSI (and Finding of No Practicable Alternative [FONPA] if required) and implement the Proposed Action, if based on the analysis in this EA, the Proposed Action would not have a significant environmental impact.
- Initiate preparation of an EIS, if based on the analysis in this EA, the Proposed Action would have a significant environmental impact.

For this EA, the Air Force has determined that the environmental impact analysis conducted to date supports preparation of a FONSI/FONPA provided the minimization/mitigation measures identified in **Section 1.5** of this EA are implemented. No EIS is required for the Proposed Actions.

## CHAPTER 2 DESCRIPTION OF THE PROPOSED ACTION AND ALTERNATIVES

### 2.1 PROPOSED ACTIONS

The following eight Proposed Actions have been identified for evaluation in this EA. For each Proposed Action listed below, discrete alternatives are identified and considered as to whether they satisfy the established Purpose and Need and comply with all selection standards established for use in this EA to determine whether the alternatives are reasonable to implement.

1. Construct New Explosive Ordnance Disposal (EOD) Gravel Road: The current EOD Range and detonation site is appropriately sited and fully approved to dispose of heavy ordnance. However, under existing conditions, heavy ordnance must be transported in via the main EOD road and lowered into the detonation site from atop an earthen berm on the north side of the detonation site, adding time and effort to completion of detonation activities by assigned personnel. The Proposed Action seeks to implement an efficiency improvement to current heavy ordnance offloading and disposal activities.
2. Dredge the 325th Weapons Evaluation Group (325 WEG) Small Boathouse Area: 325 WEG operations in the 9700 Area of Tyndall AFB are facilitated by both roadway access and maritime access points. The WEG Boathouse (Building 9709) is the primary access point for small boats to this area, which sustained significant damage during Hurricane Michael in 2018. Repair of the boathouse dock area has been separately approved and environmentally evaluated and is in the process of being implemented. However, current bottom conditions in this area are not conducive to access by small boats during low tide, and therefore dredging is required once the boat docks are again operational. The area must be dredged to a depth of between 3 and 5 feet below present bottom elevation to provide access during low tide operations.
3. Replace WEG Tower 1802: WEG Communications Tower 1802 was damaged and rendered unusable due to Hurricane Michael in 2018. Prior to being damaged, the tower provided communications functions required for mission readiness by the 83rd Fighter Weapons Squadron (83 FWS). 83 FWS requires restoration of the previous functions, and also seeks better coverage and line-of-sight for communications during unmanned drone missions. Functionality of this facility needs to be replaced to accomplish these objectives.
4. Improve Expeditionary/Encampment Roads: Expeditionary Road and Encampment Road, located north of U.S. Highway 98 and west of Florida Avenue on Tyndall AFB, have historically been gravel forestry roads. Since commencing reconstruction activities after Hurricane Michael in 2018, these roads have seen an increase in traffic. Aside from the main Flightline gates there is not another ingress point to areas north of Florida Avenue (e.g., the Flightline and the 6000 area). Construction of these roadways to 12-foot asphalt roads has been separately approved and environmentally evaluated and is in the process of being implemented. Further improvements are needed to accommodate construction traffic. The Proposed Action seeks to expand lanes along these roadways and install Entry Control Facilities (ECF) to help facilitate construction traffic and secure access.



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5. Expand Family Camp (FAMCAMP) Site: FAMCAMP is located west of U.S. Highway 98, north of Sabre Drive. FAMCAMP is a significant revenue generator for Tyndall AFB and provides many MWR programs and amenities to airmen, their families, and the public. The goal of the Proposed Action is to increase the number of Recreational Vehicle (RV) hookups and parking pads to increase residential capacity at the site and create kayak launches/landings to give users better access to the water. Another objective of the Proposed Action is to install additional egress pathways for emergency response scenarios.
6. Construct Water Main Along North Side of Flightline: Airfield and Flightline drainage improvements are ongoing as part of the Hurricane Michael reconstruction efforts. Additional connectivity is needed to provide water quality and conveyance to support these improvements. The Proposed Action would connect the lines running from Florida Avenue and Ammo Road to form a Flightline Water Loop along the northside of the airfield. The goal of this Proposed Action is to improve water quality issues and provide water utilities for future development of the North Flightline area.
7. Construct Fishing/Observation Pier at Heritage Club (Building 1454): Future plans for the Heritage Club facilities, which have gone unused since Hurricane Michael in 2018, include installation of outdoor amenities such as an amphitheater and other public outdoor use areas. Although these development plans are not part of the Proposed Action in this EA and will be addressed at a future time, the Proposed Action seeks to increase near-term use of the facility in a way that is compatible with the planned future construction, by constructing a fishing and observation pier.
8. Renovate the UNITE Site: The UNITE Program at Tyndall AFB is managed by the 325 Force Support Squadron (FSS) as a means to build cohesion for active-duty troops, reserve and civilians at Tyndall AFB. The Proposed Action involves creating outdoor recreational facilities and supporting infrastructure that can be utilized by these parties in order to increase MWR opportunities and revenue at Tyndall.

## **2.2 SELECTION STANDARDS**

Under NEPA and 32 CFR Part 989, this EA is required to analyze the potential environmental impacts of reasonable alternatives to the Proposed Actions, including the No Action Alternative. Reasonable alternatives are those that meet the underlying purpose of and need for the Proposed Actions, are feasible from a technical and economic standpoint, and meet reasonable selection standards (screening criteria) that are suitable to a particular action.

Selection standards may include requirements or constraints associated with operational, technical, environmental, budgetary, and time factors. Alternatives that are determined to not be reasonable can be eliminated from detailed analysis in this EA. Additionally, EO 11988 and EO 11990 require consideration of practicable alternatives to avoid adverse effects on floodplains and wetlands, respectively. Practicable alternatives are those that are capable of being done within existing constraints and include consideration of pertinent factors including the environment, community welfare, cost, and available technology. Evaluation of multiple options in the planning process allows viable alternatives to be carried forward.

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Alternatives that satisfy established selection standards are considered reasonable and retained for consideration in this EA. Alternatives that do not meet one or more of the selection standards are eliminated and not carried forward for detailed analysis in the EA. **Table 2.2-1** presents a summary of the selection standards utilized to evaluate the Proposed Actions and alternatives for this EA.

**TABLE 2.2-1 SELECTION STANDARDS SUMMARY**

ID	Standard Description
SS-01	Cost-effectively modernize infrastructure, drive down life-cycle costs of recapitalization, and improve infrastructure readiness
SS-02	Promote operational efficiency and mission adjacency
SS-03	Comply with all facility sizing and siting requirements based on mission needs
SS-04	Support MWR programs in accordance with Air Force Instruction (AFI) 34-101, <i>Air Force Morale, Welfare and Recreation Programs and Use Eligibility</i>
SS-05	Avoid environmental resources, or minimize/mitigate unavoidable impacts

## **2.3 ALTERNATIVES CONSIDERED**

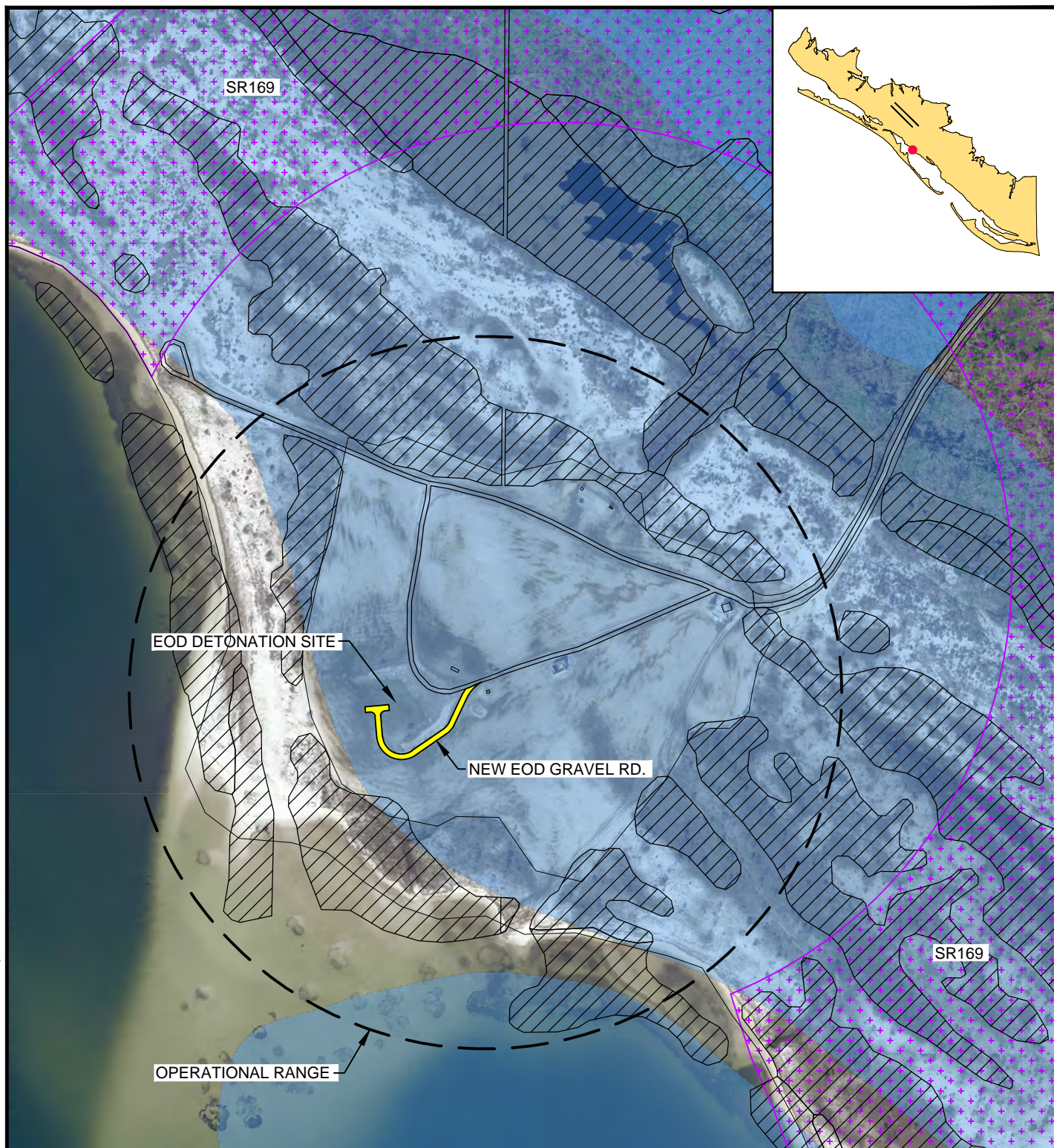
The following section describes alternatives considered for each of the Proposed Actions identified in **Section 2.1**. Each alternative is evaluated against selection standards summarized on **Table 2.2-1**, as applicable, which then determines whether the alternative is dismissed from further consideration in this EA or is retained for detailed impact analysis within the following chapters.

### **2.3.1 CONSTRUCT NEW EOD GRAVEL ROAD**

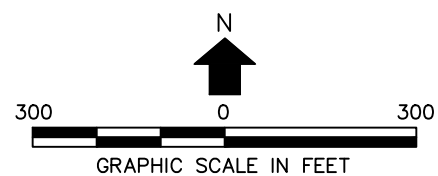
The Air Force did not consider alternative siting locations for heavy EOD and transport. The existing EOD Range is adjacent to major mission functions requiring EOD response, such as the airfield and Munitions Storage Area (MSA). This optimizes response times and minimizes the need for transport on public roads. The location provides required security and visual screening, provides required explosives safety setbacks, and is compatible with established land use and usage of communications frequencies on base. Selecting an alternative location for heavy EOD operations would need to be performed in full accordance with AFMAN 91-201 related to securing land use and explosives safety permissions and approvals. This would introduce additional costs and time constraints on maintaining existing EOD operations.

The Air Force considered the following alternatives to the Proposed Action:

- Construct New EOD Gravel Road (Alternative 1): Construct an approximately 480-foot-long gravel access road with a hammerhead style turnaround connecting the existing main EOD road to the existing detonation site (**Figure 2.3-1**).
- Construct New EOD Gravel Road (Alternative 2): Construct an approximately 842-foot-long gravel access road with a hammerhead style turnaround connecting the existing main EOD road to the western edge of the existing detonation site (**Figure 2.3-2**).
- No-Action Alternative: Continue utilizing the existing EOD Range under current operational parameters.



LEGEND	
	NEW EOD GRAVEL ROAD
	RESTORATION SITE
	FLOODPLAIN
	WETLAND (BASE DATA)

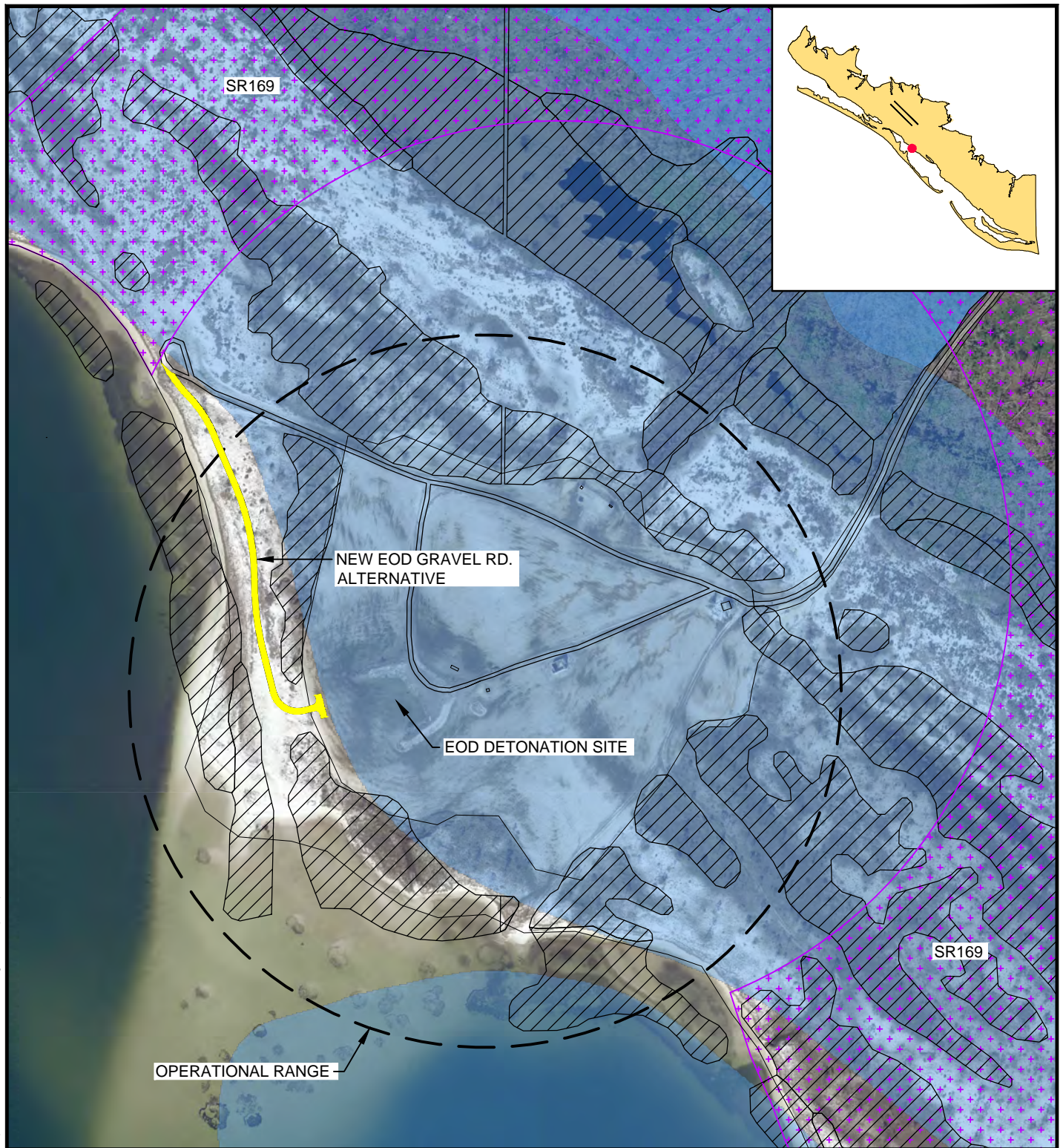






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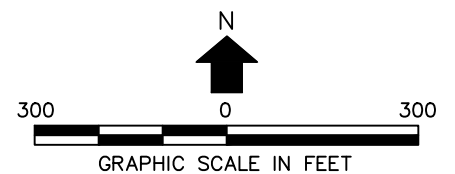
CONSTRUCT  
NEW EOD GRAVEL ROAD  
(ALTERNATIVE 1)

FIGURE  
2.3-1





LEGEND	
	NEW EOD GRAVEL ROAD
	FLOODPLAIN
	RESTORATION SITE
	WETLAND (BASE DATA)



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CONSTRUCT  
NEW EOD GRAVEL ROAD  
(ALTERNATIVE 2)

FIGURE  
2.3-2

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**2.3.2 DREDGE THE WEG SMALL BOATHOUSE AREA**

Because repair of the WEG boathouse docks is already planned and approved separately from this EA, no alternatives to using the existing boathouse docks were considered. The existing docks, once refurbished, are sufficient to meet ongoing mission needs. Instead, the alternatives to the Proposed Action focus on dredging the existing small boathouse area and placing the dredge spoils at one of two locations adjacent to the area. The determination of which of these spoil storage alternative locations will be used is dependent upon whether the dredge material is clean, contaminated, or a combination of both.

The Air Force considered the following alternatives to the Proposed Action:

- Dredge the WEG Small Boathouse (Alternative 1): Dredge the small boathouse docks to a depth of between three and five feet below present bottom elevation, and place clean dredge spoils immediately to the north and to the west of Buildings 9700 and 9706 (**Figure 2.3-3**).
- Dredge the WEG Small Boathouse (Alternative 2): Dredge the small boathouse docks to a depth of between three and five feet below present bottom elevation, and place either clean or contaminated dredge spoils in an area north of Research Road (**Figure 2.3-3**).
- No-Action Alternative: Do not dredge the boathouse docks and preclude small boat access to the facility.

**2.3.3 REPLACE WEG TOWER 1802**

The Air Force considered the following alternatives to the Proposed Action:

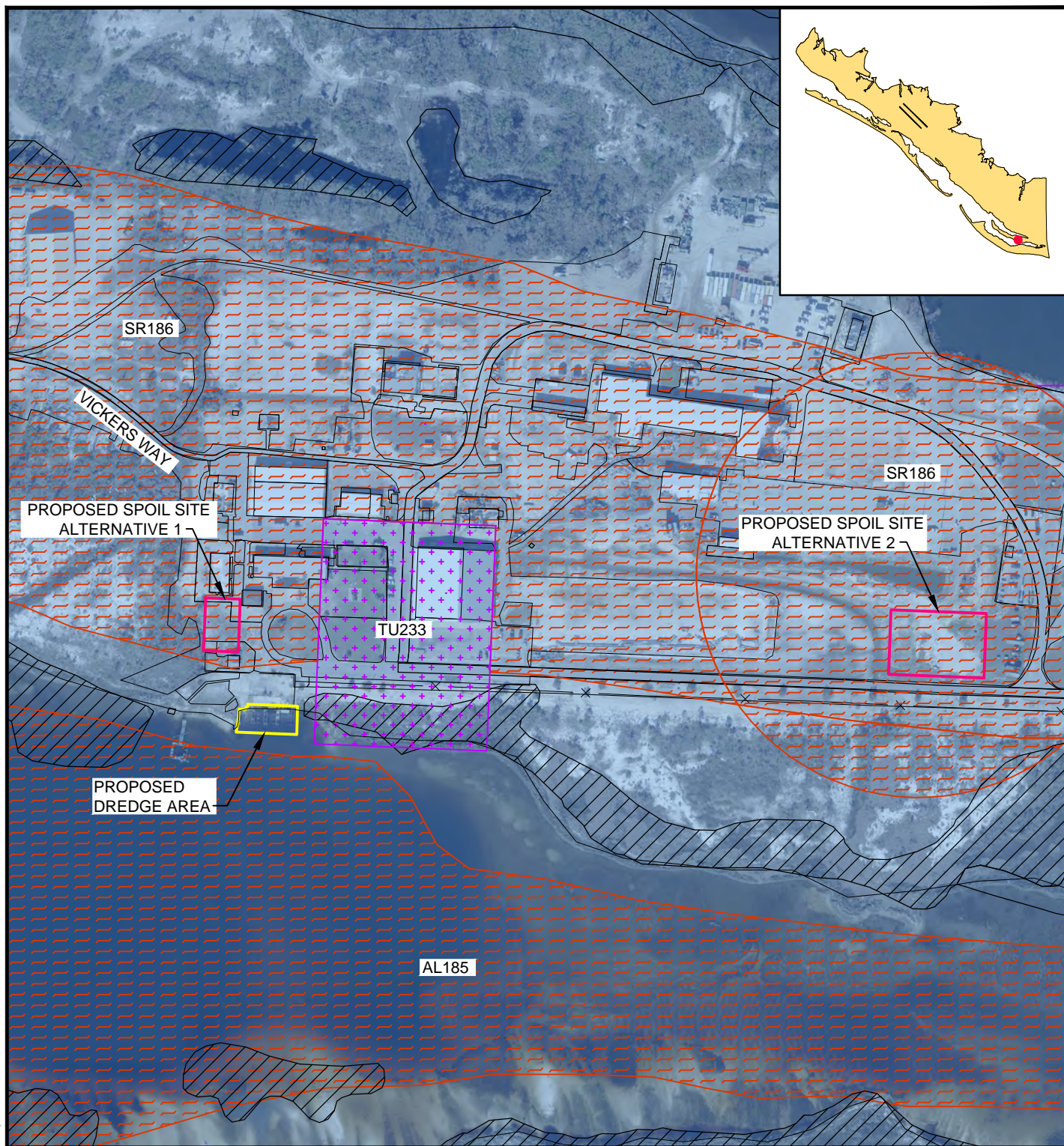
- Replace WEG Tower 1802 (Alternative 1): Construct a new 110-foot-tall, four-legged communications tower with a 30 feet by 30 feet ground surface area, construct a new approximately 1600-square-foot (SF) (40 feet by 40 feet) tower compound, to include a perimeter security fence, place gravel within the fenced area, install utility connections to the tower via directional boring, and construct an approximately 5,000-SF unpaved tower access road (**Figure 2.3-4**).
- Refurbish/Repair Existing Tower 1802 (Alternative 2): Perform infrastructure repairs and refurbishments on the existing tower to restore functionality.
- No-Action Alternative: Forego use of Tower 1802 capabilities and perform base operations with functional infrastructure currently in place.

**2.3.4 IMPROVE EXPEDITIONARY/ENCAMPMENT ROADS**

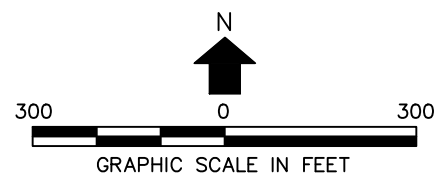
The Air Force considered the following alternatives to the Proposed Action:

- Improve Expeditionary and Encampment Roads (Alternative 1): Widen the existing asphalt Expeditionary Road and Encampment Road from 12 feet wide to 26 feet wide, including two 12-foot-wide lanes with one-foot shoulders, construct a 55-foot paved turnaround on Expeditionary Road near U.S. Highway 98, and construct a new ECF near the Expeditionary Road/U.S. Highway 98 intersection (**Figure 2.3-5**).





LEGEND	
	DREDGE AREA
	PROPOSED SPOIL SITE
	RESTORATION SITE
	CLOSED RESTORATION SITE
	FLOODPLAIN
	WETLAND (BASE DATA)

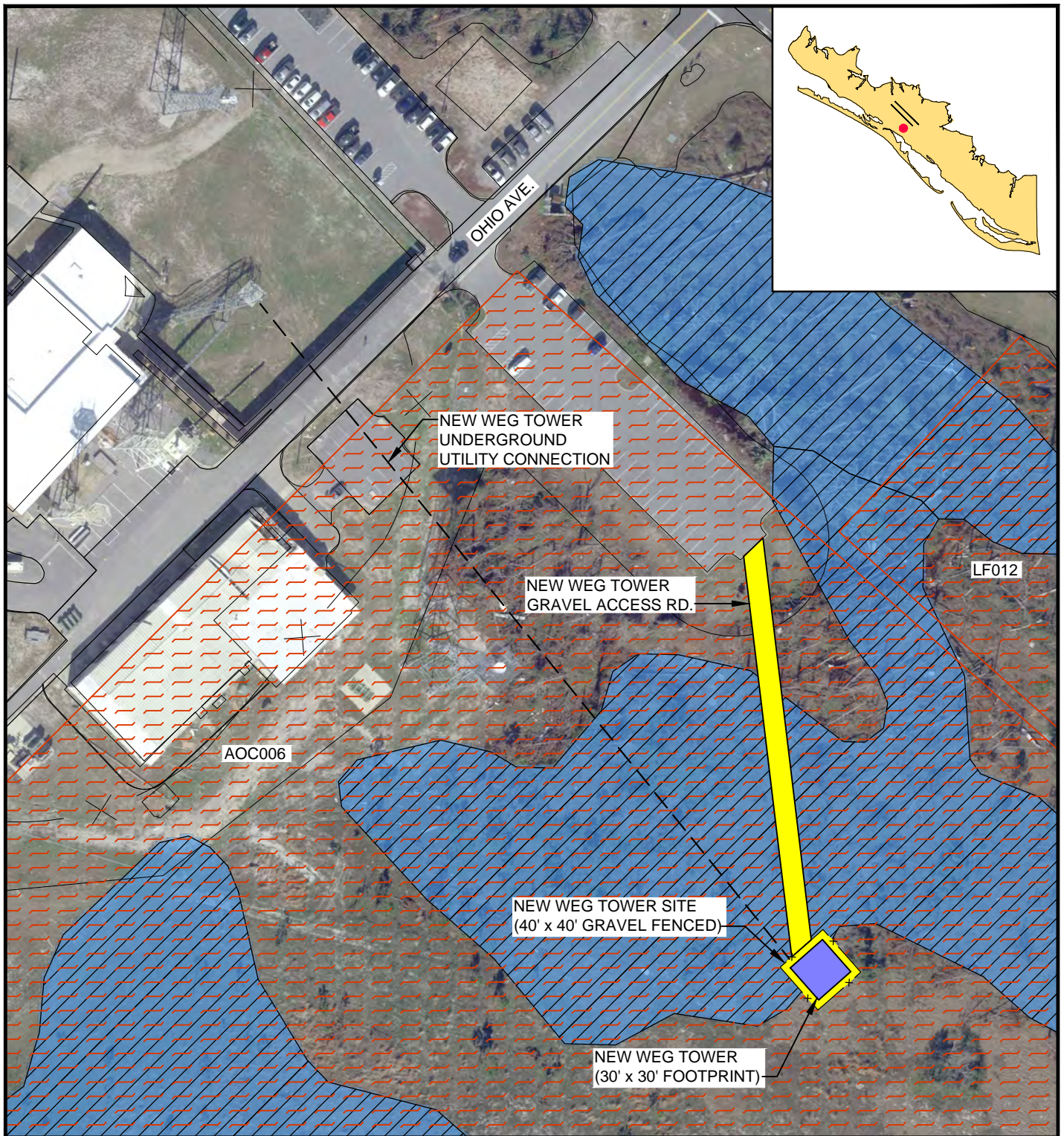







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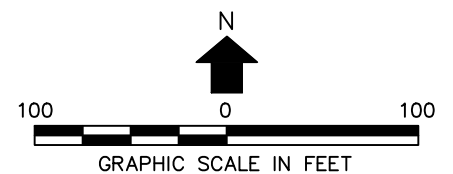
DREDGE THE WEG  
SMALL BOATHOUSE AREA

FIGURE  
2.3-3





LEGEND	
	NEW WEG TOWER
	NEW WEG TOWER ACCESS ROAD
	CLOSED RESTORATION SITE
	FLOODPLAIN
	WETLAND (BASE DATA)

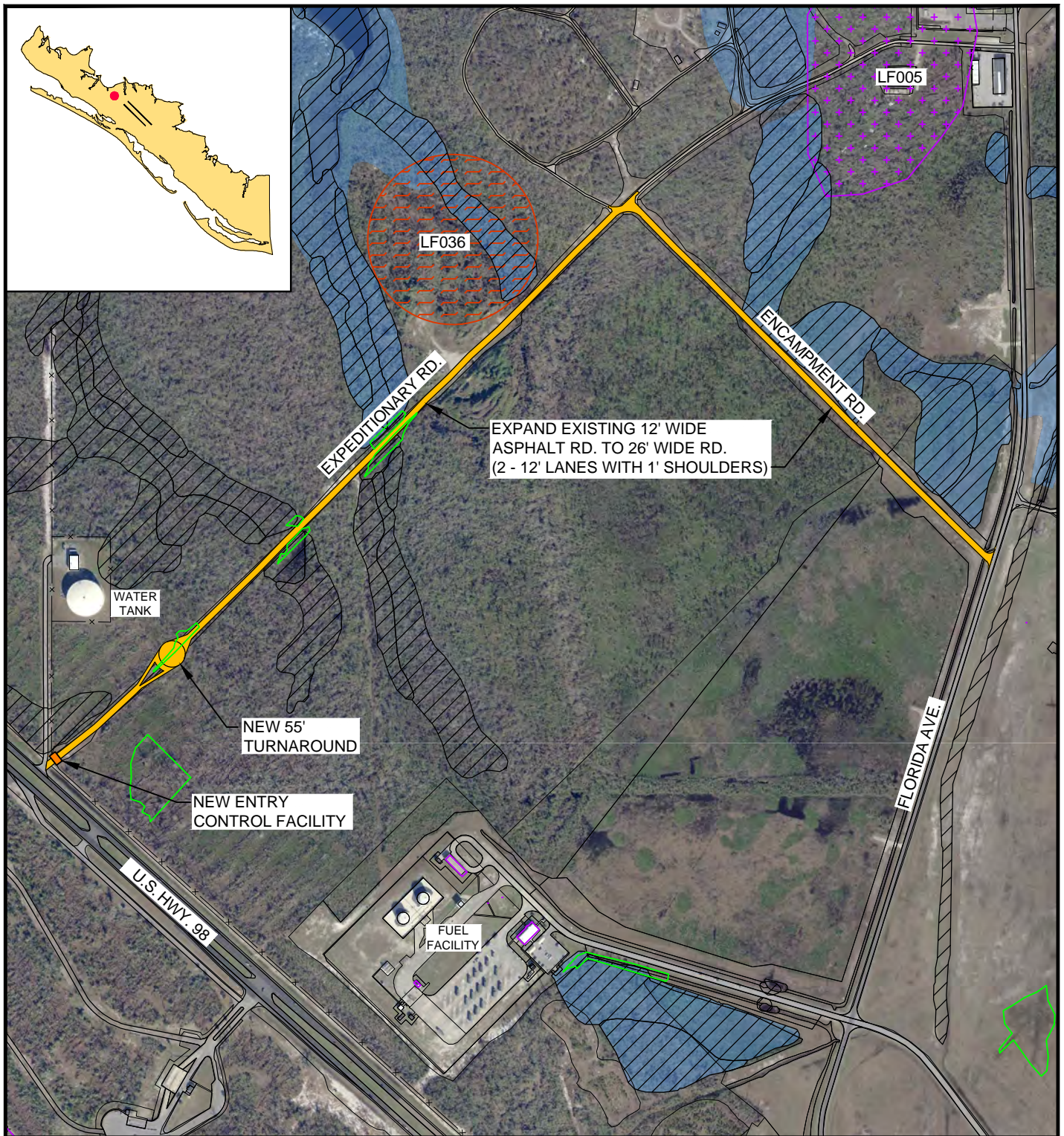


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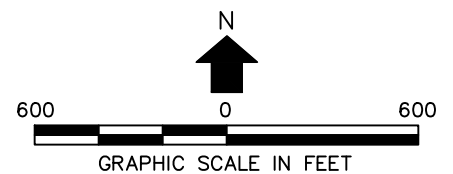
REPLACE WEG TOWER 1802

FIGURE  
2.3-4





LEGEND	
	IMPROVE EXPEDITIONARY / ENCAMPMENT ROADS
	NEW ENTRY CONTROL FACILITY
	RESTORATION SITE
	CLOSED RESTORATION SITE
	FLOODPLAIN
	WETLAND (BASE DATA)
	WETLAND (DELINEATED 2020 / 2021)



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## IMPROVE EXPEDITIONARY / ENCAMPMENT ROADS (ALTERNATIVE 1)

FIGURE  
2.3-5



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- 1   ▪ Improve Expeditionary and Encampment Roads (Alternative 2): Widen the existing asphalt  
2   Expeditionary Road and Encampment Road from 12 feet wide to 26 feet wide, including two 12-foot-  
3   wide lanes with one-foot shoulders, and construct a new ECF near the Expeditionary Road/U.S.  
4   Highway 98 intersection (**Figure 2.3-6**).
- 5   ▪ No-Action Alternative: Leave the roadways as a single lane asphalt facility to provide access to the  
6   northside of Tyndall AFB.

7   Because expansion of Expeditionary and Encampment Roads is already underway and the Proposed Action  
8   is a capacity enhancement action, no alternatives to constructing or using other roadways were considered  
9   in this EA.

### 10   **2.3.5   EXPAND FAMCAMP SITE**

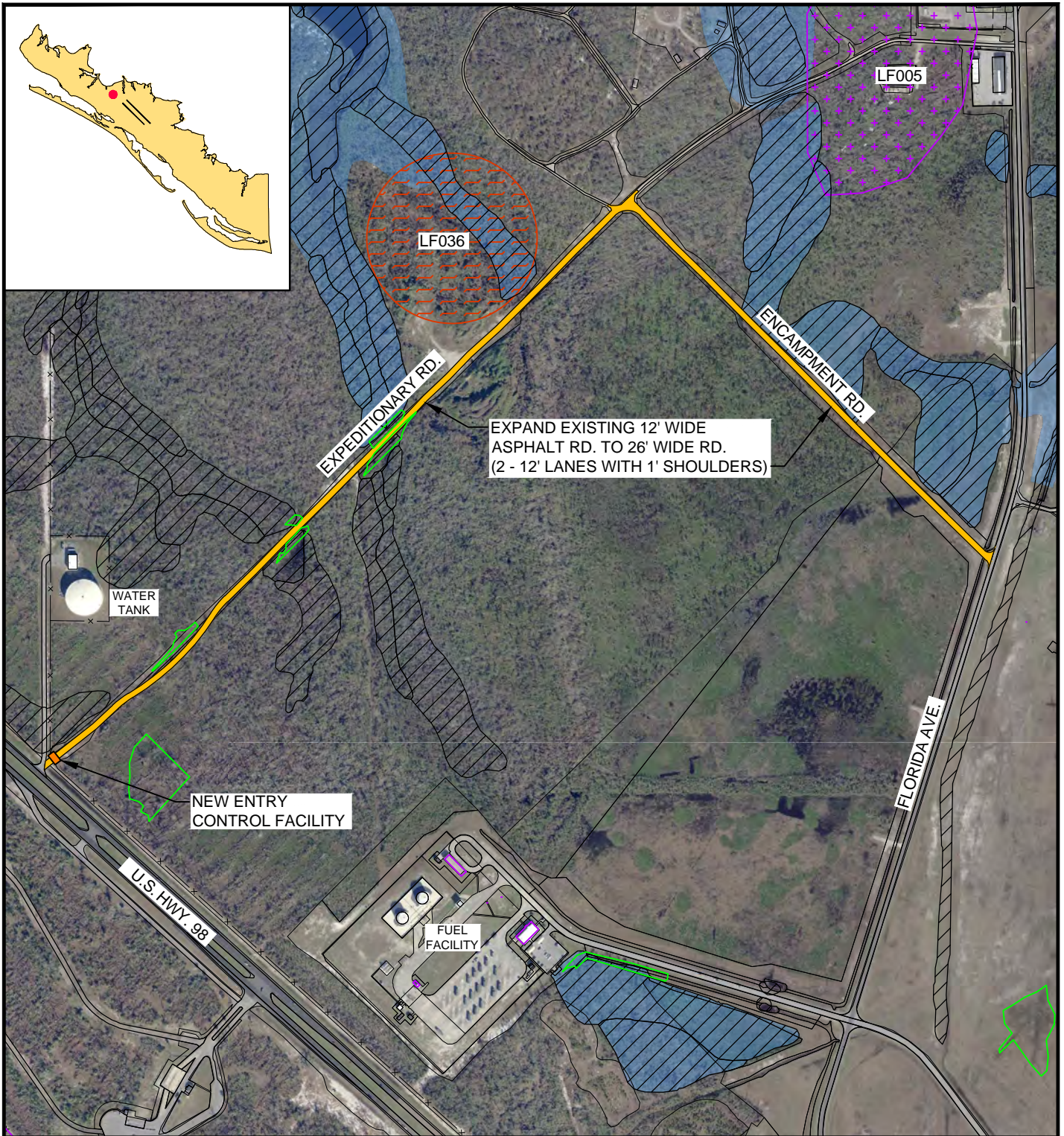
11   The Air Force considered the following alternatives to the Proposed Action:

- 12   ▪ Expand FAMCAMP Site (Alternative 1): Construct a new gravel emergency access road and controlled  
13   access gates on both the proposed and existing entrances. Replace two existing RV pads that would be  
14   displaced due to planned construction activities such that there is no net loss of currently available RV  
15   slots. Construct 30 additional 350- to 400-SF concrete RV parking pads with new water, electrical, and  
16   sewage utility connections and install a site containment fence. Construct a new kayak launch in the  
17   northwest area of the FAMCAMP site with stairs leading down to the water (**Figure 2.3-7**).
- 18   ▪ Expand FAMCAMP Site (Alternative 2): Construct a new gravel emergency access road and controlled  
19   access gates on both the proposed and existing entrances. Replace one existing RV pad that would be  
20   displaced due to planned construction activities such that there is no net loss of currently available RV  
21   slots. Construct 30 additional 350- to 400-SF concrete RV parking pads with new water, electrical, and  
22   sewage utility connections and install a site containment fence. Construct a new kayak launch in the  
23   southwest area of the FAMCAMP site at grade with the existing waterline (**Figure 2.3-8**).
- 24   ▪ No-Action Alternative: Do not perform expansion improvements and leave FAMCAMP amenities as  
25   is.

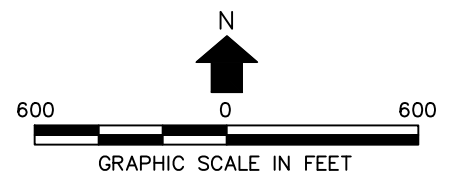
### 26   **2.3.6   CONSTRUCT WATER MAIN ALONG NORTH SIDE OF FLIGHTLINE**

27   The Air Force considered the following alternatives to the Proposed Action:

- 28   ▪ Construct Water Main Along the North Side of Flightline (Alternative 1): Install approximately 15,000  
29   linear feet (LF) of 8-inch polyvinyl chloride (PVC) water main pipe along the northeast side of  
30   Flightline, connecting existing lines at Florida Avenue and Ammo Road, to complete a Flightline Water  
31   Loop (**Figure 2.3-9**).
- 32   ▪ No-Action Alternative: Separate water conveyances to areas adjacent to Florida Avenue and Ammo  
33   Road would remain unconnected.



LEGEND	
	IMPROVE EXPEDITIONARY / ENCAMPMENT ROADS
	NEW ENTRY CONTROL FACILITY
	RESTORATION SITE
	CLOSED RESTORATION SITE
	FLOODPLAIN
	WETLAND (BASE DATA)
	WETLAND (DELINEATED 2020 / 2021)

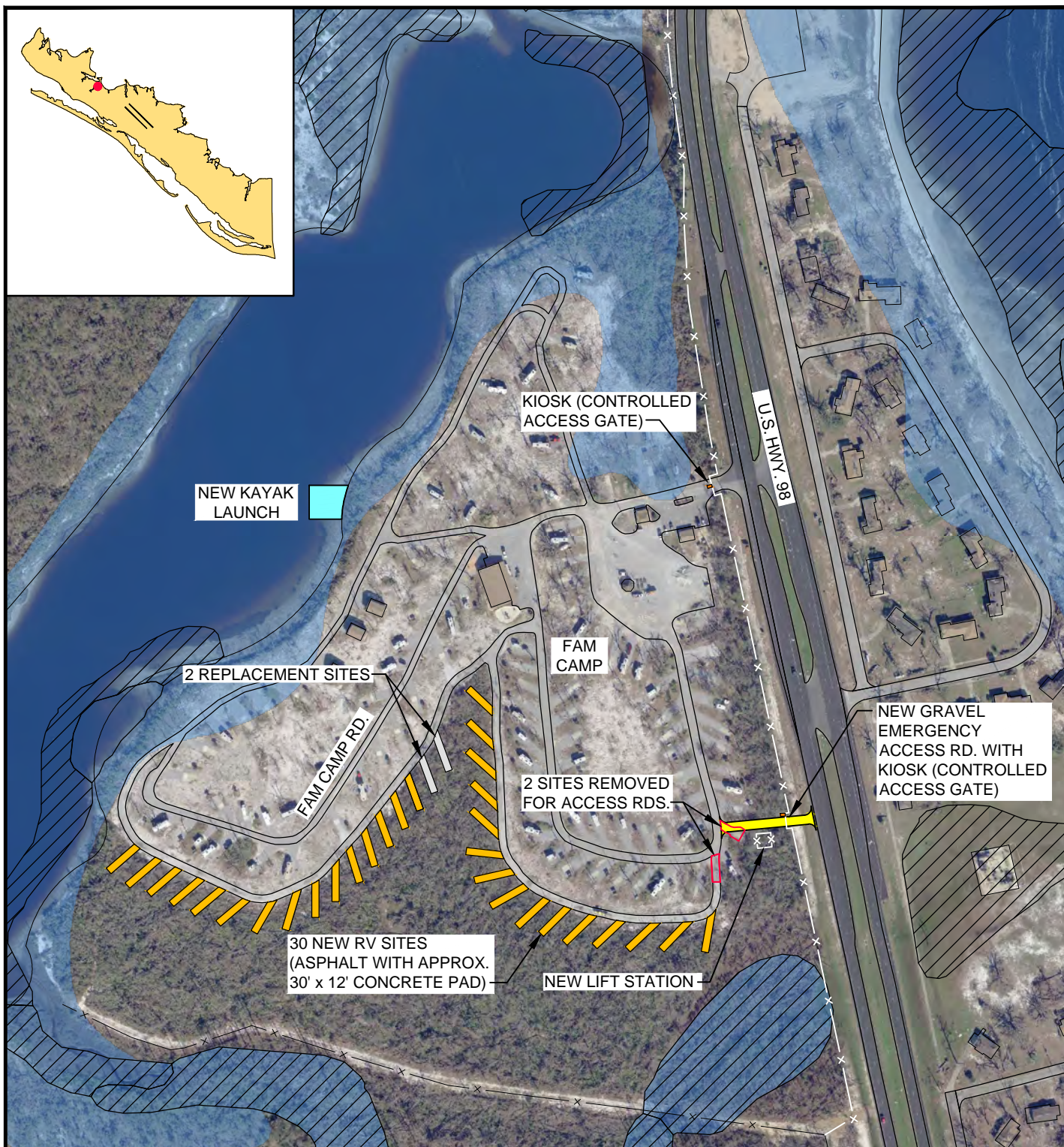


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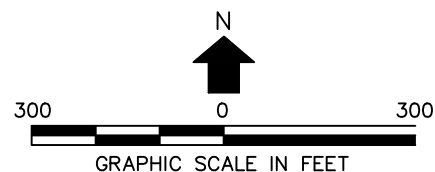
## IMPROVE EXPEDITIONARY / ENCAMPMENT ROADS (ALTERNATIVE 2)

FIGURE  
2.3-6





LEGEND	
	NEW RV SITES
	NEW REPLACEMENT RV SITE
	NEW BOAT LAUNCH RAMP
	NEW EMERGENCY ACCESS ROAD
	FLOODPLAIN
	WETLAND (BASE DATA)

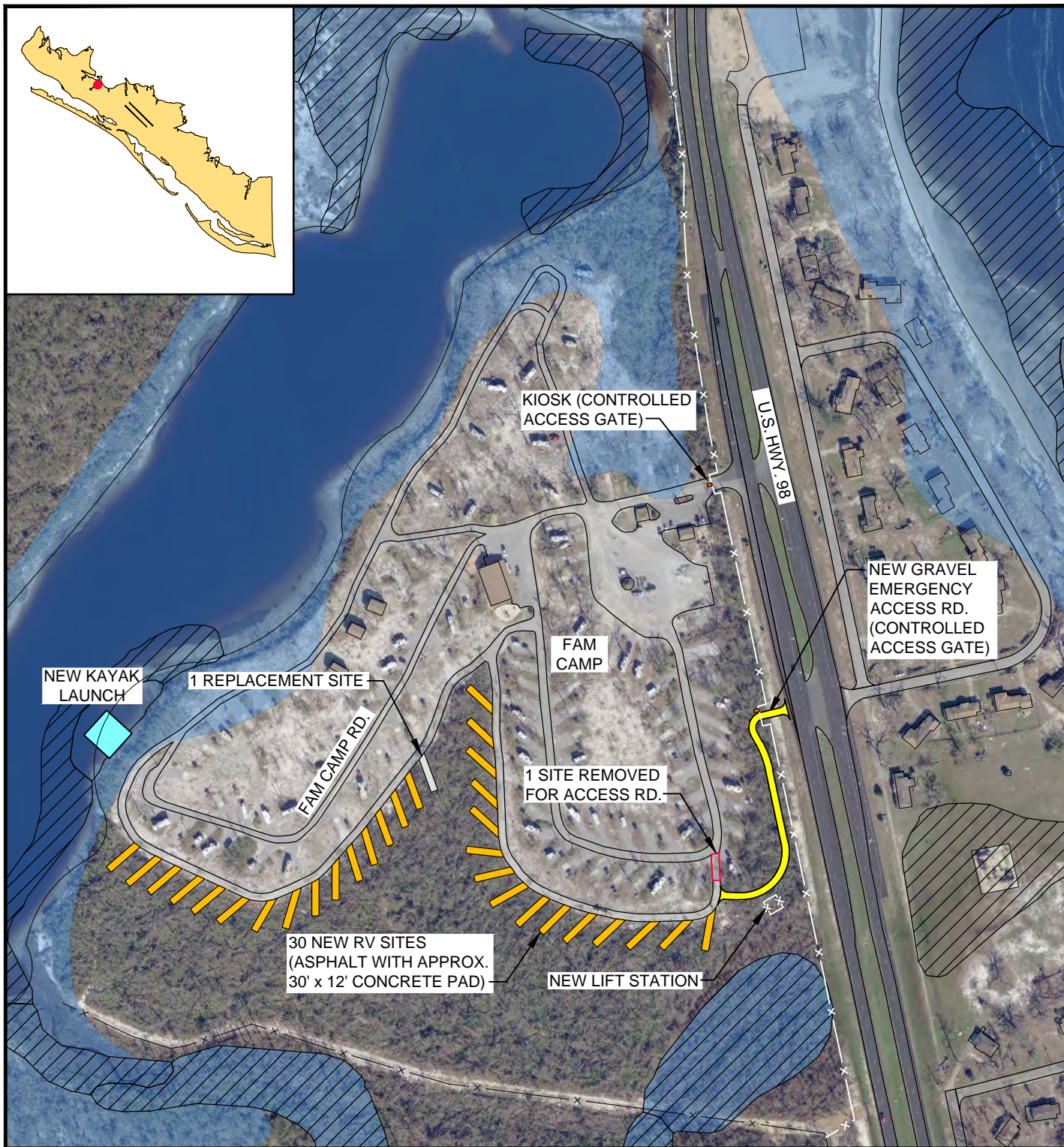







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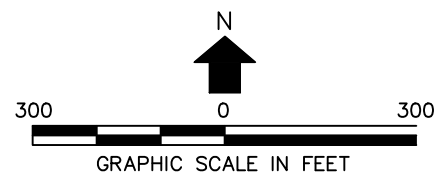
## EXPAND FAM CAMP SITE (ALTERNATIVE 1)

FIGURE  
2.3-7





LEGEND	
	NEW RV SITES
	NEW BOAT LAUNCH RAMP
	NEW EMERGENCY ACCESS ROAD
	FLOODPLAIN
	WETLAND (BASE DATA)

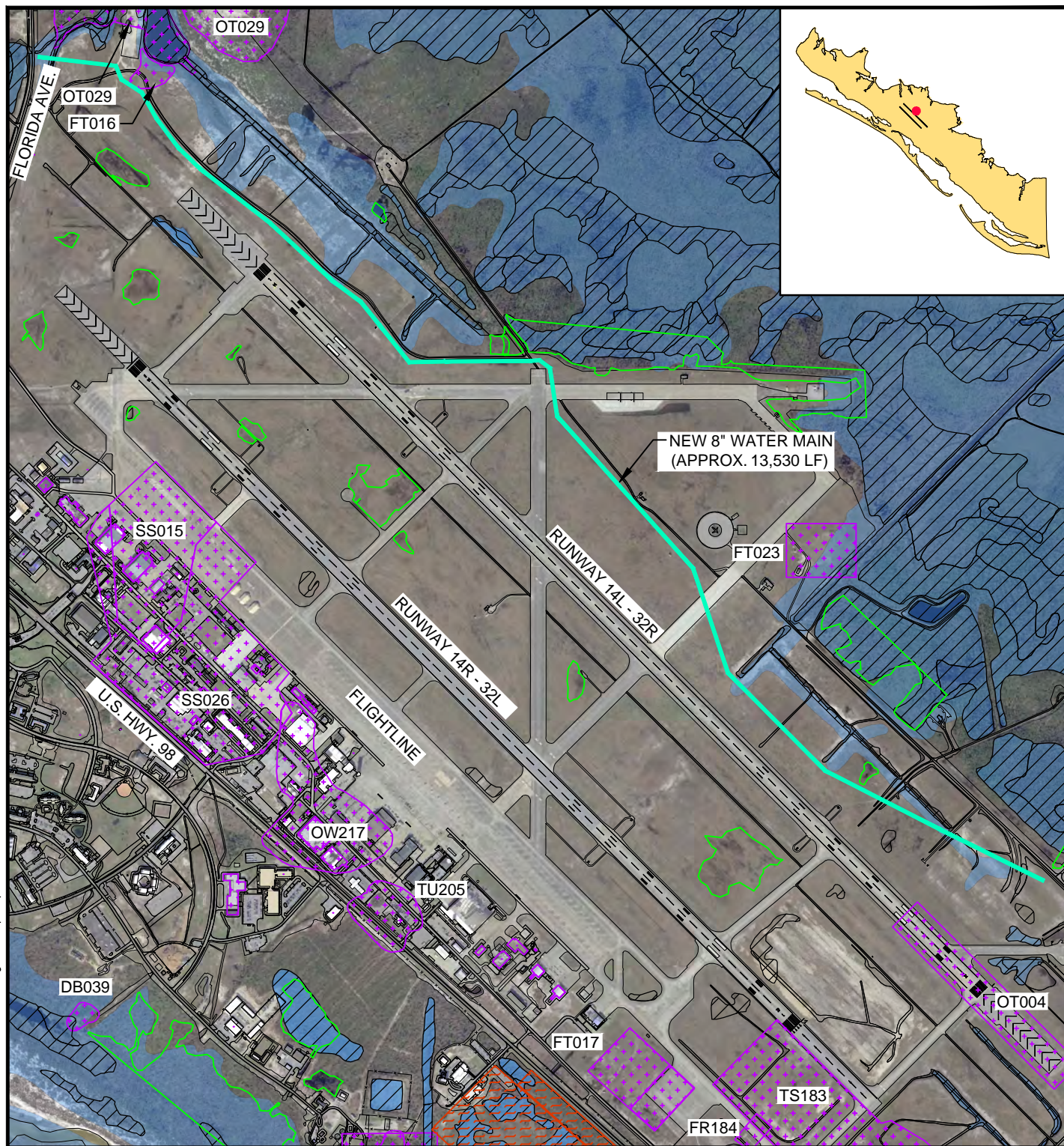


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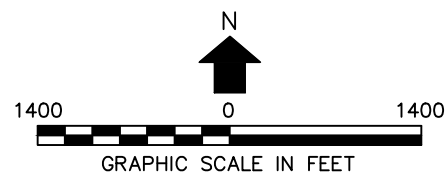
## EXPAND FAM CAMP SITE (ALTERNATIVE 2)

FIGURE  
2.3-8





LEGEND	
	NEW 8" WATER MAIN
	RESTORATION SITE
	CLOSED RESTORATION SITE
	FLOODPLAIN
	WETLAND (BASE DATA)
	WETLAND (DELINEATED 2020 / 2021)



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## CONSTRUCT WATER MAIN ALONG NORTH SIDE OF FLIGHTLINE

FIGURE  
2.3-9

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**2.3.7 CONSTRUCT FISHING/OBSERVATION PIER AT HERITAGE CLUB**

The Air Force considered the following alternatives to the Proposed Action:

- Construct Fishing/Observation Pier (Alternative 1): Construct a new wooden pier approximately 200 feet long by 15 feet wide, with a 50-foot by 20-foot observation/fishing area, including approximately 40 12-inch-diameter support pylons embedded into the soil (**Figure 2.3-10**).
- Construct Fishing/Observation Pier (Alternative 2): Construct a new concrete pier approximately 200 feet long by 20 feet wide, with a 75-foot by 20-foot observation/fishing area, including approximately 55 12-inch-diameter support pylons embedded into the soil (**Figure 2.3-11**).
- No-Action Alternative: Leave Heritage Club amenities as is.




**2.3.8 RENOVATE THE UNITE SITE**

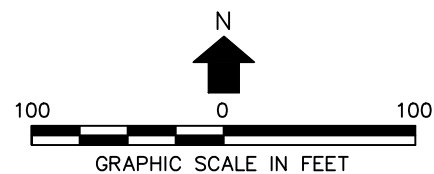
The Air Force considered the following alternatives to the Proposed Action:

- Renovate UNITE Site (Alternative 1): Construct new recreational facilities (axe throwing course, paintball field, and archery range), administrative office space and a gravel parking area on a 22.5-acre site located north of Sabre Drive and west of U.S. Highway 98 (**Figure 2.3-12**).
- Renovate UNITE Site (Alternative 2): Construct new recreational facilities (axe throwing course, paintball field, and archery range), administrative office space and a gravel parking area on a 16-acre site at the corner of Sabre Drive and Prime Beef Road (**Figure 2.3-13**).
- No-Action Alternative: Do not construct UNITE site improvements.





LEGEND	
 NEW FISHING / OBSERVATION PIER	 WETLAND (BASE DATA)
 FLOODPLAIN	



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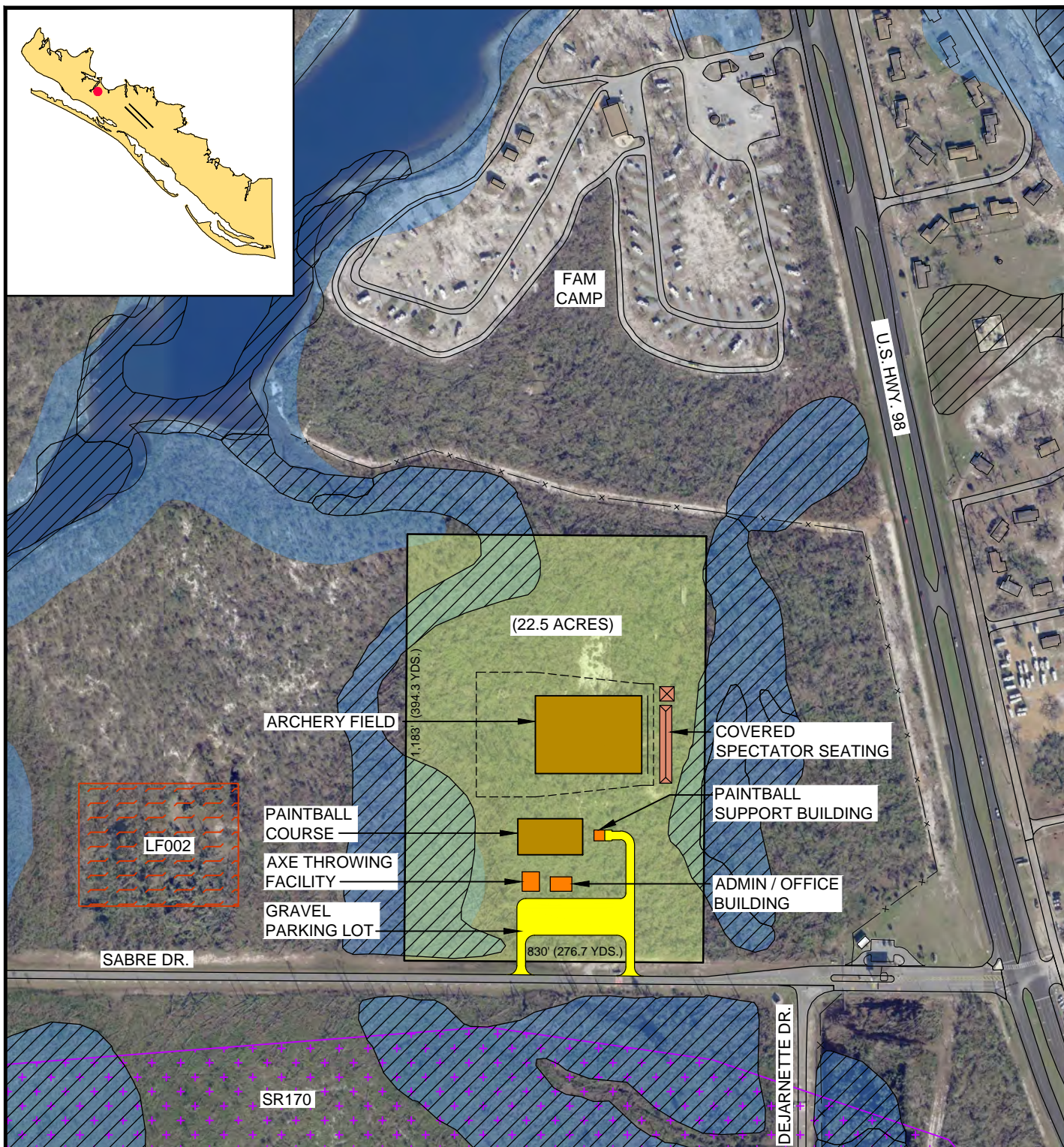
CONSTRUCT  
PIER AT HERITAGE CLUB  
(ALTERNATIVE 1)









FIGURE  
2.3-10

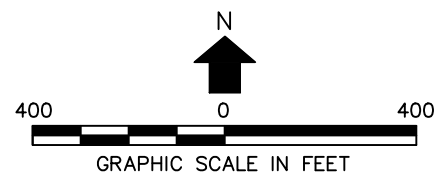








LEGEND	
 UNITE SITE	 RESTORATION SITE
 POTENTIAL NEW BUILDINGS	 CLOSED RESTORATION SITE
 ARCHERY FIELD / PAINTBALL COURSE	 FLOODPLAIN
 GRAVEL PARKING LOT	 WETLAND (BASE DATA)



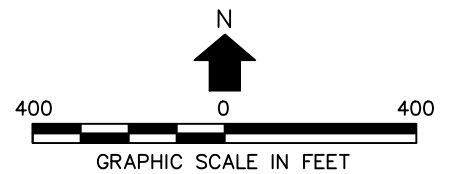
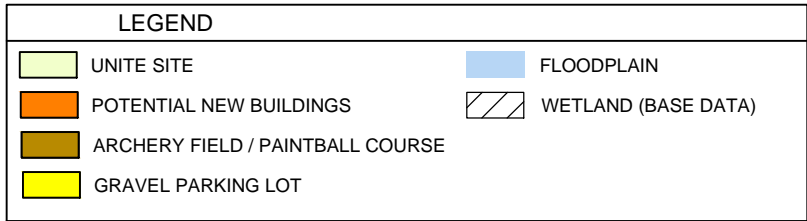
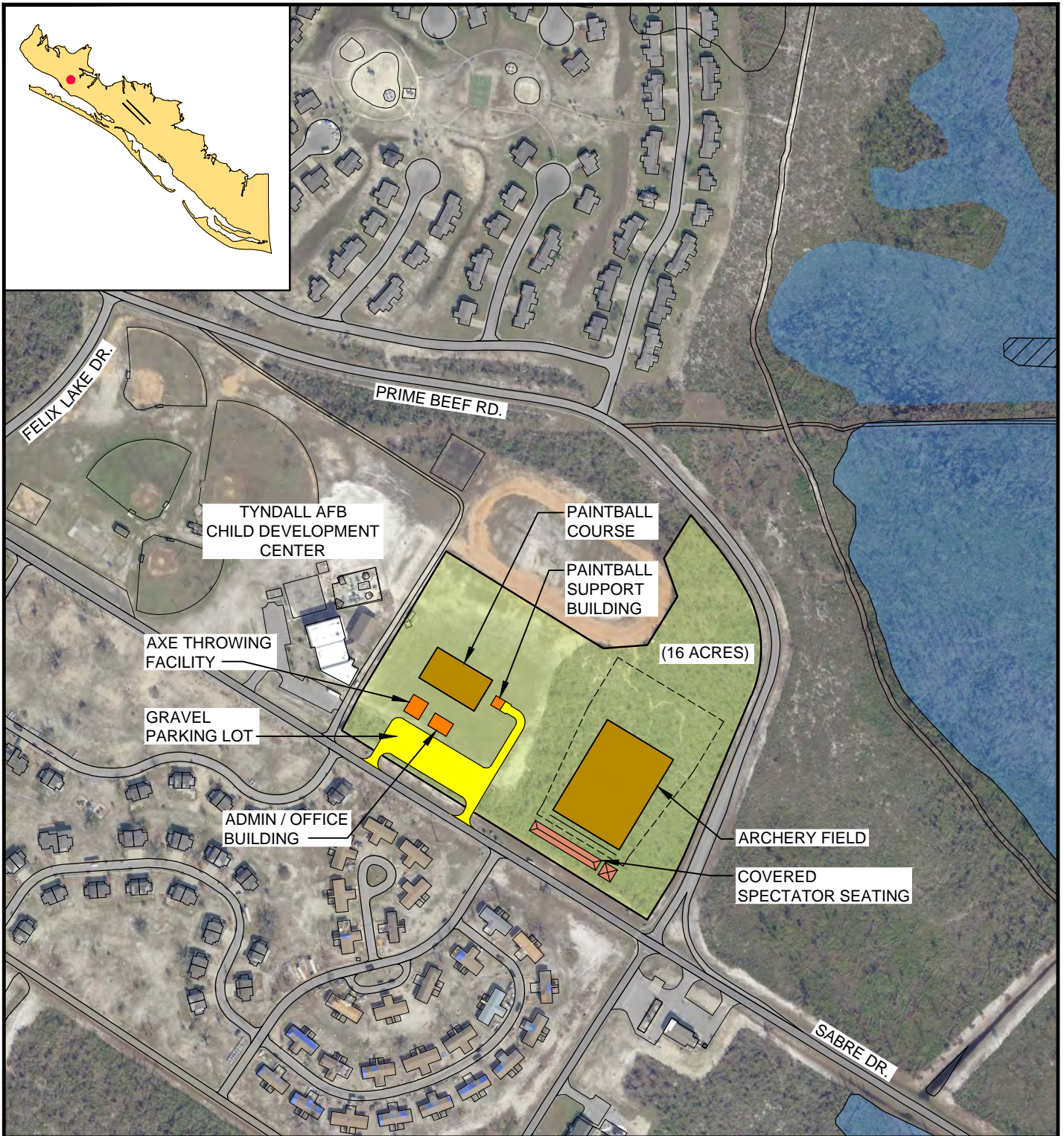
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RENOVATE UNITE SITE  
(ALTERNATIVE 1)

FIGURE  
2.3-12



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## RENOVATE UNITE SITE (ALTERNATIVE 2)

FIGURE  
2.3-13

## 2.4 SUMMARY OF ALTERNATIVES ANALYSIS

**Table 2.4-1** summarizes the alternatives considered for each of the eight Proposed Actions and compares them against established selection standards where applicable. As described in **Section 2.2**, alternatives that satisfy applicable selection standards are considered reasonable and retained for consideration in this EA. Alternatives that do not meet one or more of the selection standards are eliminated and not carried forward for detailed analysis in the EA. Each of the following sections summarizes which alternatives are retained in the EA and which are eliminated based on the analysis contained on **Table 2.4-1**.

### 2.4.1 CONSTRUCT NEW EOD GRAVEL ROAD

Based on the evaluation summarized on **Table 2.4-1**, only Alternative 1 fully achieves the purpose and need of the Proposed Action and satisfies all applicable selection standards. While Alternative 1 (**Figure 2.3-1**) provides direct access to the detonation site, Alternative 2 (**Figure 2.3-2**) would provide access only to the margin of the EOD area, requiring ordnance unloading outside of, and subsequent transport into the detonation site. Alternative 2 would also substantially increase the travel distance to and from the site. Additionally, the roadway would be located directly along the coastline, which increases the potential for road washout and diminished use during high tide conditions. Alternative 1 would impact floodplains, which would require mitigation. Although Alternative 2 avoids known wetlands and mapped floodplains, the gravel road would traverse designated critical habitat for the federally-listed endangered Choctawhatchee beach mouse.

Per **Table 2.4-1**, Alternative 1 fully achieves the purpose and need of the Proposed Action and satisfies all applicable selection standards. Because Alternative 2 does not achieve Selection Standards SS-02 and SS-03, and only partially achieves Selection Standard SS-05, this alternative is not retained for evaluation in this EA. Although the No-Action Alternative does not achieve the purpose and need of the Proposed Action, and does not satisfy all selection standards, it is nevertheless retained for evaluation in this EA for comparative purposes and to satisfy NEPA requirements. Aside from the No-Action Alternative, there is no practicable alternative for avoiding floodplain areas. Floodplain impacts are assessed in this EA under **Section 4.6** and any mitigation measures identified will need to be implemented prior to implementation of the Proposed Action.

### 2.4.2 DREDGE THE WEG SMALL BOATHOUSE AREA

Both Alternatives 1 and 2 achieve established selection standards and are retained for further evaluation in the EA (**Table 2.4-1**). Although the No-Action Alternative does not achieve the purpose and need of the Proposed Action, and does not satisfy all selection standards, it is nevertheless retained for evaluation in this EA for comparative purposes and to satisfy NEPA requirements. Aside from the No-Action Alternative, there is no practicable alternative for avoiding floodplain areas. Floodplain impacts are assessed in this EA under **Section 4.6** and any mitigation measures identified will need to be implemented prior to implementation of the Proposed Action.



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**TABLE 2.4-1 ALTERNATIVES EVALUATION SUMMARY**

Proposed Action	Alternative	SS-01: Cost-effectively modernize infrastructure and improve infrastructure readiness?	SS-02: Promote operational efficiency and mission adjacency?	SS-03: Comply with all facility sizing and siting requirements based on mission needs?	SS-04: Support MWR programs in accordance with AFI 34-101?	SS-05: Avoid environmental resources, or minimize/mitigate unavoidable impacts?	Retained for EA?
Construct New EOD Gravel Road	Alternative 1: Construct an approximately 480-foot-long gravel access road with a hammerhead style turnaround connecting the existing main EOD road to the existing detonation site ( <b>Figure 2.3-1</b> )	Not applicable	Yes: This alternative would create a gravel road directly into the detonation site. This would optimize off-loading of heavy ordnance directly to the detonation site	Yes: Current EOD range siting complies with all land use, base operations, and explosives safety directives	Not applicable	Partially: Alternative would impact floodplain which would require mitigation	Yes
	Alternative 2: Construct an approximately 842-foot-long gravel access road with a hammerhead style turnaround connecting the existing main EOD road to the western edge of the existing detonation site ( <b>Figure 2.3-2</b> )	Not applicable	No: This alternative increases travel times to access the range site compared to Alternative 1. The gravel road's location directly along the coastline increases potential for washout and potential diminished use during high tide conditions	No: Although the alternative would likely comply with land use, base operations and explosives safety directives, increased distance between ordnance unloading and the detonation site compared to Alternative 1 may increase hazard risk	Not applicable	Partially: Alternative would avoid known wetlands and mapped floodplains. Roadway would traverse designated critical habitat for the Choctawhatchee beach mouse	No
	No-Action Alternative: Continue utilizing the existing EOD Range under current operational parameters.	Not applicable	No: The No-Action Alternative would require off-loading ordnance from the top of an earthen berm along the detonation site, and lowering the ordnance down into the site for disposal	Yes: Current EOD range siting complies with all land use, base operations, and explosives safety directives	Not applicable	Yes: No changes to environmental resources in the area would occur	Yes
Dredge the WEG Small Boathouse Area	Alternative 1: Dredge the small boathouse docks to a depth of between three and five feet below present bottom elevation, and place clean dredge spoils immediately to the north and to the west of Buildings 9700 and 9706 ( <b>Figure 2.3-3</b> ).	Not applicable	Yes: Preserving small boat access to the 9700 area continues to meet mission operational needs	Yes: The WEG small boathouse has been identified as a required facility and ensuring its function during all tidal conditions would maximize use of the facility	Not applicable	Partially: Alternative would impact floodplain which would require mitigation  The proposed spoil storage area is located adjacent to active Environmental Restoration Program (ERP) TU233, but spoil storage activities should not impact ongoing investigation, monitoring or remediation activities at this site	Yes
	Alternative 2: Dredge the small boathouse docks to a depth of between three and five feet below present bottom elevation, and place either clean or contaminated dredge spoils in an area north of Research Road ( <b>Figure 2.3-3</b> ).	Not applicable	Yes: Preserving small boat access to the 9700 area continues to meet mission operational needs	Yes: The WEG small boathouse has been identified as a required facility and ensuring its function during all tidal conditions would maximize use of the facility	Not applicable	Partially: Alternative would impact floodplain which would require mitigation  The proposed spoil storage areas are located within ERP site SR186. However, SR186 is closed with no remediation pending and spoil storage at this location would not adversely impact the site status	Yes
	No-Action Alternative: Do not dredge the boathouse docks and preclude small boat access to facility.	Not applicable	No: Loss of small boat access to the 9700 area facilities would hinder mission operations	No: The No-Action Alternative would reduce the use of a mission required facility	Not applicable	Yes: No changes to environmental resources in the area would occur	Yes

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Proposed Action	Alternative	SS-01: Cost-effectively modernize infrastructure and improve infrastructure readiness?	SS-02: Promote operational efficiency and mission adjacency?	SS-03: Comply with all facility sizing and siting requirements based on mission needs?	SS-04: Support MWR programs in accordance with AFI 34-101?	SS-05: Avoid environmental resources, or minimize/mitigate unavoidable impacts?	Retained for EA?
Replace WEG Tower 1802	Alternative 1: Construct a new 110-foot-tall, four-legged communications tower with a 30 feet by 30 feet ground surface area, construct a new approximately 1600-SF (40 feet by 40 feet) tower compound, to include a perimeter security fence, place gravel within the fenced area, install utility connections to the tower via directional boring, and construct an approximately 5,000-SF unpaved tower access road <b>(Figure 2.3-4)</b> .	Yes: Completely new construction would provide more resilient infrastructure (e.g., ability to withstand higher windspeeds) compared to available alternatives. By adopting new construction, the installation can integrate sustainability principles into the design, development and construction of the Proposed Action. New facilities would be constructed in accordance with Tyndall AFB Installation Facilities Standards intended to maximize resiliency	Yes: fully complies with 83 FWS requirements to restore previous tower functionality and support emerging mission requirements for better coverage and line-of-sight for communications during unmanned drone missions	Not applicable	Not applicable	Partially: Construction could impact wetland and floodplain area which would require mitigation if design measures could not be undertaken to avoid these resources.  The construction footprint overlies ERP sites LF012 and AOC006, which are both closed with no remediation pending. Construction activities could occur within this area without jeopardizing site status	Yes
	Alternative 2: Perform infrastructure repairs and refurbishments on the existing tower to restore functionality.	No: Although renovations to existing infrastructure could partially succeed in infrastructure modernization, the capital outlay associated with implementing this alternative is not as cost effective as other available alternatives	No: refurbishing the tower in its current location would not meet emerging line-of-sight coverage/communications specified by 83 FWS	Not applicable	Not applicable	Yes: Refurbishment of the communications infrastructure within the existing footprint would likely not interfere or impact surrounding environmental resources	No
	No-Action Alternative: Forego use of Tower 1802 capabilities and perform base operations with functional infrastructure currently in place.	No: There would be no net change in infrastructure conditions or readiness under this alternative	No: 83 FWS mission requirements would not be met	Not applicable	Not applicable	Yes: No changes to environmental resources in the area would occur	Yes
Improve Expeditionary /Encampment Roads	Alternative 1: Widen the existing asphalt Expeditionary Road and Encampment Road from 12 feet wide to 26 feet wide, including two 12-foot-wide lanes with one-foot shoulders, construct a 55-foot paved turnaround on Expeditionary Road near U.S. Highway 98, and construct a new entry control facility near the Expeditionary Road/U.S. Highway 98 intersection <b>(Figure 2.3-5)</b> .	Yes: Providing an expanded concrete/asphalt roadway facility would harden the transportation infrastructure and increase its useful life compared to remaining partially gravel.	Yes: Expanding the road capacity to two lanes would increase utility as using the road as a backup when Tyndall and Airey gates are closed	Yes: Enhanced roadway capacity and condition would further manage traffic associated with ongoing Hurricane Michael rebuild activities	Not applicable	Partially: Wetlands along the proposed Right of Way have been delineated and could be impacted, requiring mitigation  Closed ERP site LF036 is adjacent to Expeditionary Road but is not expected to be impacted	Yes
	Alternative 2: Widen the existing asphalt Expeditionary Road and Encampment Road from 12 feet wide to 26 feet wide, including two 12-foot-wide lanes with one-foot shoulders, and construct a new entry control facility near the Expeditionary Road/U.S. Highway 98 intersection <b>(Figure 2.3-6)</b> .	Yes: Providing an expanded concrete/asphalt roadway facility would harden the transportation infrastructure and increase its useful life compared to remaining partially gravel.	No: Without a turnaround facility as provided with Alternative 1, vehicles, especially heavy vehicles may be required to traverse the entire roadway length in order to change travel direction. This may create operational inefficiency, increase congestion, and divert traffic back on to Florida Avenue.	No: Operational inefficiencies that could result without a turnaround facility may conflict with facility requirements and mission needs.	Not applicable.	Partially: Wetlands along the proposed Right of Way have been delineated and could be impacted, requiring mitigation. Potential impacts would be comparatively less compared to Alternative 1.  Closed ERP site LF036 is adjacent to Expeditionary Road but is not expected to be impacted	No
	No-Action Alternative: Leave the roadways as a single lane asphalt facility to provide access to the northside of Tyndall AFB.	Partially: a partially paved concrete/asphalt roadway facility helps increase the roadway useful life compared to a gravel alternative.	No: Access redundancy during conditions when Tyndall/Airey gates are closed would not be provided	No: Roadway capacity and entry control capability would not be maximized to support ongoing rebuild objectives	Not applicable	Yes: No changes to environmental resources in the area would occur	Yes

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Proposed Action	Alternative	SS-01: Cost-effectively modernize infrastructure and improve infrastructure readiness?	SS-02: Promote operational efficiency and mission adjacency?	SS-03: Comply with all facility sizing and siting requirements based on mission needs?	SS-04: Support MWR programs in accordance with AFI 34-101?	SS-05: Avoid environmental resources, or minimize/mitigate unavoidable impacts?	Retained for EA?
Expand FAMCAMP Site	Alternative 1: Construct a new gravel emergency access road and controlled access gates on both the proposed and existing entrances. Replace two existing RV pads that would be displaced due to planned construction activities such that there is no net loss of currently available RV slots. Construct 30 additional 350- to 400-SF concrete RV parking pads with new water, electrical, and sewage utility connections and install a site containment fence. Construct a new kayak launch in the northwest area of the FAMCAMP site with stairs leading down to the water ( <b>Figure 2.3-7</b> ).	Not applicable	Yes: Providing an emergency egress road and secured entry would enhance safety and security operations at FAMCAMP	Yes: Replacing displaced RV slots and increasing the total number of RV slots by 30 would satisfy user requirements	Yes: Increases recreational facilities and amenities available for use and provides additional revenue potential for MWR programs	Partially: The proposed kayak launch site is located in a floodplain area requiring avoidance, minimization of impacts, or mitigation	Yes
	Alternative 2: Construct a new gravel emergency access road and controlled access gates on both the proposed and existing entrances. Replace one existing RV pad that would be displaced due to planned construction activities such that there is no net loss of currently available RV slots. Construct 30 additional 350- to 400-SF concrete RV parking pads with new water, electrical, and sewage utility connections and install a site containment fence. Construct a new kayak launch in the southwest area of the FAMCAMP site at grade with the existing waterline ( <b>Figure 2.3-8</b> ).	Not applicable	Yes: Providing an emergency egress road and secured entry would enhance safety and security operations at FAMCAMP	Yes: Replacing displaced RV slots and increasing the total number of RV slots by 30 would satisfy user requirements.	Yes: Increases recreational facilities and amenities available for use and provides additional revenue potential for MWR programs	Partially: The proposed kayak launch site is located in a floodplain/wetland area requiring avoidance, minimization of impacts, or mitigation	Yes
	No-Action Alternative: Do not perform expansion improvements and leave FAMCAMP amenities as is.	Not applicable	No: Emergency egress and security enhancements would not occur	No: Maintaining the existing number of RV positions would not satisfy user requirements	No: availability of amenities and revenue potential would not be increased	Yes: No changes to environmental resources in the area would occur	Yes
Construct Water Main Along North Side of Flightline	Alternative 1: Install approximately 15,000 linear feet (LF) of 8-inch PVC water main pipe along the northeast side of Flightline, connecting existing lines at Florida Avenue and Ammo Road, to complete a Flightline Water Loop ( <b>Figure 2.3-9</b> ).	Yes: Providing new conveyance infrastructure would extend the useful life of water management systems along the airfield	Yes: Providing redundancy and connectivity along with north side of the airfield would optimize water management systems	Yes: This Alternative is compatible with both the ongoing airfield drainage reconstruction projects as well as planned northside development on the Flightline	Not applicable	Partially: delineated wetlands are present along the proposed watermain alignment but may be able to be avoided using design measures. Otherwise, any wetland impacts would need to be mitigated. The proposed alignment intersects a small floodplain area on its eastern side and would also need to be either avoided or mitigated  Active ERP Sites FT016 and OT029 adjoin the proposed watermain project area to the northwest. It is not anticipated that proposed construction would impact any monitoring or remediation activities ongoing at these sites	Yes
	No-Action Alternative: Separate conveyances to areas adjacent to Florida Avenue and Ammo Road would remain unconnected.	No: Existing infrastructure and infrastructure connections would remain as is	No: The efficiency improvements by connecting Florida Avenue and Ammo Road waterlines would not be achieved	No: The No-Action Alternative would not enhance existing and planned future water management projects in this area of the base	Not applicable	Yes: No changes to environmental resources in the area would occur	Yes

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Proposed Action	Alternative	SS-01: Cost-effectively modernize infrastructure and improve infrastructure readiness?	SS-02: Promote operational efficiency and mission adjacency?	SS-03: Comply with all facility sizing and siting requirements based on mission needs?	SS-04: Support MWR programs in accordance with AFI 34-101?	SS-05: Avoid environmental resources, or minimize/mitigate unavoidable impacts?	Retained for EA?
Construct Fishing/Observation Pier at Heritage Club	Alternative 1: Construct a new wooden pier approximately 200 feet long by 15 feet wide, with a 50-foot by 20-foot observation/fishing area, including approximately 40 12-inch-diameter support pylons embedded into the soil ( <b>Figure 2.3-10</b> ).	Not applicable	Not applicable	Yes: Constructing this recreational amenity would increase use of the existing site and also be compatible with planned future enhancements	Yes: Constructing the planned improvements would provide additional recreational space for enjoyment of the Tyndall AFB coast	Partially: Most of the project site is located in a coastal wetland and floodplain area, and mitigations would need to be performed for impacts incurred	Yes
	Alternative 2: Construct a new concrete pier approximately 200 feet long by 20 feet wide, with a 75-foot by 20-foot observation/fishing area, including approximately 55 12-inch-diameter support pylons embedded into the soil ( <b>Figure 2.3-11</b> ).	Not applicable	Not applicable	Yes: Constructing this recreational amenity would increase use of the existing site and also be compatible with planned future enhancements	Yes: Constructing the planned improvements would provide additional recreational space for enjoyment of the Tyndall AFB coast	Partially: Most of the project site is located in a coastal wetland and floodplain area, and impacts would be greater compared to Alternative 1 due to the larger structure. Mitigations would need to be performed for impacts incurred	Yes
	No-Action Alternative: Leave Heritage Club amenities as is.	Not applicable	Not applicable	No: Heritage Club facilities would not be enhanced to be compatible with future development plans	No: Heritage Club facilities would remain as is and recreational usage would not increase now or in the future	Yes: No changes to environmental resources in the area would occur	Yes
Renovate the UNITE Site	Alternative 1: Construct new recreational facilities (axe throwing course, paintball field, and archery range), administrative office space and a gravel parking area on a 22.5-acre site located north of Sabre Drive and west of U.S. Highway 98 ( <b>Figure 2.3-12</b> ).	Not applicable	Partially: The UNITE facilities would be located in an area previously used for outdoor recreation and are adjacent to FAMCAMP.	Yes: 22.5 acres is sufficient space to construct adequately sized amenities, parking and support buildings as shown on <b>Figure 2.3-12</b>	Yes: The planned facilities would increase outdoor recreational enjoyment and promote the goals and the objectives of the UNITE program in providing teambuilding and cohesion opportunities for airmen	Partially: A portion of the 22.5-acre footprint is located in wetland and floodplain areas. However, based on the notional layout provided in <b>Figure 2.3-12</b> , these can likely be avoided	Yes
	Alternative 2: Construct new recreational facilities (axe throwing course, paintball field, and archery range), administrative office space and a gravel parking area on a 16-acre site at the corner of Sabre Drive and Prime Beef Road ( <b>Figure 2.3-13</b> ).	Not applicable	Yes: The UNITE Facilities are immediately adjacent to a Child Development Center, recreational sports fields, and base housing. This would maximize ease of use for base residents	Yes: 16 acres is sufficient space to construct adequately sized amenities, parking and support buildings as shown on <b>Figure 2.3-13</b>	Yes: The planned facilities would increase outdoor recreational enjoyment and promote the goals and the objectives of the UNITE program in providing teambuilding and cohesion opportunities for airmen	Yes: The project is free of environmental constraints such as wetlands, floodplains and ERP sites	Yes
	No-Action Alternative: Do not construct UNITE Site improvements	Not applicable	No: UNITE facilities would not be constructed	No: UNITE facilities would not be constructed	No: UNITE facilities would not be constructed, and increased on-installation MWR opportunities would not be achieved	Yes: No changes to environmental resources in the area would occur	Yes

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**2.4.3 REPLACE WEG TOWER 1802**

Based on the evaluation summarized on **Table 2.4-1**, only Alternative 1 fully achieves the purpose and need of the Proposed Action and satisfies all applicable selection standards. Reconstructing/refurbishing the existing Tower 1802 under Alternative 2 would not meet Selection Standard SS-02 because it would not accomplish mission objectives, nor would it meet Selection Standard SS-01 because it would not provide comparably cost-effective infrastructure modernization and hardening that is possible with Alternative 1.

Although Alternative 2 would avoid impacts to wetlands and floodplains that would be incurred under Alternative 1, it is not considered a practicable alternative and therefore wetland and floodplain mitigation would be required for the Proposed Action. See **Section 4.6** of this EA for discussion of wetland and floodplain impacts and mitigation requirements associated with the Proposed Action. Although the No-Action Alternative does not achieve the purpose and need of the Proposed Action, and does not satisfy all selection standards, it is nevertheless retained for evaluation in this EA for comparative purposes and to satisfy NEPA requirements.

**2.4.4 IMPROVE EXPEDITIONARY/ENCAMPMENT ROADS**

Per **Table 2.4-1**, Alternative 1 fully achieves the purpose and need of the Proposed Action and satisfies all applicable selection standards. The roadway widening included in both alternatives may encroach upon small, isolated wetlands adjacent to Expeditionary Road. Alternative 1 (**Figure 2.3-5**) includes a turnaround facility on Expeditionary Road, east of U.S. Highway 98. This turnaround facility would impact wetlands in the area. Alternative 2 (**Figure 2.3-6**) eliminates the turnaround facility that is included in Alternative 1, which would slightly reduce the total acreage of wetland impacts. However, foregoing the turnaround facility could require vehicles, particularly heavy vehicles, to traverse the entire roadway length in order to change travel direction. This may create operational inefficiency, increase roadway congestion, and divert traffic back onto Florida Avenue. Therefore, installation personnel and contractors would not receive the optimal use of the proposed improvements.

Because Alternative 2 does not achieve Selection Standards SS-02 and SS-03, it is not retained for evaluation in this EA. Although the No-Action Alternative does not achieve the purpose and need of the Proposed Action, and does not satisfy all selection standards, it is nevertheless retained for evaluation in this EA for comparative purposes and to satisfy NEPA requirements. As indicated by Selection Standard SS-05, delineated wetlands are adjacent to the planned expanded right-of-way. Although it may be possible to avoid these wetlands during design and construction, any wetland impacts incurred would need to be fully mitigated. Wetland impacts are assessed in this EA under **Section 4.6** and any mitigation measures identified will need to be implemented prior to implementation of the Proposed Action.

**2.4.5 EXPAND FAMCAMP SITE**

Based on the evaluation summarized on **Table 2.4-1**, both Alternatives 1 and 2 fully achieve the purpose and need of the Proposed Action, satisfy applicable selection standards, and are retained for further evaluation in the EA. As indicated by Selection Standard SS-05, the proposed kayak launch areas under both alternatives would be partially located in a floodplain/wetland area. Floodplain and wetland impacts



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are assessed in this EA under **Section 4.6**, and any mitigation measures identified will need to be implemented prior to implementation of the Proposed Action.

Both Alternatives 1 and 2 would provide emergency access to the FAMCAMP site. However, the notional alignment of the emergency access road for Alternative 1 would require emergency vehicles travelling northbound on U.S. Highway 98 to travel north of the access road and conduct a U-turn on U.S. Highway 98 to access the road (**Figure 2.3-7**). The proposed alignment of the access road under Alternative 2 would provide direct emergency vehicle access from both directions of the highway (**Figure 2.3-8**).

Although the No-Action Alternative does not achieve the purpose and need of the Proposed Action, and does not satisfy all selection standards, it is nevertheless retained for evaluation in this EA for comparative purposes and to satisfy NEPA requirements.

#### **2.4.6 CONSTRUCT WATER MAIN ALONG NORTH SIDE OF FLIGHTLINE**

Based on the evaluation summarized on **Table 2.4-1**, Alternative 1 fully achieves the purpose and need of the Proposed Action and satisfies applicable selection standards. As indicated by Selection Standard SS-05, delineated wetlands are present along the proposed watermain alignment (**Figure 2.3-9**). Wetlands may be able to be avoided using design and other measures; however, any wetland impacts that cannot be avoided would need to be mitigated. Similarly, the proposed alignment intersects a small floodplain area on its eastern side, which would need to be either avoided or mitigated. Floodplain and wetland impacts are assessed in this EA under **Section 4.6**, and any mitigation measures identified will need to be implemented prior to implementation of the Proposed Action. Active ERP Sites FT016 and OT029 adjoin the northwest portion of the proposed project area. However, it is not anticipated that proposed construction would impact ongoing monitoring or remediation activities at these sites. ERP site impacts are addressed in **Section 4.9** of this EA.

Although the No-Action Alternative does not achieve the purpose and need of the Proposed Action, and does not satisfy all selection standards, it is nevertheless retained for evaluation in this EA for comparative purposes and to satisfy NEPA requirements.

#### **2.4.7 CONSTRUCT FISHING/OBSERVATION PIER AT HERITAGE CLUB**

Per **Table 2.4-1**, both Alternative 1 (**Figure 2.3-10**) and Alternative 2 (**Figure 2.3-11**) fully achieve the purpose and need of the Proposed Action and satisfy all applicable selection standards. Therefore, both alternatives are retained for evaluation in this EA. Although the No-Action Alternative does not achieve the purpose and need of the Proposed Action, and does not satisfy all selection standards, it is nevertheless retained for evaluation in this EA for comparative purposes and to satisfy NEPA requirements. As indicated by Selection Standard SS-05, most of the project sites for both alternatives are located in a coastal wetland or floodplain area (**Figures 2.3-10** and **2.3-11**). Due to the nature of the project and the need to construct support pylons and other structural components within these areas, it would not be possible to avoid all wetland and floodplain impacts under either alternative. Alternative 2 would potentially incur a somewhat greater impact due to its larger size and the need for additional support pylons. Impacts would be minimized through design features, but unavoidable impacts would need to be mitigated prior to implementation of the Proposed Action. Floodplain and wetland impacts are assessed in this EA under **Section 4.6**.

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1 Although the No-Action Alternative does not achieve the purpose and need of the Proposed Action, and  
2 does not satisfy all selection standards, it is nevertheless retained for evaluation in this EA for comparative  
3 purposes and to satisfy NEPA requirements.

4 **2.4.8 RENOVATE THE UNITE SITE**

5 Based on the evaluation summarized on **Table 2.4-1**, both Alternatives 1 and 2 fully achieve the purpose  
6 and need of the Proposed Action, satisfy applicable selection standards, and are retained for further  
7 evaluation in the EA. As indicated by Selection Standard SS-05, a portion of the 22.5-acre footprint of  
8 Alternative 1 is located in wetland and floodplain areas. However, based on the notional layout provided in  
9 **Figure 2.3-12**, the wetland and floodplain areas within the Alternative 1 project area can likely be avoided.  
10 Wetland and floodplain impacts are assessed in this EA under **Section 4.6**. Alternative 2 may provide a  
11 more desirable alternative, as the 16-acre project site is free of environmental constraints including  
12 wetlands, floodplains, and ERP sites, and is located adjacent to installation housing (**Figure 2.3-13**).

13 Although the No-Action Alternative does not achieve the purpose and need of the Proposed Action, and  
14 does not satisfy all selection standards, it is nevertheless retained for evaluation in this EA for comparative  
15 purposes and to satisfy NEPA requirements.

## CHAPTER 3 AFFECTED ENVIRONMENT

### 3.1 SCOPE OF THE ANALYSIS

The scope of this EA includes an analysis of effects resulting from the implementation of the Proposed Actions and retained alternatives, including the No-Action Alternative (**Section 2.4**). The EA environmental analysis process identifies and discloses potential effects on the natural and human environments in and surrounding Tyndall AFB. Impacts are identified and disclosed within established Regions of Influence (ROI) which are resource-specific.

#### 3.1.1 RESOURCES ANALYZED

The Air Force determined that there would be temporary and short-term effects due to construction or demolition activities associated with the Proposed Actions and alternatives, as well as long-term effects associated with the construction activities. With few exceptions (e.g., emergency generators in newly constructed facilities), base operations would not change as a result of the Proposed Actions and alternatives, and therefore operational impacts would be negligible. As a result, the following resource categories are evaluated: air quality; noise; safety and occupational health; land use; soils; water resources including wetlands and floodplains; biological resources; cultural resources; and hazardous materials and waste.

#### 3.1.2 RESOURCES ELIMINATED FROM DETAILED CONSIDERATION

The Air Force determined that the Proposed Actions and alternatives would have no effect on several resources. Therefore, these resources were eliminated from detailed analysis in this EA, in accordance with CEQ regulations. The resources that were eliminated from detailed analysis and the rationale for their elimination are summarized below.

##### *3.1.2.1 Airspace*

The Proposed Actions and alternatives do not include any beddown of additional units or increase in the number of aircraft or sorties operating out of Tyndall AFB. Therefore, there would be no effect on the classification or parameters of any Special Use Airspace or any other existing airspace that overlies Tyndall AFB. The Proposed Actions and alternatives would also have no potential to result in airspace restrictions or congestion, or otherwise impact military or non-military use of any airspace. For these reasons, the Proposed Actions and alternatives would have no effect on airspace.

##### *3.1.2.2 Geology*

The Proposed Actions and alternatives would not involve any activity that would adversely affect subsurface geological formations. Construction of the new structures and dredging activities associated with the Proposed Actions and alternatives would be conducted using standard methods that would have no appreciable impact on geology such as site clearing, grading, and compacting. Excavation is expected

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to be conducted only to depths necessary for facility foundations and utility connections. For these reasons, the Proposed Actions and alternatives would have no appreciable effect on geology.

**3.1.2.3 Socioeconomics**

The Proposed Actions and alternatives would not result in a change to the number of personnel employed or stationed at Tyndall AFB. Therefore, no significant short- or long-term impacts on demographics or social services and conditions would be expected, including demand for housing, education, law enforcement, fire protection, emergency medical services, and medical services. No excavated materials would be transported off-base, and any increases in surface traffic on local area roadways would be short-term and generally limited to construction personnel commuting. For these reasons, the Proposed Actions and alternatives would have no appreciable effect on socioeconomics.

**3.1.2.4 Environmental Justice and the Protection of Children**

The Proposed Actions and Alternatives would not cause disproportionate environmental, economic, or social impacts on minority or low-income populations, as described in EO 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*. All Proposed Action and alternatives activities would occur on Tyndall AFB, and most of the environmental effects would be limited to the immediate vicinity of individual projects. As analyzed and documented in this EA, no significant long-term change in noise or air quality is expected to result from the Proposed Actions and alternatives. Children's health and safety risks associated with implementation of Federal Actions would be dependent upon changes in the location, nature, tempo, or schedule of activities. Impacts would focus on compatibility of child-oriented land uses and facilities with a new operational condition, and related changes in risk exposure. However, no change in operational tempo or shift in operational schedule is planned as part of the Proposed Actions and alternatives. Activity on base would not differ from that currently supported. Therefore, the Proposed Actions and alternatives would not cause disproportionate risks to children that result from environmental health risks or safety risks, as described in EO 13045, *Protection of Children from Environmental Health Risks and Safety Risks*. For these reasons, the Proposed Actions and alternatives would have no appreciable effect on environmental justice and the protection of children.

**3.1.2.5 Utilities**

The Proposed Actions and alternatives would result in a negligible change to utility demands. Any marginal incremental increase in utility demand would be well within the existing local capacity and supply and would not require substantial changes to existing utility infrastructure. Construction of the Flightline water main is intended to provide redundancy and water supply improvements to the existing on-Installation potable water system. For these reasons, the Proposed Actions and alternatives would have no appreciable effect on utilities.

**3.1.2.6 Transportation**

The Proposed Actions and Alternatives do not include modifications to or rerouting of existing roadways, or road closures. Publicly accessible roadway and transportation systems would not be affected. No

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additional personnel would be assigned to the Installation as a result of the Proposed Actions and Alternatives; therefore, no long-term operational increase in local or regional surface traffic volume would occur. The Proposed Actions and alternatives do not include modification of existing, or development of new public transit systems. For these reasons, the Proposed Actions and alternatives would have no appreciable effect on transportation.

**3.1.2.7 Visual Resources**

The Air Force anticipates no negative effects on or conflicts with visual resources as a result of the Proposed Actions and alternatives at Tyndall AFB. Planned activities would take place on the installation and be consistent with the existing visual landscapes. They would primarily occur in the developed portion of the installation, would be built of materials similar to other structures on the installation, and would be landscaped consistent with the existing habitat. For these reasons, implementation of the Proposed Actions and alternatives would not have an adverse impact on the visual environment at Tyndall AFB or the lands surrounding the installation.

**3.2 AIR QUALITY AND CLIMATE CHANGE**

For this EA, the ROI for air quality/climate change is the Mobile (Alabama)-Pensacola-Panama City (Florida)-Southern Mississippi Interstate Air Quality Control Region (U.S. Air Force, 2019b). Existing air quality conditions are described in the following sections.

**3.2.1 NATIONAL AMBIENT AIR QUALITY STANDARDS**

Under the CAA and its amendments, the U.S. Environmental Protection Agency (USEPA) identifies air pollutants that cause or contribute to the endangerment of human health and or environmental welfare and establishes air quality “criteria” that guide the establishment of air quality standards to regulate these pollutants (42 U.S.C. Sections 7408 - 7409). To date, the USEPA has established such criteria for six air pollutants: carbon monoxide (CO), lead (Pb), nitrogen dioxide (NO<sub>2</sub>), ozone (O<sub>3</sub>), particulate matter less than 2.5 micrometers in diameter (PM<sub>2.5</sub>), particulate matter less than ten micrometers in diameter (PM<sub>10</sub>), and sulfur dioxide (SO<sub>2</sub>). As a result, the EPA created National Ambient Air Quality Standards (NAAQS) meant to safeguard public health (i.e., primary NAAQS) and environmental welfare (i.e., secondary NAAQS). Current NAAQS are presented in **Table 3.2-1**.

USEPA and state/local air quality control agencies monitor and evaluate outdoor air quality for compliance with the NAAQS. Areas where monitored outdoor air concentrations are within an applicable NAAQS are considered in attainment of that NAAQS. If sufficient ambient air monitoring data are not available to make a determination, the area is instead deemed attainment/unclassifiable. Areas where monitored outdoor air concentrations exceed the NAAQS are designated by the USEPA as nonattainment areas. Nonattainment designations for some pollutants (e.g., O<sub>3</sub>) can be further classified based on the severity of the NAAQS exceedances. Lastly, areas that have historically exceeded the NAAQS, but have since instituted controls and programs that have successfully remedied these exceedances are known as maintenance areas. Currently, Bay County is considered attainment of all NAAQS (U.S. Air Force, 2019b).

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**TABLE 3.2-1 NATIONAL AMBIENT AIR QUALITY STANDARDS**

Pollutant	Averaging Time	Level	Form
CO	8-hour	9 ppm	Not to be exceeded more than once per year
	1-hour	35 ppm	
Pb	Rolling 3-month average	0.15 µg/m <sup>3</sup>	Not to be exceeded
NO <sub>2</sub>	1-hour	100 ppb	98th percentile of 1-hour daily maximum concentrations, 3-year average
	Annual	53 ppb	Annual mean
O <sub>3</sub>	8-hour	0.070 ppm	Annual fourth-highest daily maximum 8-hour concentration, 3-year average
PM	<sup>PM</sup> <sub>2.5</sub> Annual (primary)	12 µg/m <sup>3</sup>	Annual mean, 3-year average
	<sup>PM</sup> <sub>2.5</sub> Annual (secondary)	15 µg/m <sup>3</sup>	Annual mean, 3-year average
	<sup>PM</sup> <sub>2.5</sub> 24-hour	35 µg/m <sup>3</sup>	98th percentile, 3-year average
	<sup>PM</sup> <sub>10</sub> 24-hour	150 µg/m <sup>3</sup>	Not to be exceeded more than once per year, 3-year average
SO <sub>2</sub>	1-hour	75 ppb	99th percentile of 1-hour daily maximum concentrations, 3-year average
	3-hour	0.5 ppm	Not to be exceeded more than once per year

Notes: ppb = parts per billion; ppm = parts per million; µg/m<sup>3</sup> = micrograms per cubic meter of air.

Source: USEPA, 2021a

#### **3.2.1.1 Clean Air Act Conformity**

State agencies having nonattainment or maintenance areas within their jurisdiction are charged with developing air quality control plans, called State Implementation Plans (SIP), that include strategies and measures to bring the area back into compliance with the NAAQS by a USEPA-prescribed deadline. SIPs are also devised to maintain compliance with a NAAQS once attainment is achieved.

The General Conformity Rule of the Federal CAA mandates that the Federal government does not engage, support or provide financial assistance for licensing or permitting, or approve any activity not conforming to an approved SIP. This rule applies to all Federal actions except highway and transit actions which are instead regulated by the Transportation Conformity Rule. The rule considers air pollutant emissions associated with actions that are Federally funded, licensed, permitted, or approved, and ensures that such emissions do not cause or contribute to air quality degradation, thus preventing the achievement of state and Federal air quality goals.

The Air Force's EIAP for air quality promulgated at 32 CFR 989.30 requires that NEPA documents such as this EA address General Conformity applicability. Because the Mobile (Alabama)-Pensacola-Panama City (Florida)-Southern Mississippi Interstate Air Quality Control Region, which contains Tyndall AFB, meets all NAAQS, the region is considered in attainment for all pollutants (U.S. Air Force, 2019b). Therefore, the State of Florida is not required to develop an emissions inventory or attainment demonstration SIP for the region, and the General Conformity Rule does not apply to the Proposed Actions or alternatives.

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Nevertheless, the impact analysis performed for this EA (**Section 4.1**) identifies and discloses reasonably foreseeable air quality impacts associated with the Proposed Action and alternatives, in keeping with Air Force EIAP guidelines.

**3.2.1.2 Permitted Emissions Sources at Tyndall AFB**

The USEPA oversees programs for stationary source operating permits (Title V) and for new or modified major stationary source construction and operation. Mobile sources are regulated under the CAA Title II through enforcing emissions standards on manufactured sources.

Tyndall AFB has a Federally Enforceable State Operation Permit, under Florida Statutes (F.S.) Chapter 403. Installation sources regulated by the permit include paint booths, fuel fill stands, jet engine testing (destroyed by Hurricane Michael in 2018, but currently permitted), fuel tanks, external combustion equipment (including boilers), and stationary emergency reciprocating internal combustion engines (emergency generators). The permit requires Tyndall AFB's permitted sources to emit less than 90 tons per year each for CO, SO<sub>2</sub>, and Oxides of Nitrogen (NO<sub>x</sub>); 80 tons per year of Volatile Organic Compounds (VOC); and 8 and 21 tons per year for individual and total Hazardous Air Pollutants respectively to avoid being a major source with respect to Title V (FDEP, 2020).

**3.2.2 GREENHOUSE GAS EMISSIONS**

Greenhouse gases (GHGs) are compounds that contribute to the greenhouse effect. The greenhouse effect is a natural phenomenon where gases trap heat within the lowest portion of the earth's atmosphere, causing heating at the surface of the earth. The primary long-lived GHGs directly emitted by human activities are carbon dioxide (CO<sub>2</sub>), methane (CH<sub>4</sub>), nitrous oxide (N<sub>2</sub>O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulfur hexafluoride (SF<sub>6</sub>).

The heating effect from these gases is considered the probable cause of the global warming observed over the last 50 years (USEPA, 2009a). Global warming and climate change can affect many aspects of the environment. The USEPA has recognized potential risks to public health or welfare and signed an endangerment finding regarding GHGs under Section 202(a) of the CAA (USEPA, 2009b), which finds that the current and projected concentrations of the six key well-mixed GHGs – CO<sub>2</sub>, CH<sub>4</sub>, N<sub>2</sub>O, HFCs, PFCs, and SF<sub>6</sub> – in the atmosphere threaten the public health and welfare of current and future generations.

CO<sub>2</sub>, CH<sub>4</sub>, and N<sub>2</sub>O are the primary GHG pollutants that result from mobile and stationary fuel combustion (e.g., gasoline, diesel, natural gas), and are the basis for calculating GHG emissions resulting from the Proposed Actions. GHG emissions are generally expressed as "carbon dioxide equivalent" (CO<sub>2</sub>e), based on each pollutant's global warming potential (GWP). GWP is the heat absorbed by any greenhouse gas in the atmosphere, as a multiple of the heat that would be absorbed by the same mass of carbon dioxide. The total emissions (metric tons) of CH<sub>4</sub> and N<sub>2</sub>O are multiplied by their respective GWP, with the results added to the total emissions of CO<sub>2</sub> (metric tons), resulting in total emissions of CO<sub>2</sub>e (metric tons).

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### 3.3 NOISE

For this EA, the overall ROI for noise is Tyndall AFB and surrounding communities, although due to the primarily construction-related nature of the Proposed Action and alternatives, particular attention is given to noise conditions in the vicinity of the Proposed Action areas. Existing noise conditions and factors pertinent to the ROI are described in the following sections.

#### 3.3.1 NOISE DESCRIPTORS AND METRICS

Noise is defined as any sound that is undesirable because it interferes with communication, is intense enough to damage hearing, or is otherwise annoying. Noise can be intermittent or continuous, steady or impulsive, and can involve any number of sources and frequencies. Noise can be readily identifiable or generally nondescript. Human response to increased sound levels varies according to the source type, characteristics of the sound source, distance between the source and receptor, receptor sensitivity, and time of day. Affected receptors are specific (e.g., residential areas, schools, churches, or hospitals) or broad (e.g., nature preserves or designated districts) areas in which occasional or persistent sensitivity to noise above ambient levels exists. These are generally referred to as noise sensitive receptors.

Human response to noise varies, as do the metrics used to quantify it. Generally, sound can be calculated with instruments that record instantaneous sound levels in decibels (dB). An A-weighted decibel (dBA) is the unit used to characterize sound levels that can be sensed by the human ear. "A- weighted" denotes the adjustment of the frequency range to what the average human ear can sense when experiencing an audible event. The threshold of audibility is generally within the range of 10 to 25 dBA for normal hearing. The threshold of pain occurs at the upper boundary of audibility, which is normally in the region of 135 dBA (USEPA, 1981a). **Table 3.3-1** compares common sounds and shows how they rank in terms of auditory impacts. Noise levels can become annoying at 80 dBA and very annoying at 90 dBA. To the human ear, each 10-dBA increase seems twice as loud (USEPA, 1981b).

**TABLE 3.3-1 SOUND LEVELS AND HUMAN RESPONSE**

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

Source: USEPA, 1981a.

Sound levels vary with time. For example, the sound increases as an aircraft approaches, then falls and blends into the ambient, or background, as the aircraft recedes into the distance. Because of this variation, it is often convenient to describe a particular noise "event" by its highest or maximum sound level ( $L_{max}$ ). It should be noted that  $L_{max}$  describes only one dimension of an event; it provides no information on the



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1 cumulative noise exposure generated by a sound source. In fact, two events with identical  $L_{\max}$  levels may  
2 produce very different total noise exposures. One may be of very short duration, while the other may last  
3 much longer.

4 The average day/night sound level (DNL) is an alternative metric used to measure of the total community  
5 noise environment. DNL is the average A-weighted sound level over a 24-hour period, with a 10-dBA  
6 adjustment added to the nighttime levels (between 2200 and 0700 hours). This adjustment is an effort to  
7 account for increased human sensitivity to nighttime noise events. Land use compatibility and  
8 incompatibility are determined by comparing the predicted DNL at a site with the recommended land uses.  
9 Noise levels occurring at night generally produce a greater annoyance than those of the same levels  
10 occurring during the day. It is generally agreed that people perceive intrusive noise at night as being 10  
11 dBA louder than those occurring during the day, at least in terms of its potential for causing community  
12 annoyance.

### 13 **3.3.2 AIR INSTALLATION COMPATIBLE USE ZONE PROGRAM**

14 The ambient noise environment at Tyndall AFB is predominantly affected by U.S. DoD aircraft operations,  
15 including Air Force, Army, Navy, and Marine Corps aircraft and military vehicles. AFI 32-1015, *Integrated*  
16 *Installation Planning*, requires plotting aircraft DNL contours of 65, 70, 75, 80, and 85 dB for use in  
17 analyzing land use compatibility for both the current mission and the projected mission in the 5- to 10-year  
18 range.

19 A noise analysis was completed at Tyndall AFB in 2016 in support of the Air Installations Compatible Use  
20 Zone (AICUZ Study) (U.S. Air Force, 2016). These noise contours included noise data from all aircraft  
21 operations associated with Tyndall AFB, projected the 2016 noise condition and represents the existing  
22 condition at Tyndall AFB. According to the 2016 AICUZ, approximately 166 acres of off-airport land is  
23 contained within the DNL 65 dB or higher noise contours. According to the AICUZ, a population of  
24 approximately 212 persons is contained within these contours (U.S. Air Force, 2016). A planning  
25 amendment to the 2016 AICUZ Study was developed in 2020 to determine new noise contours for the  
26 future F-35A Wing beddown at Tyndall AFB. Populated areas near Tyndall AFB are expected to experience  
27 little to no change in noise contours (U.S. Air Force, 2020c).

28 Other than residential land uses on the mainland north and west of Tyndall AFB, the AICUZ did not identify  
29 any additional Noise Sensitive Sites (NSS) within the noise contour, which would include religious  
30 institutions, educational facilities and health care facilities. Most NSS on or near Tyndall AFB have been  
31 damaged by Hurricane Michael in 2018 and are in the process of or planned for demolition. However, a  
32 review of on base facilities indicates that on base NSS that are currently in use or will be rebuilt, include  
33 Visiting Officers Quarters (VOQs) and Visiting Airmen's Quarters (VAQs), a chapel, transient cabins, base  
34 housing, and Tyndall Elementary School.

### 35 **3.4 SAFETY AND OCCUPATIONAL HEALTH**

36 A safe environment is one in which there is no, or an optimally reduced, potential for death, serious bodily  
37 injury or illness, or property damage. The elements of an accident-prone environment include the presence  
38 of a hazard and an exposed population at risk of encountering the hazard. Numerous approaches are

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available to manage the operational environment to improve safety, including reducing the magnitude of a hazard or reducing the probability of encountering the hazard.

The safety-related ROI for this EA corresponds to the footprints of the individual Proposed Actions and alternatives where construction, demolition and operational activities would occur. The primary safety categories include Construction and Demolition Safety and Mission Safety, described below.

#### **3.4.1 CONSTRUCTION AND DEMOLITION SAFETY**

All contractors performing construction and demolition activities on Air Force installations are responsible for following Federal Occupational Safety and Health Administration (OSHA) regulations, as well as Air Force Occupational Safety and Health (AFOSH) standards. AFOSH standards follow OSHA regulations and are required to conduct work activities in a manner that does not increase risk to workers or the public. The regulations address the health and safety of people at work and cover potential exposure to a wide range of chemical, physical, and biological hazards, and ergonomic stressors. Examples of activities that can be hazardous include transportation, maintenance and repair activities, and the creation of extremely noisy environments. The regulations are designed to control these hazards by eliminating exposure to the hazards via administrative or engineering controls, substitution, use of personal protective equipment (PPE), and availability of Safety Data Sheets.

For activities during which there is the potential for construction workers to encounter contamination from ERP sites, it is recommended that a health and safety plan be prepared in accordance with OSHA requirements prior to commencement of construction activities. Workers performing soil-removal activities within ERP sites are required to have OSHA 40-hour Hazardous Waste, Operations, and Emergency Response (HAZWOPER) training. In addition to this training, supervisors are required to have an OSHA Site Supervisor certification. Should contamination be encountered, the handling, storage, transportation, and disposal activities would be conducted in accordance with applicable Federal, state, and local regulations; AFIs; and Tyndall AFB programs and procedures. HAZWOPER regulations that protect workers and the public at or near a hazardous waste cleanup site are discussed in 29 CFR 1910.120 and 29 CFR 1926.

#### **3.4.2 MISSION SAFETY**

Mission safety on Air Force installations is maintained through adherence to DoD and Air Force safety policies and plans. Tyndall AFB is a secure military installation with access limited to military personnel, civilian employees, military dependents, and approved visitors. Operations and maintenance activities conducted on the installation are performed in accordance with applicable Air Force safety regulations, published Air Force Technical Orders, and standards prescribed by AFOSH requirements. Adherence to industrial-type safety procedures and directives ensures safe working conditions.

Safety constraints such as Explosive Safety Quantity Distance (ESQD) arcs partially determine the suitability of areas for various land uses and, therefore, minimize safety hazards associated with mission activities. ESQD arcs are buffers around facilities that contain high-explosive munitions or flammable elements. The size and shape of an ESQD arc depends on the facility and the net explosive weight (NEW) of the munitions being housed. Separations set by ESQD arcs establish the minimum distances necessary

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to prevent the exposure of Air Force personnel and the public to potential safety hazards. Tyndall AFB aggressively manages its development program to ensure that it meets explosive safety requirements (U.S. Air Force, 2021a). There are 19 explosive safety zones at Tyndall AFB. Development not related to munitions is restricted within the ESQD arcs surrounding the MSA, airfields, the Silver Flag training site, explosive testing sites, and the EOD range. The remainder of mission-essential land adjacent to the apron is unencumbered by ESQD arcs.

Additional health and safety risks to construction personnel and installation personnel exist in terms of encountering unexploded ordnances (UXO) within UXO probability areas (known munitions test/training areas). The Air Force protects personnel from the risks associated with UXO by controlling access to areas of concern. They manage programs to remove UXO and maintain records of expenditures, range clearance operations, EOD incidents, and areas of known or suspected UXO.

### **3.5 LAND USE**

For land use, the overall ROI for this EA is Tyndall AFB, although due to the primarily construction-related nature of the Proposed Action and alternatives, particular attention is given to land use for areas within or immediately adjacent to the construction footprints for the Proposed Actions and alternatives.

There are 13 distinct land use categories on Tyndall AFB. The land use categories include Administrative, Aircraft Operations and Maintenance, Airfield, Community (Commercial), Community (Service), Housing (Accompanied), Housing (Unaccompanied), Industrial, Medical/Dental, Open Space, Outdoor Recreation, Training, and Water. Existing land use complements the established planning districts with minimal adjacent incompatible land uses; however, there are notable operational inefficiencies resulting from similar and/or complementary functions being geographically separated, land use constraints and new and changing missions.

There are typical facilities that complement and are compatible with land use categories. Therefore, to supplement land use planning, Tyndall AFB further defines typical facilities/features and functions of land to encourage and plan for compatible development. Compatible development is partially achieved through establishment of planning districts. The four planning districts identified for Tyndall AFB are, Tyndall West, Support Area, Flightline Area, and Tyndall East, described below (U.S. Air Force, 2015)

**Tyndall West District.** The Tyndall West District includes the advanced wastewater treatment plant, the closed Pelican Point Golf Course, privatized accompanied housing, and undeveloped land. U.S. Highway 98 divides 120 acres of accompanied housing to the north from the majority of the district between the highway and Saint Andrew Bay. The primary land use of the district is accompanied housing.

**Support Area District.** The Support District is the community and mission support center of Tyndall AFB. The district includes the majority of installation administration space, the Base Exchange, commissary, dormitories, fitness center, dining facilities, lodging and medical facilities.

**Flightline Area District.** The Flightline District includes the installation's runways, accompanying taxiways, aprons, Flightline facilities that support the Flightline, MSA, fuel supply areas, and drone runway. The primary facilities within this district include aircraft hangars, aircraft maintenance units, base

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operations, the Air Traffic Control tower, and administrative facilities directly related to flight operations or aircraft maintenance. This district is predominantly industrial and mission oriented. Aircraft operations and maintenance, administrative, and industrial land uses directly affect Tyndall AFB's mission; therefore, this district includes the most important real estate on Tyndall AFB (Air Force, 2015a). The Flightline District is the most important for mission effectiveness and the most visible of the four planning districts.

**Tyndall East District.** The Tyndall East District is east of the Flightline District and is primarily undeveloped. The district houses some training functions, including the 53 WEG subscale launch facilities, the AFCEC Sky 10 blast range, and the RED HORSE Silver Flag Site. U.S. Highway 98 bisects the district, creating two distinct parcels.

In 2018, Hurricane Michael directly impacted land use and typical land use facilities by destroying or damaging facilities, thus altering the built environment from existing conditions prior to the storm. Every facility on the installation sustained at least some damage with more than 50 percent of the facilities being significantly damaged. During the ongoing reconstruction efforts, support services, tenants and personnel are operating under temporary conditions conducting mission requirements in impermeant facilities with inadequate infrastructure and often co-located with dissimilar support organizations and geographically separated from complementary and compatible facilities and support services. In response to the damage sustained at Tyndall AFB, the Air Force commissioned development of a new Master Plan in support of the re-build of Tyndall AFB. To provide a complete analysis of existing land use, this analysis provides pre- and post-storm conditions of land use as baseline conditions were significantly altered as a result of Hurricane Michael.

Land use constraints are elements of the natural or built environment that create limitations on the operation of the base's buildings, roadways, utility systems, airfields, training ranges and other infrastructure. Development constraints are categorized as operational, natural and environmental or built. These land use constraints are located throughout Tyndall AFB, spanning all four planning districts and are a consideration when planning for future development.

### **3.6 SOILS**

The ROI established to assess potential impacts to soils on Tyndall AFB for this EA corresponds to the footprints of the individual Proposed Actions and alternatives where construction, demolition and operational activities would occur. These footprints are also known as Limits of Disturbance (LODs) and are areas within which the Proposed Actions may directly impact soils.

Soils at Tyndall AFB are formed from sandy, marine sediments and are predominately sandy, acidic, poorly drained, have low shrink-swell potential, and are relatively close to the underlying water table. There are 12 different soil types found within the areas of the Proposed Action and alternatives. **Table 3.6-1** identifies soil types and acreages of soils included within the LOD of each of the Proposed Actions and alternatives. Impacted soils within the LOD based on planned construction activities are further discussed in **Section 4.5. Appendix H** contains descriptions and characteristics of the soil types present within the LOD.

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**TABLE 3.6-1 SOILS**

<b>Project</b>	<b>Map Unit</b>	<b>Acres in LOD</b>
Construct New EOD Gravel Road (Figure 3.6-1)	31 - Osier fine sand	2.57
	44 - Beaches	0.08
	<i>Subtotal</i>	2.65
Dredge the WEG Small Boathouse Area - Alternative 1 (Figure 3.6-2)	48 - Fripp-Corolla complex, 2 to 30 percent slopes	0.97
	100 - Waters of the Gulf of Mexico	0.17
	<i>Subtotal</i>	1.14
Dredge the WEG Small Boathouse Area - Alternative 2 (Figure 3.6-3)	48 - Fripp-Corolla complex, 2 to 30 percent slopes	1.75
	100 - Waters of the Gulf of Mexico	0.17
	<i>Subtotal</i>	1.92
Replace WEG Tower 1802 (Figure 3.6-4)	13 - Leon sand, 0 to 2 percent slopes	2.52
	22 - Pamlico-Dorovan complex	0.87
	27 - Mandarin sand, 0 to 2 percent slopes	0.29
	<i>Subtotal</i>	3.68
Improve Expeditionary/ Encampment Roads (Figure 3.6-5)	13 - Leon sand, 0 to 2 percent slopes	5.68
	22 - Pamlico-Dorovan complex	1.62
	27 - Mandarin sand, 0 to 2 percent slopes	3.28
	29 - Rutlege sand, 0 to 2 percent slopes	0.86
	30 - Pottsburg-Pottsburg, wet, sand, 0 to 2 percent slopes	1.58
	40 - Arents, 0 to 5 percent slopes	0.01
	42 - Resota fine sand, 0 to 5 percent slopes	2.74
	47 - Pits	1.17
	<i>Subtotal</i>	16.94
Expand FAMCAMP Site - Alternative 1 (Figure 3.6-6)	40 - Arents, 0 to 5 percent slopes	0.65
	45 - Kureb sand, 0 to 5 percent slopes	10.39
	<i>Subtotal</i>	11.04
Expand FAMCAMP Site - Alternative 2 (Figure 3.6-7)	40 - Arents, 0 to 5 percent slopes	0.65
	45 - Kureb sand, 0 to 5 percent slopes	10.40
	<i>Subtotal</i>	11.05
Construct Water Main on North Side of Flightline (Figure 3.6-8)	27 - Mandarin sand, 0 to 2 percent slopes	1.22
	29 - Rutlege sand, 0 to 2 percent slopes	1.93
	31 - Osier fine sand	0.29
	40 - Arents, 0 to 5 percent slopes	151.3
	42 - Resota fine sand, 0 to 5 percent slopes	0.12
	<i>Subtotal</i>	154.86
Construct Fishing/Observation Pier Heritage Club – Alternative 1 (Figure 3.6-9)	31 - Osier fine sand	0.37
	<i>Subtotal</i>	0.37

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Project	Map Unit	Acres in LOD
Construct Fishing/Observation Pier Heritage Club – Alternative 2 (Figure 3.6-10)	31 - Osier fine sand	0.37
	<i>Subtotal</i>	<i>0.37</i>
Renovate Unite Site - Alternative 1 (Figure 3.6-11)	13 - Leon sand, 0 to 2 percent slopes	0.03
	29 - Rutlege sand, 0 to 2 percent slopes	6.79
	40 - Arents, 0 to 5 percent slopes	1.08
	42 - Resota fine sand, 0 to 5 percent slopes	14.65
	<i>Subtotal</i>	<i>22.55</i>
Renovate Unite Site - Alternative 2 (Figure 3.6-12)	13 - Leon sand, 0 to 2 percent slopes	0.23
	27 - Mandarin sand, 0 to 2 percent slopes	10.21
	42 - Resota fine sand, 0 to 5 percent slopes	5.6
	<i>Subtotal</i>	<i>16.04</i>
<b>Total<sup>1</sup></b>		<b>214.02</b>

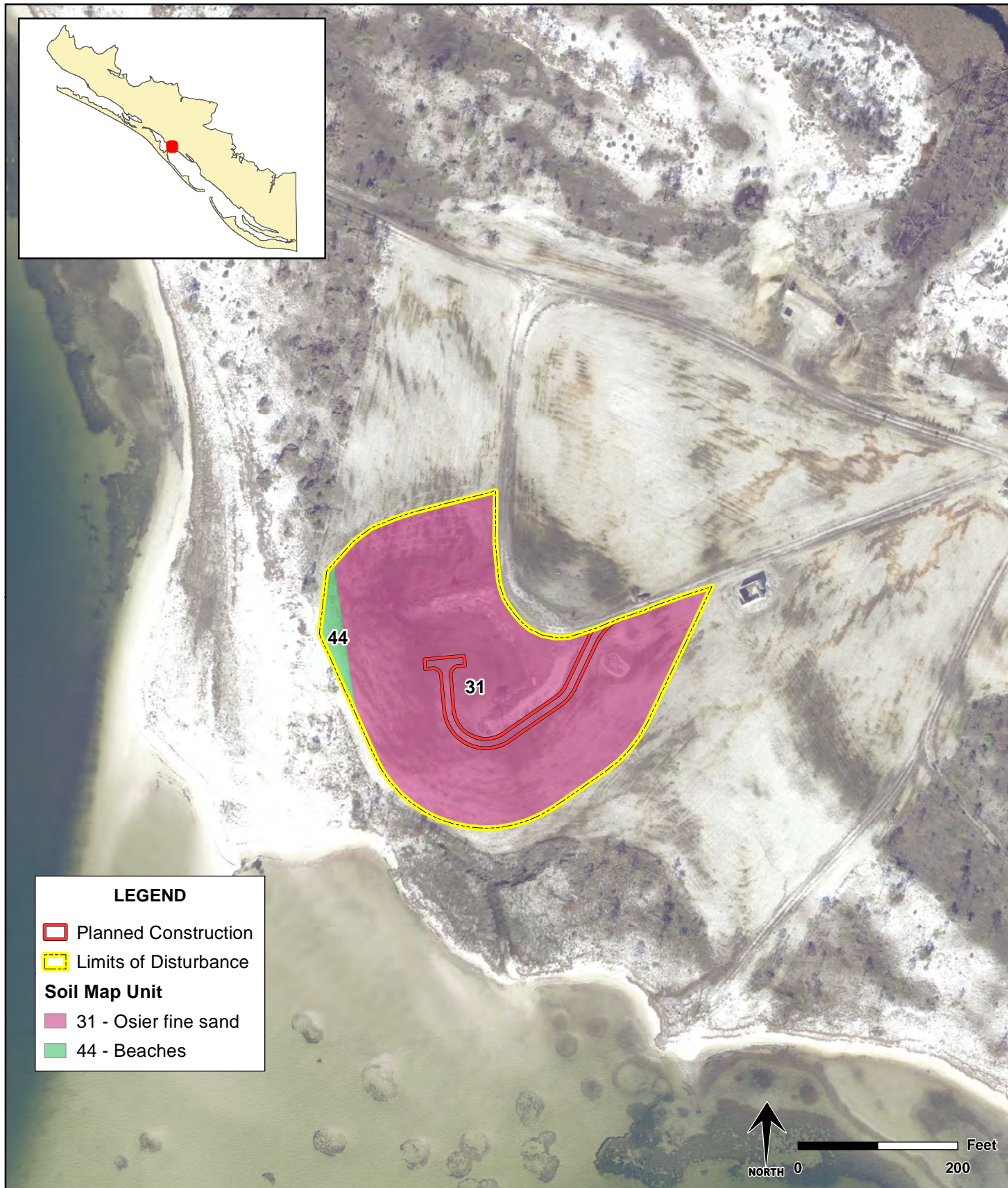
<sup>1</sup> Values may reflect rounding.

<sup>2</sup> <sup>1</sup> For projects with more than one alternative, the alternative with the greatest acreage of soil disturbance is included in the total.

<sup>3</sup> Sources: USDA, Soil Conservation Service, 1984. Soil Survey of Bay County, Florida. USDA, Natural Resources Conservation Service, 2020. Web Soil Survey. Internet URL:

<sup>4</sup> <https://websoilsurvey.sc.egov.usda.gov/App/WebSoilSurvey.aspx>.





**Tyndall Air Force Base, Panama City, FL**  
**ENVIRONMENTAL ASSESSMENT  
FOR 8 CONSTRUCTION SITES**

**SOILS:  
CONSTRUCT NEW EOD  
GRAVEL ROAD**

**FIGURE  
3.6-1**





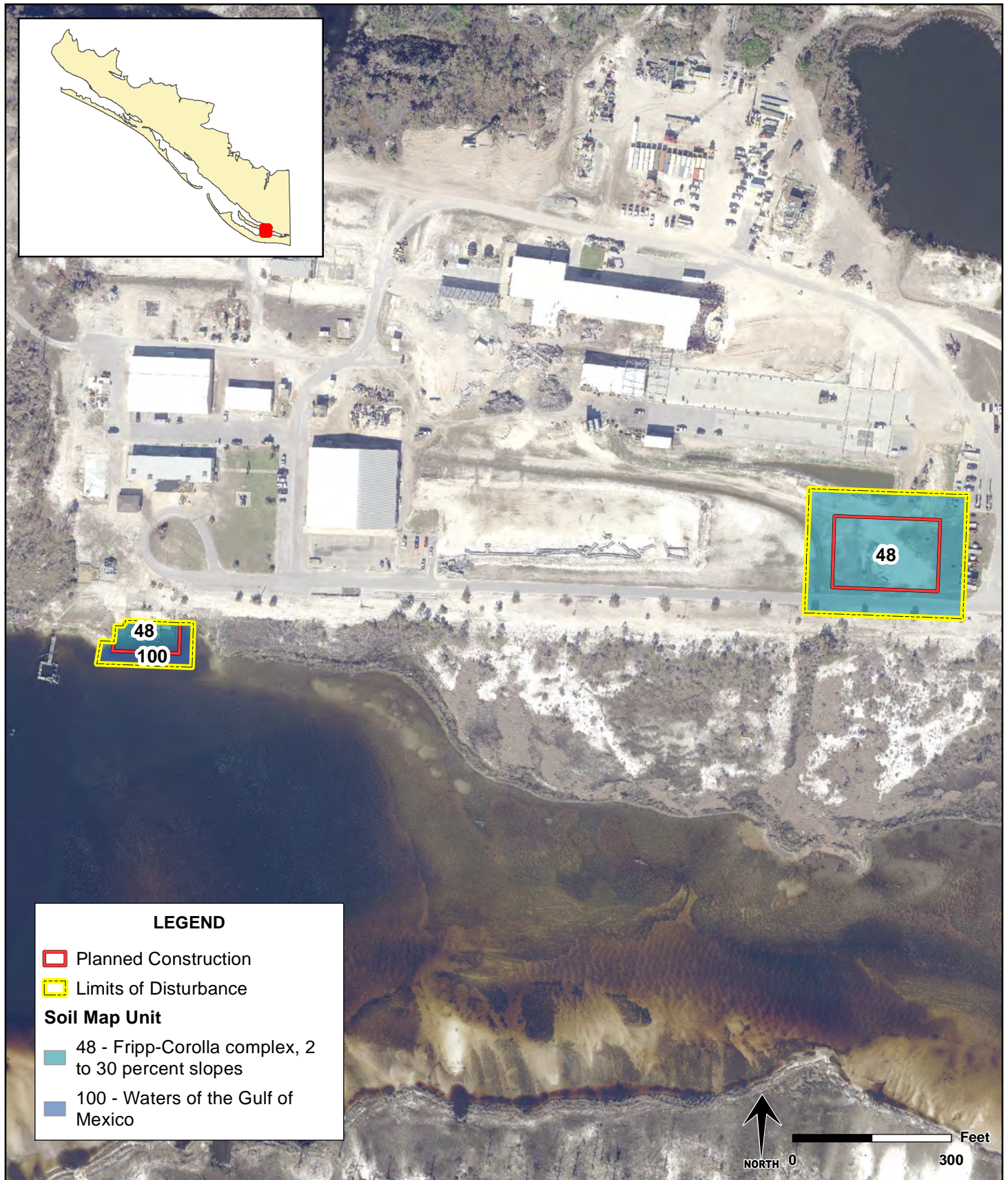
**Tyndall Air Force Base, Panama City, FL**

**ENVIRONMENTAL ASSESSMENT  
FOR 8 CONSTRUCTION SITES**

**SOILS: DREDGE THE WEG  
SMALL BOATHOUSE AREA  
(ALTERNATIVE 1)**

**FIGURE  
3.6-2**



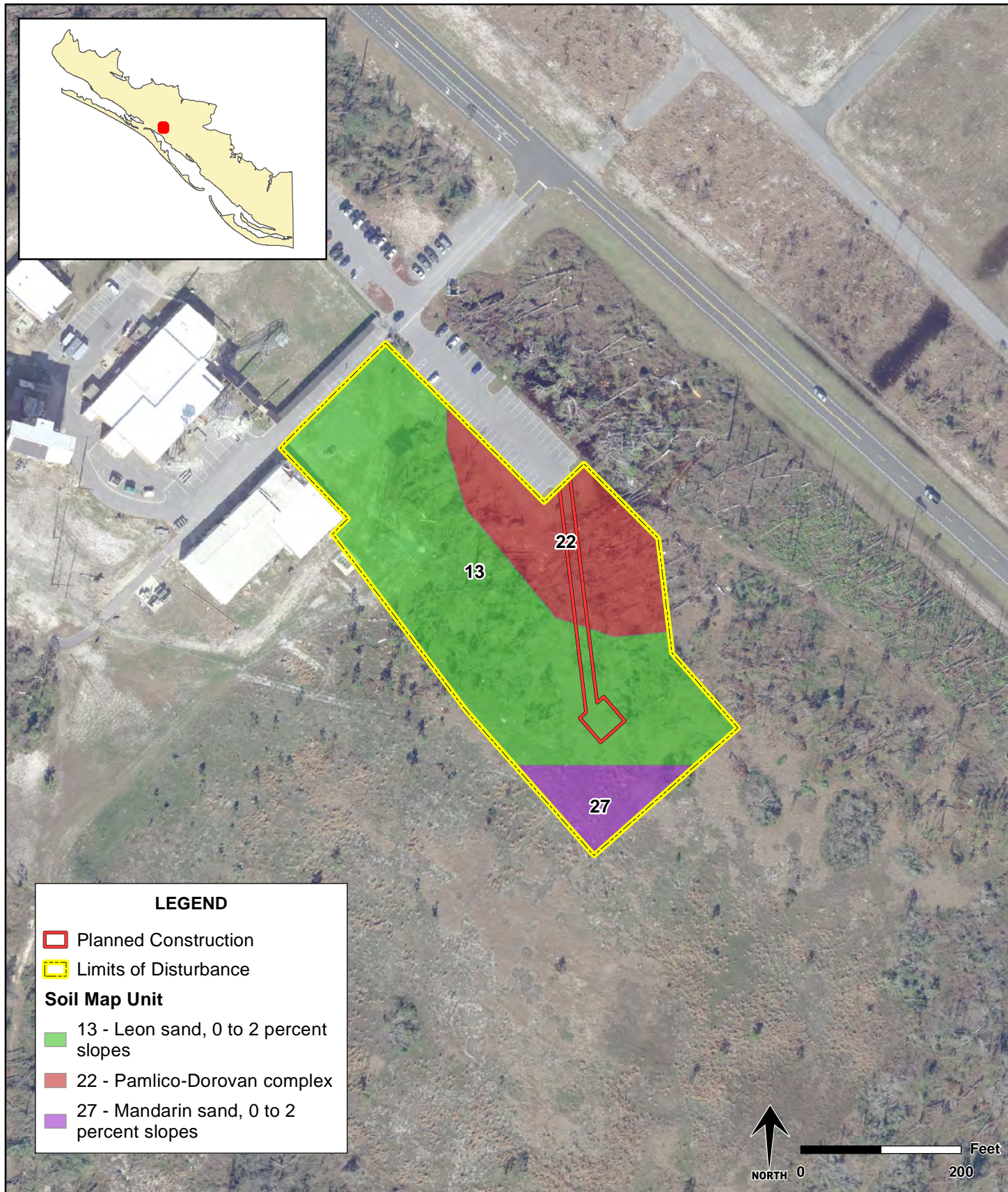


**Tyndall Air Force Base, Panama City, FL**  
**ENVIRONMENTAL ASSESSMENT  
FOR 8 CONSTRUCTION SITES**



**SOILS:DREDGE THE WEG  
SMALL BOATHOUSE AREA  
(ALTERNATIVE 2)**

**FIGURE  
3.6-3**








#### LEGEND

-  Planned Construction
-  Limits of Disturbance

#### Soil Map Unit

-  13 - Leon sand, 0 to 2 percent slopes
-  22 - Pamlico-Dorovan complex
-  27 - Mandarin sand, 0 to 2 percent slopes

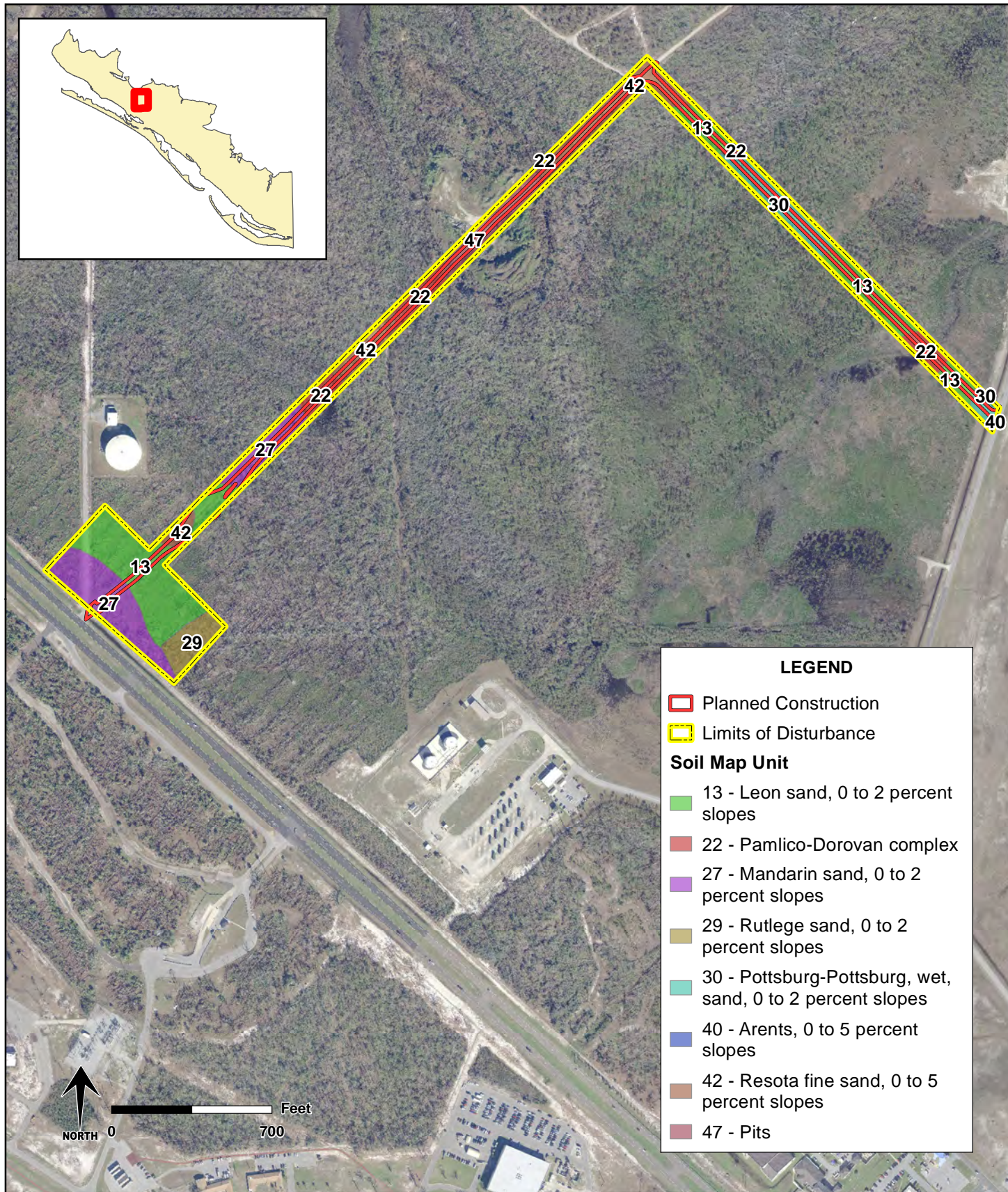


**Tyndall Air Force Base, Panama City, FL**  
**ENVIRONMENTAL ASSESSMENT  
FOR 8 CONSTRUCTION SITES**

**SOILS:**  
**REPLACE WEG TOWER 1802**

**FIGURE  
3.6-4**





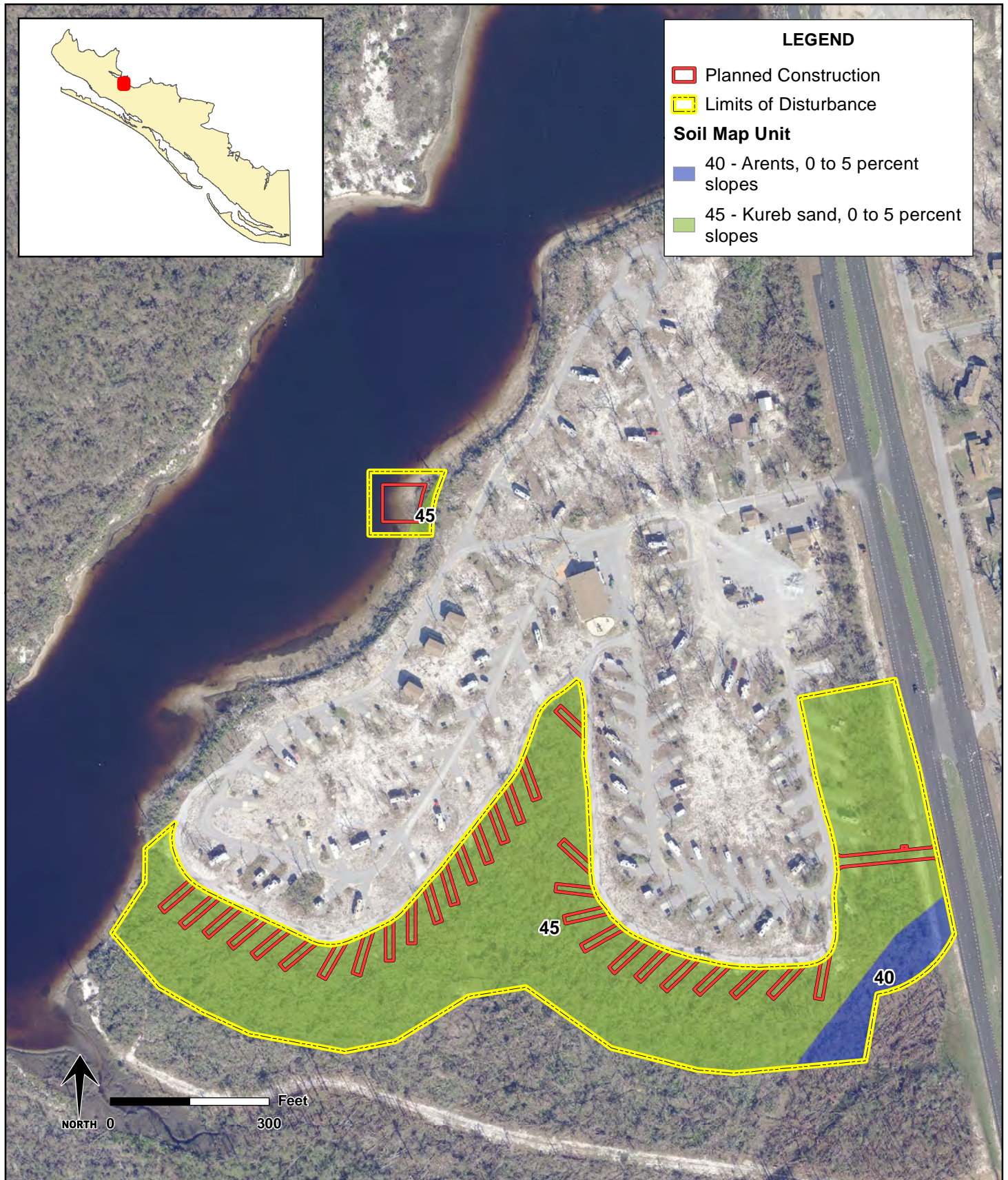
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**SOILS:  
IMPROVE EXPEDITIONARY/  
ENCAMPMENT ROADS**

**FIGURE  
3.6-5**





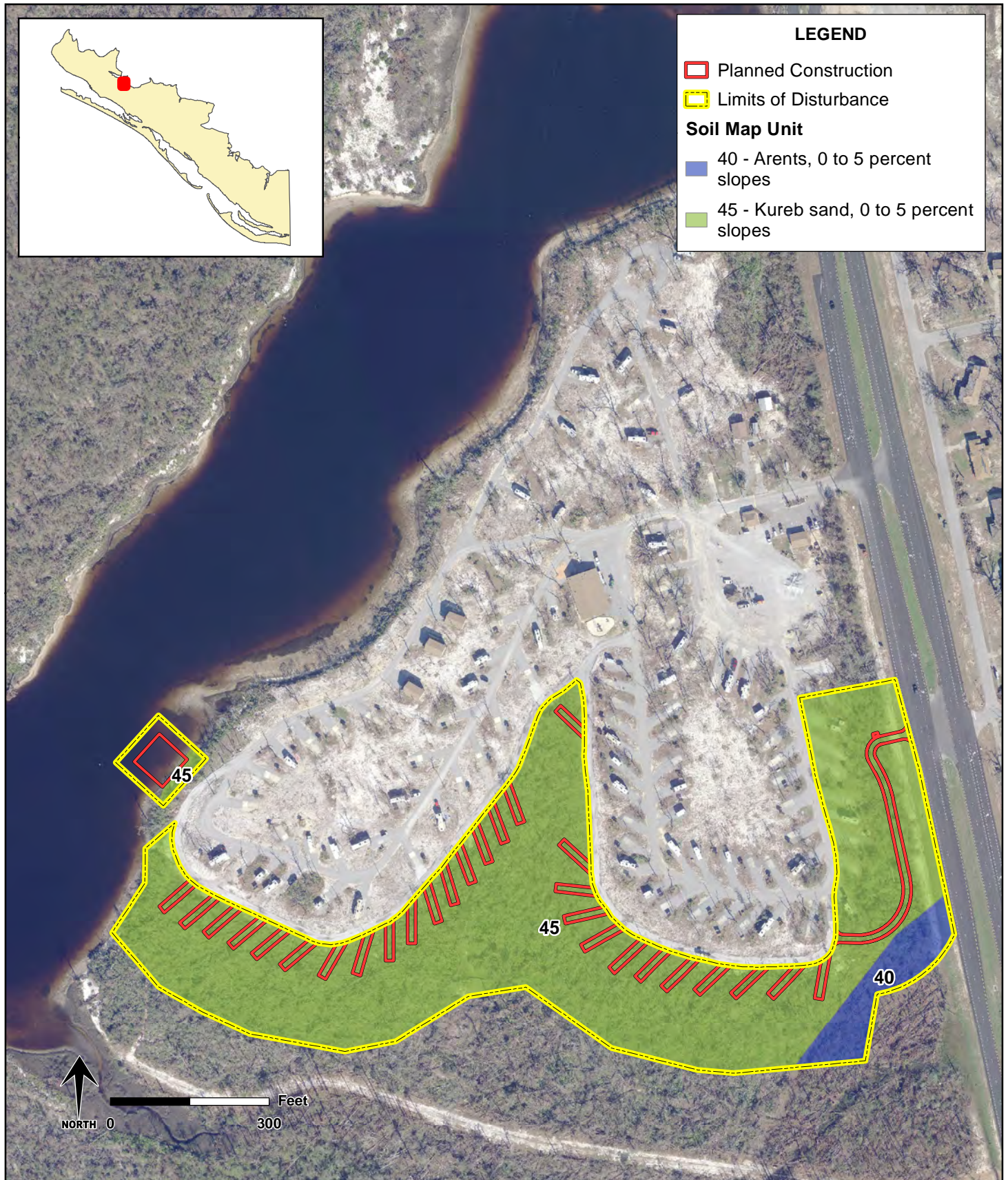
**Tyndall Air Force Base, Panama City, FL**

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FOR 8 CONSTRUCTION SITES**

**SOILS:  
EXPAND FAM CAMP SITE  
(ALTERNATIVE 1)**

**FIGURE  
3.6-6**



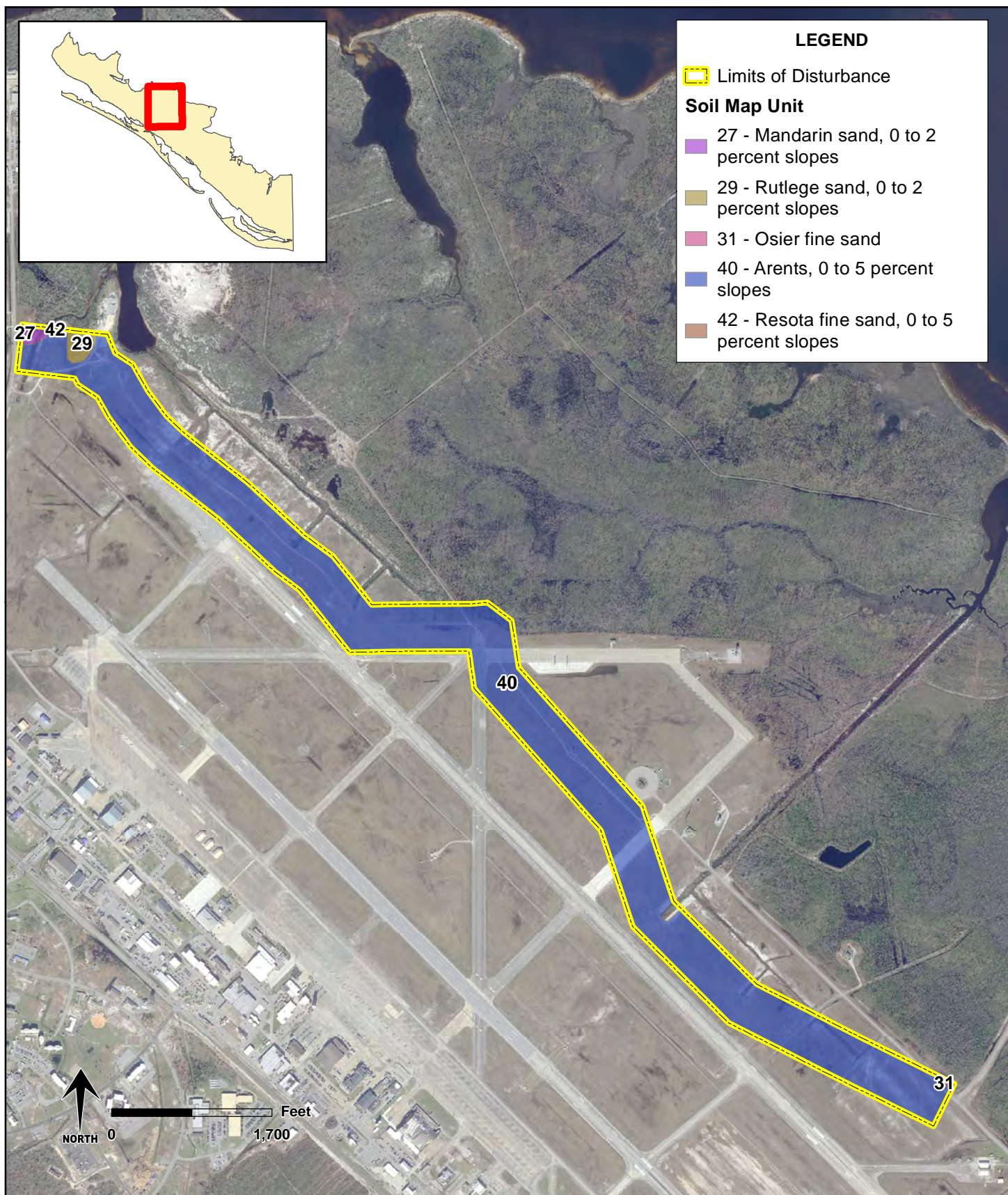


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SOILS:  
EXPAND FAM CAMP SITE  
(ALTERNATIVE 2)

FIGURE  
3.6-7





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**SOILS:  
CONSTRUCT WATER MAIN ON  
NORTH SIDE OF FLIGHTLINE**

**FIGURE  
3.6-8**





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FOR 8 CONSTRUCTION SITES**

**SOILS: CONSTRUCT  
PIER - HERITAGE CLUB  
(ALTERNATIVE 1)**

**FIGURE  
3.6-9**



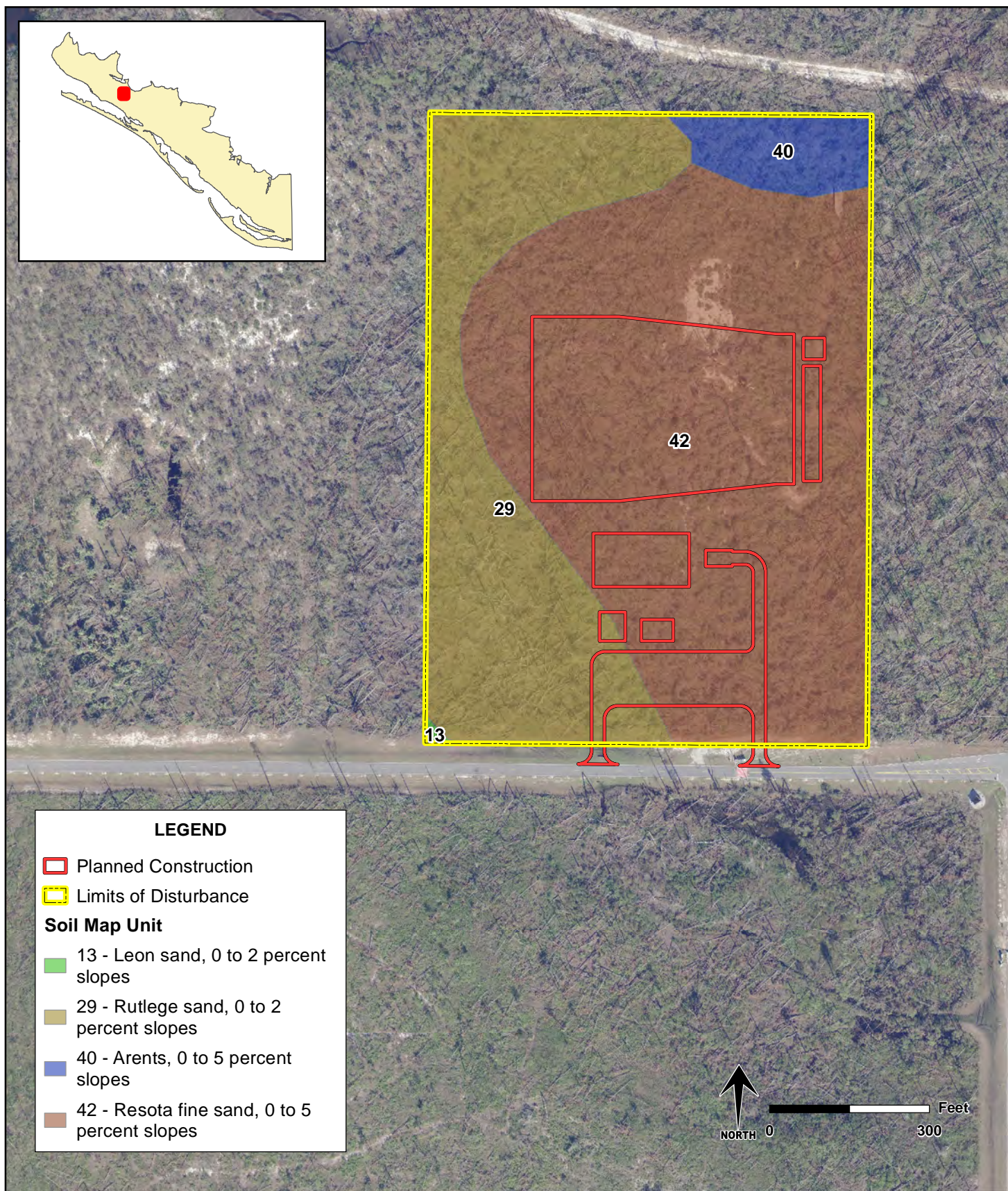


**Tyndall Air Force Base, Panama City, FL**  
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FOR 8 CONSTRUCTION SITES**

**SOILS: CONSTRUCT  
PIER - HERITAGE CLUB  
(ALTERNATIVE 2)**

**FIGURE  
3.6-10**



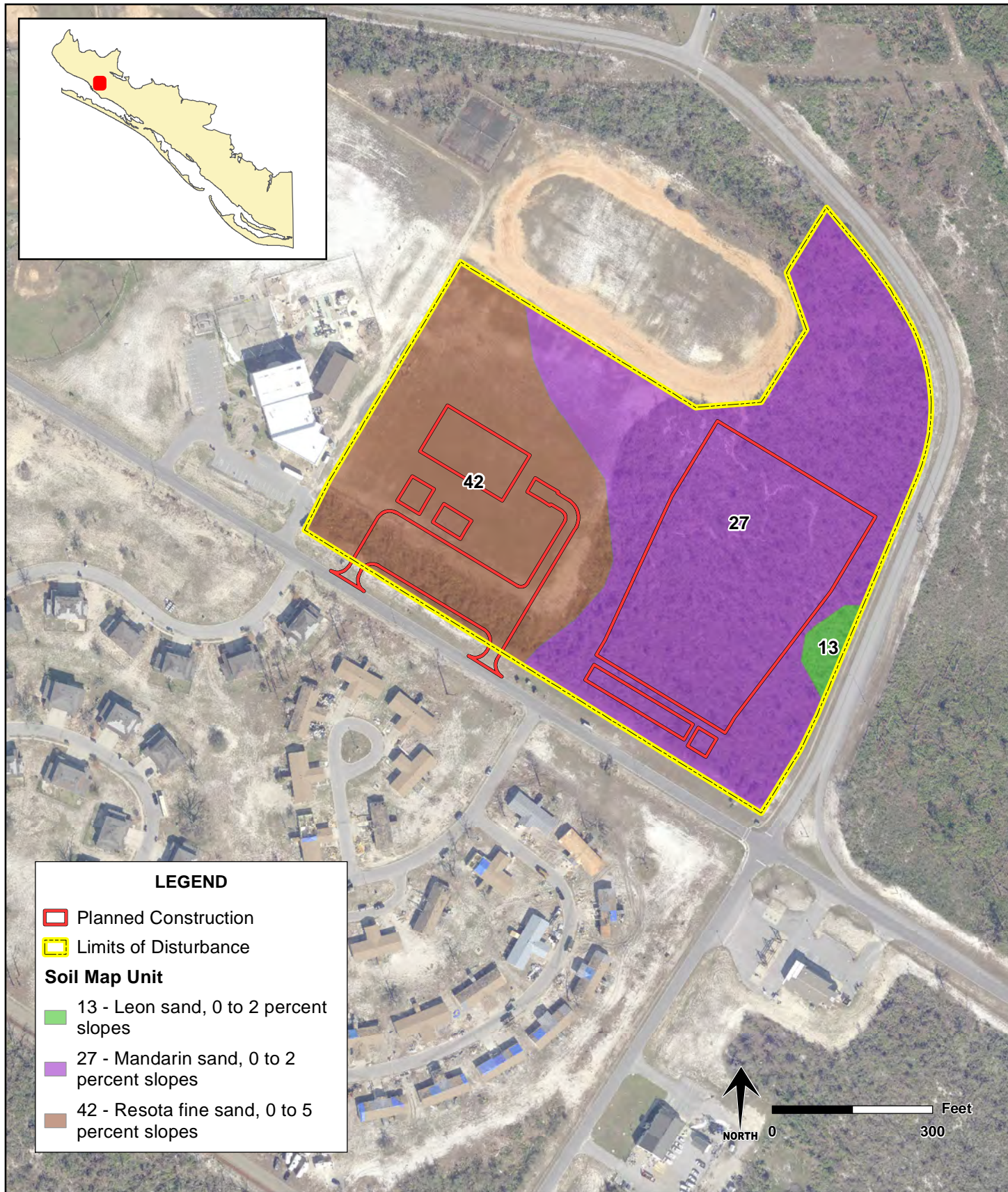


**Tyndall Air Force Base, Panama City, FL**  
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 FOR 8 CONSTRUCTION SITES**

**SOILS:  
 RENOVATE UNITE SITE  
 (ALTERNATIVE 1)**

**FIGURE  
 3.6-11**





**Tyndall Air Force Base, Panama City, FL**

**ENVIRONMENTAL ASSESSMENT  
FOR 8 CONSTRUCTION SITES**

**SOILS:  
RENOVATE UNITE SITE  
(ALTERNATIVE 2)**

**FIGURE  
3.6-12**

## **3.7 WATER RESOURCES**

Water resources include those waters that are above and below the surface of the Earth. Water resources for this EA include groundwater, surface waters including wetlands and waters of the U.S., floodplains and coastal zones. The ROI established for these resources in this EA corresponds to the LODs for the individual Proposed Actions and alternatives where construction, demolition and operational activities would occur.

### **3.7.1 GROUNDWATER**

Groundwater is classically defined as subsurface water that occurs beneath the water table in soils and geologic formations that are fully saturated (i.e., the pore spaces in the subsurface materials are completely filled with water). It is part of the hydrologic cycle, originating as precipitation that infiltrates or seeps into the subsurface and then moves toward surface water bodies, where it discharges to complete the hydrologic cycle.

Tyndall AFB is located within the Floridan aquifer. The Floridan aquifer covers an area of approximately 64,000,000 acres (100,000 square-miles) and covers all of Florida in addition to southern Alabama, southeastern Georgia, and southern South Carolina; and it is one of the most productive aquifers in the world (U.S. Geological Survey, 2021). The Floridan aquifer lies approximately 250 to 350 feet below the surface (USFWS, 2015); however, this is not the primary source of potable water on Tyndall AFB. The primary source of potable water is Deer Point Lake Reservoir (Northwest Florida Water Management District [NFWFMD], 2017); it is 5,000-acres in size and is located seven miles north of Panama City.

### **3.7.2 WETLANDS AND OTHER SURFACE WATERS**

Surface water is any body of water at land's surface and includes natural features such as wetlands, swamps, streams, rivers, ponds, lakes, marshes, bayous, and oceans. Man-made surface waters include impoundments, canals, drainage ditches, and storm water catchments (but are not necessarily considered waters of the U.S.). Tyndall AFB, within Bay County, Florida, is located in the St. Andrew Bay watershed in the Florida Panhandle (NFWFMD, 2017). The St. Andrew Bay Watershed covers approximately 740,000 acres of the central Florida panhandle. This watershed is unique in that it contains no major rivers (NFWFMD, 2017).

The St. Andrew Bay estuary system covers approximately 59,568 acres and is comprised of five bay and lagoon segments: St. Andrew Bay, East Bay, West Bay, North Bay, and Grand Lagoon. St. Andrew Bay lies to the northwest of Tyndall AFB and northeast of East Bay. Additionally, St. Andrew Sound lies to the south of Tyndall AFB and covers approximately 4,707 acres. Compared to watershed systems that contain major rivers, the estuarine waters of the St. Andrew Bay Watershed are deeper, clearer, and are characterized by high and consistent salinity.

There are several additional water features that are either connected to St. Andrew Sound or East Bay that are adjacent to Tyndall AFB and these include Wild Goose Lagoon, Blind Alligator Bayou, Strange Bayou, Fred Bayou, Pearl Bayou, Freshwater Bayou, Sheephead Bayou, and Smack Bayou. Tyndall AFB contains one natural lake, Felix Lake; although, it is located on the northern section of the base and not adjacent to any project area (U.S. Air Force, 2020d).



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Wetlands are defined as “those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas” (33 CFR Section 328.3[b]) (USEPA, 2021b; U.S. Army Corps of Engineers [USACE], 2010). Wetlands are discussed in more detail in the following section.

In each LOD for the Proposed Action and alternatives, wetlands and other surface waters (OSW) were delineated according to the guidelines found within the USACE *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Atlantic and Gulf Coastal Plain Region* (USACE, 2010) and methodologies prescribed in Chapter 62-340, Florida Administrative Code (F.A.C.), “Delineation of the Landward Extent of Wetlands and Surface Waters”. Wetlands and OSW were classified according to the Florida Department of Transportation (FDOT) *Florida Land Use, Cover and Forms Classification System* (FLUCFCS), (FDOT, 1999) and USFWS’ *Classification of Wetlands and Deepwater Habitats of the United States* (Cowardin, et al., 1979). **Table 3.7-1** summarizes the acreage and type of all identified wetlands and OSWs identified within the LODs for the Proposed Actions and alternatives. Impacted wetlands and OSW within the LODs based on planned construction activities are further discussed in **Section 4.6**.

**TABLE 3.7-1 WETLANDS AND OTHER SURFACE WATERS**

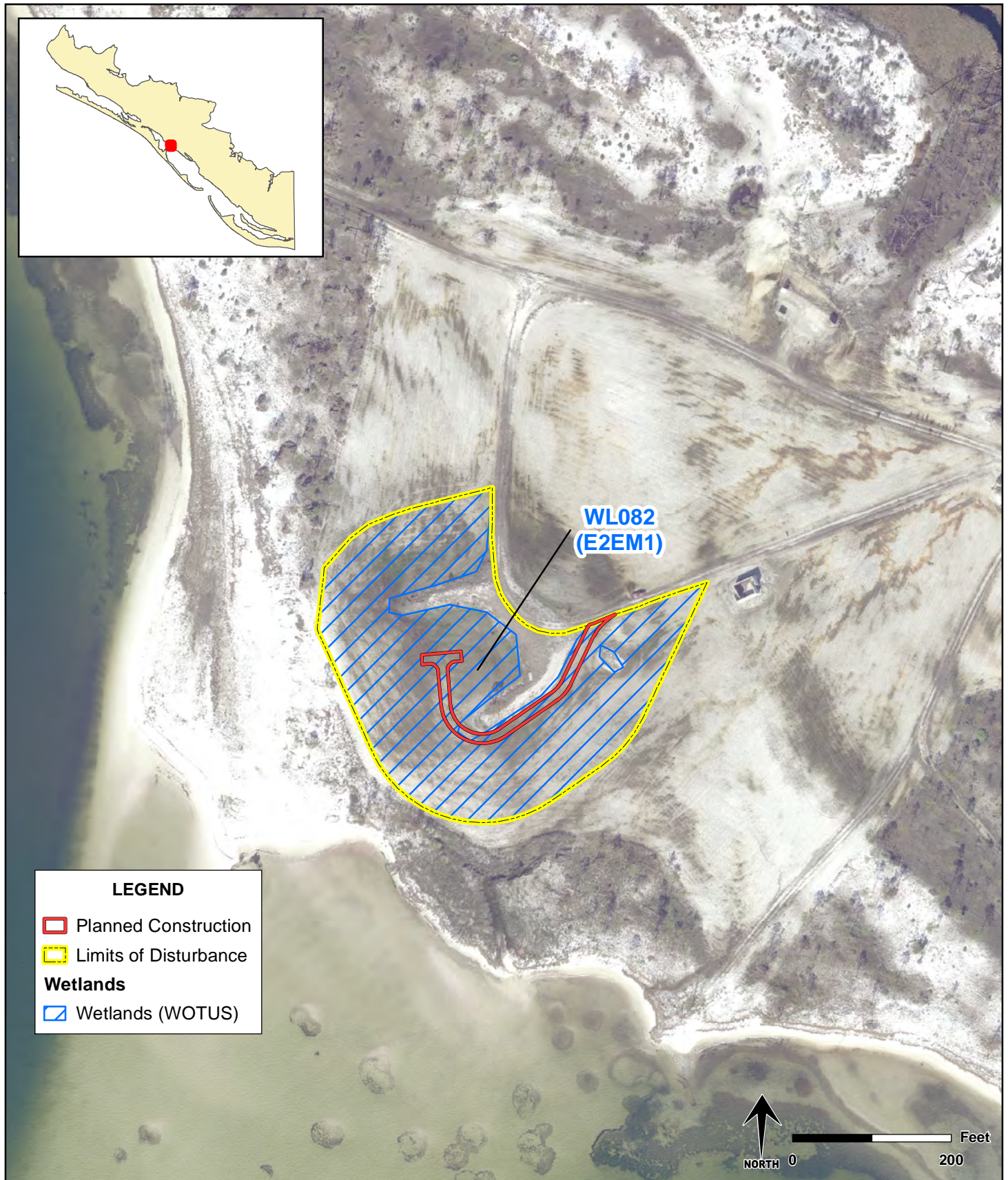
Project	Wetland/ OSW ID	FLUCFCS Description	USFWS Description	Acre (LOD)
Construct New EOD Gravel Road ( <b>Figure 3.7-1</b> )	WL082	642	E2EM1	2.31
	Subtotal - Wetlands			2.31
Dredge the WEG Small Boathouse Area - Alternative 1 ( <b>Figure 3.7-2</b> )	WL084	642	E2EM1	0.08
	Subtotal - Wetlands			0.08
Replace WEG Tower 1802 ( <b>Figure 3.7-3</b> )	WL087	641	PEM	0.60
	Subtotal - Wetlands			0.60
Improve Expeditionary/Encampment Roads ( <b>Figure 3.7-4</b> )	WL005	631	PSS1F	0.10
	WL006	631	PSS1F	0.04
	WL007	631	PSS1C	0.19
	WL008	631	PSS1C	0.13
	WL023	643	PEM1	0.13
	WL024	631	PSS3C	1.18
	WL060	630	PFO1/4E	0.03
	WL060	642	E2EM1	0.06
	OSW008	510	PEM1C	0.06
	OSW012	510	PEM1C	0.02
	Subtotal - Wetlands			1.86
	Subtotal - OSW			0.08
Expand Fam Camp Site - Alternative 1 ( <b>Figure 3.7-5</b> )	WL088	641	PEM1C	0.46
	WL089	642	E2EM1	0.19
	Subtotal - Wetlands			0.65
Expand Fam Camp Site - Alternative 2 ( <b>Figure 3.7-6</b> )	WL088	641	PEM1C	0.46
	WL089	642	E2EM1	0.13
	Subtotal - Wetlands			0.59
Construct Water Main on North Side of Flightline ( <b>Figure 3.7-7</b> )	WL011	643	PEM1E	1.63
	WL012	643	PEM1E	0.97
	WL033	643	PEM1E	0.44
	OSW013	510	PEM	0.54
	OSW014	510	PEM1C	1.6



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Project	Wetland/ OSW ID	FLUCFCS Description	USFWS Description	Acres (LOD)
	OSW015	530	PEM1C	15.25
	OSW016	530	PEM1C	0.67
	OSW067	510	PEM1C	0.05
	OSW068	510	PEM1C	0.39
	OSW068	530	PEM1C	3.41
	OSW072	510	PEM1C	0.16
	OSW073	510	PEM1C	1.43
	OSW074	510	PEM1C	0.21
	OSW174	510	PEM1C	0.31
	OSW175	510	PEM1C	0.05
	OSW176	530	PEM1Fx	1.69
	OSW177	530	PEM1Fx	0.66
	Subtotal - Wetlands			3.04
	Subtotal -OSW			26.42
Construct Fishing/Observation Pier (Heritage Club) - Alternative 1 (Figure 3.7-8)	WL090	643	PEM1	0.07
	WL090	642	E2EM1	0.29
	Subtotal - Wetlands			0.36
Construct Fishing/Observation Pier (Heritage Club) - Alternative 2 (Figure 3.7-9)	WL090	643	PEM1	0.07
	WL090	642	E2EM1	0.29
	Subtotal - Wetlands			0.36
Renovate Unite Site - Alternative 1 (Figure 3.7-10)	WL091	643	PEM	0.14
	WL092	631	PSS	6.81
	Subtotal - Wetlands			6.95
Renovate Unite Site - Alternative 2 (Figure 3.7-11)	OSW178	510	PEM1C	0.15
	Subtotal - OSW			0.15
Total - Wetlands <sup>1</sup>				15.85
Total - OSW <sup>1</sup>				26.65

- 1 Source: AECOM, 2021  
2 1 For projects with more than one alternative, the alternative with the greatest acreage of wetland and OSW within the LOD is included in the total.  
3 Notes : OSW = Other Surface Water; WL = Wetland



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**WETLANDS AND OSW:  
CONSTRUCT NEW EOD  
GRAVEL ROAD**

**FIGURE  
3.7-1**



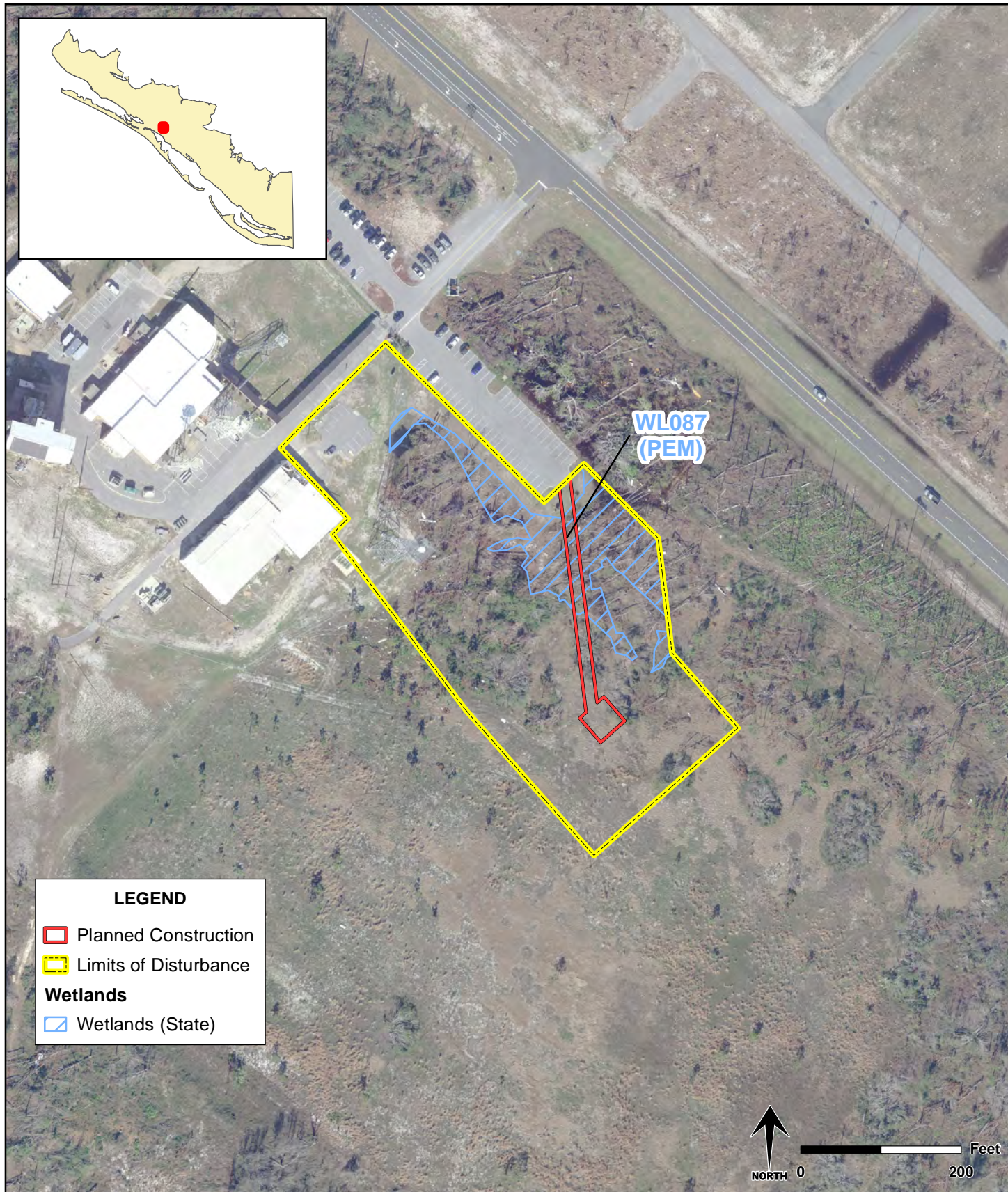


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FOR 8 CONSTRUCTION SITES**

**WETLANDS AND OSW:  
DREDGE THE WEG  
SMALL BOATHOUSE AREA (ALT 1)**

**FIGURE  
3.7-2**



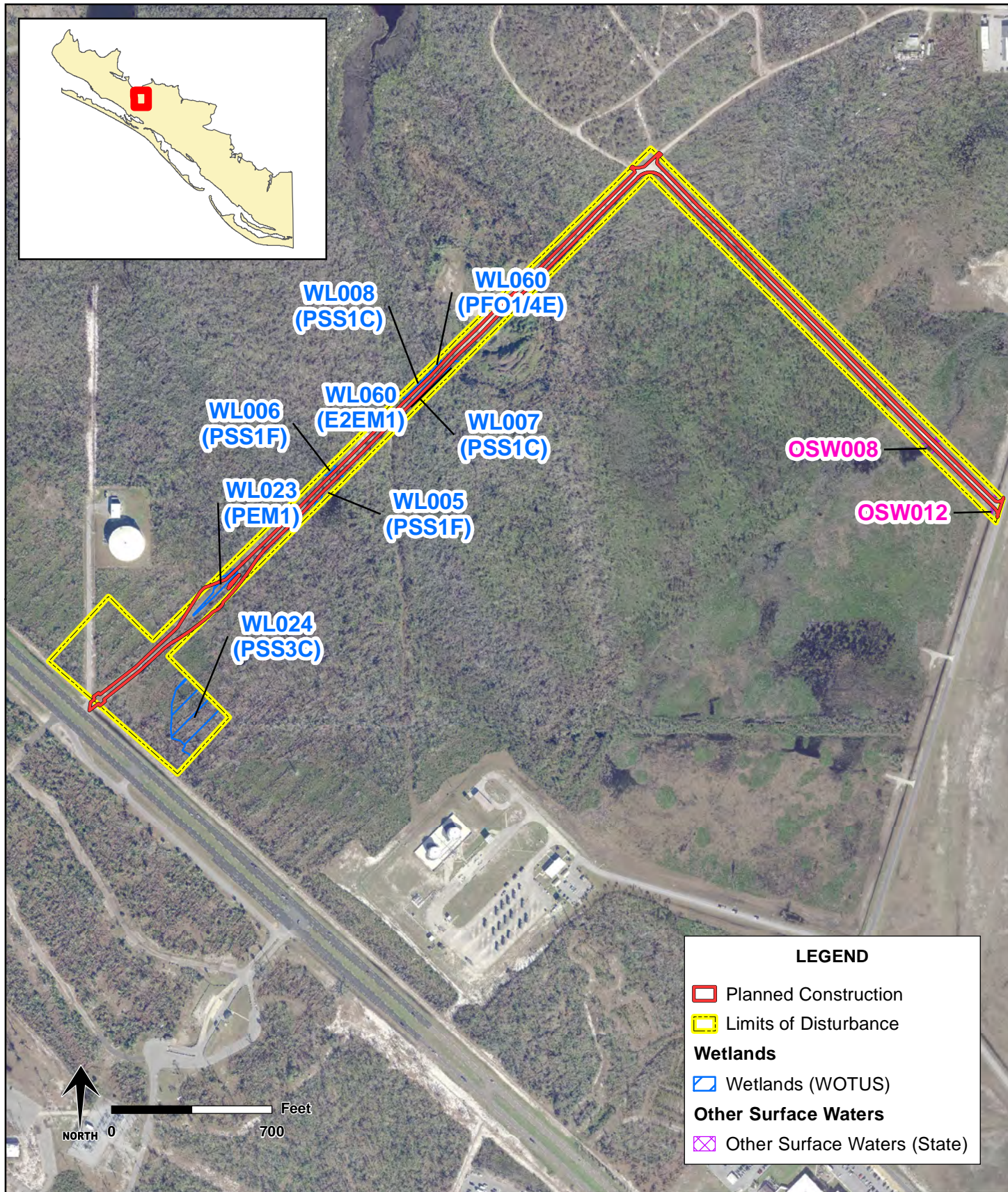


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**WETLANDS AND OSW:  
REPLACE WEG TOWER 1802**

**FIGURE  
3.7-3**



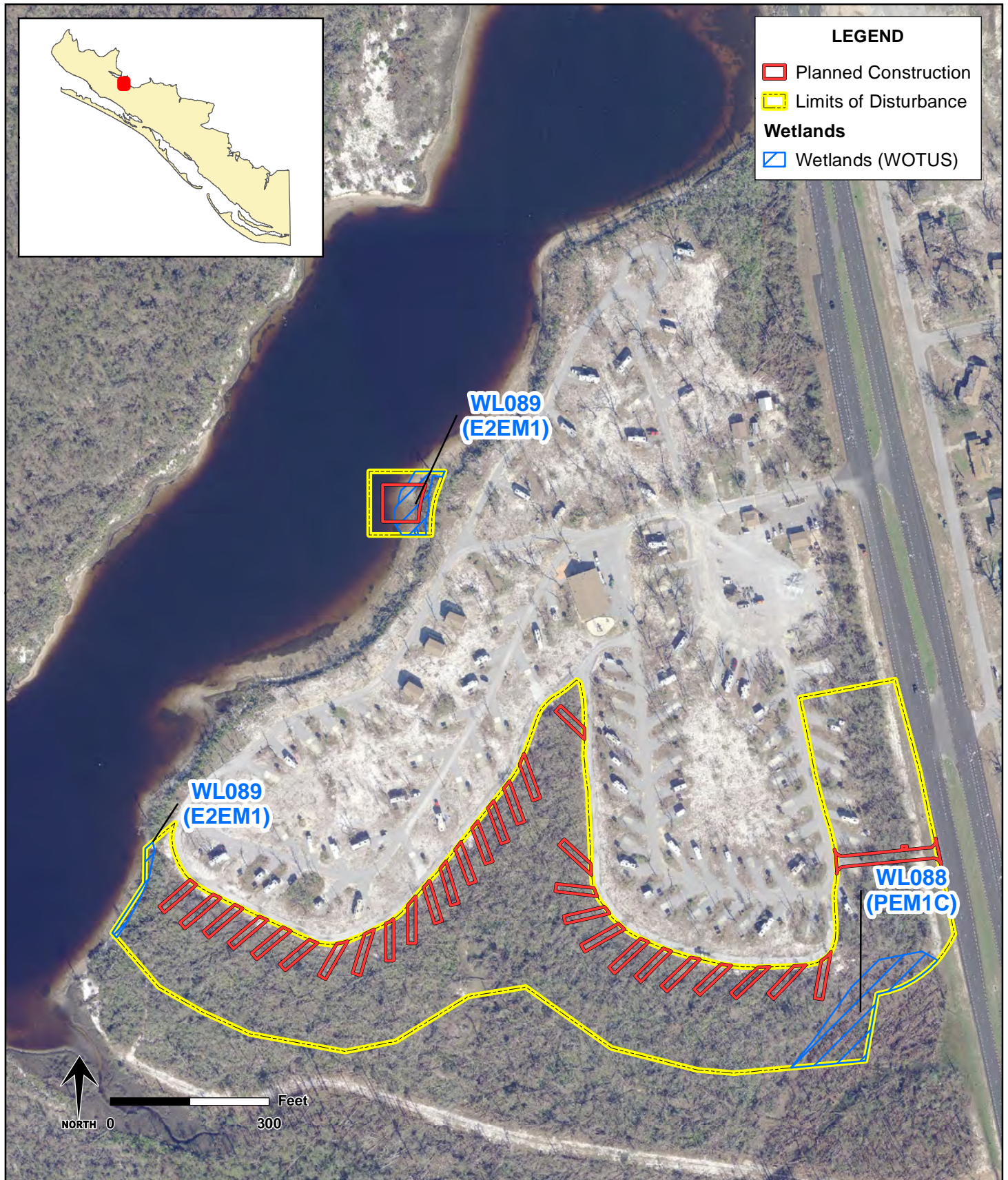


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**ENVIRONMENTAL ASSESSMENT  
 FOR 8 CONSTRUCTION SITES**

**WETLANDS AND OSW:  
 IMPROVE EXPEDITIONARY/  
 ENCAMPMENT ROADS**

**FIGURE  
 3.7-4**



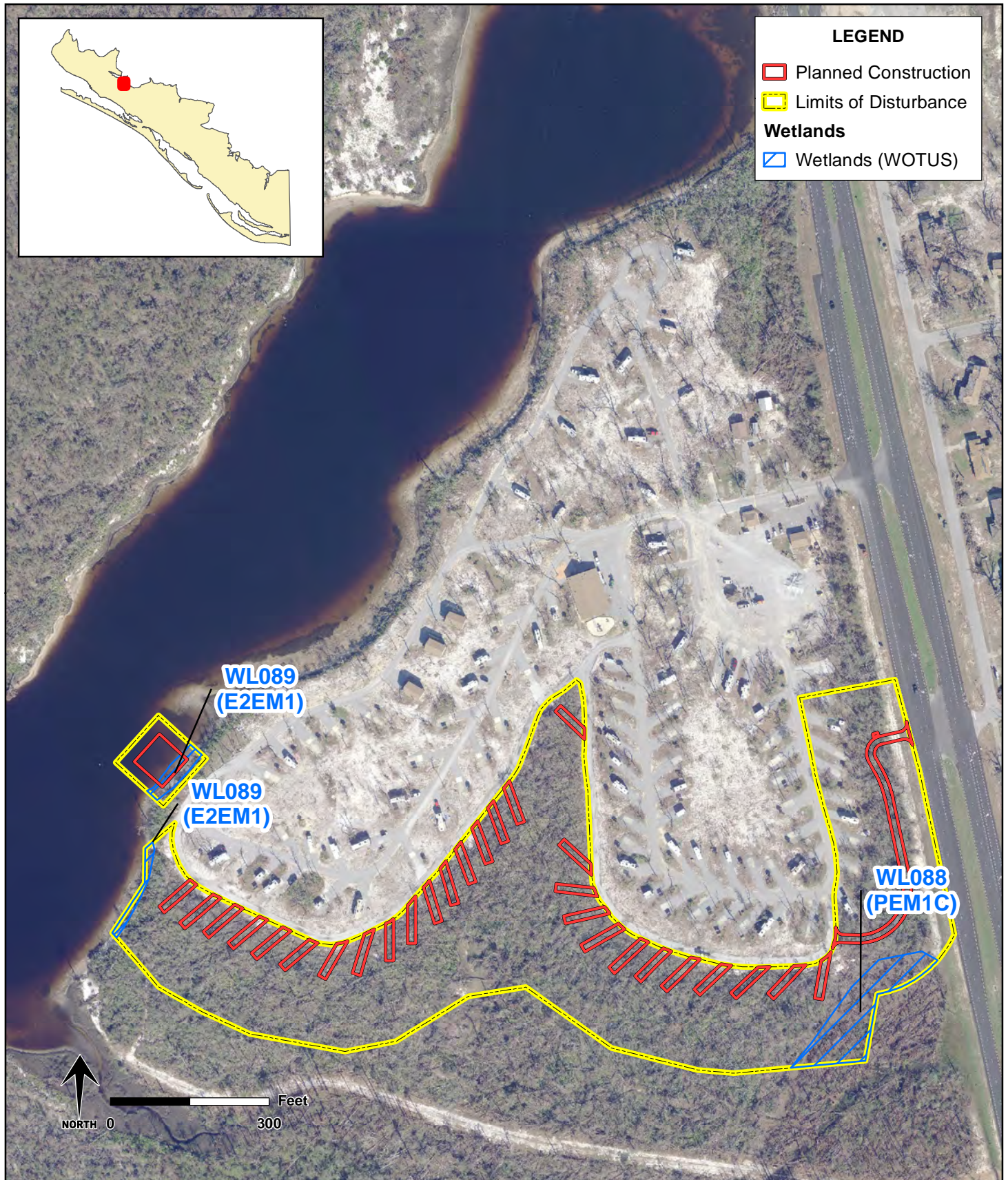


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FOR 8 CONSTRUCTION SITES**

**WETLANDS AND OSW:  
EXPAND FAM CAMP SITE  
(ALTERNATIVE 1)**

**FIGURE  
3.7-5**



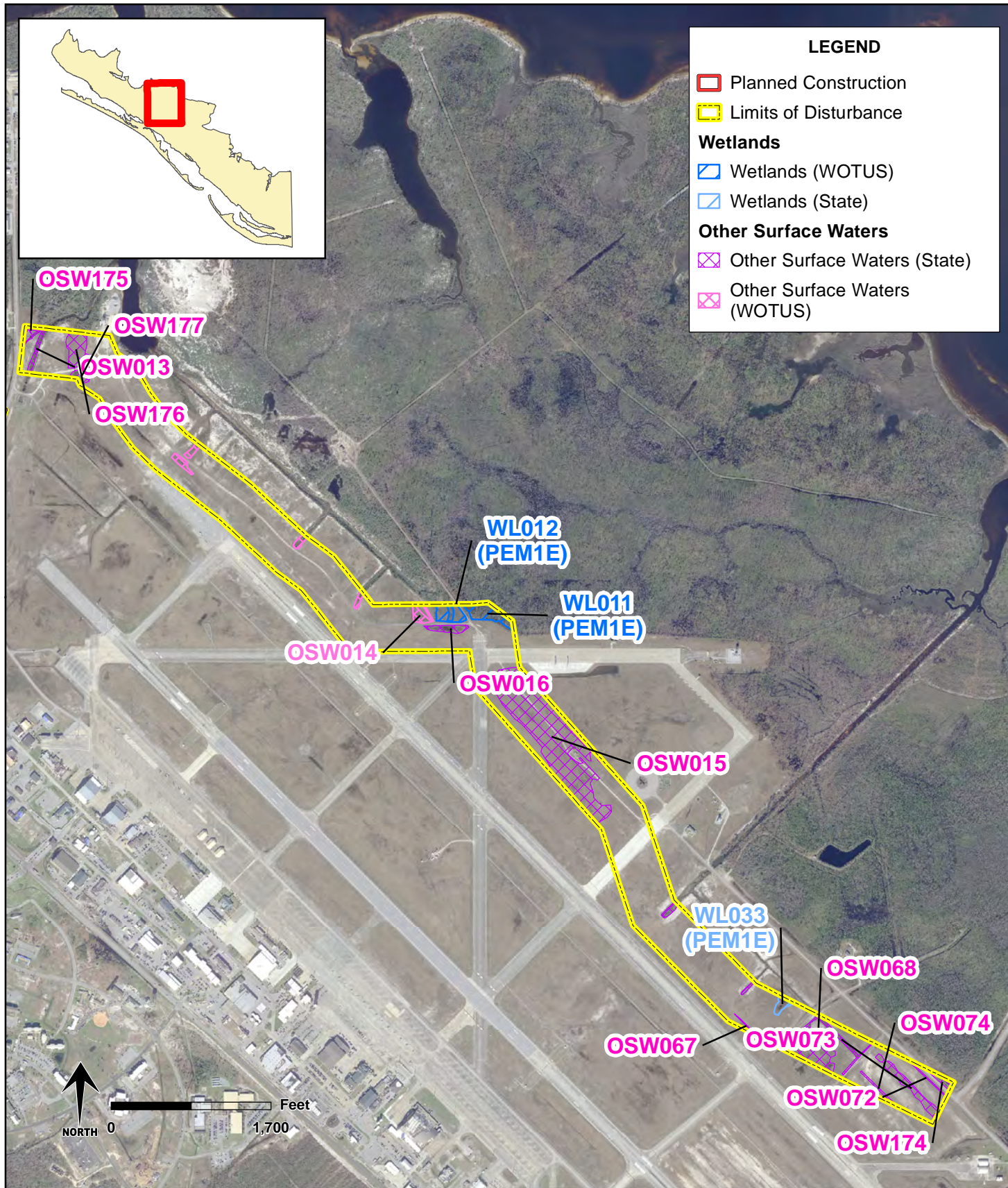


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FOR 8 CONSTRUCTION SITES**

**WETLANDS AND OSW:  
EXPAND FAM CAMP SITE  
(ALTERNATIVE 2)**

**FIGURE  
3.7-6**



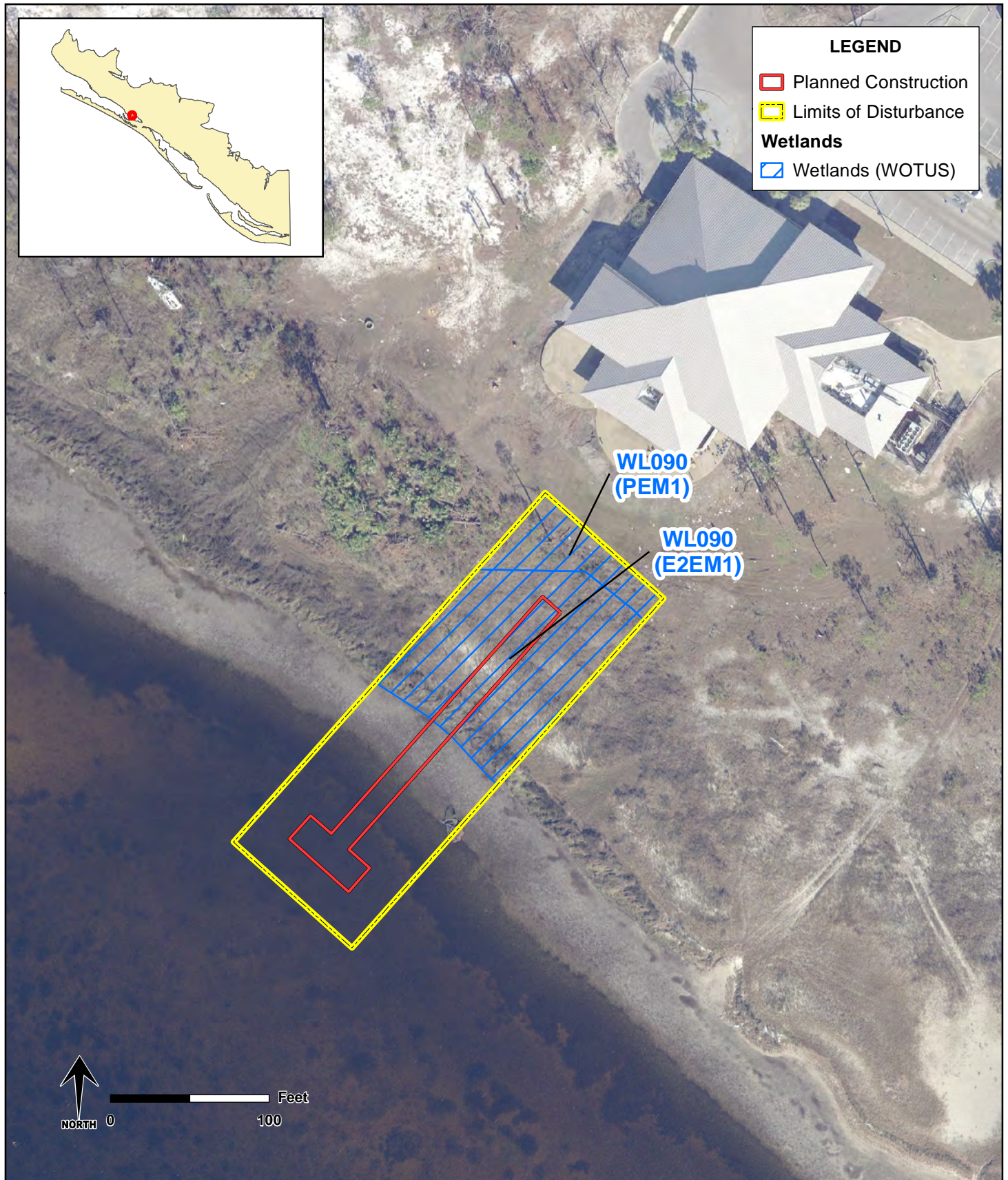


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FOR 8 CONSTRUCTION SITES**

**WETLANDS AND OSW:  
CONSTRUCT WATER MAIN ON  
NORTH SIDE OF FLIGHTLINE**

**FIGURE  
3.7-7**





**Tyndall Air Force Base, Panama City, FL**  
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**WETLANDS AND OSW:  
CONSTRUCT PIER - HERITAGE  
CLUB (ALTERNATIVE 1)**

**FIGURE  
3.7-8**



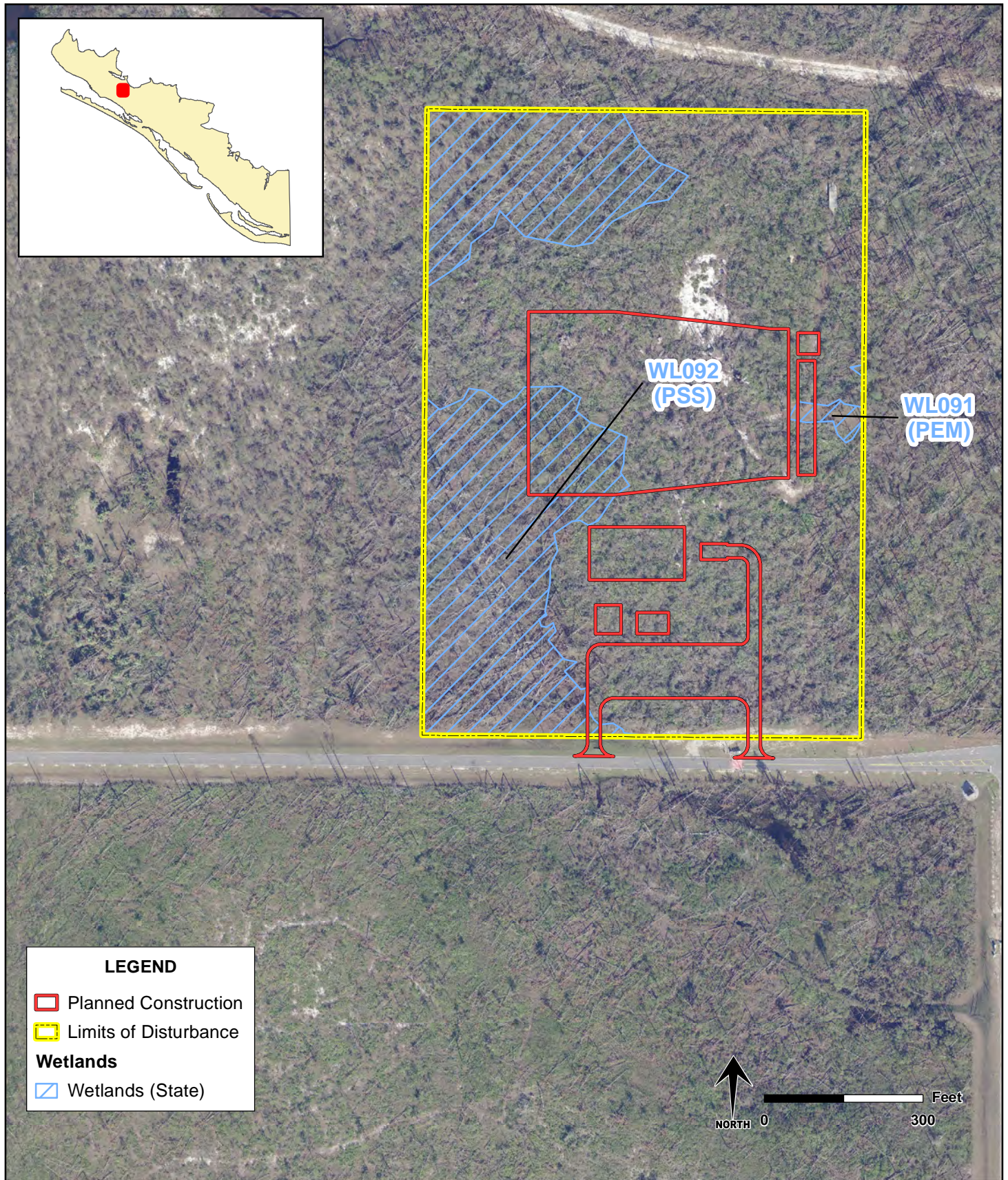


**Tyndall Air Force Base, Panama City, FL**  
**ENVIRONMENTAL ASSESSMENT  
FOR 8 CONSTRUCTION SITES**

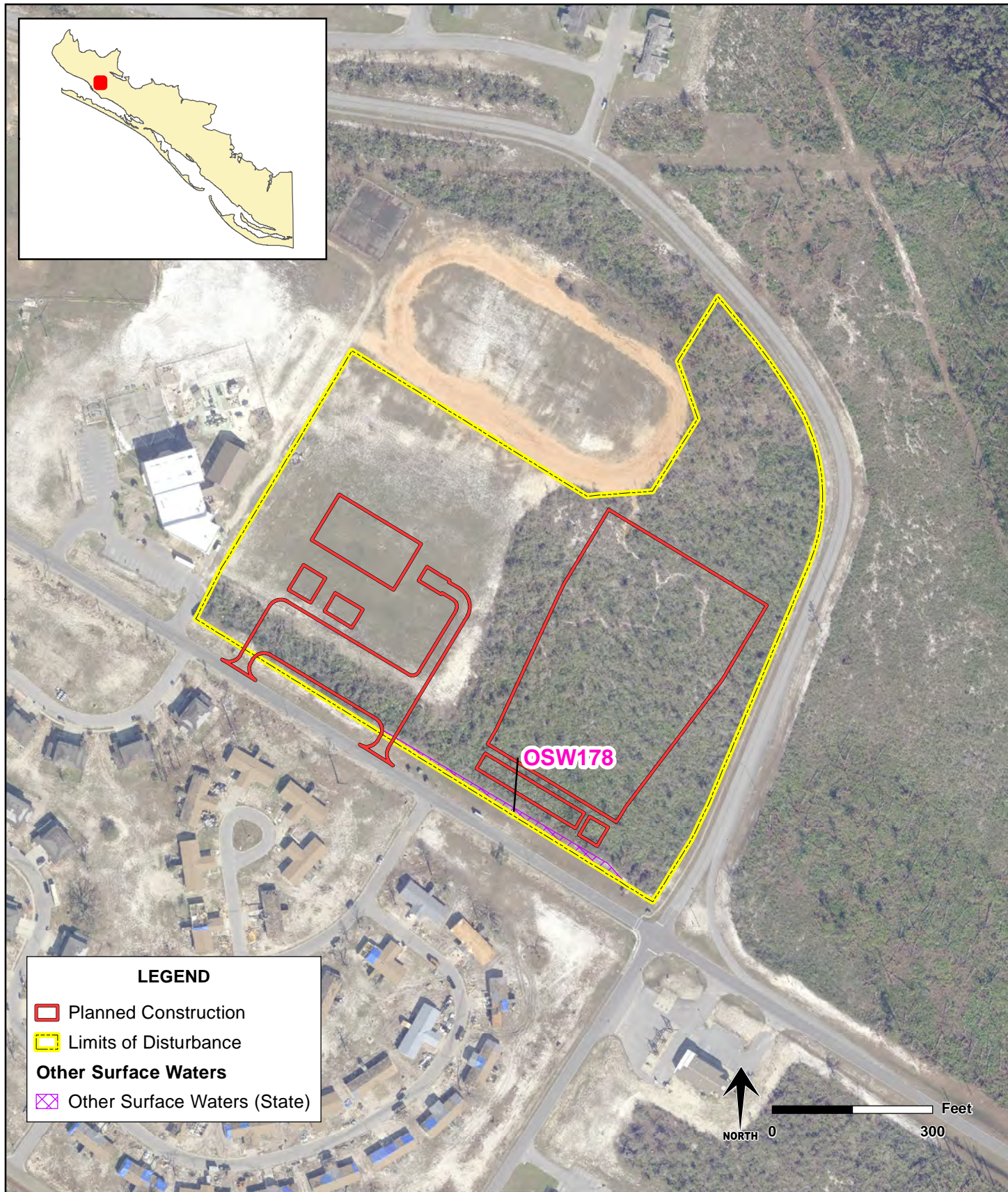
**WETLANDS AND OSW:  
CONSTRUCT PIER - HERITAGE  
CLUB (ALTERNATIVE 2)**

**FIGURE  
3.7-9**









**Tyndall Air Force Base, Panama City, FL**  
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FOR 8 CONSTRUCTION SITES**

**WETLANDS AND OSW:  
RENOVATE UNITE SITE  
(ALTERNATIVE 2)**

**FIGURE  
3.7-11**



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### 3.7.3 FLOODPLAINS

Floodplains are lands bordering rivers and streams that are typically dry but covered with water during floods. They occur in both inland and coastal areas. Risk of flooding is typically related to local topography, the frequency of precipitation events, size of the watershed above the floodplain, and in the case of coastal areas, storm surge intensity. The direct function of a floodplain is to absorb water and energy from storms. Indirect benefits are groundwater recharge from stormwater absorption, nutrient cycling, waste disposal, carbon sequestration, wildlife habitat, vegetative diversity, and aesthetic qualities.

The Federal Emergency Management Agency (FEMA) categorizes floodplains into several categories, called Special Flood Hazard Areas (SFHA) based on their chance of flooding in any given year. EO 11988 requires Federal agencies to avoid direct or indirect support or development within or affecting the 100-year floodplain whenever there is a practicable alternative. EO 11988 further directs all Federal agencies to refrain from conducting, supporting, or allowing actions in floodplains unless it is the only practicable alternative.

The location and extents of 100-year floodplain areas with the LODs for the Proposed Actions and alternatives are summarized in **Table 3.7-2**. Impacts to floodplains based on planned construction activities are further discussed in **Section 4.6**.

**TABLE 3.7-2 FLOODPLAINS**

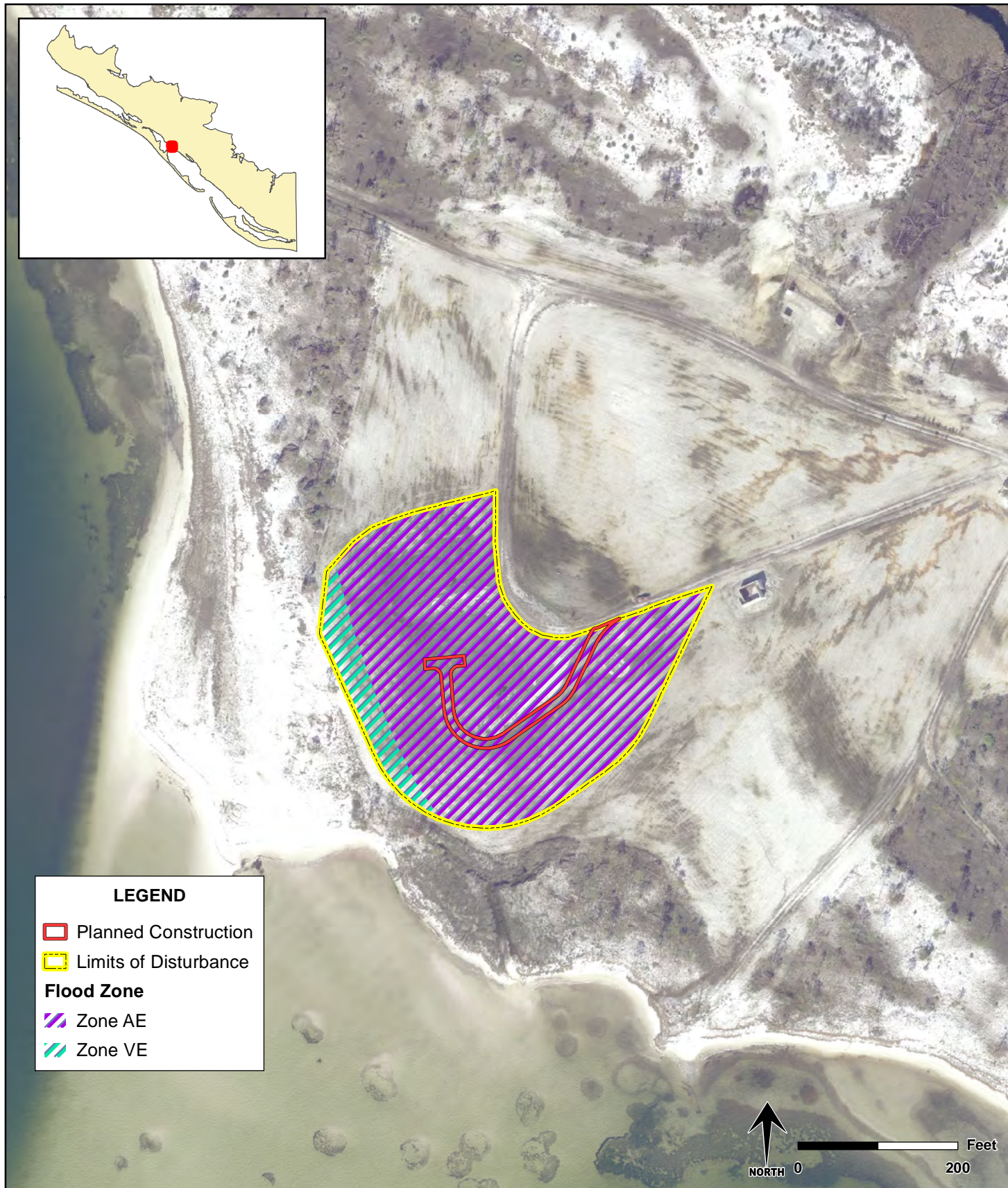
Project	Zone A	Zone AE	Zone VE	Total
Construct New EOD Gravel Road ( <b>Figure 3.7-12</b> )	--	2.42	0.23	2.65
Dredge the WEG Small Boathouse Area - Alternative 1 ( <b>Figure 3.7-13</b> )	--	0.86	0.28	1.14
Dredge the WEG Small Boathouse Area - Alternative 2 ( <b>Figure 3.7-14</b> )	--	1.64	0.28	1.92
Replace WEG Tower 1802 ( <b>Figure 3.7-15</b> )	1.53	--	--	1.53
Improve Expeditionary/Encampment Roads ( <b>Figure 3.7-16</b> )	5.00	--	--	5.00
Expand FAMCAMP Site - Alternative 1 ( <b>Figure 3.7-17</b> )	0.12	0.42	--	0.54
Expand FAMCAMP Site - Alternative 2 ( <b>Figure 3.7-18</b> )	0.12	0.41	--	0.53
Construct Water Main on North Side of Flightline ( <b>Figure 3.7-19</b> )	1.46	14.40	--	15.86
Construct Fishing/Observation Pier (Heritage Club) - Alternative 1 ( <b>Figure 3.7-20</b> )	0.22	0.14	--	0.36
Construct Fishing/Observation Pier (Heritage Club) - Alternative 2 ( <b>Figure 3.7-21</b> )	0.22	0.14	--	0.36
Renovate Unite Site - Alternative 1 ( <b>Figure 3.7-22</b> )	4.40	0.06	--	4.46
Renovate Unite Site - Alternative 2	--	--	--	--
<b>Total<sup>1</sup></b>	<b>12.73</b>	<b>19.08</b>	<b>0.51</b>	<b>32.32</b>

Source: FEMA, 2022.

<sup>1</sup> For projects with more than one alternative, the alternative with the greatest acreage of floodplains within the LOD is included in the total.

Notes: Zone A and AE – one percent annual chance of flooding; 100-year floodplain; Zone VE – one percent chance of flooding with additional hazards due to storm-induced velocity wave action; 100-year floodplain with additional hazards





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**FLOODPLAINS:  
CONSTRUCT NEW EOD  
GRAVEL ROAD**

**FIGURE  
3.7-12**





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FOR 8 CONSTRUCTION SITES**

**FLOODPLAINS:  
DREDGE THE WEG  
SMALL BOATHOUSE AREA (ALT 1)**

**FIGURE  
3.7-13**



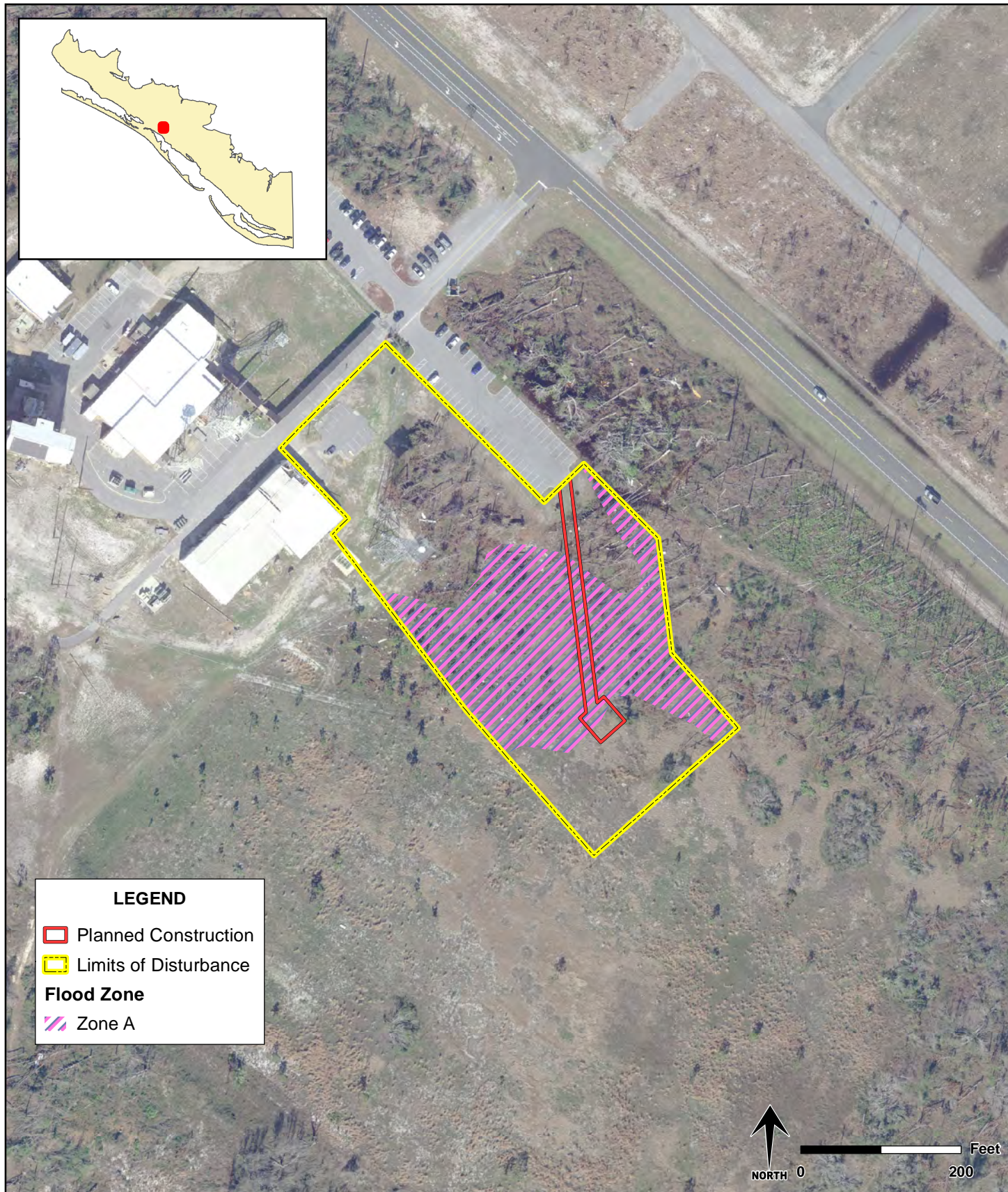


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FOR 8 CONSTRUCTION SITES**

**FLOODPLAINS:  
DREDGE THE WEG  
SMALL BOATHOUSE AREA (ALT 2)**

**FIGURE  
3.7-14**



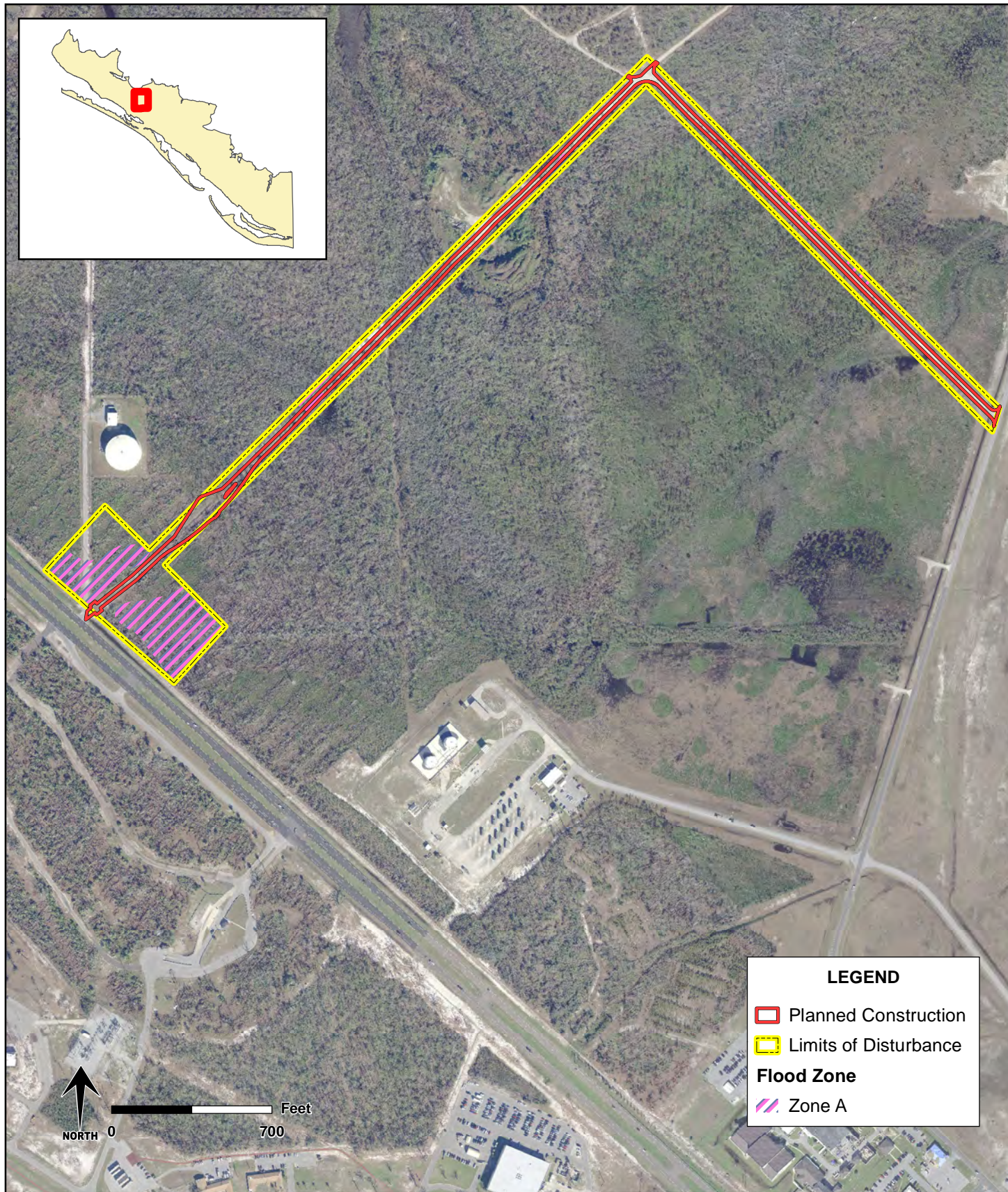


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**ENVIRONMENTAL ASSESSMENT  
FOR 8 CONSTRUCTION SITES**

**FLOODPLAINS:  
REPLACE WEG TOWER 1802**

**FIGURE  
3.7-15**



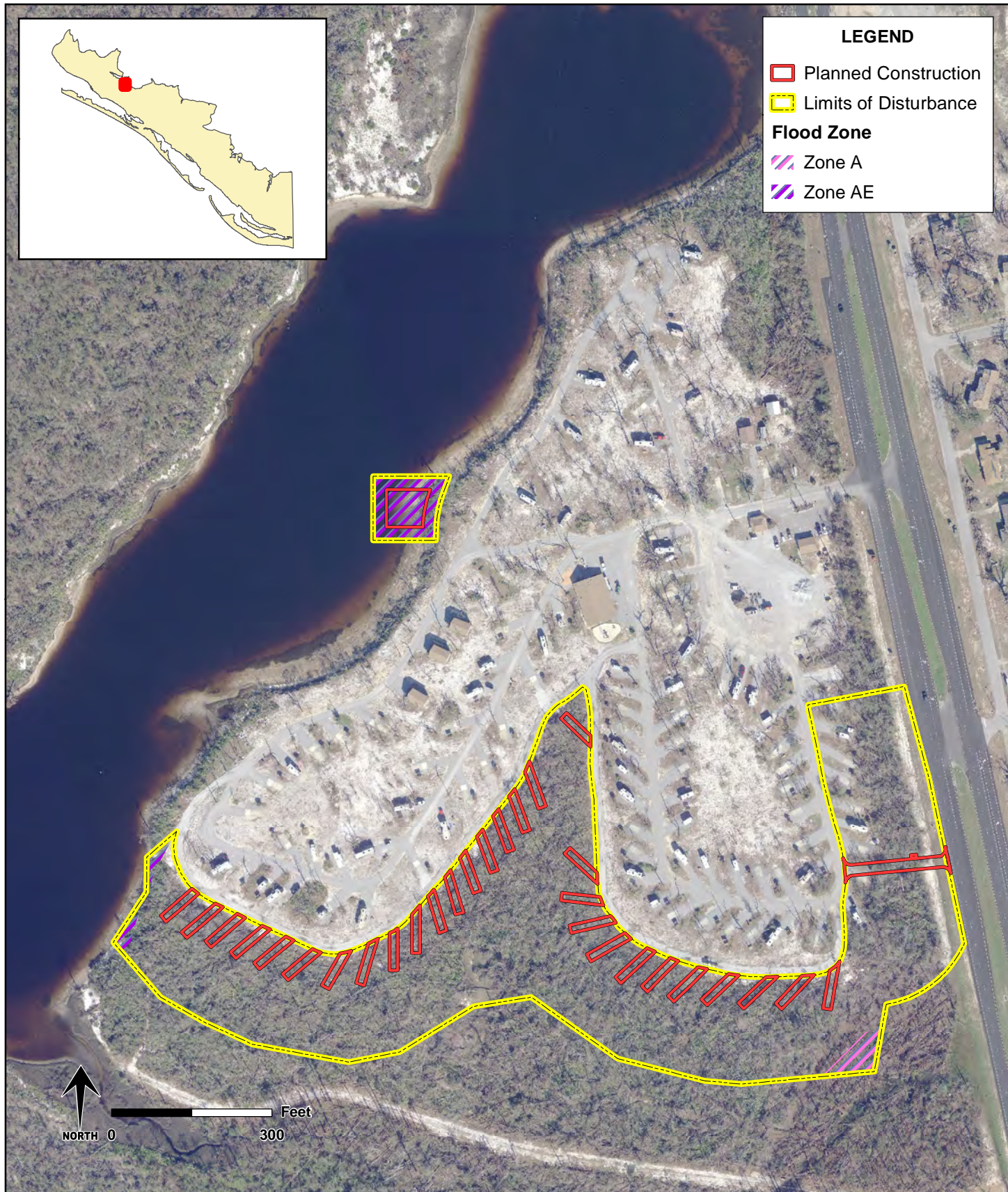


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FOR 8 CONSTRUCTION SITES**

**FLOODPLAINS:  
IMPROVE EXPEDITIONARY/  
ENCAMPMENT ROADS**

**FIGURE  
3.7-16**



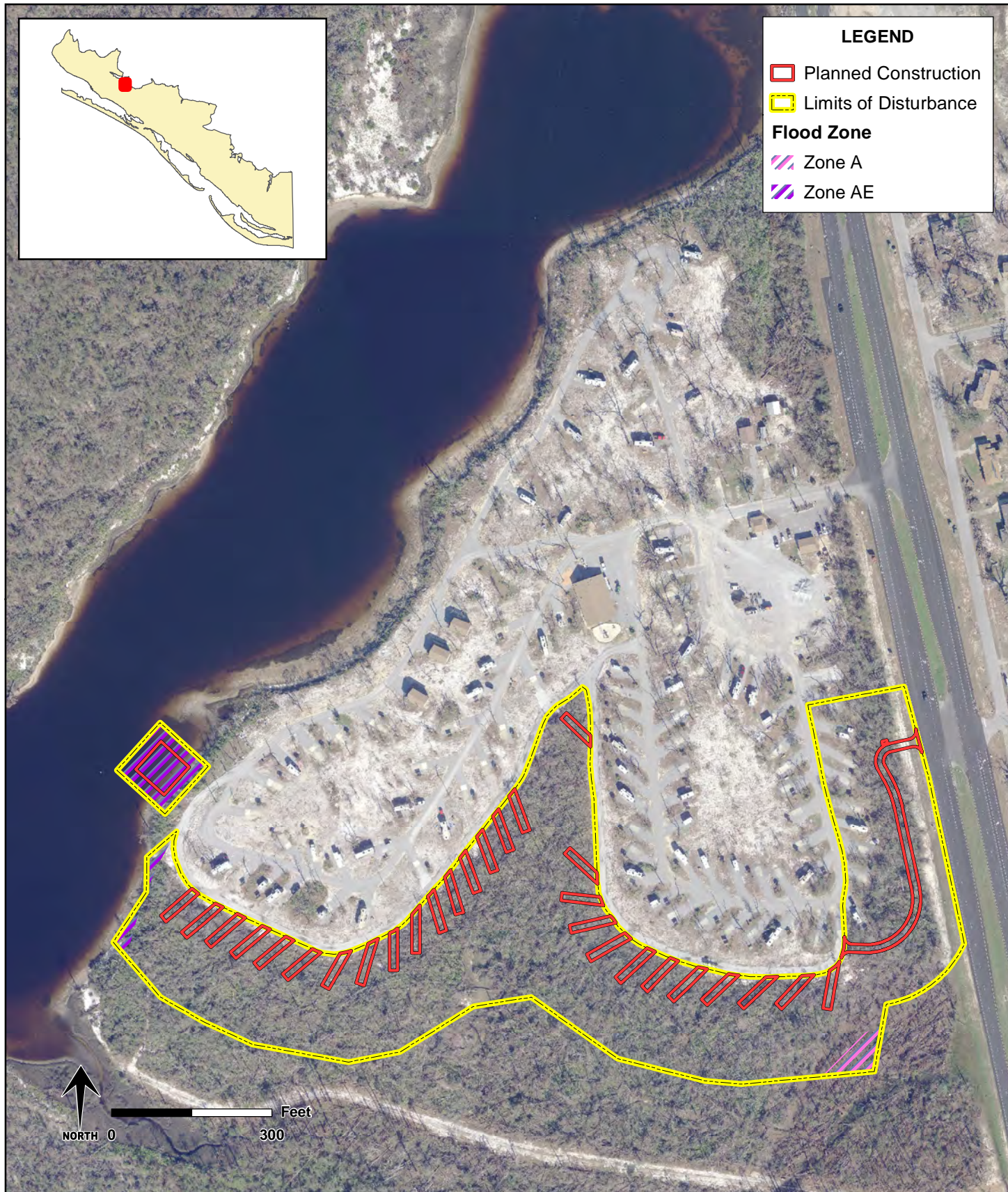


**Tyndall Air Force Base, Panama City, FL**  
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FOR 8 CONSTRUCTION SITES**

**FLOODPLAINS:  
EXPAND FAM CAMP SITE  
(ALTERNATIVE 1)**

**FIGURE  
3.7-17**



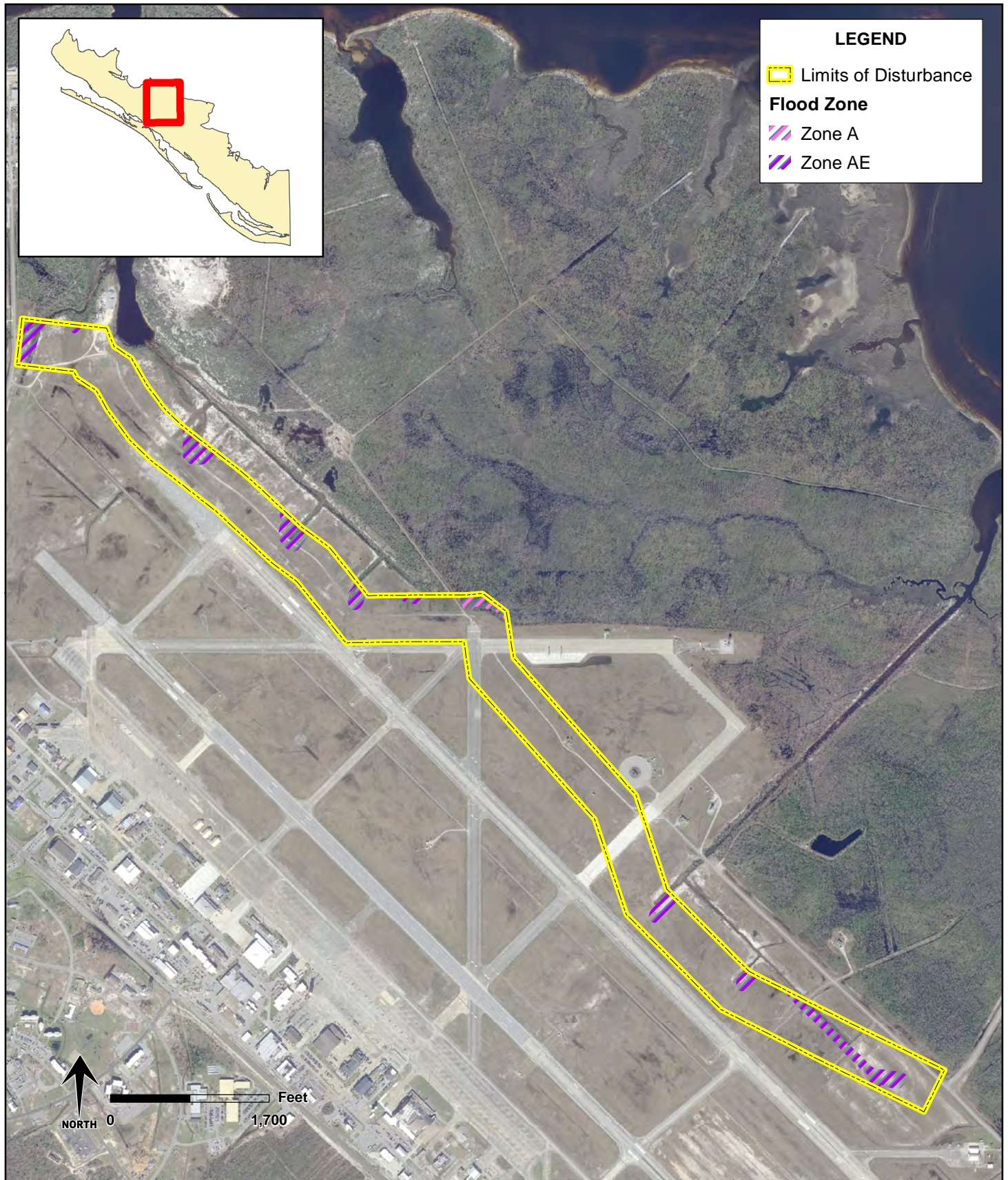


**Tyndall Air Force Base, Panama City, FL**  
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FOR 8 CONSTRUCTION SITES**

**FLOODPLAINS:  
EXPAND FAM CAMP SITE  
(ALTERNATIVE 2)**

**FIGURE  
3.7-18**



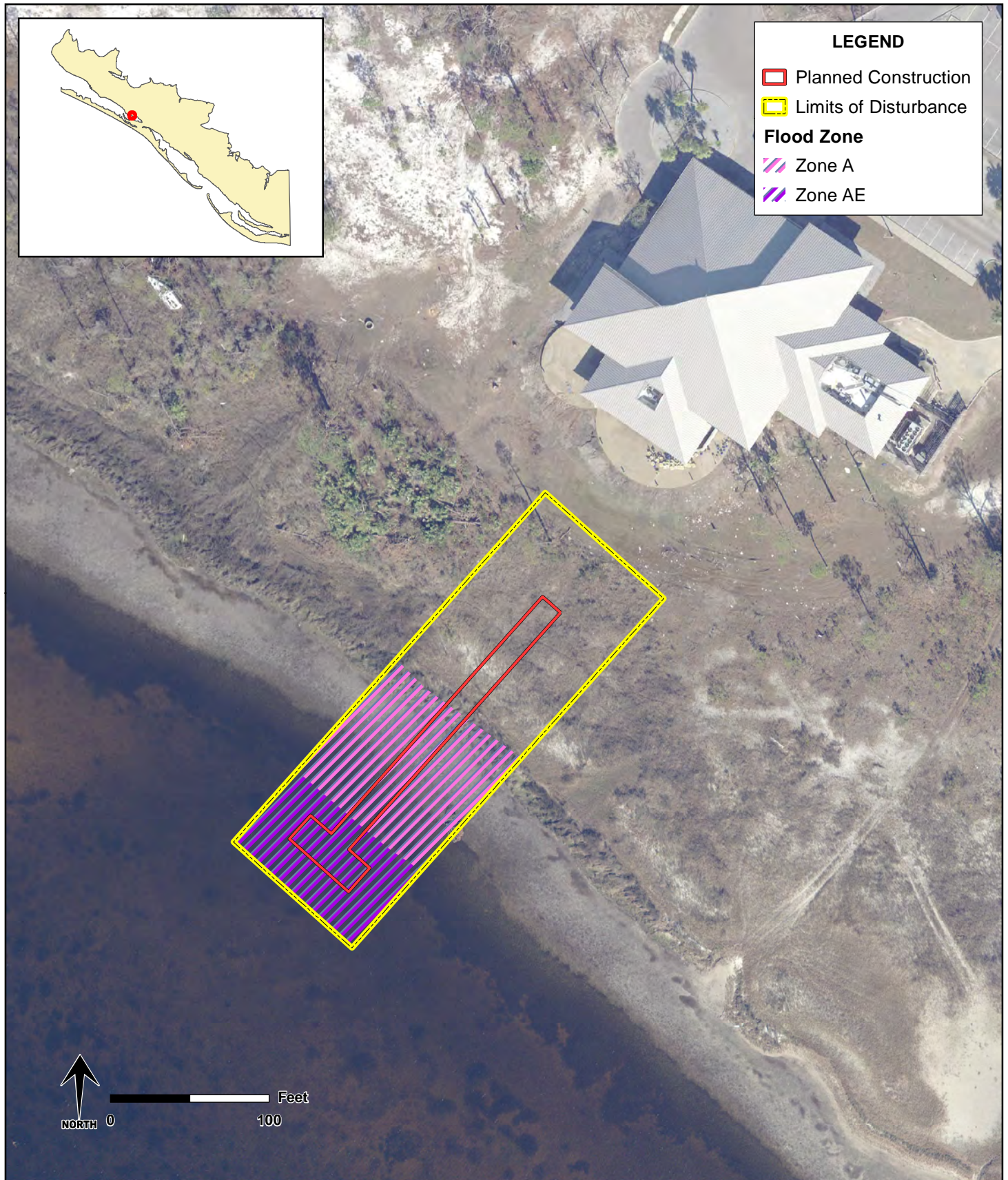


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FOR 8 CONSTRUCTION SITES**

**FLOODPLAINS:  
CONSTRUCT WATER MAIN ON  
NORTH SIDE OF FLIGHTLINE**

**FIGURE  
3.7-19**



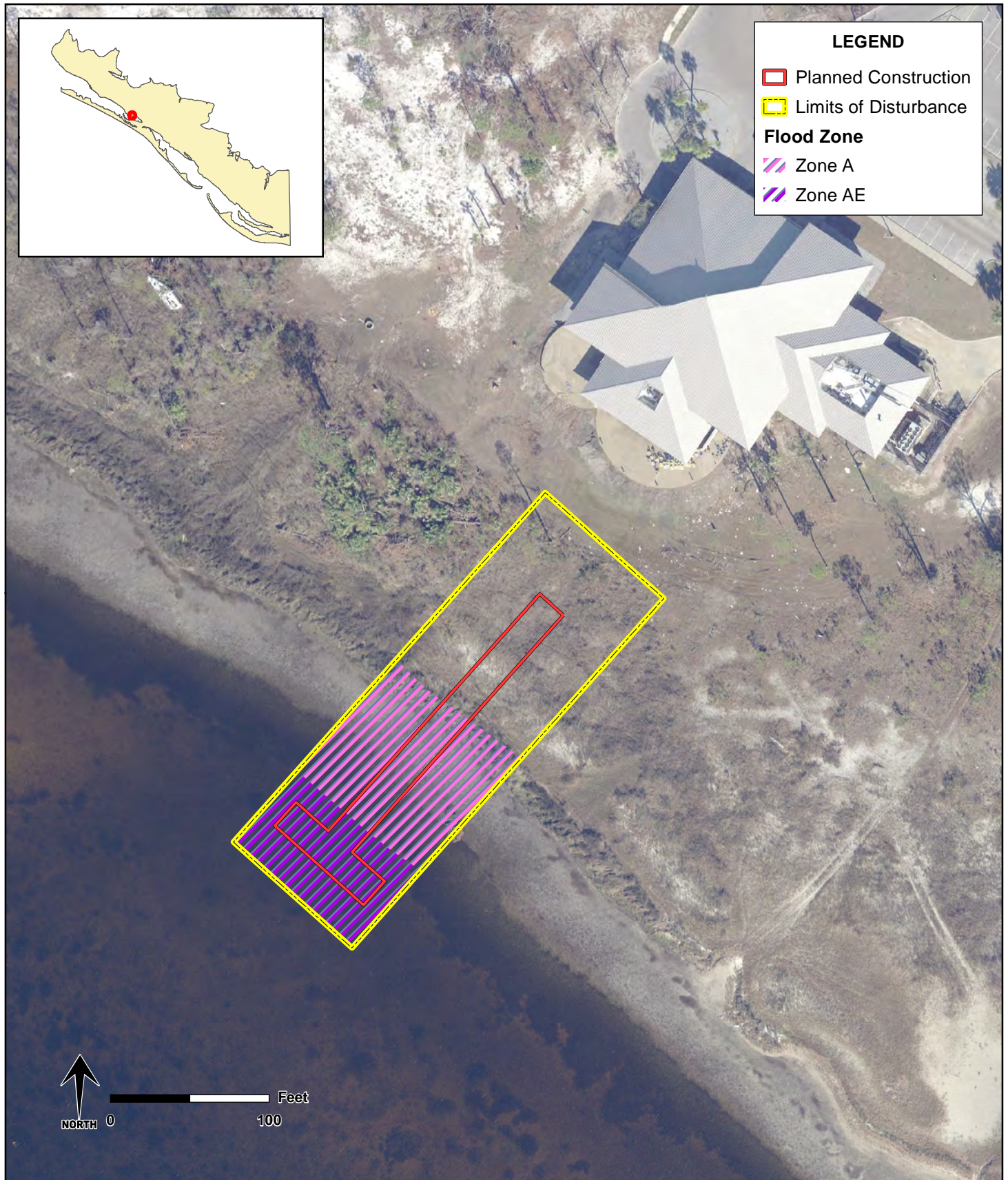


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**ENVIRONMENTAL ASSESSMENT  
FOR 8 CONSTRUCTION SITES**

**FLOODPLAINS: CONSTRUCT  
PIER - HERITAGE CLUB  
(ALTERNATIVE 1)**

**FIGURE  
3.7-20**



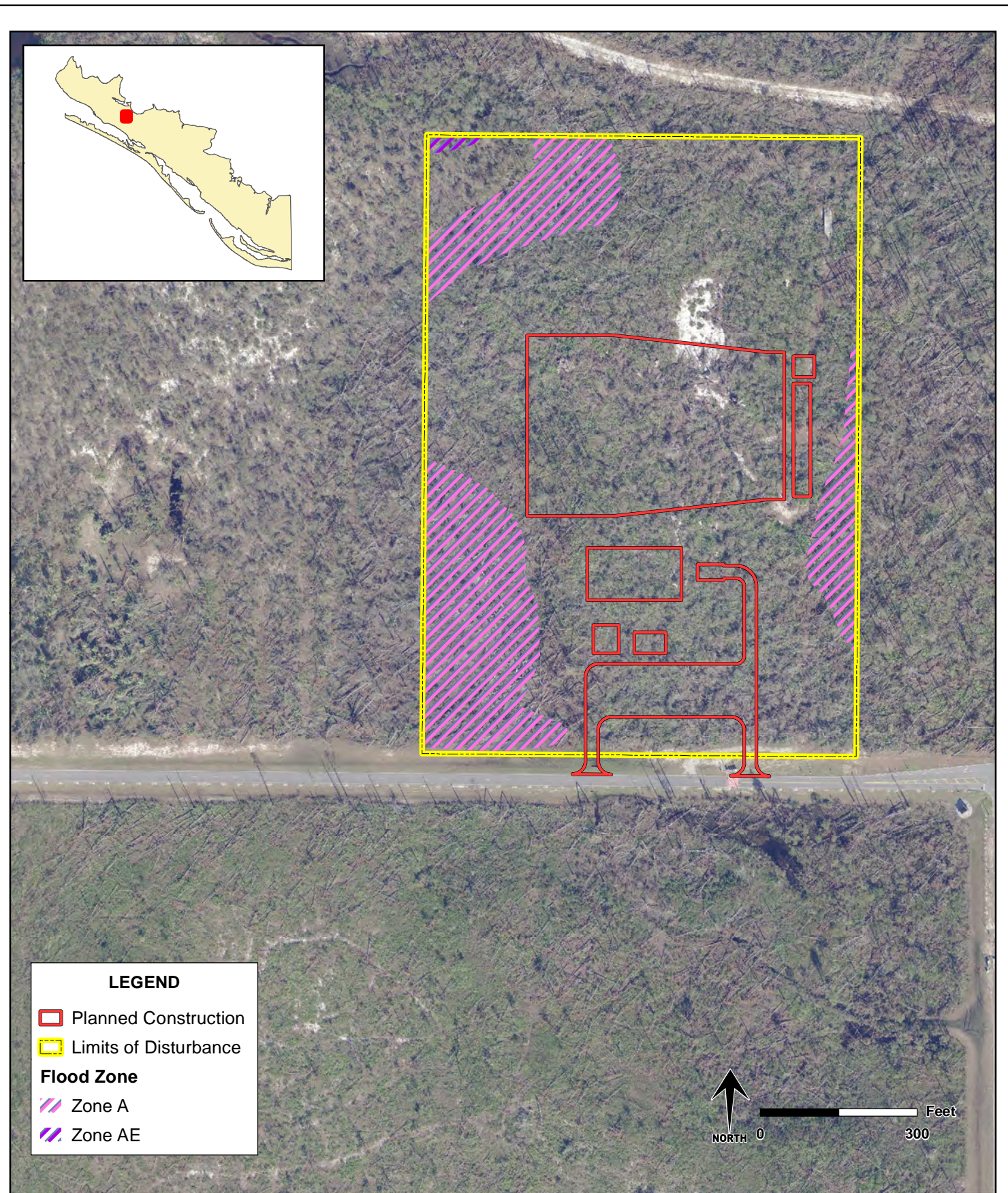


**Tyndall Air Force Base, Panama City, FL**  
**ENVIRONMENTAL ASSESSMENT  
FOR 8 CONSTRUCTION SITES**

**FLOODPLAINS: CONSTRUCT  
PIER - HERITAGE CLUB  
(ALTERNATIVE 2)**

**FIGURE  
3.7-21**







#### 3.7.4 COASTAL ZONE MANAGEMENT

The coastal zone includes those coastal lands or water uses governed by the FDEP, pursuant to the Federal Coastal Zone Management Act (CZMA) (16 U.S.C. 1451 et seq., as amended). The Florida Coastal Management Program (FCMP) implements these regulations within the state of Florida and encompasses the state's 67 counties and territorial seas. The outer boundary of Florida's coastal zone is the limit of state waters, which for the Atlantic Ocean coast of Florida is three nautical miles from shore and for the Gulf of Mexico coast of Florida is nine nautical miles from shore. Because Tyndall AFB is located in the coastal zone, a FCMP consistency review was performed for this EA and is further discussed in **Section 4.6**.

### 3.8 BIOLOGICAL RESOURCES

The biological resources ROI established for this EA corresponds to the LODs for each of the Proposed Actions and alternatives. Environmental scientists familiar with Florida's natural communities conducted a field review within the LODs in August 2021, November 2021 and April 2022. During the field review, each vegetative community and land use type within the LODs was visually inspected to assess approximate boundaries and document dominant vegetation. Field activities also included identifying wildlife and signs of wildlife usage within the LODs and within adjacent habitats. The survey areas at Tyndall AFB were surveyed for the presence of all federal- and state-listed plant and animal species that are known to, or have the potential, to occur on Tyndall AFB. Aquatic habitats were also surveyed for the presence, function, and cover-abundance of submerged aquatic vegetation (SAV). Critical habitat and Essential Fish Habitat (EFH) were also evaluated. A Biological Assessment (**Appendix B**) was prepared to assess potential impacts of the Proposed Actions and alternatives on biological resources, which is further discussed in **Section 4.7**.

#### 3.8.1 LAND COVER

Tyndall AFB is located in the Florida Coastal Lowlands-Gulf Section of the Coastal Plain Mixed Forest Province. Vegetative communities at Tyndall AFB include both natural and altered community types. Historically, natural areas at Tyndall AFB were composed primarily of coastal ecosystems and upland longleaf pine (*Pinus palustris*) ecosystems. Historical pine flatwoods have been largely impacted from timber harvesting and development. Timber at Tyndall AFB sustained catastrophic wind damage from Hurricane Michael in 2018. Following the hurricane, forest management actions included clearing of 9,000 acres of timber, removal of the debris, and restoration of the longleaf pine ecosystem. Management activities within the longleaf pine restoration areas include mechanical and chemical treatment, seeding and planting groundcover, and use of prescribed fire. Longleaf pine restoration is scheduled for completion in 2024. In addition to the longleaf pine ecosystem, numerous natural upland and wetland community types remain at Tyndall AFB and altered community types include residential and transportation. The majority of the natural and altered community types at Tyndall AFB have the potential to provide habitat for a variety of wildlife species.

Land use/vegetative cover types mapped within the survey areas were classified using FLUCFCS categories and were adapted from the NFWMD Land Use Geographic Information System (GIS) database and Tyndall AFB's land use cover GIS data. **Table 3.8-1** summarizes the land/vegetative cover types mapped within each survey area.



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**TABLE 3.8-1 LAND COVER**

Project	FLUCFCS Code	Description	Acres
Construct New EOD Gravel Road (Figure 3.8-1)	6420	Saltwater Marsh	2.31
	7410	Rural land in transition without positive indicators of intended activity	0.25
		<i>Subtotal</i>	2.56
Dredge the WEG Small Boathouse Area - Alternative 1 (Figure 3.8-2)	1554	Aircraft Building and Repair	0.61
	3220	Coastal Scrub	0.04
	6420	Saltwater Marsh	0.08
		<i>Subtotal</i>	0.73
Dredge the WEG Small Boathouse Area - Alternative 2 (Figure 3.8-3)	1554	Aircraft Building and Repair	1.45
		<i>Subtotal</i>	1.45
Replace WEG Tower 1802 (Figure 3.8-4)	3100	Herbaceous (Dry Prairie)	2.34
	4140	Pine - Mesic Oak	0.70
	6410	Freshwater Marsh	0.60
		<i>Subtotal</i>	3.64
Improve Expeditionary/ Encampment Roads (Figure 3.8-5)	3100	Herbaceous (Dry Prairie)	3.46
	3290	Other Shrubs and Brush	0.02
	4140	Pine - Mesic Oak	6.21
	4360	Upland Scrub, Pine and Hardwoods	2.35
	5100	Streams and Waterways	0.07
	6310	Wetland Shrub	1.68
	6420	Saltwater Marsh	0.06
	6430	Wet Prairie	0.13
	8330	Water Supply Plants	0.30
	8350	Solid Waste Disposal	0.93
		<i>Subtotal</i>	15.21
Expand Fam Camp Site - Alternative 1 (Figure 3.8-6)	3100	Herbaceous (Dry Prairie)	0.15
	4130	Sand Pine	9.26
	4270	Live Oak	1.02
	5420	Bays and Estuaries	0.17
	6410	Freshwater Marsh	0.46
	6420	Saltwater Marsh	0.19
		<i>Subtotal</i>	11.25
Expand Fam Camp Site - Alternative 2 (Figure 3.8-7)	3100	Herbaceous (Dry Prairie)	0.15
	4130	Sand Pine	9.26
	4270	Live Oak	1.01
	5420	Bays and Estuaries	0.31
	6410	Freshwater Marsh	0.46
	6420	Saltwater Marsh	0.13
		<i>Subtotal</i>	11.32
Construct Water Main on North Side of Flightline (Figure 3.8-8)	3100	Herbaceous (Dry Prairie)	1.37
	4250	Temperate Hardwoods	0.02
	4410	Coniferous Plantations, Slash Pine	0.38
	5100	Streams and Waterways	4.74
	5300	Reservoirs	21.68
	6430	Wet Prairie	3.03
	8110	Airports	115.45
		<i>Subtotal</i>	146.67
	5420	Bays and Estuaries	0.32

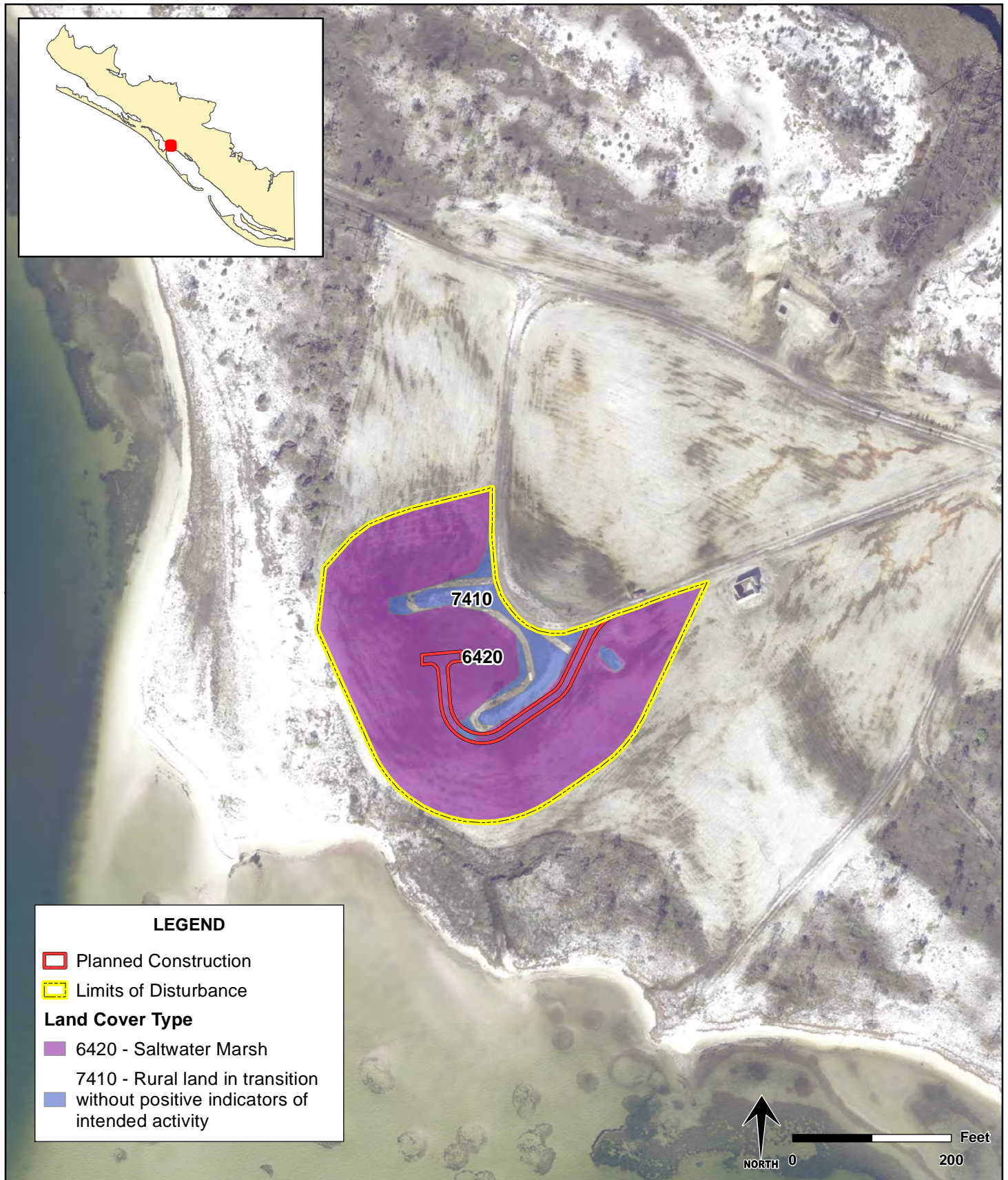
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Project	FLUCFCS Code	Description	Acres
Construct Fishing/Observation Pier (Heritage Club) – Alternative 1 (Figure 3.8-9)	6410	Freshwater Marsh	0.07
	6420	Saltwater Marsh	0.29
		<i>Subtotal</i>	0.68
Construct Fishing/Observation Pier (Heritage Club) – Alternative 2 (Figure 3.8-9)	5420	Bays and Estuaries	0.32
	6410	Freshwater Marsh	0.07
	6420	Saltwater Marsh	0.29
		<i>Subtotal</i>	0.68
Renovate Unite Site - Alternative 1 (Figure 3.8-10)	3100	Herbaceous (Dry Prairie)	0.19
	3290	Other Shrubs and Brush	15.40
	6310	Wetland Shrub	6.81
	6430	Freshwater Marsh	0.14
		<i>Subtotal</i>	22.54
Renovate Unite Site - Alternative 2 (Figure 3.8-11)	1210	Fixed Single Family Units	0.26
	1713	High Schools	5.39
	4360	Upland Scrub, Pine and Hardwoods	10.25
	5100	Streams and Waterways	0.15
		<i>Subtotal</i>	16.05
<b>Total<sup>1</sup></b>			<b>204.07</b>

Values may reflect rounding.

<sup>1</sup> For projects with more than one alternative, the alternative with the greatest acreage within the LOD is included in the total.





**Tyndall Air Force Base, Panama City, FL**

**ENVIRONMENTAL ASSESSMENT  
FOR 8 CONSTRUCTION SITES**

**LAND COVER:  
CONSTRUCT NEW EOD  
GRAVEL ROAD**

**FIGURE  
3.8-1**





**Tyndall Air Force Base, Panama City, FL**  
**ENVIRONMENTAL ASSESSMENT  
FOR 8 CONSTRUCTION SITES**

**LAND COVER:  
DREDGE THE WEG  
SMALL BOATHOUSE AREA (ALT 1)**

**FIGURE  
3.8-2**



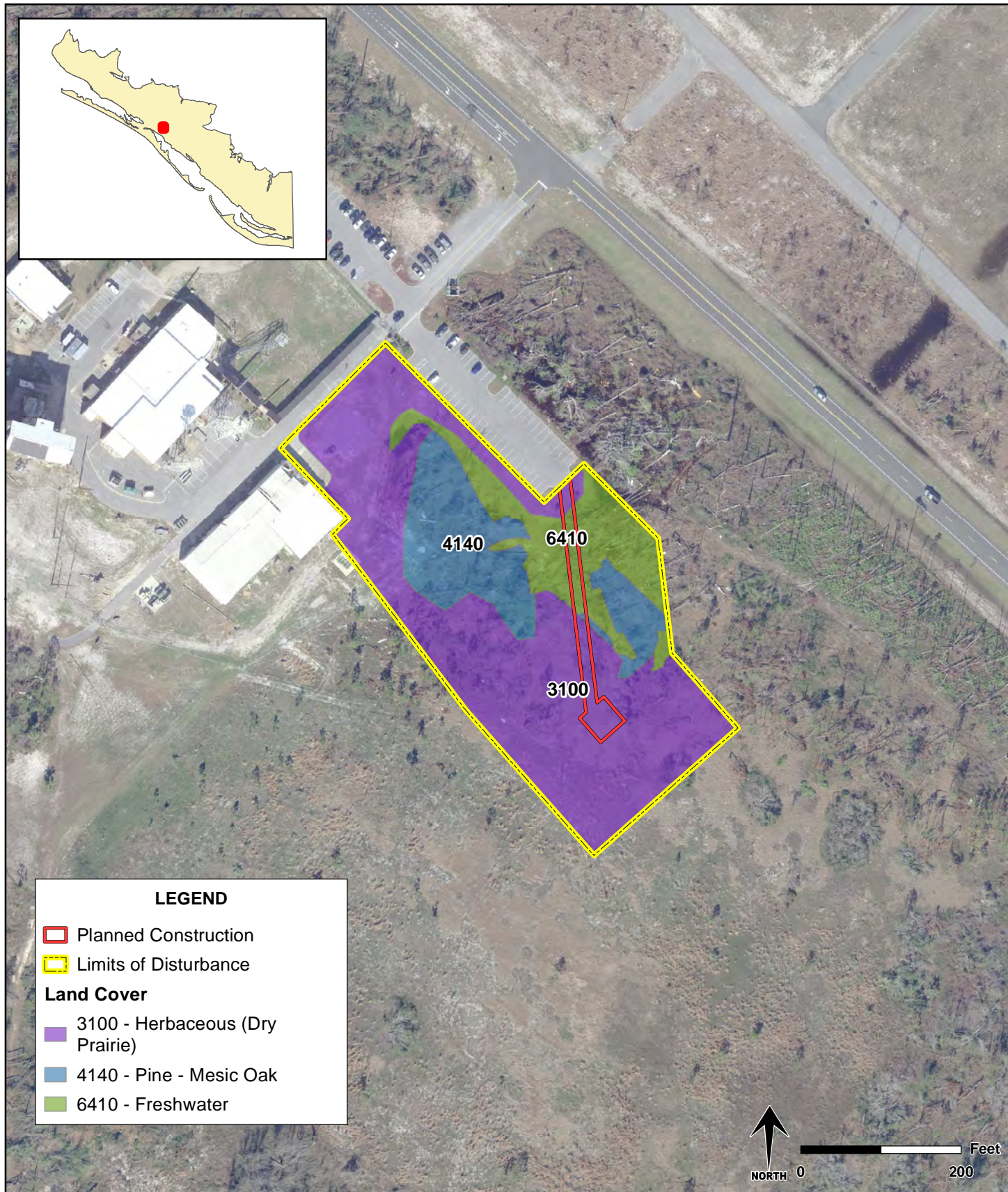


**Tyndall Air Force Base, Panama City, FL**  
**ENVIRONMENTAL ASSESSMENT  
FOR 8 CONSTRUCTION SITES**

**LAND COVER:  
DREDGE THE WEG  
SMALL BOATHOUSE AREA (ALT 2)**

**FIGURE  
3.8-3**



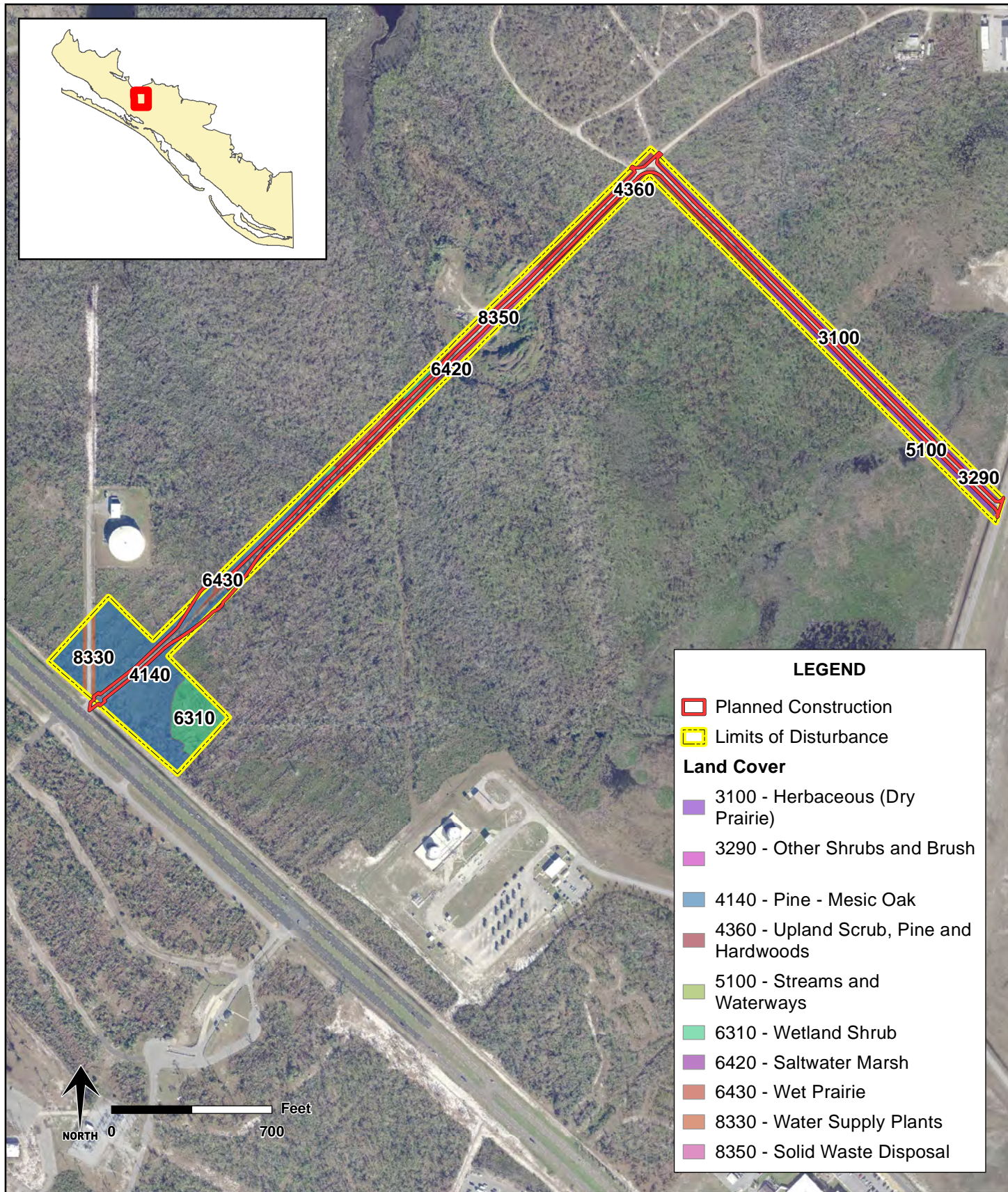


**Tyndall Air Force Base, Panama City, FL**  
**ENVIRONMENTAL ASSESSMENT  
FOR 8 CONSTRUCTION SITES**

**LAND COVER:  
REPLACE WEG TOWER 1802**

**FIGURE  
3.8-4**



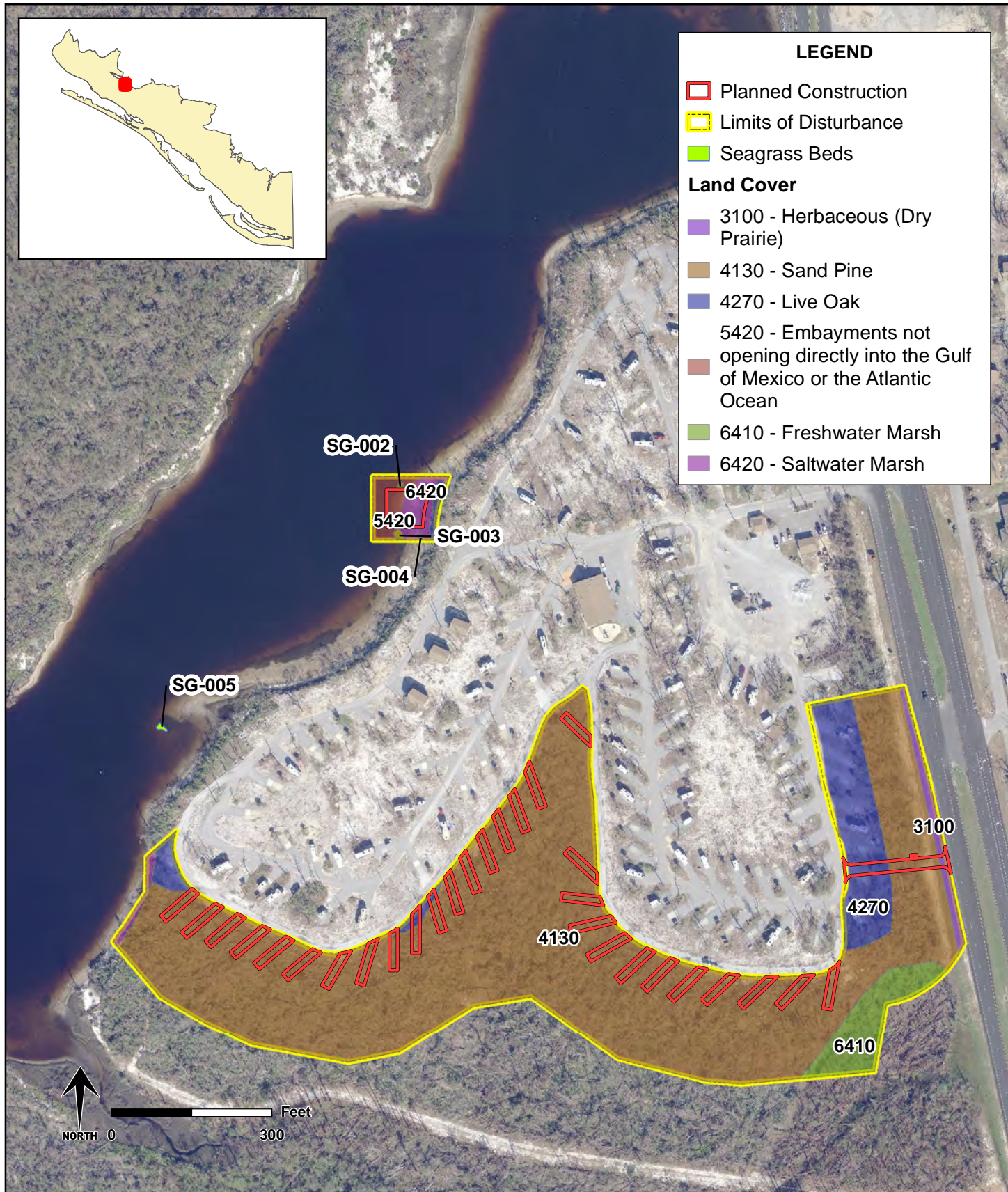


**Tyndall Air Force Base, Panama City, FL**  
**ENVIRONMENTAL ASSESSMENT  
 FOR 8 CONSTRUCTION SITES**

**LAND COVER:  
 IMPROVE EXPEDITIONARY/  
 ENCAMPMENT ROADS**

**FIGURE  
 3.8-5**



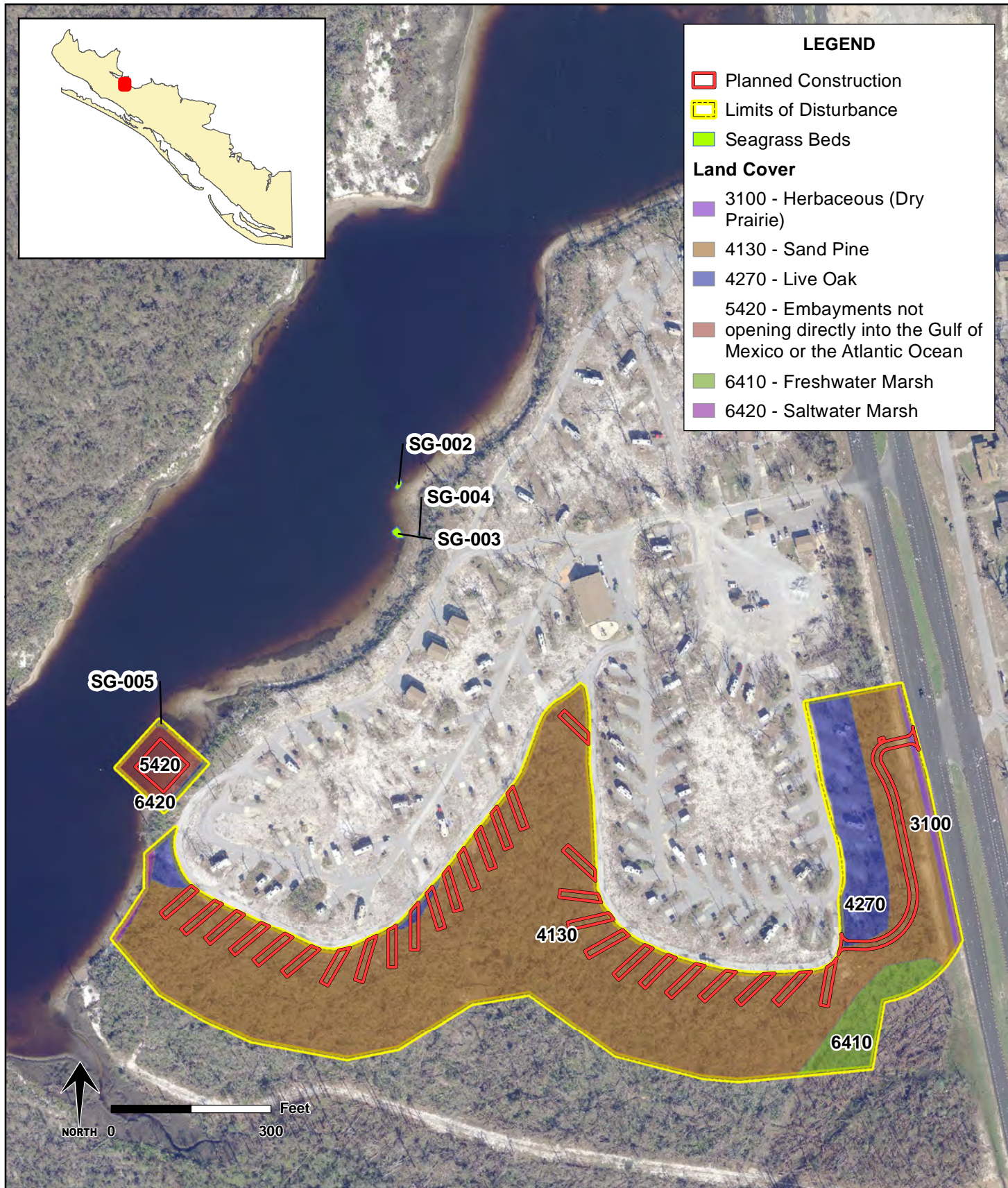


**Tyndall Air Force Base, Panama City, FL**  
**ENVIRONMENTAL ASSESSMENT**  
**FOR 8 CONSTRUCTION SITES**

**LAND COVER:**  
**EXPAND FAM CAMP SITE**  
**(ALTERNATIVE 1)**

**FIGURE**  
**3.8-6**



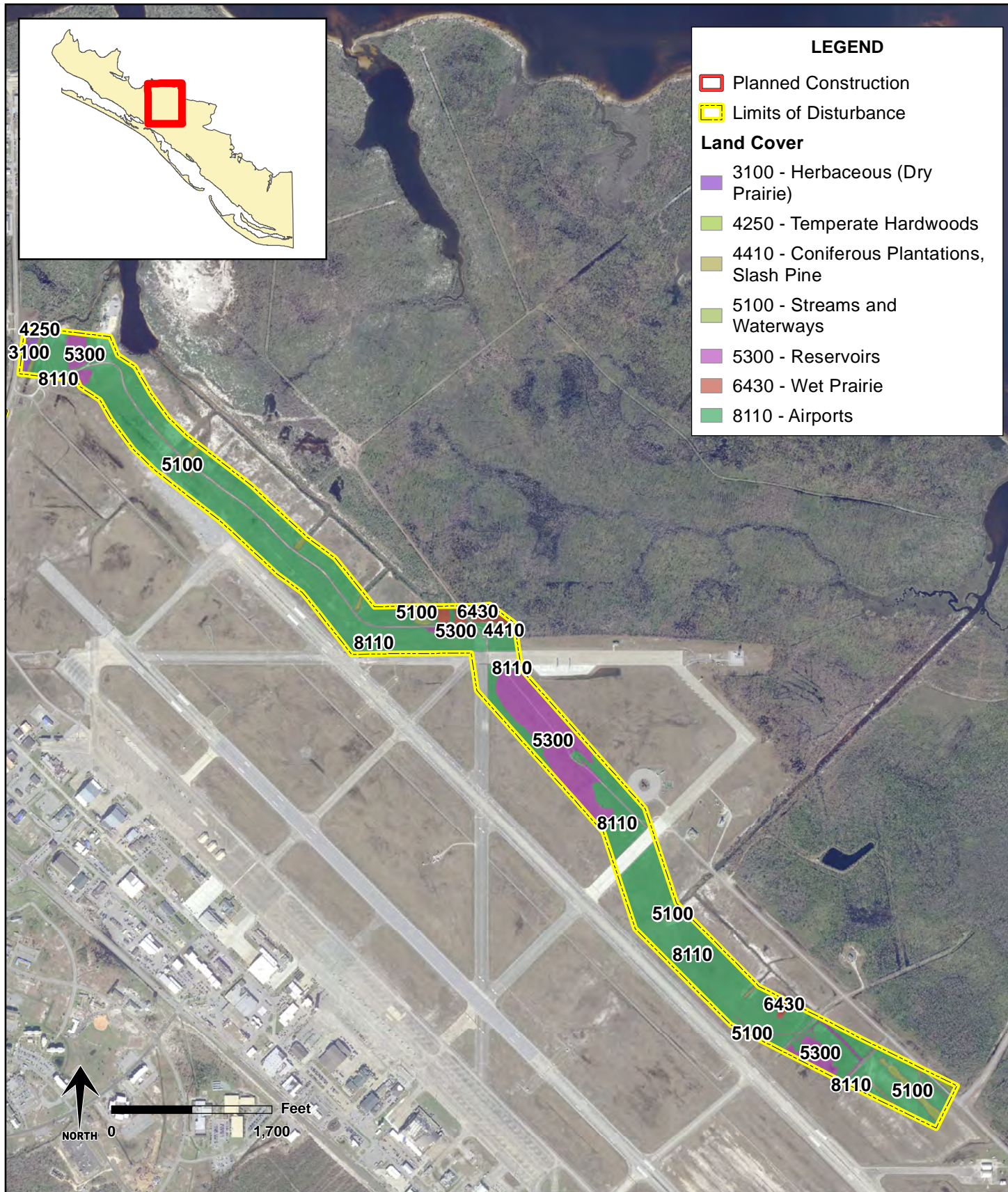


**Tyndall Air Force Base, Panama City, FL**  
**ENVIRONMENTAL ASSESSMENT  
FOR 8 CONSTRUCTION SITES**

**LAND COVER:  
EXPAND FAM CAMP SITE  
(ALTERNATIVE 2)**

**FIGURE  
3.8-7**



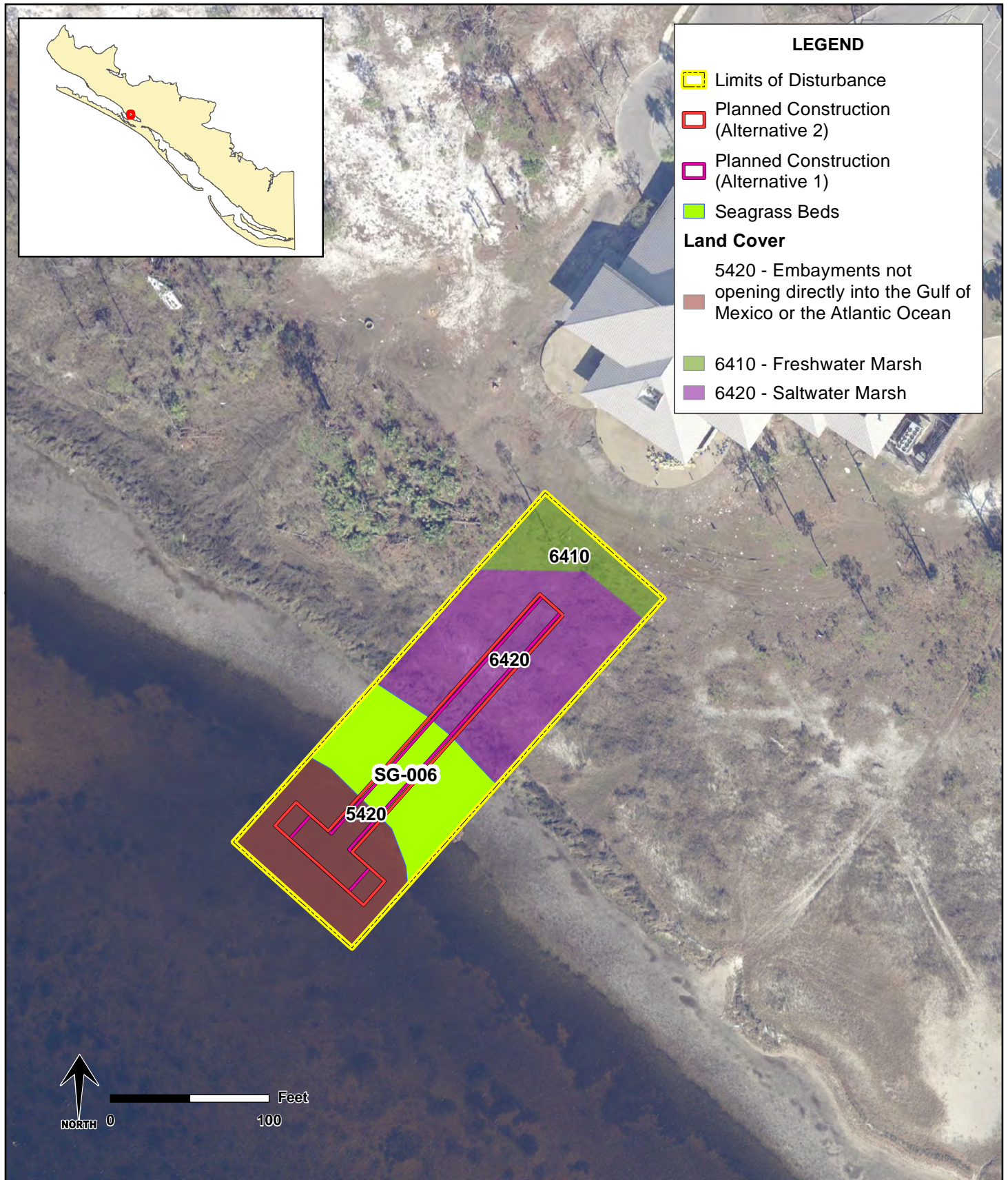


**Tyndall Air Force Base, Panama City, FL**  
**ENVIRONMENTAL ASSESSMENT  
FOR 8 CONSTRUCTION SITES**

**LAND COVER:  
CONSTRUCT WATER MAIN ON  
NORTH SIDE OF FLIGHTLINE**

**FIGURE  
3.8-8**



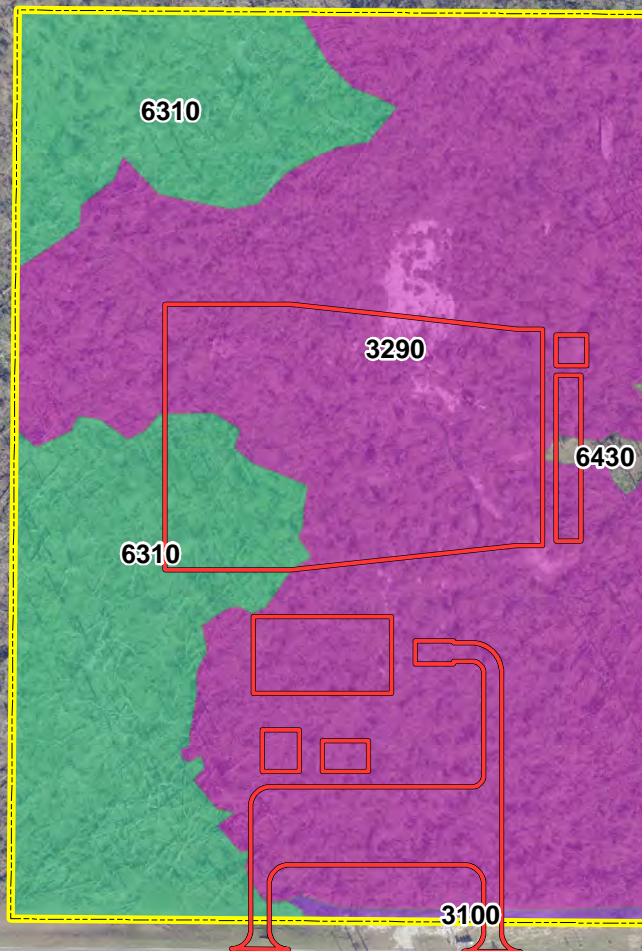


Tyndall Air Force Base, Panama City, FL  
ENVIRONMENTAL ASSESSMENT  
FOR 8 CONSTRUCTION SITES

LAND COVER:  
HERITAGE CLUB PIER  
(BOTH ALTERNATIVES)

FIGURE  
3.8-9







#### LEGEND

 Planned Construction

 Limits of Disturbance

#### Land Cover

 3100 - Herbaceous (Dry  
Prairie)

 3290 - Other Shrubs and Brush

 6310 - Wetland Shrub



0 300 Feet



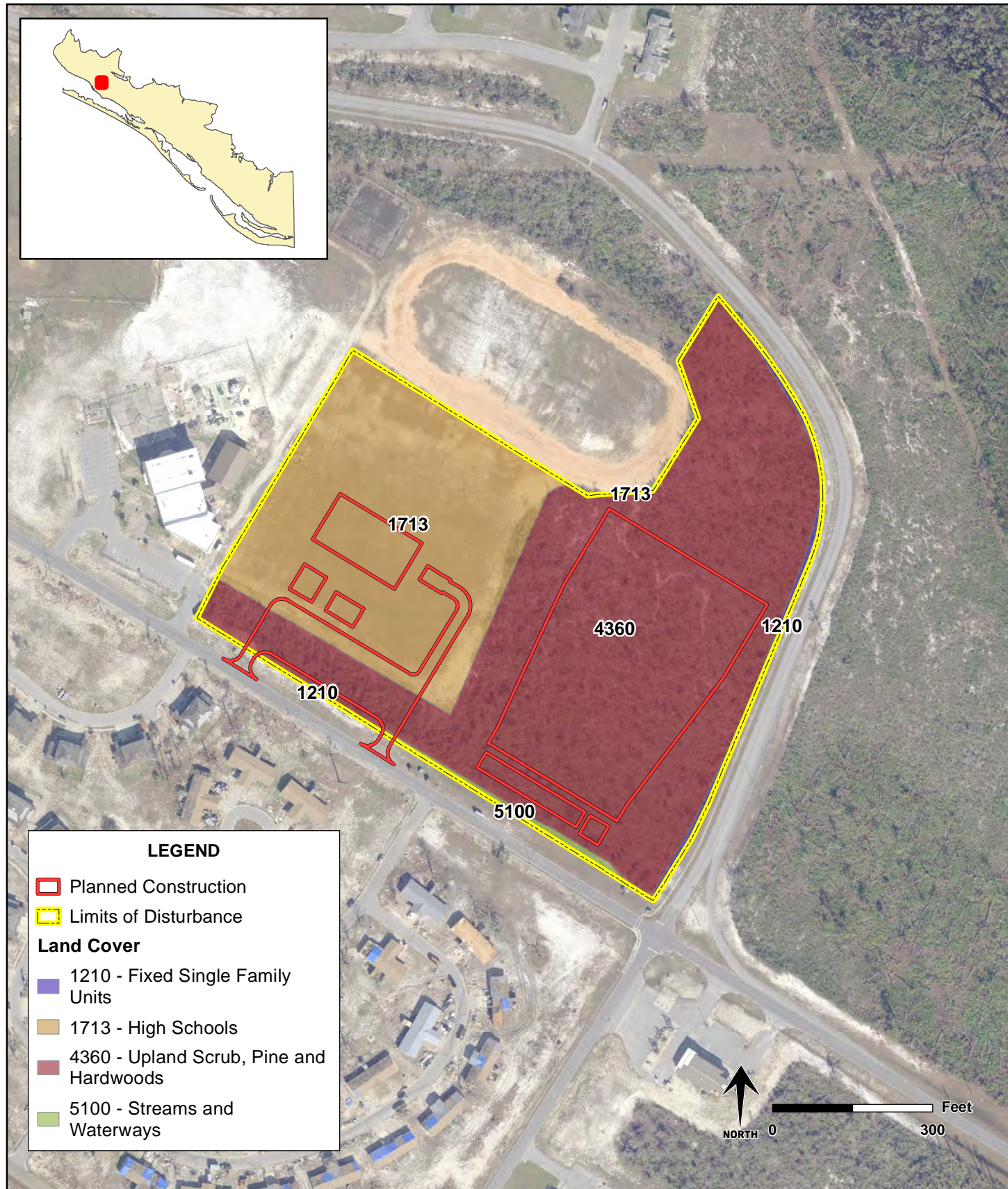
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ENVIRONMENTAL ASSESSMENT  
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LAND COVER:  
RENOVATE UNITE SITE  
(ALTERNATIVE 1)

FIGURE  
3.8-10





**Tyndall Air Force Base, Panama City, FL**  
**ENVIRONMENTAL ASSESSMENT  
FOR 8 CONSTRUCTION SITES**

**LAND COVER:  
RENOVATE UNITE SITE  
(ALTERNATIVE 2)**

**FIGURE  
3.8-11**

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### 3.8.2 WILDLIFE

The large amount of undeveloped land and wide range of natural community types at Tyndall AFB provides habitat for a variety of mammals, reptiles, birds, amphibians, fish, and plants. Common mammal species include the least shrew (*Cryptodius parva*), eastern red bat (*Lasiurus borealis*), eastern mole (*Scalopus aquaticus*), cotton mouse (*Peromyscus gossypinus*), eastern gray squirrel (*Sciurus carolinensis*), red fox (*Vulpes vulpes*), gray fox (*Urocyon cinereoargenteus*), raccoon (*Procyon lotor*), white-tailed deer (*Odocoileus virginianus*), and Virginia opossum (*Didelphis virginiana*).

### 3.8.3 LISTED SPECIES

Federally-listed species are those plant and animal species protected by the federal government pursuant to the Endangered Species Act of 1973, as amended. State-listed species are those plant and animal species managed by the State of Florida pursuant to Chapter 5B-40 F.A.C. and Chapter 68A-27 F.A.C., respectively. An official species list of threatened and endangered species that may occur within the Action Area, or may be affected by the Proposed Actions, was generated using USFWS's IPaC project planning tool on the Environmental Conservation Online System. The official species list is included in **Appendix B**. In addition to the official species list, the 2020 *Integrated Natural Resources Management Plan for Tyndall AFB, Florida* was consulted to broaden the list of species that are known to, or have the potential to, occur within Tyndall AFB or within proximity to the survey areas. **Table 3.8-2** depicts federally-listed species and **Table 3.8-3** depicts state-listed species associated with Tyndall AFB.

**TABLE 3.8-2 FEDERALLY LISTED SPECIES ASSOCIATED WITH TYNDALL AFB**

Scientific Name	Common Name	Federal Status	Location
<b>Mammals</b>			
<i>Peromyscus polionatus allophtys</i>	Choctawhatchee beach mouse	E	Tyndall AFB
<i>Peromyscus polionatus peninsularis</i>	St. Andrew beach mouse	E	Tyndall AFB
<i>Trichechus manatus</i>	West Indian manatee	T	Gulf of Mexico
<b>Reptiles</b>			
<i>Alligator mississippiensis</i>	American alligator	T(S/A)	Tyndall AFB
<i>Caretta caretta</i>	Loggerhead sea turtle	T	Tyndall AFB, Gulf of Mexico
<i>Chelonia mydas</i>	Green sea turtle	T	Tyndall AFB, Gulf of Mexico
<i>Dermochelys coriacea</i>	Leatherback sea turtle	E	Tyndall AFB, Gulf of Mexico
<i>Drymarchon corais couperi</i>	Eastern indigo snake	T	Tyndall AFB
<i>Gopherus polyphemus</i>	Gopher tortoise	C	Tyndall AFB
<i>Lepidochelys kempii</i>	Kemp's ridley sea turtle	E	Tyndall AFB, Gulf of Mexico
<b>Birds</b>			
<i>Calidris canutus rufa</i>	Red knot	T	Tyndall AFB
<i>Charadrius melodus</i>	Piping plover	T	Tyndall AFB
<i>Mycteria americana</i>	Wood stork	T	Tyndall AFB
<b>Fish</b>			
<i>Acipenser oxyrinchus desotoi</i>	Gulf sturgeon	T	Gulf of Mexico
<i>Pristis pectinate</i>	Smalltooth sawfish	E	Gulf of Mexico



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Scientific Name	Common Name	Federal Status	Location
<b>Plants</b>			
<i>Euphorbia telephoides</i>	Telephus spurge	T	Tyndall AFB
<i>Harperocallis flava</i>	Harper's beauty	E	Tyndall AFB
<i>Macbridea alba</i>	White birds-in-a-nest	T	Tyndall AFB
<i>Pinguicula ionantha</i>	Godfrey's butterwort	T	Tyndall AFB
<i>Scutellaria floridana</i>	Florida skullcap	T	Tyndall AFB

Sources: Tyndall AFB, 2020. *Integrated Natural Resources Management Plan for Tyndall AFB, Florida*. U.S. Air Force, Tyndall Air Force Base, Florida; USFWS, 2021. Environmental Conservation Online System Information for Planning and Consultation (<https://ecos.fws.gov/ipac/>), accessed July 13, 2021.

Notes: E – Endangered; C – Candidate; T – Threatened; T(S/A) – Threatened due to Similarity of Appearance

**TABLE 3.8-3 STATE LISTED SPECIES ASSOCIATED WITH TYNDALL AFB**

Scientific Name	Common Name	State Status	Location
<b>Mammals</b>			
<i>Ursus americanus floridanus</i>	Florida black bear	FBBCR	Tyndall AFB
<b>Reptiles</b>			
<i>Gopherus polyphemus</i>	Gopher tortoise	T	Tyndall AFB
<i>Pituophis melanoleucus mugitus</i>	Florida pine snake	T	Tyndall AFB
<b>Birds</b>			
<i>Charadrius nivosus</i>	Snowy plover	T	Tyndall AFB
<i>Egretta caerulea</i>	Little blue heron	T	Tyndall AFB
<i>Egretta rufescens</i>	Reddish egret	T	Tyndall AFB
<i>Egretta tricolor</i>	Tri-colored heron	T	Tyndall AFB
<i>Haematopus palliatus</i>	American oystercatcher	T	Tyndall AFB
<i>Haliaeetus leucocephalus</i>	Bald eagle	BGEPA	Tyndall AFB
<i>Rynchops niger</i>	Black skimmer	T	Tyndall AFB
<i>Sternula antillarum</i>	Least tern	T	Tyndall AFB
<b>Plants</b>			
<i>Asclepias viridula</i>	Southern milkweed	T	Tyndall AFB
<i>Chrysopsis godfreyi</i>	Godfrey's golden aster	E	Tyndall AFB
<i>Cleistes bifaria</i>	Small spreading pogonia	E	Tyndall AFB
<i>Drosera filiformis</i>	Dew thread sundew	E	Tyndall AFB
<i>Drosera intermedia</i>	Spoon-leaved sundew	T	Tyndall AFB
<i>Euphorbia telephoides</i>	Telephus spurge	E	Tyndall AFB
<i>Eurybia spinulosa</i>	Apalachicola aster	E	Tyndall AFB
<i>Gentiana pennelliana</i>	Wiregrass gentian	E	Tyndall AFB
<i>Harperocallis flava</i>	Harper's beauty	E	Tyndall AFB
<i>Justicia crassifolia</i>	Thick-leaved water willow	E	Tyndall AFB
<i>Lilium catesbaei</i>	Southern red lily	T	Tyndall AFB
<i>Lupinus westianus</i>	Gulf coast lupine	T	Tyndall AFB
<i>Macbridea alba</i>	White birds-in-a-nest	E	Tyndall AFB
<i>Oxypolis greenmanii</i>	Giant water dropwort	E	Tyndall AFB
<i>Physostegia godfreyi</i>	Apalachicola dragonhead	T	Tyndall AFB
<i>Pinguicula ionantha</i>	Godfrey's butterwort	E	Tyndall AFB
<i>Pinguicula lutea</i>	Yellow-flowered butterwort	T	Tyndall AFB
<i>Pinguicula planifolia</i>	Chapman's butterwort	T	Tyndall AFB
<i>Pogonia ophioglossoides</i>	Snakemouth orchid	T	Tyndall AFB
<i>Polygonella macrophylla</i>	Large-leaved jointweed	T	Tyndall AFB
<i>Ruellia noctiflora</i>	Nightflowering wild petunia	E	Tyndall AFB
<i>Sarracenia psittacina</i>	Parrot pitcher plant	T	Tyndall AFB
<i>Sarracenia rosea</i>	Purple pitcher plant	T	Tyndall AFB

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Scientific Name	Common Name	State Status	Location
<i>Scutellaria floridana</i>	Florida skullcap	E	Tyndall AFB
<i>Verbesina chapmanii</i>	Chapman's crownbeard	T	Tyndall AFB
<i>Xyris isoetifolia</i>	Quillwort yellow-eyed grass	E	Tyndall AFB
<i>Xyris longisepala</i>	Karst pond yellow-eyed grass	E	Tyndall AFB
<i>Xyris scabrifolia</i>	Harper's yellow-eyed grass	T	Tyndall AFB

Sources: Florida Department of State, 2021. Chapter 5B-40.0055 F.A.C.: Regulated Plant Index (Effective Date 1/8/2020); Florida Department of State, 2021. Chapter 68A-27.003 F.A.C.: Florida's Endangered and Threatened Species List (Effective Date: 5/27/2021); Tyndall AFB, 2020. *Integrated Natural Resources Management Plan for Tyndall AFB, Florida*. U.S. Air Force, Tyndall Air Force Base, Florida.  
Notes: BGEPA – Bald and Golden Eagle Protection Act; FBBCCR – Florida Black Bear Conservation Rule; E – Endangered; T – Threatened

### 3.8.4 CRITICAL HABITAT

Critical Habitat designated by Congress in 50 CFR Part 424 for the Choctawhatchee beach mouse, St. Andrew beach mouse, piping plover, loggerhead sea turtle and Gulf sturgeon is located within the boundaries of Tyndall AFB. Choctawhatchee beach mouse critical habitat is located within 30 feet of the limits of disturbance for the EOD range gravel road construction project. Piping Plover critical habitat is within 950 feet from the limits of disturbance for the fishing/observation pier project at Heritage Club. Critical Habitat for the St. Andrew beach mouse is located within approximately 1,200 feet of the WEG boathouse dredging project limits. Remaining critical habitat areas are approximately half a mile or more from the nearest project area.

### 3.8.5 SUBMERGED AQUATIC VEGETATION

SAV includes any species of seagrass and rhizophytic macroalgae. Patches of SAV can migrate to unvegetated areas; therefore, SAV habitat includes both areas that are currently vegetated by SAV as well as unvegetated areas that are adjacent to SAV, have historically supported SAV, and have the ability to support SAV based on conditions including water environment, sediment characteristics, and light availability.

SAV surveys were conducted on September 1 and 2, 2021. The survey was conducted during the seagrass growing season (June 1 to September 30) identified by regulatory agencies. Delineated SAV beds within the areas of the Proposed Actions and alternatives are described as follows.

#### 3.8.5.1 Dredge the WEG Small Boathouse Area

One seagrass bed, SG-001, was identified on the west side of the project area (**Figure 3.8-2 and Figure 3.8-3**). The patchy bed extends from an existing shoal to the boat ramp channel. The bed becomes increasingly patchy and sparse with increasing water depth. The dominant species observed was turtle grass. Some shoal grass was observed intermixed in the bed typically growing in shallower areas. Water depths reached a maximum of 5.5 feet at the seagrass bed boundary with greater depths observed beyond the seagrass bed. Man-made debris was observed throughout the survey area.

#### 3.8.5.2 Expand FAMCAMP (Alternative 1)

Three separate seagrass areas were identified within the FAMCAMP Alternative 1 area (**Figure 3.8-6**). Seagrass bed SG-002, located near the northern project boundary is comprised of shoal grass (*Halodule*



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*wrightii*) with sparse turtle grass (*Thalassia testudinum*). Vegetative cover of shoal grass was approximately 10-15% with sparse turtle grass located along the southern boundary of the bed. This bed was near the western limit of an existing shoal. Water depth rapidly increased towards the west. Visibility quickly diminished with increasing water depth.

Seagrass bed SG-003 was also a patchy bed located along the project's southern boundary. This bed was dominated by shoal grass. Vegetative cover was approximately 5-10%. This seagrass bed extended beyond the project boundary.

Seagrass bed SG-004 is a patchy, very narrow, bed located adjacent to the shoreline. The seagrass was growing along the needlerush (*Junucus roemerianus*) line of the adjacent saltwater marsh. Vegetative cover was approximately 0-5%. Water depths were less than 1 foot. This seagrass bed extended beyond the project boundary.

#### **3.8.5.3 Expand FAMCAMP (Alternative 2)**

One seagrass bed, SG-005, was identified along the northwest corner of the project area (**Figure 3.8-7**). The seagrass bed extends beyond the project boundary. The bed was predominantly vegetated with shoal grass with a few individuals of turtle grass intermixed within the bed. Water depths reached a maximum of 3 feet.

#### **3.8.5.4 Construct Fishing/Observation Pier at Heritage Club**

One continuous seagrass bed, SG-006, was identified within the project area (**Figure 3.8-9**). The bed extends from the adjacent saltwater marsh to approximately 85 feet waterward into the bay. Shoal grass comprises approximately 80% of the total cover with turtle grass comprising the remaining 20%. Overall vegetative cover of seagrass was greater than 95%, with little to no unvegetated sandy areas observed within the project area. Water depths reached a maximum of 4.5 feet and the seagrass bed continues along the shoreline extending beyond the project limits.

### **3.9 CULTURAL RESOURCES**

Historic property can include prehistoric or historic buildings, sites, districts, objects, or structures on or eligible for the National Register (54 U.S.C. 300308). Also included in the definition are properties of traditional religious and cultural importance to an Indian tribe or Native Hawaiian organization (36 CFR 800.16[l][1]) that meet National Register criteria.

The cultural resources ROI established for this EA corresponds to the LODs for each of the Proposed Actions and alternatives. These LODs also serve as the APE to be evaluated for cultural resources and used for NHPA consultations. Some portions of the LOD/APE have already been surveyed for cultural resources during previous identification efforts, whereas other portions were surveyed to support this EA. Previous and current investigation efforts are summarized for each Proposed Action/alternative in the following sections. Further details are included in a Cultural Resources Assessment Survey (CRAS) Report included as **Appendix C** to this EA. Refer to **Section 4.8** for further discussion of potential impacts of the Proposed Actions and alternatives on cultural resources.

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**3.9.1 CONSTRUCT NEW EOD GRAVEL ROAD**

No previous archaeological investigations have been performed within the APE for the EOD Gravel Road improvements. Two previous investigations on site TY-148 have been performed, located approximately 415 feet north, northeast, and east of the Proposed Action APE, but no archaeological sites were identified in these areas with proximity to the planned EOD range improvements. Separately, an isolated archeological resource (8BY02897) has been identified offshore well to the south of the project area. The site is documented in the Florida Master Site File (FMSF) with a National Register of Historic Places (NRHP) recommendation of potentially eligible.

During the field review performed for this EA, the soil integrity of the entire project area was found to be heavily disturbed with the presence of metallic fragments indicative of active EOD operations. No artifacts or cultural materials were observed during the pedestrian survey of the project area.

**3.9.2 DREDGE WEAPONS EVALUATION GROUP (WEG) SMALL BOATHOUSE AREA**

A majority of the terrestrial APE for the WEG Small Boathouse project has been previously surveyed for archaeological resources as part of prior investigations at site TY-156. Although numerous archaeological resources are present in the TY-156 site located approximately 700 feet northeast of spoils site Alternative 2, none are documented within or adjacent to the areas comprising the project APEs. The archaeological survey performed as part of this EA included the excavation of two Shovel Test Pits (STP) which were negative for the presence of cultural resources.

The submerged portion of the APE measures approximately 180-feet wide, defined as measured parallel to the shoreline. This portion was surveyed using transects spaced at 30-foot intervals, for a total of seven transects. The adjacent shoreline is developed for boat pier infrastructure, and extensively damaged from Hurricane Michael. The only metal anomalies detected were small debris associated within two meters of each pier structure. The block does not contain any archaeological objects.

**3.9.3 REPLACE WEG TOWER 1802**

No previous archaeological investigations have been performed within the APE for the WEG Tower 1802 replacement project. One previous investigation was performed on site TY-159, approximately 145 feet north of the project APE, and separated from the project area by Ohio Road. The site was extensively shovel tested in 2017, but no archaeological sites were identified in this area with proximity to the planned WEG Tower 1802 replacement (Mikell, 2017). During the archaeological survey performed for this EA three STPs were excavated in the APE, all of which were negative for cultural resources.

**3.9.4 IMPROVE EXPEDITIONARY/ENCAMPMENT ROADS**

Portions of the APE for the Expeditionary/Encampment Roads improvements have been previously surveyed for archaeological resources as part of prior investigations. Specifically, most of Expeditionary Road and the proposed turnaround and ECF areas are included in site TY-111, which was systematically shovel tested in 2015 (Campbell et al., 2015).



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Resource 8BY01782 (TY-111-D/E) is located within the project APE, immediately east of U.S. Highway 98, in the vicinity of the proposed turnaround and ECF facilities. A total of 43 prehistoric ceramics, 7,703.73 grams (g) of shells, and one historic can part were recovered from 8BY01782. The ceramic inventory includes two Swift Creek Complicated Stamped, one Carrabelle Incised and one Carrabelle Punctated, two Keith Incised, eight Wakulla Check Stamped, two Weeden Island Plain, two Weeden Island Punctated, and 25 unidentified plain sherds. A number of sherds display good quality of manufacture. The majority of shell recovered was whelk (6,442 g), with modest quantities of oyster (400 g) and scallop (108.02 g). Most of the whelk were whole specimens harvested for the meat. The prehistoric resources are from the Weeden Island time period (Anno Domini [A.D.] 450-1000). The single historic artifact collected was a ferrous fragment of a can of an unknown date. Site 8BY01782 was determined ineligible for inclusion to the NRHP.

Resource 8BY01780 (TY-111-B) is located immediately southeast of Expeditionary Road, outside of the APE for the proposed roadway improvements. Four prehistoric ceramics and three lithic specimens were recovered, dating to the Weeden Island time period (A.D. 450-1000). The site was determined ineligible for inclusion to the NRHP.

A total of three prehistoric ceramics and 123 historic artifacts were recovered from Resource 8BY01781 (TY-111-C). This site is located well outside the project area APE, northwest of Expeditionary Road, and was determined ineligible for listing to the NRHP.

Located within the APE at the intersection of Expeditionary and Encampment Roads is the isolated Resource 8BY00190 (TAFB ABORIGINAL 7). The site is documented in the FMSF with an indeterminate temporal association and a NRHP recommendation of ineligible.

For this EA, a total of five STPs were excavated in the portions of the APE not previously surveyed. Other locations were not subjected to shovel testing due to inundated conditions or evidence of debris/heavy disturbance at the time of field review. No artifacts or cultural materials were discovered in excavated STPs or observed during the pedestrian survey of the project area.

### **3.9.5 EXPAND FAMCAMP SITE**

A majority of the terrestrial APE for the FAMCAMP improvements has been previously surveyed for archaeological resources as part of prior investigations at sites TY-136 and TY-09-0011. Site TY-136 includes two resources identified as 8BY01770 (TY-136A) and 8BY01771 (TY-136 D) in the vicinity of the FAMCAMP APE, but these resources do not directly intersect the APE. These two resources have been evaluated for cultural significance and were determined ineligible for listing to the NRHP in November 2015.

Site TY-09-0011 includes two resources identified as 8BY01382 (TY-11A) and 8BY01391 (TY-11B). Resource 8BY01382 is located within the planned APE for the FAMCAMP improvements, whereas 8BY01391 is adjacent to the APE to the south. Resource 8BY01391 was evaluated for cultural significance and was determined to be ineligible for listing to the NRHP in October 2013.

Resource 8BY01382, which is located in the APE, is identified as a prehistoric land terrestrial campsite temporally associated with the Weeden Island (A.D. 450-1000) period. The site was subjected to systematic

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shovel testing in 2012 which uncovered a total of four ceramics, 17 lithics, and 125.6 g of shell. Ceramics include a Wakulla Check Stamped rim fragment, two unidentified plain sherds, and one fired clay fragment. Cooking soot was found on one of the unidentified sherds. At the time of investigation, 8BY01382 was recommended as ineligible for listing to the NRHP as minimal site with no clear patterns (Bourgeois et al., 2012).

The portion of the terrestrial APE surveyed for this EA largely consists of a small strip of land bordering U.S. 98. This location is mostly situated within an existing utility corridor and the presence of marked utilities including water lines, sewer lines, gas lines, fiber optic cable lines, and cable lines, prevented shovel testing in a majority of the areas. However, one STP was excavated in a small portion of the APE on the western Bayou that had not previously been tested. No artifacts or cultural materials were recovered.

The submerged portion of the APE for each of the FAMCAMP alternatives each measured 120-feet wide, defined as measured parallel to the shoreline. These areas were surveyed using transects spaced at 30-foot intervals, for a total of five transects in each block. The blocks were clean of any artifacts, with several small metal anomalies detected, measuring less than 10 cm diameter. No archaeological materials were observed in either of the proposed in-water construction locations.

#### **3.9.6 CONSTRUCT WATER MAIN ALONG NORTH SIDE OF FLIGHTLINE**

No previous archaeological investigations have been performed within the APE for the Flightline Water Main improvements. Numerous investigations have been performed in the surrounding area; however, only a small portion of site TY-119 intersects the extreme northwest corner of the APE for the proposed improvements. The site was shovel tested in 2016. No archaeological sites were documented, and no further archaeological work was recommended (Martinkovic et al., 2016).

Approximately 70 feet from the extreme southeast corner of the APE for the proposed improvements, but separated by an access road, is site TY-137. No additional information is available for this site.

For this EA, the majority of the APE contained standing water at the time fieldwork was conducted. A total of seven STPs were excavated and all tests revealed mixed soils, which are indicative of land filling and construction activities. No cultural or archeological materials were observed.

#### **3.9.7 CONSTRUCT FISHING/OBSERVATION PIER (HERITAGE CLUB)**

The terrestrial portion of the APE for the Heritage Club Fishing/Observation Pier project is included within the previously surveyed site TY-155 (TY-17-07/TY-155). The APE was shovel tested in 2017, and no archaeological resources were encountered. Two resources were identified in the vicinity of the Heritage Club area, although well outside of the APE for the proposed improvements. Resource 8BY02378 (TY-155 F) is approximately 650 feet northeast of the APE and covers a large area north, northeast, and east of the Heritage Club building and parking lot and includes both prehistoric and historic resources. Prehistoric resources include shell middens, lithic debitage, ceramics, sherds, shell tools, bone, coral, and unmodified shell fragments from the Weeden Island (A.D. 450-1000) and Ft. Walton (A.D. 1000-1500) time periods. Historic resources within this area include 20<sup>th</sup> century well remains and remnants of brick and concrete



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building foundations (Brannon et al. 2017) This resource was recommended as potentially eligible for inclusion to the NRHP; however insufficient information was available to make a final determination.

Resource IF-1089 is an isolated resource located approximately 1,150 feet northwest of the Heritage Club building, and includes a single potsherd recovered from the surface near a STP (Brannon et al., 2017). The resource was recommended as ineligible for inclusion to the NRHP.

Because the terrestrial portion of the APE for both Heritage Club alternatives has previously been subjected to a professional survey, it was not re-evaluated for this EA. The submerged portion of the APE measures approximately 100-feet wide and was subjected to underwater archaeological survey using transects extending 140 feet out from the shoreline toward the bay center. The transects were spaced at 33-foot intervals, for a total of four transects. Several small metal anomalies were detected, measuring less than 10 cm diameter. The anomalies were debris, possibly fishing hooks. The block does not contain any archaeological objects.

### **3.9.8 RENOVATE UNITE SITE**

Most of the APE for the Renovate UNITE Site, Alternative 1, was previously surveyed as Site TY-09-0011/TY-11 in 2012. No archaeological resources were encountered within the proposed project's APE. Two resources were identified in proximity to the APE for the proposed renovations. Resource 8BY01480 (TY-11F) is located approximately 180 feet east of the Alternative 1 project area and features well pipes, clear glass bottles, homestead remnants, fence posts, car parts, and other 20<sup>th</sup> century artifacts. Prehistoric resources included a shell, charcoal, and a single piece of lithic debitage (Bourgeoise et al., 2012). 8BY01480 is eligible for listing to the NRHP. The site was evaluated in 2018 immediately prior to Hurricane Michael. As a multi-component site, the prehistoric portion is considered ineligible for NRHP listing, while the historic portion is eligible for NRHP listing. Resource 8BY01391 (TY-11B) is located approximately 115 feet north of northeast corner of the Alternative 1 APE. The site contained one 20<sup>th</sup> century artifact, a clear lip fragment from a storage mason jar. Prehistoric resources in the area included ceramics and a large biface trimming flake associated with the Early Weeden Island and Middle Woodland time periods (Bourgeoise et al., 2012). 8BY01391 was determined ineligible for inclusion to the NRHP.

The majority of the APE for the Renovate Unite Site, Alternative 2, was included in a 1993 survey of 300 acres in the vicinity of Felix Lake at Tyndall AFB. No resource sites were reported in the vicinity (Campbell et al., 1993).

For both alternatives, the remaining portion of the APE not previously surveyed was evaluated for this EA. The entire area in each location was within a marked utility corridor. The excavation of STPs in this location was not feasible due to the disturbed soil and utility risk. No cultural or archaeological materials were observed in the study area.

### **3.10 HAZARDOUS MATERIALS/WASTE AND SOLID WASTE**

The hazardous materials ROI established for this EA corresponds to the LODs for each of the Proposed Actions and alternatives. Potential hazardous materials impacts that could result from the Proposed Actions and alternatives are further discussed in **Section 4.9**.

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**3.10.1 HAZARDOUS MATERIALS, HAZARDOUS WASTE AND SOLID WASTE**

Hazardous materials and hazardous waste are those substances defined as hazardous by the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA, 42 U.S.C. 9601-9675), the Toxic Substances Control Act (15 U.S.C. 2601-2671), and the Solid Waste Disposal Act as amended by the RCRA (42 U.S.C. 6901-6992). In addition, hazardous materials are regulated by the Emergency Planning and Community Right-to-Know Act (42 U.S.C. 11001-11050). Hazardous materials are further defined in AFMAN 32-7002, *Environmental Compliance and Pollution Prevention*, to include all items covered under the Emergency Planning and Community Right-to-Know Act or other applicable host nation, Federal, state, or local tracking or reporting requirements; all items covered by the OSHA under 29 CFR 1910.1200, or 29 CFR 1910.1450, *Occupational Exposure to Hazardous Chemicals in Laboratories*; and Class I or Class II Ozone Depleting Substances. Common hazardous materials used at the various buildings at Tyndall AFB include petroleum, oil, and lubricants (POL), paints, cleaning agents, and pesticides.

The Tyndall AFB Hazardous Waste Management Plan (HWMP; U.S. Air Force, 2021d) provides guidance on the proper handling and disposal of hazardous waste, including spill contingency and response requirements, at Tyndall AFB. Procedures and responsibilities for responding to a hazardous waste spill or other incidents are also addressed in the Tyndall AFB Spill Prevention, Control, and Countermeasure (SPCC) Plan (U.S. Air Force, 2021b).

Tyndall AFB is classified as a Large Quantity Generator of hazardous waste. Hazardous wastes at Tyndall AFB are controlled and managed from the point of generation to the point of ultimate disposal. Wastes are temporarily stored at designated Initial Accumulation Points (IAPs) at work locations. Once the storage limit is reached, the wastes are transferred to the 90-Day Hazardous Waste Accumulation Site (HWAS) (Building 6011). Within 90 days, the wastes are transported off-base and disposed of in accordance with applicable regulations.

Non-hazardous solid waste generated at Tyndall AFB is managed in compliance with the Tyndall AFB Integrated Solid Waste Management Plan (ISWMP; U.S. Air Force, 2021e). Non-hazardous solid waste is properly collected, handled, managed, transported, and disposed off-base by a contractor.

Asbestos-containing materials (ACM) at Tyndall AFB are managed in accordance with the guidance provided in the 325 FW Asbestos Management and Operations Plan (Air Force, 2018a). Lead-based paint (LBP) is managed at the Installation in accordance with all applicable regulations. Structures constructed after 1985 are unlikely to contain ACM or LBP. ACM and LBP are generally encountered during structure demolition or renovation. Because the Proposed Actions and alternatives do not include structure demolition or renovation activities, it is unlikely that these substances will be encountered.

**3.10.2 ENVIRONMENTAL RESTORATION PROGRAM**

Tyndall AFB has initiated and maintains an ERP as part of its Installation Restoration Program (IRP) to reduce risk to human health and environment attributable to past activities related to release of hazardous substances or environmental contamination. The IRP was developed to identify, characterize, and remediate contamination from past hazardous waste disposal operations and hazardous materials spills at DoD facilities. Sites on DoD property suspected to be contaminated from past munitions use are investigated and



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cleaned up under the Military Munitions Response Program (MMRP). Together, the IRP and MMRP make up Tyndall's current ERP. Depending on the circumstances, ERP sites are investigated and cleaned up in accordance with the CERCLA or RCRA, or an integrated approach based on both laws.

In 1997, the USEPA placed Tyndall AFB on the Superfund program's National Priorities List. USEPA, Air Force and FDEP signed an Interagency Agreement known as a Federal Facility Agreement (FFA) on 20 September 2013 to guide the cleanup of the base. These formal agreements are site cleanup plans that ensure coordination of work priorities and establish enforceable schedules for cleanup activities for the life of the project. A total of 42 operable units are listed on the EPA website (USEPA, 2021c).

ERP sites which overlap with or are in proximity to the EA Proposed Actions and alternatives are summarized on **Table 3.10-1** in terms of site type, site description and status. Refer to **Figures 2.3-1** through **2.3-13** for information on ERP site locations relative to the Proposed Actions and alternatives

**TABLE 3.10-1 ERP SITES WITHIN OR ADJACENT TO EA PROPOSED ACTIONS**

Project	IRP Site ID	Site Name	Site Type	Status
Construct EOD Gravel Road	SR169	Jeep Range	Small Arms Range	Active
Dredge WEG Small Boathouse Area	AL185	Lagoon Splash Target Range	Small Arms Range	Closed
	SR186	Davis Beach Range	Small Arms Range	Closed
	TU233	Building 9725 Wright Labs Motor Pool	Vehicle Maintenance/Waste Accumulation Area	Active
Replace WEG Tower 1802	AOC006	Wastewater Holding Pond	Wastewater Management	Closed
	LF012	Highway 98 Burial Site	Debris Burial	Closed
Improve Expeditionary/Encampment Roads	LF005	6000 Area Landfill	Debris Burial	Active
	LF036	6000 Area Construction Debris Landfill	Debris Burial	Closed
Construct Water Main Along North Side of Flightline	FT016	Former Shell Bank Fire Training Area	Fire Training Area/Fuel Storage Area	Active
	FT023	Former Active Fire Training Area	Fire/Crash Training Area	Active
	OT004	Southeast Runway Extension Burial Site	Debris Burial	Closed
	OT029	Shoal Point Bayou	Debris Burial, Dredge Spoils Disposal, Pesticide Storage	Active
Renovate Unite Site (Alternative 1)	LF002	Sabre Drive Landfill	Debris Burial	Closed
	SR170A	Tyndall Elementary School	Small Arms Range	Active

Source: Tyndall AFB Geodata 2019

## CHAPTER 4 ENVIRONMENTAL CONSEQUENCES

This chapter identifies and discloses the potential direct, indirect, and cumulative impacts associated with implementing the Proposed Actions. Direct effects are those that occur at the same time and place, as a direct result of the Proposed Actions. Indirect effects are those effects that would result from the Proposed Actions but occur later in time or are farther removed in distance (CEQ, 2022). Direct and indirect effects are assessed for each of the studied environmental resource impact areas **Section 4.1** through **4.9**. Cumulative effects are further defined, identified, and evaluated in **Section 4.10**.

### 4.1 AIR QUALITY AND CLIMATE CHANGE

This section identifies and discloses potential air quality impacts from criteria pollutant and GHG emissions associated with the Proposed Actions. The air quality impact analysis follows the EIAP Air Quality Guidelines (Solutio Environmental, 2019) for criteria pollutants, and GHG emissions. Impacts to air quality would be considered significant if the Proposed Actions were to:

- Cause pollutant concentrations to exceed one or more of the NAAQS for any of the time periods analyzed, or to increase the frequency or severity of any such existing violations.

The majority of air emissions associated with the Proposed Actions would be temporary in nature (limited to the duration of construction activities) and would be caused by construction equipment and vehicle operation, asphalt paving, and dust generated from disturbance on unpaved areas. Operational emissions related to the Proposed Actions would result from fuel combustion by newly installed emergency generators and space heating equipment. These emissions are expected to be small and generally not represent an increase from the current conditions.

The Air Force's Air Conformity Applicability Model (ACAM) was used to analyze the potential air quality impacts associated with the Proposed Actions, as described above, in accordance with the AFMAN 32-7002, the EIAP, and the General Conformity Rule (40 CFR 93 Subpart B).

The Proposed Actions would not result in significant direct or indirect impacts to air quality. The following subsections describe the non-significant effects on air quality that would result from the Proposed Actions.

#### 4.1.1 PROPOSED ACTIONS AND ALTERNATIVES

##### *4.1.1.1 Criteria Air Pollutants*

Construction activities associated with the Proposed Actions and alternatives would include site clearing and grading; gravel road construction; sediment dredging; trenching and excavation; paving; constructing new buildings and associated utilities; and application of architectural coatings. Construction period emissions depend on expected material quantities and equipment/vehicle utilization requirements for each project component. Contractors may be required to obtain appropriate permits and comply with all permit provisions for certain types of equipment and temporary facilities (e.g., portable crushers and batch plants).



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The Proposed Action and alternatives would result in a temporary increase in emissions related to construction activities, as well as ongoing, annual emissions from the operation of newly installed emergency generators and space heating equipment. As mentioned, the operational and construction emissions resulting from the Proposed Actions and alternatives were calculated using ACAM. These emissions are “netted” on an annual basis. The impact analysis must consider the greatest annual emissions associated with the Proposed Actions and alternatives. Since emissions can vary from year-to-year depending on activity, the greatest annual net change in emissions for each pollutant forms the basis of the analysis. The individual pollutant worst-case emission value may occur in a different project year. While some construction activity associated with the Proposed Actions and alternatives may occur over multiple years, the air quality analysis conservatively assumes an overall worst-case scenario in which all construction activities would occur in a single year. The total annual emissions during the construction phase of the Proposed Actions and alternatives are presented in **Table 4.1-1**.

After construction is complete, the action will reach a “steady state” (i.e., once the action is fully implemented and operational with no further net change in emissions). Steady state emissions are presented in **Table 4.1-2**. Emissions for each Proposed Action project and each Alternative are estimated individually. Additionally, maximum total construction emissions are estimated for each pollutant based on the Alternative with the greatest emission rate, for individual projects with more than one Alternative. For individual projects with multiple Alternatives, operational parameters (e.g., number of generators, size of buildings heated) would be identical, therefore, steady state emissions would be the same for each of a project’s Action Alternatives. Consequently, the total steady state emissions for all projects combined would be the same, regardless of which Alternatives are implemented.

**TABLE 4.1-1 CONSTRUCTION PHASE EMISSIONS<sup>1</sup>**

<b>Project</b>	<b>VOC</b>	<b>NO<sub>x</sub></b>	<b>CO</b>	<b>SO<sub>x</sub></b>	<b>PM<sub>10</sub></b>	<b>PM<sub>2.5</sub></b>	<b>Pb</b>	<b>NH<sub>3</sub></b>	<b>CO<sub>2e</sub></b>
Construct New EOD Gravel Road	0.005	0.027	0.031	0	0.013	0.001	0	0	8.6
Dredge the WEG Small Boathouse Area - Alternative 1	0.003	0.022	0.02	0	0.014	0.001	0	0	8.1
Dredge the WEG Small Boathouse Area - Alternative 2	0.003	0.022	0.02	0	0.014	0.001	0	0	8.1
Replace WEG Tower 1802	0.082	0.221	0.319	0.001	0.024	0.008	0	0	76.8
Improve Expeditionary/Encampment Roads	0.1	0.491	0.533	0.002	1.058	0.02	0	0.001	161.2
Expand FAMCAMP Site - Alternative 1	0.091	0.604	0.591	0.002	1.977	0.023	0	0.002	202.3
Expand FAMCAMP Site - Alternative 2	0.092	0.605	0.592	0.002	1.981	0.023	0	0.002	202.9
Construct Water Main on North Side of Flightline	0.143	0.905	0.808	0.003	20.582	0.036	0	0.001	262.7
Construct Fishing/Observation Pier (Heritage Club) - Alternative 1	0.087	0.215	0.316	0.001	0.012	0.008	0	0	74.6
Construct Fishing/Observation Pier	0.104	0.217	0.319	0.001	0.014	0.008	0	0	75.7

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Project	VOC	NO <sub>x</sub>	CO	SO <sub>x</sub>	PM <sub>10</sub>	PM <sub>2.5</sub>	Pb	NH <sub>3</sub>	CO <sub>2</sub> e
(Heritage Club) - Alternative 2									
Renovate Unite Site - Alternative 1	0.35	1.314	1.025	0.004	6.223	0.051	0	0.005	446.7
Renovate Unite Site - Alternative 2	0.313	0.948	0.88	0.003	3.841	0.036	0	0.002	310.2
<b>Total Maximum Emissions<sup>2</sup></b>	<b>0.879</b>	<b>3.802</b>	<b>3.647</b>	<b>0.013</b>	<b>29.909</b>	<b>0.148</b>	<b>0</b>	<b>0.009</b>	<b>1,242.7</b>
<b>Indicator (ton/year)</b>	<b>250</b>	<b>250</b>	<b>250</b>	<b>250</b>	<b>250</b>	<b>250</b>	<b>25</b>	<b>250</b>	<b>N/A</b>
<b>Exceedance (Yes or No)</b>	<b>No</b>	<b>No</b>	<b>No</b>	<b>No</b>	<b>No</b>	<b>No</b>	<b>No</b>	<b>No</b>	<b>N/A</b>

Notes:

1 VOC, NO<sub>x</sub>, CO, SO<sub>x</sub>, PM<sub>10</sub>, PM<sub>2.5</sub>, Pb, and NH<sub>3</sub> emission rates = Tons per year. CO<sub>2</sub>e = Metric tons per year

2 For projects with more than one alternative, the alternative with the greatest emissions for that pollutant is included in the total

CO<sub>2</sub>e = Carbon Dioxide Equivalent

Source: ACAM (version 5.0.17b), run on 10 January 2022.

**TABLE 4.1-2 STEADY STATE EMISSIONS<sup>1</sup>**

Project	VOC	NO <sub>x</sub>	CO	SO <sub>x</sub>	PM <sub>10</sub>	PM <sub>2.5</sub>	Pb	NH <sub>3</sub>	CO <sub>2</sub> e
Construct New EOD Gravel Road	0	0	0	0	0	0	0	0	0
Dredge the WEG Small Boathouse Area - Alternative 1	0	0	0	0	0	0	0	0	0
Dredge the WEG Small Boathouse Area - Alternative 2	0	0	0	0	0	0	0	0	0
Replace WEG Tower 1802	0.007	0.055	0.042	0.005	0.007	0.007	0	0	40.9
Improve Expeditionary/Encampment Roads	0.006	0.033	0.021	0.005	0.006	0.006	0	0	12
Expand FAMCAMP Site - Alternative 1	0.006	0.024	0.016	0.005	0.005	0.005	0	0	3.1
Expand FAMCAMP Site - Alternative 2	0.006	0.024	0.016	0.005	0.005	0.005	0	0	3.1
Construct Water Main on North Side of Flightline	0	0	0	0	0	0	0	0	0
Construct Fishing/Observation Pier (Heritage Club) - Alternative 1	0	0	0	0	0	0	0	0	0
Construct Fishing/Observation Pier (Heritage Club) - Alternative 2	0	0	0	0	0	0	0	0	0
Renovate Unite Site - Alternative 1	0.008	0.063	0.049	0.005	0.008	0.008	0	0	50.6
Renovate Unite Site - Alternative 2	0.008	0.063	0.049	0.005	0.008	0.008	0	0	50.6
<b>Total Maximum Emissions<sup>2</sup></b>	<b>0.027</b>	<b>0.175</b>	<b>0.128</b>	<b>0.02</b>	<b>0.026</b>	<b>0.026</b>	<b>0</b>	<b>0</b>	<b>106.6</b>
<b>Indicator (ton/year)</b>	<b>250</b>	<b>250</b>	<b>250</b>	<b>250</b>	<b>250</b>	<b>250</b>	<b>25</b>	<b>250</b>	<b>N/A</b>
<b>Exceedance (Yes or No)</b>	<b>No</b>	<b>No</b>	<b>No</b>	<b>No</b>	<b>No</b>	<b>No</b>	<b>No</b>	<b>No</b>	<b>N/A</b>

1 VOC, NO<sub>x</sub>, CO, SO<sub>x</sub>, PM<sub>10</sub>, PM<sub>2.5</sub>, Pb, and NH<sub>3</sub> emission rates = Tons per year. CO<sub>2</sub>e = Metric tons per year

2 For projects with more than one alternative, the alternative with the greatest emissions for that pollutant is included in the total.

Notes: CO<sub>2</sub>e = Carbon Dioxide Equivalent

Source: ACAM (version 5.0.17b), run on 10 January 2022.

Current USAF guidance provides methodology for performing an Air Quality EIAP Level II, Quantitative Assessment, which is an insignificance assessment that can determine if an action poses an insignificant impact on air quality (Solutio Environmental, 2019). An air quality impact is considered insignificant if the action does not cause or contribute to exceedance of one or more of the NAAQS. The USAF defines “insignificance indicators” for each criteria pollutant according to current air quality conditions.



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Unlike nonattainment or maintenance criteria pollutants, General Conformity *de minimis* levels have not been established for attainment criteria pollutant emissions. In areas the USAF considers as *clearly attainment* (i.e., where all criteria pollutant concentrations are currently less than 95 percent of applicable NAAQS), the insignificance indicators are 250 tons per year (i.e., the USEPA's Prevention of Significant Deterioration threshold), except for Pb, which is 25 tons per year. Tyndall AFB is located in a *clearly attainment* area; therefore, these insignificance indicators apply to the Proposed Actions. For the Proposed Actions, the maximum emission rates for all attainment criteria pollutants are below the significance indicators presented in **Tables 4.1-1** and **4.1-2**. Therefore, the potential air quality impact from all criteria pollutants is insignificant. See **Appendix D** for the ACAM Record of Air Analysis performed for this EA.

**4.1.1.2 Greenhouse Gas Emissions and Climate Change**

The maximum estimated increase of GHG emissions associated with construction activities would produce about 1,242.7 metric tons of CO<sub>2</sub>e in the construction year (2023). For the steady-state (or operational phase) of the Proposed Actions, the newly installed heating equipment and generators are expected to yield a net increase of 106.6 tons per year of CO<sub>2</sub>e. . The change in climate conditions caused by GHGs resulting from the burning of fossil fuels from activities associated with the Proposed Actions is a global effect. Therefore, the disclosure of localized incremental emissions has no weight to impact climate change. Consequently, given the minimal increase predicted for temporary construction and steady state activities, the Proposed Actions would result in an insignificant impact on overall global or U.S. cumulative GHG emissions and global climate change.

Several proposed new features could be directly affected by global climate change and resulting warmer temperatures and possible sea level rise. Areas such as the WEG small boathouse may require more frequent dredging in the future. The kayak ramp associated with both alternatives of the Expand FAMCAMP project could be partially inundated. Rising sea levels could affect the height of the proposed fishing/observation pier relative to the sea level, although this would not affect its function or value. The proposed structures and infrastructure will be designed to withstand climate change effects such as increased wind speeds and rainfall and will be designed to the extent practicable to avoid low-lying areas such as floodplains. Increased temperatures may require installation of air conditioning in facilities such as the WEG tower 1802 replacement, FAMCAMP entry kiosk, Expeditionary/Encampment Roads ECF, and indoor recreational facilities at the Unite Site.

**4.1.2 NO-ACTION ALTERNATIVE**

Under the No-Action Alternative, construction activities and emissions associated with the Proposed Actions would not occur. There would be no impact to air quality as air emissions at Tyndall AFB would remain the same. Existing air quality conditions and emission levels at the Installation site would continue. There would be no GHG emissions increases. No air quality concerns exist within the ROI for air quality and the Proposed Actions and alternatives would not remedy or contribute to existing concerns. Therefore, there would be no substantial impacts, either beneficial or adverse, to air quality under the No-Action Alternative.

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**4.1.3 MITIGATION MEASURES**

No mitigation measures for air quality or climate change impacts would be required.

**4.2 NOISE**

**4.2.1 PROPOSED ACTIONS AND ALTERNATIVES**

Implementation of the Proposed Actions would not result in any aircraft noise related impacts on sensitive noise receptors in the vicinity of Tyndall AFB. Therefore, a quantitative analysis of aircraft operational noise is not included in this EA.

Construction activities associated with the Proposed Actions are expected to result in a short-term, negligible to minor, adverse impact on the noise environment at Tyndall AFB. Construction activities would include, but are not limited to: land clearing, grading, and excavation; marine sediment dredging; materials transport; pavement construction; and building construction. These activities would involve the use of vehicles, heavy construction equipment, and machinery and would be conducted during the daytime hours of 0700 to 1700. Construction activities would temporarily increase noise levels in the immediate vicinity of the Proposed Action areas; however, because distance rapidly attenuates noise levels, the areas would experience only a minor increase in ambient noise conditions during construction hours.

**Table 4.2-1** presents measured noise levels of common construction equipment at 50 feet. The table also provides the attenuation of these sound levels at 500, 1,000 and 1,500 feet. Based on planned construction activities, only Renovate UNITE Site Alternative 2 would occur within 500 feet of potentially noise-sensitive land uses (e.g., base housing and the Tyndall AFB Child Development Center [CDC]). Noise impacts at these locations would be temporary and minimization measures should be considered. **Table 4.2-2** summarizes noise impacts for the Proposed Actions and alternatives.

**TABLE 4.2-1 CONSTRUCTION EQUIPMENT NOISE LEVELS**

Construction Equipment	L <sub>max</sub> at 50 feet	L <sub>max</sub> at 500 feet	L <sub>max</sub> at 1,000 feet	L <sub>max</sub> at 1,500 feet
Cement and Mortar Mixers Composite	80	60	54	51
Concrete/Industrial Saws Composite	90	70	64	60
Cranes Composite	88	68	62	58
Excavators Composite	81	61	55	51
Forklifts Composite	85	65	59	55
Generator Sets Composite	81	61	55	51
Graders Composite	85	65	59	55
Other Construction Equipment Composite	85	65	59	55
Other General Industrial Equipment Composite	85	65	59	55
Pavers Composite	77	57	51	47
Paving Equipment Composite	77	57	51	47
Rollers Composite	80	60	54	50
Rubber Tired Dozers Composite	82	62	56	52
Scrapers Composite	85	65	59	55
Tractors/Loaders/Backhoes Composite	85	65	59	55
Welders Composite	73	53	47	43

Source: USDOT, 2006.



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**TABLE 4.2-2 NOISE IMPACTS SUMMARY**

<b>Project</b>	<b>Potential Impacts</b>
Construct New EOD Gravel Road	No foreseeable significant impacts
Dredge the WEG Small Boathouse Area - Alternative 1	No foreseeable significant impacts
Dredge the WEG Small Boathouse Area - Alternative 2	No foreseeable significant impacts
Replace WEG Tower 1802	No foreseeable significant impacts
Improve Expeditionary/Encampment Roads	No foreseeable significant impacts
Expand FAMCAMP Site - Alternative 1	No foreseeable significant impacts
Expand FAMCAMP Site - Alternative 2	No foreseeable significant impacts
Construct Water Main on North Side of Flightline	No foreseeable significant impacts
Construct Fishing/Observation Pier (Heritage Club) - Alternative 1	No foreseeable significant impacts
Construct Fishing/Observation Pier (Heritage Club) - Alternative 2	No foreseeable significant impacts
Renovate Unite Site - Alternative 1	No foreseeable significant impacts
Renovate Unite Site - Alternative 2	Temporary construction impacts possible at Tyndall AFB CDC. Temporary impacts reduced by implementing standard noise-reducing BMPs for construction equipment and activities.

#### **4.2.2 NO-ACTION ALTERNATIVE**

Under the No-Action Alternative, construction activities would not occur, and existing conditions discussed in **Section 3.3** would continue. Implementation of the No-Action Alternative would not result in any new or additional impacts on the noise environment. If implemented, the Renovate UNITE Site Alternative 2 would be constructed near the Tyndall AFB CDC and construction noise may temporarily affect this site. Under the No-Action Alternative this temporary increase in construction noise would not occur.

#### **4.2.3 MITIGATION MEASURES**

Overall, implementation of the Proposed Actions would not be expected to result in a significant impact on the noise environment. No mitigation measures for noise impacts would be required. Because of the proximity of the Renovate UNITE Site Alternative 2 area to potentially noise-sensitive areas (e.g., base housing and the CDC), there is potential for temporary increases in noise exposure to these locations during the construction period. If this alternative were selected Air Force would consider implementing BMPs to minimize noise exposure such as modifying construction schedule and work hours, requiring contractors to utilize equipment with properly installed factory sound features including shrouds, covers, and mufflers, and installing temporary barriers to aid in attenuating construction noise.

### **4.3 SAFETY AND OCCUPATIONAL HEALTH**

An increased risk for bodily injury, illness, death, or property damage from the Proposed Actions would be considered an adverse impact on safety. Impacts associated with health and safety would be considered significant if the Proposed Actions were to:

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

#### **4.3.1 PROPOSED ACTIONS AND ALTERNATIVES**

##### **4.3.1.1 Construction Safety**

No adverse impact on safety would be anticipated under the Proposed Actions. Short-term, minor direct impacts on contractor health and safety could occur from implementation of the Proposed Actions. The short-term risk associated with work performed by construction contractors would slightly increase at Tyndall AFB during the normal workday, as construction activity levels would increase. During construction, all actions would be performed in accordance with AFOSH directives and OSHA regulations. Occupational health and safety hazards associated with construction of the proposed new facilities under the Proposed Actions would include loud noise, heavy machinery, debris, electricity, and hazardous materials used or encountered during work. To minimize occupational health and safety risks, workers would wear and use appropriate PPE and follow applicable OSHA standards and procedures. Work areas would be clearly marked with appropriate signage and secured against unauthorized entry. The Proposed Actions would not pose new or unacceptable safety risks to installation personnel or activities at the installation but would enable Tyndall AFB to meet current and future mission objectives at the installation and conduct or meet mission requirements in a safe operating environment. No long-term adverse impacts on safety would be expected.

Changes to daily base activities and vehicular operations, including the addition of construction personnel on base, additional vehicles entering and exiting the base for construction operations, and the addition of heavy machinery/construction equipment to the base would result in a short-term increase in the potential for more accidents to occur. Furthermore, construction activities may require pedestrian and traffic detours. Standard construction traffic control measures and effective communication to installation personnel regarding changes to traffic would be used to protect workers and Tyndall AFB employees and visitors. Construction workers could encounter soil or groundwater contamination as a result of an ERP site or previously unknown soil or groundwater contamination. Workers and demolition and construction activities would be required to adhere to access restrictions and institutional controls to minimize exposure and risk. A health and safety plan would be developed and implemented by the selected contractors to further minimize potential impacts to health and safety of contractor employees.

##### **4.3.1.2 Explosives and Munitions Safety**

Short-term, minor impacts could occur during construction activities that would take place within the EOD area. Contractors working on the Construct EOD Gravel Road project could be exposed to an increased risk of potential explosions. To avoid potential impacts on construction workers and the installation mission, this project should be coordinated with the installation Safety Office to ensure that no UXO are encountered



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during construction activities. This precaution would minimize explosive safety risks to workers. Prior to any ground-disturbing work, the project area should be surveyed for potential UXO.

### **4.3.1.3 Mission Safety**

Construction of the EOD Gravel Road project would improve the long-term safety of EOD handling activities, as it would provide direct access to the EOD site and eliminate the need to unload explosive ordnances atop the existing earthen berm and manually lower them into the disposal site. The Improve Expeditionary/Encampment Roads project would provide an additional and more direct route for emergency vehicles to access the north side of Flightline, as well as provide an additional emergency egress route in the case of evacuations. The construction of emergency vehicle access routes under both Expand FAMCAMP Site Action Alternatives would provide needed emergency vehicle access to the site. Together, these Proposed Actions would have a beneficial impact on mission safety. Because there would be measures in place to protect worker safety during construction and none of the Proposed Actions would hinder the ability to respond to an emergency or introduce a new health or safety risk to Tyndall AFB, no significant impacts to safety or occupational health would occur.

**Table 4.3-1** summarizes potential impacts to safety and occupational health that may result from the Proposed Action and alternatives.

**TABLE 4.3-1 SAFETY AND OCCUPATIONAL HEALTH IMPACTS SUMMARY**

<b>Project</b>	<b>Potential Impacts</b>
Construct New EOD Gravel Road	Short-term, minor impacts during construction. Long-term beneficial impacts result from providing access directly into EOD site, eliminating the need to manually lower UXO and other explosive devices from top of berm into disposal site.
Dredge the WEG Small Boathouse Area - Alternative 1	Short-term, minor impacts during construction.
Dredge the WEG Small Boathouse Area - Alternative 2	Short-term, minor impacts during construction.
Replace WEG Tower 1802	Short-term, minor impacts during construction.
Improve Expeditionary/Encampment Roads	Short-term, minor impacts during construction. Long-term beneficial impacts include providing additional and more direct route to north side of Flightline for emergency vehicles and additional emergency/evacuation egress route.
Expand FAMCAMP Site - Alternative 1	Short-term, minor impacts during construction. Long-term beneficial impact from providing emergency vehicle access to FAMCAMP site. However, notional alignment of emergency access road would require emergency vehicles travelling northbound on U.S. Highway 98 to travel north of access road and conduct a U-Turn.
Expand FAMCAMP Site - Alternative 2	Short-term, minor impacts during construction. Long-term beneficial impact from providing emergency vehicle access to FAMCAMP site. Notional layout of emergency access road would not require a U-turn to access site for emergency vehicles travelling northbound or southbound on U.S. Highway 98.
Construct Water Main on North Side of Flightline	Short-term, minor impacts during construction.
Construct Fishing/Observation Pier (Heritage Club) - Alternative 1	Short-term, minor impacts during construction.

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Project	Potential Impacts
Construct Fishing/Observation Pier (Heritage Club) - Alternative 2	Short-term, minor impacts during construction.
Renovate Unite Site - Alternative 1	Short-term, minor impacts during construction.
Renovate Unite Site - Alternative 2	Short-term, minor impacts during construction.

#### **4.3.2 NO-ACTION ALTERNATIVE**

Under the No-Action Alternative, construction activities would not occur and, thus, there would be no changes to safety and occupational conditions at Tyndall AFB. UXOs would continue to be manually lowered from atop the existing earthen berm into the EOD site, which increases the risk of explosive hazards to installation personnel. No new emergency access routes would be provided within the FAMCAMP site. Under the No-Action Alternative, the operational safety benefits of the EOD gravel road project would not be realized. Emergency vehicle access to the north side of Flightline, and evacuation egress routes from the north side of Flightline would remain limited without the proposed improvements to Expeditionary and Encampment Roads. If the emergency vehicle access roads at FAMCAMP were not implemented, emergency vehicle access to this site would remain limited. No other safety and occupational health benefits or impacts would result from the No-Action alternative.

#### **4.3.3 MITIGATION MEASURES**

No mitigation measures for safety impacts would be required.

### **4.4 LAND USE**

An action could have a significant effect on land use if it were to preclude the viability of a land use or the continued use or occupation of the area, be incompatible with adjacent land use to the extent that public health and safety is threatened, conflict with planning criteria established to ensure the safety and protection of human life and property, or result in noncompliance with laws, regulations, or orders applicable to land use.

Other relevant factors considered when evaluating potential impacts on land use include the existing and future land use designations both on and adjacent to the project site, the proximity of adjacent land use parcels to the project site, the duration of the proposed activity, and its permanence.

#### **4.4.1 PROPOSED ACTIONS AND ALTERNATIVES**

Construction and operation of the Proposed Actions would not result in any significant direct or indirect impact on land use. Each of the individual Proposed Actions is consistent with current and future land uses as determined by Tyndall AFB and documented in installation planning documents and supports the installation's long-range facility development plan (U.S. Air Force, 2015). The existing land use and future land use compatibility of each Proposed Action are provided in **Table 4.4-1**.



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**TABLE 4.4-1 LAND USE AND LAND USE COMPATIBILITY SUMMARY**

Planning District(s)	Project	Existing Land Use	Future Land Use	Compatibility
Tyndall West District Projects	Expand FAMCAMP Site – Alternative 1	Outdoor Recreation, Open Space	Outdoor Recreation, Open Space	Compatible, outdoor recreation permitted
	Expand FAMCAMP Site – Alternative 2	Outdoor Recreation, Open Space	Outdoor Recreation, Open Space	Compatible
	Renovate UNITE Site – Alternative 1	Open Space	Open Space	Compatible, outdoor recreation permitted
	Renovate UNITE Site – Alternative 2	Housing Accompanied, Outdoor Recreation	Outdoor Recreation, Community Service, Housing Accompanied	Compatible, outdoor recreation permitted
Tyndall East District Projects	Dredge the WEG Small Boathouse Area – Alternative 1	Industrial	Industrial	Compatible
	Dredge the WEG Small Boathouse Area – Alternative 2	Industrial	Industrial	Compatible
Support Area District Projects	Construct EOD Gravel Road	Industrial	Industrial	Compatible
	Replace WEG Tower 1802	Industrial, Open Space	Industrial, Open Space	Compatible
	Construct Observation/Fishing Pier (Heritage Club) – Alternative 1	Open Space	Open Space	Compatible, outdoor recreation permitted
	Construct Observation/Fishing Pier (Heritage Club) – Alternative 2	Open Space	Open Space	Compatible, outdoor recreation permitted
Flightline Area District	Improve Expeditionary/Encampment Roads	Open Space	Open Space	Compatible, Improves circulation patterns
	Construct Water Main Along North Side of Flightline	Airfield	Airfield	Compatible

Future planning efforts at Tyndall AFB implement future development planning strategies outlined in United Facilities Criteria (UFC) 2-100-01. They support the DoD-wide installation planning philosophy to develop a sustainable platform to support the effective execution of assigned missions as efficiently as possible, thus adopting the future planning recommendations. Therefore, construction and implementation of the Proposed Actions and alternatives are consistent and compatible with future land uses as determined by Tyndall AFB.

Construction and implementation of the Proposed Actions and alternatives would be in all four planning districts on Tyndall AFB. Future development on Tyndall AFB should be consistent with the Tyndall AFB Master Plan/Area Development Plan, Installation Development Plan (IDP) and the planning goals established in the future land use plan. The future land use plan for Tyndall AFB considers land use compatibility, facility consolidation, mission sustainability, quality of life, safety and security, and past

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Tyndall AFB planning studies. A major emphasis of the installation's long-range facility development plan is to consolidate land uses and collocate similar functions. Therefore, long-term beneficial impacts from implementation of the Proposed Actions and alternatives would occur.

#### **4.4.2 NO-ACTION ALTERNATIVE**

Under the No-Action Alternative, land use classifications and constraints would remain as they are on base today. There would be no future land use planning and efficiency improvements as could be afforded by the Proposed Actions and alternatives. Neither the Proposed Actions and alternatives nor the No-Action Alternative would change land use designations or affect land use compatibility at Tyndall AFB.

#### **4.4.3 MITIGATION MEASURES**

No mitigation measures for land use impacts would be required.

### **4.5 SOILS**

#### **4.5.1 PROPOSED ACTIONS AND ALTERNATIVES**

Of the approximate 214 acres of soils contained in the LODs for the Proposed Actions and alternatives with the greatest acreage (**Section 3.6**), site preparation and construction activities based on planned construction would directly disturb a maximum of approximately 166.1 acres of native and non-native soils, depending on the alternatives selected. **Table 4.5-1** presents the soil types and amounts that would be disturbed under each Proposed Action alternative. Erosion from the construction sites could result in additional indirect effects; consequently, any soil disturbance that would expose the soils to wind, rain, and stormwater runoff must be stabilized by some means. Tyndall AFB would be required to obtain a Stormwater Construction Permit from the FDEP prior to construction. The construction contractor would be required to develop a Stormwater Pollution Prevention Plan (SWPPP) specific to each site that would detail erosion prevention and control measures to be implemented during site preparation and construction activities. No prime or unique farmland soils would be disturbed or removed from the project areas.

**TABLE 4.5-1 SOIL IMPACTS**

<b>Project</b>	<b>Map Unit</b>	<b>Acres in LOD</b>	<b>Acres Impacted</b>
<b>Construct New EOD Gravel Road (Figure 3.6-1)</b>	31 - Osier fine sand	2.57	0.11
	44 - Beaches	0.08	--
	<i>Subtotal</i>	<i>2.65</i>	<i>0.11</i>
<b>Dredge the WEG Small Boathouse Area - Alternative 1 (Figure 3.6-2)</b>	48 - Fripp-Corolla complex, 2 to 30 percent slopes	0.97	0.31
	100 - Waters of the Gulf of Mexico	0.17	0.03
	<i>Subtotal</i>	<i>1.14</i>	<i>0.34</i>
<b>Dredge the WEG Small Boathouse Area - Alternative 2 (Figure 3.6-3)</b>	48 - Fripp-Corolla complex, 2 to 30 percent slopes	1.75	0.75
	100 - Waters of the Gulf of Mexico	0.17	0.03
	<i>Subtotal</i>	<i>1.92</i>	<i>0.78</i>
<b>Replace WEG Tower 1802 (Figure 3.6-4)</b>	13 - Leon sand, 0 to 2 percent slopes	2.52	0.07
	22 - Pamlico-Dorovan complex	0.87	0.06
	27 - Mandarin sand, 0 to 2 percent slopes	0.29	--



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Project	Map Unit	Acres in LOD	Acres Impacted
	<i>Subtotal</i>	3.68	0.13
Improve Expeditionary/ Encampment Roads (Figure 3.6-5)	13 - Leon sand, 0 to 2 percent slopes	5.68	1.14
	22 - Pamlico-Dorovan complex	1.62	0.46
	27 - Mandarin sand, 0 to 2 percent slopes	3.28	0.44
	29 - Rutlege sand, 0 to 2 percent slopes	0.86	--
	30 - Pottsborg-Pottsborg, wet, sand, 0 to 2 percent slopes	1.58	0.44
	40 - Arents, 0 to 5 percent slopes	0.01	0.01
	42 - Resota fine sand, 0 to 5 percent slopes	2.74	0.96
	47 - Pits	1.17	0.35
	<i>Subtotal</i>	16.94	3.80
Expand FAMCAMP Site - Alternative 1 (Figure 3.6-6)	40 - Arents, 0 to 5 percent slopes	0.65	--
	45 - Kureb sand, 0 to 5 percent slopes	10.39	0.88
	<i>Subtotal</i>	11.04	0.88
Expand FAMCAMP Site - Alternative 2 (Figure 3.6-7)	40 - Arents, 0 to 5 percent slopes	0.65	--
	45 - Kureb sand, 0 to 5 percent slopes	10.40	0.96
	<i>Subtotal</i>	11.05	0.96
Construct Water Main on North Side of Flightline (Figure 3.6-8)	27 - Mandarin sand, 0 to 2 percent slopes	1.22	1.22
	29 - Rutlege sand, 0 to 2 percent slopes	1.93	1.93
	31 - Osier fine sand	0.29	0.29
	40 - Arents, 0 to 5 percent slopes	151.3	151.3
	42 - Resota fine sand, 0 to 5 percent slopes	0.12	0.12
	<i>Subtotal</i>	154.86	154.86
Construct Fishing/Observation Pier Heritage Club – Alternative 1 (Figure 3.6-9)	31 - Osier fine sand	0.37	0.04
	<i>Subtotal</i>	0.37	0.04
Construct Fishing/Observation Pier Heritage Club – Alternative 2 (Figure 3.6-10)	31 - Osier fine sand	0.37	0.05
	<i>Subtotal</i>	0.37	0.05
Renovate Unite Site - Alternative 1 (Figure 3.6-11)	13 - Leon sand, 0 to 2 percent slopes	0.03	--
	29 - Rutlege sand, 0 to 2 percent slopes	6.79	0.29
	40 - Arents, 0 to 5 percent slopes	1.08	--
	42 - Resota fine sand, 0 to 5 percent slopes	14.65	5.08
	<i>Subtotal</i>	22.55	5.37
Renovate Unite Site - Alternative 2 (Figure 3.6-12)	13 - Leon sand, 0 to 2 percent slopes	0.23	--
	27 - Mandarin sand, 0 to 2 percent slopes	10.21	3.84
	42 - Resota fine sand, 0 to 5 percent slopes	5.6	1.47
	<i>Subtotal</i>	16.04	5.31
<b>Total<sup>1</sup></b>		<b>214.02</b>	<b>166.06</b>

<sup>1</sup> Values may reflect rounding.

<sup>2</sup> For projects with more than one alternative, the alternative with the greatest acreage of soil disturbance is included in the total.

<sup>3</sup> Sources: USDA, Soil Conservation Service, 1984. Soil Survey of Bay County, Florida. USDA, Natural Resources Conservation Service, 2020.

<sup>4</sup> Web Soil Survey. Internet URL: <https://websoilsurvey.sc.egov.usda.gov/App/WebSoilSurvey.aspx>.

<sup>5</sup> The Arents soil types composes the majority of land to be disturbed. Arents soils are a man-made mixture  
<sup>6</sup> of various soil series, resulting from earth moving operations such as dredging and filling and are not prone  
<sup>7</sup> to either flooding or ponding. Mandarin sand and the Fripp-Corolla complex account for approximately

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three percent and two percent of the total soil disturbance, respectively. The remaining soil types each account for one percent or less of the total soil disturbance that would occur with the Proposed Actions. As the vast majority of soils that would be disturbed are manmade or otherwise previously disturbed, only minor impacts on soils would occur upon implementation of the Proposed Actions and alternatives.

#### **4.5.2 NO-ACTION ALTERNATIVE**

No construction or ground disturbing activities would occur under this alternative. There would be no risk of construction-related erosion of soils, no placement of fill material, and no excavation of existing soils. Natural soil erosion and deposition from wind and precipitation would continue to occur as under existing conditions. Therefore, the No-Action Alternative would have no direct or indirect impacts, either beneficial or adverse, on soils.

#### **4.5.3 MITIGATION MEASURES**

No mitigation measures for soils impacts would be required.

### **4.6 WATER RESOURCES**

#### **4.6.1 PROPOSED ACTIONS AND ALTERNATIVES**

##### ***4.6.1.1 Groundwater***

Proposed construction activities would not involve withdrawals from, or discharges to surface water bodies or groundwater. Groundwater within the surficial aquifer may be encountered during certain types of construction activities such as excavation within the footprint of new facilities. Any dewatering necessary during such construction activities would be conducted using standard methods allowed under a Construction Generic Permit issued by the FDEP, in compliance with 62-302.530, F.A.C. and 62-621.300, F.A.C., and following dewatering BMPs prescribed in the State of Florida Erosion and Sediment Control Designer and Reviewer Manual. Dewatering systems, operations, and BMPs would be designed and implemented to have no effect on groundwater quality or flow. Hazardous materials used and hazardous waste generated during construction would be managed in accordance with all applicable environmental compliance regulations and Tyndall AFB environmental management plans. Therefore, negligible to minor direct and indirect impacts on groundwater would be expected.

##### ***4.6.1.2 Wetlands and Other Surface Waters***

The Proposed Actions may potentially have temporary, negligible indirect impacts on surface waters as a result of increases in erosion and sedimentation during periods of construction or demolition. Disturbed soils and hazardous substances (i.e., POLs) could directly impact water quality during a major rain event. However, through the use of BMPs, as outlined in the SWPPP, these effects would be minimal.

Although final designs and laydown footprints are not developed as yet, it is estimated that a maximum of approximately 15.85 acres of wetlands and 26.65 acres of OSW are located within the LODs of the Proposed Actions and alternatives with the greatest potential wetland impacts (**Section 3.7.2**). Based on



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current conceptual layouts, not all of this acreage may be directly impacted based on planned construction. However, for conservativeness, this assessment assumes all wetlands located within the Proposed Action and alternatives LODs would be fully impacted, as the notional construction within each project footprint may change during final design.

The majority of these wetlands and other surface waters are highly disturbed and altered due to hurricane damage and timber harvest/salvage operations (U.S. Air Force, 2020d). Appropriate BMPs and engineering controls should be implemented during construction to limit the extent of damage to wetland and OSW habitat in all project areas. Regulatory jurisdiction of wetlands and OSW will be determined during the Federal/state 404 permitting processes. During design and permitting, efforts will be made to minimize direct and indirect impacts to wetlands and other surface waters to the greatest extent practicable.

All wetlands located within the proposed project areas were further assessed using the Uniform Mitigation Assessment Method (UMAM) per Chapter 62-345, F.A.C (**Appendix E**). The assessment was performed for all wetland acreage included in each Proposed Action project footprint, because the notional construction within those footprints shown in **Section 2.3** of this EA may be subject to change during final design. The UMAM methodology provides a standardized procedure used by all regulatory agencies in Florida for assessing the functions provided by wetlands and other surface waters, the amount that those functions are reduced by a proposed impact, and the amount of mitigation necessary to offset that loss. The UMAM evaluates functions through consideration of an ecological community's current condition, hydrologic connection, uniqueness, location, fish and wildlife utilization, time lag and mitigation risk.

The wetland function indicators measured by UMAM include:

- Location and Landscape Support,
- Water Environment, and
- Community Structure.

**Table 4.6-1** shows the preliminary results of the UMAM assessment score (delta) for each wetland, the acreage, and the functional loss associated with the acreage. Other surface waters, though potentially jurisdictional, were not included in this assessment. As described above, this assessment assumes all wetlands located within the Proposed Action areas that have been surveyed would be impacted, as the notional construction within each project footprint may change during final design. However, as previously mentioned, minimization measures to reduce these impacts during the design and permitting phase will be implemented. Therefore, approximately 15.85 acres of wetland impacts were assessed using UMAM. The UMAM uses the factors discussed above to compare the reduction of ecological value due to proposed impacts and the gain in ecological value due to proposed mitigation. The degree of ecological change resulting from the Proposed Actions was determined for both the impact and mitigation assessment areas by the mathematical difference in these numeric scores (established in 62-345.500, F.A.C.); between the current condition and the with-impact condition assessment; and between the condition without mitigation and the with-mitigation condition assessments. This difference is termed the "delta." The delta was multiplied by the acres potentially impacted to determine the functional loss (units) represented by the impacts, and therefore, the amount of mitigation required (units) to offset the functional loss resulting from

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the Proposed Actions. Accordingly, the approximate functional loss of wetland values as a result of construction of the Proposed Actions is up to 9.945 units, depending on the alternatives selected. UMAM scores are approximate and will be further refined during the permitting process and formal jurisdiction approval.

**TABLE 4.6-1 WETLANDS AND OTHER SURFACE WATERS IMPACTS AND UMAM ASSESSMENT**

Project	Wetland/ OSW ID	FLUCFCS Description	USFWS Description	Acres (LOD)	Delta	Functional Loss (Units)
Construct New EOD Gravel Road (Figure 3.7-1)	WL082	642	E2EM1	2.31	0.500	1.155
	Subtotal - Wetlands			2.31	-	1.155
Dredge the WEG Small Boathouse Area - Alternative 1 (Figure 3.7-2)	WL084	642	E2EM1	0.08	0.767	0.061
	Subtotal - Wetlands			0.08	-	0.061
Replace WEG Tower 1802 (Figure 3.7-3)	WL087	641	PEM	0.60	0.467	0.280
	Subtotal - Wetlands			0.60	-	0.280
Improve Expeditionary/Encampment Roads (Figure 3.7-4)	WL005	631	PSS1F	0.10	0.633	0.063
	WL006	631	PSS1F	0.04	0.633	0.025
	WL007	631	PSS1C	0.19	0.600	0.114
	WL008	631	PSS1C	0.13	0.600	0.078
	WL023	643	PEM1	0.13	0.667	0.087
	WL024	631	PSS3C	1.18	0.567	0.669
	WL060	630	PFO1/4E	0.03	0.700	0.021
	WL060	642	E2EM1	0.06	0.800	0.048
	OSW008	510	PEM1C	0.06	-	-
	OSW012	510	PEM1C	0.02	-	-
	Subtotal - Wetlands			1.86	-	1.105
	Subtotal - OSW			0.08	-	-
Expand Fam Camp Site - Alternative 1 (Figure 3.7-5)	WL088	641	PEM1C	0.46	0.700	0.322
	WL089	642	E2EM1	0.19	0.800	0.152
	Subtotal - Wetlands			0.65	-	0.474
Expand Fam Camp Site - Alternative 2 (Figure 3.7-6)	WL088	641	PEM1C	0.46	0.700	0.322
	WL089	642	E2EM1	0.13	0.800	0.104
	Subtotal - Wetlands			0.59	-	0.426
Construct Water Main on North Side of Flightline (Figure 3.7-7)	WL011	643	PEM1E	1.63	0.733	1.195
	WL012	643	PEM1E	0.97	0.600	0.582
	WL033	643	PEM1E	0.44	0.433	0.191
	OSW013	510	PEM	0.54	-	-
	OSW014	510	PEM1C	1.6	-	-
	OSW015	530	PEM1C	15.25	-	-
	OSW016	530	PEM1C	0.67	-	-
	OSW067	510	PEM1C	0.05	-	-
	OSW068	510	PEM1C	0.39	-	-
	OSW068	530	PEM1C	3.41	-	-
	OSW072	510	PEM1C	0.16	-	-
	OSW073	510	PEM1C	1.43	-	-
	OSW074	510	PEM1C	0.21	-	-
	OSW174	510	PEM1C	0.31	-	-
	OSW175	510	PEM1C	0.05	-	-
	OSW176	530	PEM1Fx	1.69	-	-
	OSW177	530	PEM1Fx	0.66	-	-
	Subtotal - Wetlands			3.04	-	1.968
	Subtotal - OSW			26.42	-	-



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Project	Wetland/ OSW ID	FLUCFCS Description	USFWS Description	Acres (LOD)	Delta	Functional Loss (Units)
Construct Fishing/Observation Pier (Heritage Club) - Alternative 1 (Figure 3.7-8)	WL090	643	PEM1	0.07	0.733	0.051
	WL090	642	E2EM1	0.29	0.800	0.232
	Subtotal - Wetlands			0.36	-	0.283
Construct Fishing/Observation Pier (Heritage Club) - Alternative 2 (Figure 3.7-9)	WL090	643	PEM1	0.07	0.733	0.051
	WL090	642	E2EM1	0.29	0.800	0.232
	Subtotal - Wetlands			0.36	-	0.283
Renovate Unite Site - Alternative 1 (Figure 3.7-10)	WL091	643	PEM	0.14	0.567	0.079
	WL092	631	PSS	6.81	0.667	4.540
	Subtotal - Wetlands			6.95	-	4.619
Renovate Unite Site - Alternative 2 (Figure 3.7-11)	OSW178	510	PEM1C	0.15	-	-
	Subtotal - OSW			0.15	-	-
Total - Wetlands <sup>1</sup>				15.85	-	9.945
Total - OSW <sup>1</sup>				26.65	-	-

Source: AECOM, 2021

<sup>1</sup> For projects with more than one alternative, the alternative with the greatest acreage of wetland and OSW disturbance is included in the total.

Notes : OSW = Other Surface Water; WL = Wetland

#### 4.6.1.3 Floodplains

Of the approximate 32 acres of 100-year floodplain contained in the LODs for the Proposed Actions and alternatives with the greatest potential floodplain impacts (**Section 3.7.3**), site preparation and construction activities based on planned construction would directly impact up to approximately 17 acres. **Table 4.6-2** depicts the acreage of anticipated floodplain impacts resulting from the Proposed Actions (e.g., within notional layout construction footprints). Floodplain impact values will be refined and finalized during the permitting process. During the design phase, the construction footprint for each of the Proposed Actions will implement design measures to avoid/minimize direct impacts to floodplains to the greatest extent practicable. Unavoidable impacts to floodplains resulting from the implementation of the Proposed Actions will be mitigated. The use of standard BMPs and erosion control measures during construction will minimize erosion, sedimentation and other potential indirect effects on floodplains.

**TABLE 4.6-2 FLOODPLAIN IMPACTS**

Project	Acres (LOD)				Acres Impacted			
	Zone A	Zone AE	Zone VE	Total	Zone A	Zone AE	Zone VE	Total
Construct New EOD Gravel Road ( <b>Figure 3.7-12</b> )	--	2.42	0.23	2.65	--	0.11	--	0.11
Dredge the WEG Small Boathouse Area - Alternative 1 ( <b>Figure 3.7-13</b> )	--	0.86	0.28	1.14	--	0.21	0.14	0.35
Dredge the WEG Small Boathouse Area - Alternative 2 ( <b>Figure 3.7-14</b> )	--	1.64	0.28	1.92	--	0.64	0.14	0.78
Replace WEG Tower 1802 ( <b>Figure 3.7-15</b> )	1.53	--	--	1.53	0.08	--	--	0.08
Improve Expeditionary/Encampment Roads ( <b>Figure 3.7-16</b> )	5.00	--	--	5.00	0.13	--	--	0.13
Expand FAMCAMP Site - Alternative 1 ( <b>Figure 3.7-17</b> )	0.12	0.42	--	0.54	--	0.12	--	0.12

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Project	Acres (LOD)				Acres Impacted			
	Zone A	Zone AE	Zone VE	Total	Zone A	Zone AE	Zone VE	Total
Expand FAMCAMP Site - Alternative 2 (Figure 3.7-18)	0.12	0.41	--	0.53	--	0.12	--	0.12
Construct Water Main on North Side of Flightline (Figure 3.7-19)	1.46	14.40	--	15.86	1.46	14.40	--	15.86
Construct Fishing/Observation Pier (Heritage Club) - Alternative 1 (Figure 3.7-20)	0.22	0.14	--	0.36	0.03	0.03	--	0.06
Construct Fishing/Observation Pier (Heritage Club) - Alternative 2 (Figure 3.7-21)	0.22	0.14	--	0.36	0.04	0.04	--	0.08
Renovate Unite Site - Alternative 1 (Figure 3.7-22)	4.40	0.06	--	4.46	--	--	--	--
Renovate Unite Site - Alternative 2	--	--	--	--	--	--	--	--
<b>Total<sup>1</sup></b>	<b>12.73</b>	<b>19.08</b>	<b>0.51</b>	<b>32.32</b>	<b>1.71</b>	<b>15.31</b>	<b>0.14</b>	<b>17.16</b>

Source: FEMA, 2022.

<sup>1</sup> For projects with more than one alternative, the alternative with the greatest acreage of floodplain disturbance is included in the total.

Notes: Zone A and AE – one percent annual chance of flooding; 100-year floodplain; Zone VE – one percent chance of flooding with additional hazards due to storm-induced velocity wave action; 100-year floodplain with additional hazards

The Proposed Actions may increase the risk or impact of floods on human safety or adversely impact the beneficial values that floodplains serve. The Proposed Actions may increase the duration, frequency, velocity, or volume of flood events due to the reduction of floodplain capacity. All potential effects, if any, would remain on Tyndall AFB property.

#### **4.6.1.4 Coastal Zone Management**

Based on the geography of Florida and the legal basis for the state program, the entire state of Florida is included within the coastal zone. Geographically, Florida has low land elevation, a generally high water table, and an extensive coastline with many rivers emptying into coastal waters. Few places in Florida are more than 70 miles from either the Atlantic Ocean or the Gulf of Mexico. The result is an interrelationship between the land and coastal waters, which makes it difficult to establish a boundary that would exclude inland areas. Because of this relationship, the state boundaries include the entire area encompassed by the state's 67 counties and its territorial seas.

All of Tyndall AFB is within Florida's coastal zone, as defined by the FCMP. While Federal lands such as Tyndall are statutorily excluded from Florida's coastal zone, Federal approval of the FCMP elicits Section 307 of the CZMA and mandates that activities on Federal lands that have the potential to affect coastal resources or uses on non-Federal lands comply to the maximum extent practicable with the enforceable policies of the FCMP. Florida's Coastal Zone Management Program (CZMP) includes the 24 enforceable policies (statutory authorities) incorporated into the federally approved FCMP.

The Air Force submitted an analysis of the Proposed Action and alternatives' consistency with the FCMP (Appendix F). Determination and requested concurrence with these determinations from the Florida State Clearinghouse as part of the Draft EA review process.



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**4.6.2 NO-ACTION ALTERNATIVE**

Under the No-Action Alternative, no construction or demolition activities would occur; therefore, there would be no direct impacts on surface waters, groundwater, wetlands, floodplains or the coastal zone. The water main along the north side of Flightline would not be constructed; therefore, developable land on this portion of the Flightline would continue to lack water system connectivity, and redundancy and other functional improvements to the water conveyance system would not be implemented. With the exception of the proposed water main project, the Proposed Actions and Alternatives would not remedy or improve existing water resources conditions. Therefore, no significant adverse or beneficial impacts are anticipated under the No-Action Alternative.

**4.6.3 MITIGATION MEASURES**

Mitigation measures for impacts to wetlands and floodplains are discussed in the following sections.

**4.6.3.1 Wetlands and Other Surface Waters**

For construction activity related to the Proposed Actions, a National Pollutant Discharge Elimination System (NPDES) stormwater permit implementing appropriate pollution prevention techniques will be obtained from the FDEP. Any wastewater collection/transmission systems will require authorization from the FDEP pursuant to Chapter 62-604, F.A.C. and public drinking water system modifications will be authorized by FDEP pursuant to Chapter 62-555.900, F.A.C. In addition, pursuant to Section 373 Part IV, F.S., any construction and operation of surface water management systems will require an ERP from the FDEP or NFWFMD to ensure that activities or situations are not harmful to the water resources or inconsistent with the public interest. A CWA Section 404 permit and a Section 401 water quality certification would be required prior to any dredge and/or fill actions within federally jurisdictional wetlands. The notional layout for the Flightline waterline project has been aligned to minimize direct impacts to drainage features (e.g., manmade ditches and swales), and unavoidable impacts to the features would be minimized during the design and permitting phase.

Mitigation will be required to offset impacts on state and/or federally jurisdictional wetlands. As shown on **Table 4.6-1** a total of up to 15.85 acres of wetlands could potentially be impacted by planned construction activities within the LODs of the Proposed Actions and alternatives and based on UMAM scoring a total of up to 9.945 units of functional loss would occur.

Wetland impacts resulting from construction of the Proposed Actions will be mitigated to satisfy all mitigation requirements of 33 U.S.C. 1344 and Part IV, Chapter 373 F.S. During the process of obtaining these permits, USACE, Air Force, and FDEP will identify the necessary mitigation required to offset impacts to jurisdictional wetlands and other surface waters. The preference would be to avoid wetland impacts, but since that is likely not possible, the Air Force will consider on-site and in-kind, off-site and in-kind, and obtaining credits from approved mitigation banks. Currently, there is one wetland mitigation bank (Horseshoe Creek Mitigation Bank) that services this area and is pending state and Federal permits to have freshwater herbaceous, freshwater forested, and saltmarsh wetland credits available. Therefore, implementation of the Proposed Actions would not result in significant impacts on wetlands.

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**4.6.3.2 Floodplains**

Any drainage system improvements associated with the Proposed Actions would be designed to properly convey and store stormwater flows and would not impede floodwater flows during major storm events. The Proposed Actions' design would comply with local floodplain management policies and regulations, which promote designs to minimize flood impacts. Adverse effects could be further minimized by elevating all facilities above the base flood elevation (BFE), applying construction period erosion and sedimentation controls, and using pervious surfaces for stormwater retention and treatment where possible.

Up to approximately 17.16 acres of floodplains would be impacted by the Proposed Actions., Pursuant to EO 11998, the Air Force has concluded that there is no practicable alternative to siting and constructing the individual projects included in the Proposed Actions. Accordingly, the following mitigations are required to: 1) protect structures sited in the floodplain, and 2) minimize impacts to flood elevation, function and capacity within floodplain areas.

First, design elements will be incorporated into the individual projects that would encroach on floodplains to minimize and mitigate potential floodplain impacts to the greatest extent practicable. In general, building footprints would be reduced as much as possible to minimize encroachments into the floodplain. Other design elements could include constructing buildings on land elevated above the BFE through placement of fill; establishing basement elevations and first floor elevations consistent with potential flood levels; and elevating utilities and equipment that might be hazardous to life if submerged.

Additionally, to minimize impacts to flood elevation, function and capacity within the 100- and 500-year floodplain due to cut and fill activities, compensatory storage will be provided by excavating material within or adjacent to the same floodplain to be used as fill, in a manner that does not disturb or impact wetlands, endangered vegetation, or potential cultural sites.

**4.7 BIOLOGICAL RESOURCES**

**4.7.1 PROPOSED ACTIONS AND ALTERNATIVES**

**4.7.1.1 Species Impacts**

The Proposed Actions and alternatives would result in permanent modifications to habitat potentially utilized by listed and protected species. Included in this section is a determination for each proposed or listed species and proposed or designated critical habitat that may be present in the areas of the Proposed Actions and Alternatives. Definitions of determinations are listed below.

- No effect: There will be no impacts, positive or negative, to listed or proposed resources. Generally, no listed resources will be exposed to the action and its environmental consequences.
- May affect, but not likely to adversely affect: All effects are beneficial, insignificant, or discountable. Beneficial effects have contemporaneous positive effects without any adverse effects to the species or habitat. Insignificant effects relate to the size of the impact and include those effects that are undetectable, not measurable, or cannot be evaluated. Discountable effects are those extremely unlikely to occur.



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- May affect, and is likely to adversely affect: Listed resources are likely to be exposed to the action or its environmental consequences and will respond in a negative manner to the exposure.

The basis of the effects determinations for each species are as follows. If the LODs of the Proposed Actions are outside of a species' range, there is no potentially suitable habitat within the LODs, and no species individuals were observed during field reviews, the species received an effects determination of "No effect". If a species range includes the LODs for the Proposed Actions, there is potentially suitable habitat within the LODs, but no species individuals or habitat utilization were observed during field reviews, the species received an effects determination of "May affect, not likely to adversely affect". If suitable habitat occurs within the LODs and there was evidence of species occurrence/habitat utilization, the species received a "May affect, and is likely to adversely affect" determination. **Table 4.7-1** summarizes the effects determination discussed in detail in the Biological Assessment (**Appendix B**).

**TABLE 4.7-1 EFFECTS DETERMINATION SUMMARY**

Scientific Name	Common Name	Federal Status	State Status	Determination
<b>Mammals</b>				
<i>Peromyscus polionatus alloparys</i>	Choctawhatchee beach mouse	E	-	"No effect"
<i>Peromyscus polionatus peninsularis</i>	St. Andrew beach mouse	E	-	"No effect"
<i>Trichechus manatus</i>	West Indian manatee	T	-	"May affect, not likely to adversely affect"
<i>Ursus americanus floridanus</i>	Florida black bear	-	FBBCR	"May affect, not likely to adversely affect"
<b>Reptiles</b>				
<i>Alligator mississippiensis</i>	American alligator	T(S/A)	-	"May affect, not likely to adversely affect"
<i>Caretta caretta</i>	Loggerhead sea turtle	T	-	"May affect, not likely to adversely affect"
<i>Chelonia mydas</i>	Green sea turtle	E	-	"May affect, not likely to adversely affect"
<i>Dermochelys coriacea</i>	Leatherback sea turtle	E	-	"May affect, not likely to adversely affect"
<i>Drymarchon corais couperi</i>	Eastern indigo snake	T	-	"May affect, not likely to adversely affect"
<i>Gopherus polyphemus</i>	Gopher tortoise	C	T	"May affect, not likely to adversely affect"
<i>Lepidochelys kempii</i>	Kemp's ridley sea turtle	E	-	"May affect, not likely to adversely affect"
<i>Pituophis melanoleucus mugitus</i>	Florida pine snake	-	T	"No effect"
<b>Birds</b>				
<i>Calidris canutus rufa</i>	Red knot	T	-	"May affect, not likely to adversely affect"
<i>Charadrius melodus</i>	Piping plover	T	-	"May affect, not likely to adversely affect"
<i>Charadrius nivosus</i>	Snowy plover	-	T	"May affect, not likely to adversely affect"
<i>Egretta caerulea</i>	Little blue heron	-	T	"May affect, not likely to adversely affect"
<i>Egretta rufescens</i>	Reddish egret	-	T	"No effect"
<i>Egretta tricolor</i>	Tri-colored heron	-	T	"May affect, not likely to adversely affect"
<i>Haematopus palliatus</i>	American oystercatcher	-	T	"May affect, not likely to adversely affect"
<i>Haliaeetus leucocephalus</i>	Bald eagle	-	BGEPA	"No effect"
<i>Mycteria americana</i>	Wood stork	T	-	"May affect, not likely to adversely affect"
<i>Rynchops niger</i>	Black skimmer	-	T	"May affect, not likely to adversely affect"

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Scientific Name	Common Name	Federal Status	State Status	Determination
<i>Sternula antillarum</i>	Least tern	-	T	"May affect, not likely to adversely affect"
<b>Fish</b>				
<i>Acipenser oxyrinchus desotoi</i>	Gulf sturgeon	T	-	"May affect, not likely to adversely affect"
<i>Pristis pectinate</i>	Smalltooth sawfish	E	-	"No effect"
<b>Plants</b>				
<i>Asclepias viridula</i>	Southern milkweed	-	T	"No effect"
<i>Chrysopsis godfreyi</i>	Godfrey's golden aster	-	E	"No effect"
<i>Cleistes bifaria</i>	Small spreading pogonia	-	E	"May affect, not likely to adversely affect"
<i>Drosera filiformis</i>	Dew thread sundew	-	E	"May affect, not likely to adversely affect"
<i>Drosera intermedia</i>	Spoon-leafed sundew	-	T	"May affect, not likely to adversely affect"
<i>Euphorbia telephoides</i>	Telephus spurge	T	E	"May affect, not likely to adversely affect"
<i>Eurybia spinulosa</i>	Apalachicola aster	-	E	"May affect, not likely to adversely affect"
<i>Gentiana pennelliana</i>	Wiregrass gentian	-	E	"May affect, not likely to adversely affect"
<i>Harperocallis flava</i>	Harper's beauty	E	E	"May affect, not likely to adversely affect"
<i>Justicia crassifolia</i>	Thick-leaved water willow	-	E	"May affect, not likely to adversely affect"
<i>Lilium catesbaei</i>	Southern red lily	-	T	"No effect"
<i>Lupinus westianus</i>	Gulf coast lupine	-	T	"May affect, not likely to adversely affect"
<i>Macbridea alba</i>	White birds-in-a-nest	T	E	"May affect, not likely to adversely affect"
<i>Oxypolis greenmanii</i>	Giant water dropwort	-	E	"May affect, not likely to adversely affect"
<i>Physostegia godfreyi</i>	Apalachicola dragonhead	-	T	"May affect, not likely to adversely affect"
<i>Pinguicula ionantha</i>	Godfrey's butterwort	T	E	"May affect, not likely to adversely affect"
<i>Pinguicula lutea</i>	Yellow-flowered butterwort	-	T	"May affect, not likely to adversely affect"
<i>Pinguicula planifolia</i>	Chapman's butterwort	-	T	"May affect, not likely to adversely affect"
<i>Pogonia ophioglossoides</i>	Snakemouth orchid	-	T	"May affect, not likely to adversely affect"
<i>Polygonella macrophylla</i>	Large-leaved jointweed	-	T	"No effect"
<i>Ruellia noctiflora</i>	Nightflowering wild petunia	-	E	"May affect, not likely to adversely affect"
<i>Sarracenia psittacina</i>	Parrot pitcher plant	-	T	"May affect, not likely to adversely affect"
<i>Sarracenia rosea</i>	Purple pitcher plant	-	T	"May affect, not likely to adversely affect"
<i>Scutellaria floridana</i>	Florida skullcap	T	E	"May affect, not likely to adversely affect"
<i>Verbesina chapmanii</i>	Chapman's crownbeard	-	T	"May affect, not likely to adversely affect"
<i>Xyris isoetifolia</i>	Quillwort yellow-eyed grass	-	E	"May affect, not likely to adversely affect"
<i>Xyris longisepala</i>	Karst pond yellow-eyed grass	-	E	"May affect, not likely to adversely affect"
<i>Xyris scabrifolia</i>	Harper's yellow-eyed grass	-	T	"No effect"

Sources: Tyndall AFB, 2020. Integrated Natural Resources Management Plan for Tyndall AFB, Florida. U.S. Air Force, Tyndall Air Force Base, Florida; USFWS, 2021. Environmental Conservation Online System Information for Planning and Consultation (<https://ecos.fws.gov/ipac/>), accessed July 13, 2021.

Notes: BGEPA – Bald and Golden Eagle Protection Act; FBB CR – Florida Black Bear Conservation Rule; E – Endangered; C – Candidate; T – Threatened; T(S/A) – Threatened due to Similarity of Appearance



**4.7.1.2 Submerged Aquatic Vegetation**

As discussed in **Section 3.8.5**, SAV beds were delineated within the LODs for the WEG Small Boathouse dredging alternatives, the FAMCAMP expansion alternatives, and the Heritage Club pier construction alternatives. For the WEG Small Boathouse and FAMCAMP alternatives, direct impacts may be able to be avoided based on current planned construction. However, dredging/disturbance activities may induce increased turbidity in the surrounding waters which could cause indirect impacts to the delineated areas.

For the Heritage Club pier alternatives, direct impacts due to pile placement would occur and likely could not be avoided due to the continuity and density of the vegetation in this area. Turbidity-related indirect impacts as described above may also occur and may also include indirect impacts due to shading.

During the design process, exact impact areas will be refined, and the actions would be subject to the permitting process. Additional avoidance and minimization measures may be required, including pre- and post-construction SAV surveys and installation of turbidity curtains around construction areas to prevent or minimize indirect effects to SAV. Development and implementation of a Turbidity Control and Monitoring Plan could be required to ensure that turbidity doesn't exceed 29 Nephelometric Turbidity Units, and that nearby seagrass beds will not be affected by turbidity.

**4.7.2 NO-ACTION ALTERNATIVE**

No construction, ground disturbing, or dredging activities would occur under this alternative. No vegetation, animals, or habitat would be directly impacted, altered, or lost. The Proposed Action and alternatives would not provide direct benefits to vegetation, animals, or habitats. Therefore, the No-Action Alternative would have no direct or indirect impacts either beneficial or adverse on biological resources, including federally- and/or state-listed species.

**4.7.3 MITIGATION MEASURES**

Based on the analysis presented in this EA and the BA (**Appendix B**), the following conservation measures are recommended for the Proposed Actions in order to minimize potential effects to rare, threatened or endangered species at Tyndall AFB.

- To prevent potential adverse impacts to the West Indian manatee, the *2011 Standard Manatee Conditions for In-Water Work* will be adhered to during all in-water construction activities.
- To prevent potential adverse impacts to the loggerhead sea turtle, the green sea turtle, the leatherback sea turtle and the Kemp's ridley sea turtle, the *Sea Turtle and Smalltooth Sawfish Construction Conditions* (Revised March 23, 2006) will be adhered to during all in-water construction activities.
- To prevent potential adverse impacts to the loggerhead sea turtle, the green sea turtle, the leatherback sea turtle and the Kemp's ridley sea turtle, installation activities will also continue to adhere to management practices outlined in the INRMP, including but not limited to, predator control, resolution of beach lighting issues, enforcement of beach driving restrictions, and restoration/protection of nesting habitat.

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- If potentially occupied gopher tortoise burrows are found during construction, Tyndall AFB, in accordance with FWC's *Gopher Tortoise Permitting Guidelines* (revised July 2020), will maintain a minimum 25-foot radial buffer around the burrow to avoid impacts to the species. The buffer will not isolate gopher tortoise mobility. If a buffer cannot be maintained, a gopher tortoise relocation permit (10 or fewer burrows) will be obtained through FWC.
- During the design and permitting process, develop avoidance and minimization measures for impacts to SAV, which may include (but may not necessarily be limited to): pre- and post-construction SAV surveys, installation of turbidity curtains around construction areas, and development and implementation of a Turbidity Control and Monitoring Plan.

## **4.8 CULTURAL RESOURCES**

### **4.8.1 PROPOSED ACTIONS AND ALTERNATIVES**

Areas that were not previously surveyed and that are proposed for construction have been surveyed for cultural resources and no significant sites or materials were found in any of the project areas. Several previously recorded archaeological sites overlap the terrestrial APEs for the Dredge WEG Small Boathouse Area and Expand FAMCAMP Site Action Alternatives, and within the APE for the Improve Expeditionary/Encampment Road project area. However, each of these sites was determined ineligible for inclusion to the NRHP. Additional details regarding these sites are provided in the CRAS report for this EA (**Appendix C**). **Table 4.8-1** summarizes potential impacts to cultural resources resulting from the Proposed Action and alternatives. As part of the Draft EA process the CRAS report has been submitted to the SHPO and interested tribes for consultation under Sections 106 and 110 of the NHPA.

**TABLE 4.8-1 CULTURAL RESOURCES IMPACTS SUMMARY**

Project	Cultural Resource Sites within 0.5 mile of LOD	Potential Impacts
Construct New EOD Gravel Road	8BY02897 (outside LOD)	No direct or indirect impacts anticipated. No NRHP-eligible resources identified within or adjacent to project LOD.
Dredge the WEG Small Boathouse Area - Alternative 1	NWR 1 (Outside LOD)	No direct or indirect impacts anticipated. No NRHP-eligible resources identified within or adjacent to project LOD.
Dredge the WEG Small Boathouse Area - Alternative 2	NWR 1 (Outside LOD)	No direct or indirect impacts anticipated. No NRHP-eligible resources identified within or adjacent to project LOD.
Replace WEG Tower 1802	None	No direct or indirect impacts anticipated. No NRHP-eligible resources identified within or adjacent to project LOD.
Improve Expeditionary/Encampment Roads	8BY01782 (Within LOD) 8BY01780 (Adjacent to LOD) 8BY01781 (Outside LOD) 8BY00190 (Within LOD)	No direct or indirect impacts anticipated. No NRHP-eligible resources identified within or adjacent to project LOD.
Expand FAMCAMP Site - Alternative 1	8BY01770 (Within LOD) 8BY01502 (Outside LOD) 8BY01773 (Outside LOD) 8BY01771 (Within LOD) 8BY01382 (Within LOD) 8BY01391 (Adjacent to LOD)	No direct or indirect impacts anticipated. No NRHP-eligible resources identified within or adjacent to project LOD.



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Project	Cultural Resource Sites within 0.5 mile of LOD	Potential Impacts
Expand FAMCAMP Site - Alternative 2	8BY01770 (Within LOD) 8BY01502 (Outside LOD) 8BY01773 (Outside LOD) 8BY01771 (Within LOD) 8BY01382 (Within LOD) 8BY01391 (Adjacent to LOD)	No direct or indirect impacts anticipated. No NRHP-eligible resources identified within or adjacent to project LOD.
Construct Water Main on North Side of Flightline	8BY01785 (Outside LOD) 8BY01786 (Outside LOD)	No direct or indirect impacts anticipated. No NRHP-eligible resources identified within or adjacent to project LOD.
Construct Fishing/Observation Pier (Heritage Club) - Alternative 1	8BY02378 (Outside LOD) IF-1089 (Outside LOD)	No direct or indirect impacts anticipated. 8BY02378 is eligible for NRHP inclusion but is located outside project LOD. No other NRHP-eligible resources located within or adjacent to project LOD.
Construct Fishing/Observation Pier (Heritage Club) - Alternative 2	8BY02378 (Outside LOD) IF-1089 (Outside LOD)	No direct or indirect impacts anticipated. 8BY02378 is eligible for NRHP inclusion but is located outside project LOD. No other NRHP-eligible resources located within or adjacent to project LOD.
Renovate Unite Site - Alternative 1	8BY01480 (Outside LOD) 8BY01391 (Outside LOD)	No direct or indirect impacts anticipated. Historic portion of multi-component Site 8BY01480 is eligible for NRHP inclusion but is located outside project LOD. No other NRHP-eligible resources located within or adjacent to project LOD.
Renovate Unite Site - Alternative 2	None	No direct or indirect impacts anticipated. No NRHP-eligible resources identified within or adjacent to project LOD.

#### 4.8.2 NO-ACTION ALTERNATIVE

Under the No-Action Alternative, construction activities would not occur, and no cultural resources would be adversely affected. There would be no immediate potential either to disturb known or unknown cultural resources, or to encounter and recover unknown cultural resources for analysis and possible curation. The No-Action Alternative would not result in adverse or beneficial impacts to cultural resources.

#### 4.8.3 MITIGATION MEASURES

No mitigation measures for cultural resources impacts would be required. Should future construction activities uncover any artifacts or fossils, the discoverer will note the location of the find and cease all activities within a 50-m (164-foot) perimeter of the location. The discoverer will report the find to the Cultural Resources Management Program (CRMP), and the program's coordinator will visit the location and determine which legal mandates are applicable. Activities will not resume within the perimeter until the CRMP clears the location of all concerns.

If human remains or bones are discovered, the discoverer will note the location of the find and cease all activities with a 100-m (328-foot) perimeter of the location. The discoverer will report the find to the CRMP, and the program's coordinator will visit the location and determine which legal mandates are

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applicable. Activities will not resume within the perimeter until the CRMP clears the location of all concerns.

## **4.9 HAZARDOUS MATERIALS/WASTE AND SOLID WASTE**

### **4.9.1 PROPOSED ACTIONS AND ALTERNATIVES**

#### ***4.9.1.1 Hazardous Materials/Waste***

Construction of the proposed new facilities would involve use of typical construction-related hazardous materials such as POL, paints, and solvents. Handling and storage of hazardous materials during construction activities, including measures to prevent releases, would be required to be conducted in accordance with all applicable environmental compliance regulations and Tyndall AFB environmental management plans. Hazardous materials or petroleum products (fuel and lubricants) would be required to be stored either in double walled tanks or placed within secondary containment in order to prevent any impacts to soil or groundwater in the event of a spill. The contractor and Air Force would be required to report to the State any spills or discharges discovered during the course of demolition and construction. Management of other hazardous materials in compliance with Tyndall AFB HWMP (U.S. Air Force, 2021d) requirements. Disposal of hazardous wastes as directed by the HWMP would minimize impacts from handling and disposal of hazardous substances. By following the procedures identified, impacts from hazardous and toxic substances due to the Proposed Actions would be minor.

No increases or substantial changes in current quantities and types of hazardous materials or wastes would be expected upon completion of the projects.

Handling, storage, and disposal of hazardous waste generated during construction activities, including measures to prevent releases, would be required to be conducted in accordance with all applicable environmental compliance regulations and Tyndall AFB environmental management plans. The proposed facilities would be expected to use and manage the same type and similar amounts of hazardous materials/waste as their current facilities. Generated hazardous waste would be stored in one or more designated IAPs at Tyndall AFB in compliance with the waste containerization requirements specified in the Tyndall AFB HWMP (U.S. Air Force, 2021d). Certain wastes, such as spent air filters, may be removed from the facilities during maintenance events and taken directly to the 90-day HWAS instead of being stored in an onsite IAP. Therefore, the Proposed Actions would result in no negligible effects regarding hazardous wastes.

#### ***4.9.1.2 Solid Waste***

Construction of the proposed structures and infrastructure would generate nonhazardous, construction-related solid waste. The Proposed Actions include limited construction of structures; therefore, generation of building construction material waste such as scrap metal, drywall, and wood would be minimal. The Proposed Actions include limited demolition. Approximately 112 cubic yards of asphalt pavement and 47 cubic yards of concrete pavement would be demolished with the removal of existing RV parking pads for the Expand FAMCAMP Site project. Structural construction waste and pavement demolition debris would be disposed of at an off-base landfill or recycled/reused as appropriate. Infrastructure construction (e.g.,



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roadways and utilities) would require excavation of soils and fill material within the construction footprint. Based on conceptual design elements, an estimated maximum of 154,382 cubic yards of material would be excavated. Some of this material would be reused onsite as backfill. Excess fill material would be stockpiled at designated locations on Tyndall AFB, and none would be transported off-base. Up to 2,554 cubic yards of marine sediments would be dredged for the Dredge the WEG Small Boathouse Area project. As previously discussed, dredge spoils would be characterized upon removal, and stockpiled at one of two locations within the project's established LOD. All solid waste generated during construction activities would be managed in accordance with the Tyndall AFB ISWMP (U.S. Air Force, 2021e). Therefore, minor effects relative to solid wastes at Tyndall AFB would occur due to the Proposed Action.

#### **4.9.1.3 Environmental Restoration Program Sites**

As stated in **Section 3.10.2**, a variety of ERP sites are located near or are collocated with Proposed Actions and alternatives, many of which are closed. Refer to **Table 4.9-1** for an appraisal of likely potential impacts to each active site based on the site status, as well as the planned activities associated with each of the Proposed Actions and alternatives. Contractors working within ERP sites will be notified of the presence and nature of the known contaminants, access restrictions, institutional controls, and land use controls specific to the potentially impacted ERP site prior to beginning work. A description of the closure requirements and contaminants located on the ERP sites is provided in **Appendix I**.

As summarized on **Table 4.9-1**, implementation of the Proposed Actions could affect or be affected by active ERP sites. A formal construction waiver is not currently required for construction in ERP sites; however, AFCEC does require that reviews of excavation and/or construction siting and compatibility with environmental cleanup sites be conducted and documented in accordance with current EIAP processes as specified in AFI 32-1015. Through these existing EIAP processes, installations are to ensure project siting will not adversely affect environmental cleanup program activities and that there are no land use controls impacting siting and/or construction activities. If an ERP site is the only feasible location for an excavation or construction project, land use controls are to be evaluated and addressed by evaluating the project to ensure continued protectiveness for human health and the environment, and AFCEC should be consulted to ensure proper coordination and mitigation of any impacts upon cleanup site activities. If the site will be modified in such a way that a land use control no longer exists or is no longer protective, then the remedy in the ERP site's decision document would need to be revisited (U.S. Air Force, 2013).

Pursuant to 62-532.500(5), F.A.C., and NFWFMD requirements, the contractor and the Air Force should be aware of all monitoring wells, injection wells, extraction wells, sparge wells, and similar treatment facilities within each work area. If any of these wells are found within the area of the construction and demolition activities, they would need to be properly abandoned, as appropriate. Additionally, abandoned wells may need to be reinstalled, as necessary. The contractor and the Air Force should evaluate on a case-by-case basis if permits are needed from the Installation and NFWFMD for well abandonment and installation activities.

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1 **TABLE 4.9-1 POTENTIAL IMPACTS TO ACTIVE ERP SITES**

Project	Site ID	Site Name	Site Type	Impact Assessment
Construct EOD Gravel Road	SR169	Jeep Range	Small Arms Range	As shown on <b>Figure 2.3-1</b> , planned construction for the Proposed Action would occur outside of the limits of the ERP site. Therefore, <b>no direct or indirect impacts are expected to occur</b> related to Proposed Action construction activities.
Dredge WEG Small Boathouse Area	TU233	Building 9725 Wright Labs Motor Pool	Vehicle Maintenance/Waste Accumulation Area	As shown on <b>Figure 2.3-3</b> , the proposed dredging activity area is located in vicinity to the southwest corner of the ERP study area; however, the LOD for the Proposed Action would not intersect the ERP site. Recent groundwater sampling in the area indicates that the contaminated plume limit occurs east of the ERP study area boundary. Accordingly, there is a <b>low-to-negligible potential for direct or indirect impacts</b> to this ERP site related to Proposed Action construction activities.
Improve Expeditionary/Encampment Roads	LF005	6000 Area Landfill	Debris Burial	As shown on <b>Figure 2.3-5</b> , planned construction for the Proposed Action would occur outside of the limits of the ERP site. Therefore, <b>no direct or indirect impacts are expected to occur</b> related to Proposed Action construction activities.
Construct Water Main Along North Side of Flightline	FT016	Former Shell Bank Fire Training Area	Fire Training Area/Fuel Storage Area	As shown on <b>Figure 2.3-9</b> , planned construction for the Proposed Action would occur adjacent to the southwestern boundary of this ERP site. Although the ERP site has not been closed by regulatory agencies, remediation activities on-site have reduced groundwater contamination to concentrations approaching Groundwater Cleanup Target Levels. Accordingly, there is a <b>low-to-moderate potential for short-term, minor direct or indirect adverse impacts</b> related to the Proposed Action construction activities.
	FT023	Former Active Fire Training Area	Fire/Crash Training Area	As shown on <b>Figure 2.3-9</b> , planned construction of the Proposed Action would occur well outside of the ERP site boundaries. Accordingly, <b>no direct or indirect impacts are expected</b> related to Proposed Action construction activities.
	OT029	Shoal Point Bayou	Debris Burial, Dredge Spoils Disposal, Pesticide Storage	As shown on <b>Figure 2.3-9</b> , the planned construction of the Proposed Action would occur at a sufficient distance from the ERP site boundaries that <b>no direct or indirect impacts are expected to occur</b> related to construction activities.
Renovate Unite Site (Alternative 1)	SR170A	Tyndall Elementary School	Small Arms Range	As shown on <b>Figure 2.3-12</b> , construction of the Proposed Action would occur outside of this ERP site. Therefore, <b>no direct or indirect impacts are expected to occur</b> related to construction activities.

Source: Tyndall AFB, 2019a



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**4.9.2 NO-ACTION ALTERNATIVE**

Under the No Action Alternative, no hazardous, toxic or solid waste would be produced since demolition and construction activities would not occur. There would be no potential new interaction between construction or operational activities and active or closed ERP sites. ERP sites would continue to be remediated. The Proposed Actions and alternatives do not include any new environmental remediation activities, industrial processes, use of hazardous materials, or substantial production of hazardous or solid waste. Therefore, the No-Action Alternative would have no significant beneficial or adverse impact if implemented.

**4.9.3 MITIGATION MEASURES**

No mitigation measures would be required. As stated above, land use controls will be evaluated and addressed by evaluating any construction activity on ERP sites to ensure continued protectiveness for human health and the environment. Additionally, AFCEC will be consulted to ensure proper coordination and mitigation of any impacts upon cleanup site activities. If an ERP site will be modified in such a way that a land use control no longer exists or is no longer protective, then the remedy in the ERP site's decision document will be revisited. If any monitoring wells, injection wells, extraction wells, sparge wells, or similar treatment facilities are found within the area of the construction and demolition activities, they would need to be properly abandoned, as appropriate. Additionally, contractors are expected to comply with all Federal and state regulations regarding removal, handling, and disposal of any hazardous waste generated or encountered.

**4.10 CUMULATIVE IMPACTS**

Cumulative impacts to environmental resources result from incremental effects of Proposed Actions and alternatives when combined with other past, present, and reasonably foreseeable future projects in the ROI. The ROI for cumulative impacts is generally limited to Tyndall AFB and the adjacent portions of Bay County, Panama City, and other municipalities. Cumulative impacts can result from individually minor, but collectively substantial, actions undertaken over a period of time by various agencies (Federal, state, and local) or individuals. In accordance with NEPA, a discussion of cumulative impacts resulting from projects that are proposed (or anticipated over the foreseeable future) is required.

This section focuses on the effects of the Proposed Actions and alternatives in concert with any reasonably foreseeable actions that are separate from the Proposed Actions but are expected to occur concurrently and in the same geographic extent. This EA analysis addresses three questions to identify cumulative effects:

1. Does a relationship exist such that elements of the Proposed Actions and alternatives might interact with elements of past, present, or reasonably foreseeable actions?
2. If one or more of the elements of the project and another action could be expected to interact, would the project affect or be affected by impacts of the other action?

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3. If such a relationship exists, does an assessment reveal any potentially significant impacts not identified when the Proposed Action and alternatives are considered alone?

For the scenarios under consideration to have a cumulatively significant impact on an environmental resource, two conditions must be met. First, the combined impacts of all identified past, present, and reasonably foreseeable projects, activities, and processes on a resource, including the impacts of the Proposed Actions must be significant. Second, the Proposed Actions and alternatives must make a substantial contribution to that significant cumulative impact. Proposed Actions of limited scope do not typically require as comprehensive an assessment of cumulative impacts as proposed actions that have significant environmental impacts over a large area (CEQ, 2022). A records search was performed to identify specific projects recently completed, currently underway, or planned within the next several years within the ROI by Tyndall AFB as well as state, county, and local agencies and planning departments (**Appendix G**). The search was performed to evaluate whether there were any applicable projects which would meet the criteria above for evaluation of cumulative effects.

The following sections evaluate the cumulative effects for each resource category. No significant adverse cumulative impacts are expected to result from the Proposed Actions when considered with other reasonably foreseeable actions within the ROI.

#### **4.10.1 AIR QUALITY**

Proposed Actions and alternatives' air quality impacts would be largely constrained to the facilities construction period. The time frame anticipated for construction activities would correspond with other regional construction and development projects occurring in the ROI. Construction of each of the Proposed Actions and alternatives would have some degree of adverse effect on air quality. Accordingly, impacts of overlapping projects are anticipated. However, annual operational and construction-related emissions associated with the Proposed Actions and alternatives are well beneath the applicable Air Force insignificance indicators for all pollutants. Operational emissions are expected to be comparable to existing emission rates, with only a slight increase to installation-wide emissions. Such emissions would be well below insignificance indicators on an ongoing basis. Overall, based on these emissions levels, significant cumulative impacts to air quality resulting from the Proposed Actions and alternatives are not anticipated.

Under the No Action Alternative, the Proposed Actions and alternatives would not occur, no temporary construction emissions would occur, no new emissions sources (e.g., heating equipment and emergency generators) would be installed or operated, and there would be no associated contribution to cumulative impacts to air quality.

#### **4.10.2 NOISE**

Construction-related noise would be temporary, while none of the projects considered would have an impact on operations-related noise activities. Cumulative noise levels are not expected to substantially change the noise contours currently experienced within the region of Tyndall AFB. Future Air Force projects could change aircraft noise contours at Tyndall AFB. However, impacts to noise from the Proposed Actions and alternatives would not add or contribute to possible future impacts from those other projects. Therefore, the



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Proposed Actions and alternatives, when combined with other past, present, and reasonably foreseeable projects would not contribute to adverse cumulative impacts on the noise environment.

Under the No Action Alternative, the Proposed Actions and alternatives would not occur and there would be no associated contribution to cumulative noise impacts.

#### **4.10.3 SAFETY AND OCCUPATIONAL HEALTH**

Short-term, negligible, adverse cumulative impacts on health and safety (e.g., slips, falls, heat exposure, exposure to mechanical, explosive, electrical, vision, chemical hazards) could occur from construction, dredging, and repair activities associated with the Proposed Actions/alternatives and other planned actions occurring at the installation. Construction workers could also encounter soil or groundwater contamination as a result of an ERP site or previously unknown soil or groundwater contamination. However, implementation of appropriate safety methods and following OSHA and AFOSH safety standards during these activities would minimize the potential for such impacts. With these protocols in place, health and safety risks from all planned projects, and when considered cumulatively, would be reduced to acceptable levels. Therefore, no significant cumulative impacts to safety and occupational health are anticipated.

Under the No-Action Alternative, the Proposed Actions and alternatives would not occur and there would be no associated contribution to cumulative impacts relative to health and safety.

#### **4.10.4 LAND USE**

No impacts to land use are anticipated from the Proposed Actions and alternatives. Implementation of the proposed installation development projects will accomplish future development expectations for long-range planning and land use. The Proposed Actions are consistent with the Tyndall AFB master planning efforts and the planning goals established in the future land use plan. Future land use planning for Tyndall AFB considers land use compatibility, facility consolidation, mission sustainability, quality of life, safety and security. The Proposed Actions and alternatives would collectively achieve each of these objectives. Therefore, the Proposed Actions and alternatives, when combined with other past, present, and reasonably foreseeable projects, would not contribute to adverse cumulative impacts on land use.

Under the No-Action Alternative, the Proposed Actions and alternatives would not occur and there would be no associated beneficial or adverse contribution to cumulative impacts on land use.

#### **4.10.5 SOILS**

Construction activities associated with the Proposed Actions and alternatives would directly disturb native and non-native soils. Other construction activities in the region proposed by the county, city or state governments, as well as commercial and private developers would also remove soils from biological productivity. Tyndall AFB would be required to obtain a Stormwater Construction Permit from the FDEP prior to construction. The construction contractor would be required to develop a SWPPP specific to each site, that would detail erosion prevention and control measures to be implemented during site preparation and construction activities. Therefore, the Proposed Actions, when combined with other past, present, and

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reasonably foreseeable projects would result in a minor contribution to adverse cumulative impacts on the regional soils.

Under the No-Action Alternative, the Proposed Actions and alternatives would not occur and there would be no associated contribution to cumulative impacts on soils.

#### **4.10.6 WATER RESOURCES**

Construction activities associated with the Proposed Actions and alternatives would impact wetlands and OSWs. During design and permitting, efforts will be made to minimize impacts to wetlands and other surface waters to the greatest extent practicable. Mitigation measures would be implemented to minimize impacts to wetlands and other surface waters, in compliance with EO 11990 and Section 404 of the CWA.

There would be a permanent loss of floodplain functions due to the construction activities. Given the amount of restoration-related construction ongoing in Bay County, other impacts to floodplains are likely as well, although these impacts will be minimized through state and local building ordinances regarding floodplains.

No long-term impacts on surface waters and groundwater were identified. Therefore, the Proposed Actions and alternatives, when combined with other past, present, and reasonably foreseeable projects would result in minor contributions to adverse cumulative impacts on water resources, primarily wetlands and floodplain functions.

Under the No-Action Alternative, the Proposed Actions and alternatives would not occur and there would be no associated contribution to cumulative impacts relative to water resources.

#### **4.10.7 BIOLOGICAL RESOURCES**

Construction and dredging activities would impact potential wildlife habitat; however, most of these areas have been previously disturbed by development or timber harvesting/salvage operations. Wildlife occupying these habitats would be affected, but the effects are considered minor and would not adversely affect the population viability. Some individual listed species may be lost; however, the Air Force and USFWS will identify the proper conservation measures to offset these impacts through the Section 7 consultation process. Therefore, the Proposed Actions and alternatives, when combined with other past, present, and reasonably foreseeable projects would result in minor contributions to adverse cumulative impacts on biological resources.

Under the No-Action Alternative, the Proposed Actions and alternatives would not occur and there would be no associated contribution to cumulative impacts relative to biological resources.

#### **4.10.8 CULTURAL RESOURCES**

Construction and dredging activities would not impact any significant cultural properties or NRHP-listed or -eligible resources. Therefore, the Proposed Actions and alternatives, when combined with other past,



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present, and reasonably foreseeable projects would not contribute to adverse cumulative impacts on cultural resources.

Under the No-Action Alternative, the Proposed Actions and alternatives would not occur and there would be no associated contribution to cumulative impacts relative to cultural resources.

**4.10.9 HAZARDOUS MATERIALS/WASTE AND SOLID WASTE**

Construction activities would increase the use and storage of hazardous materials (e.g., solvents, paints, adhesives, etc.) at Tyndall AFB for the short-term. Some short-term increases would be realized in terms of the quantity of fuel used during construction activities for these actions. The limited demolition included in the Proposed Actions and alternatives would increase the amounts of wastes generated, but these activities would be temporary, and all wastes would be disposed of properly. No increases or substantial changes in current quantities and types of hazardous materials or wastes would be expected upon completion of the projects, given the nature of the Proposed Actions and alternatives. No change in aircraft operations or use of motor vehicles at the installation would be expected, and therefore, throughput of petroleum substances and hazardous waste streams would not increase. Operations-related hazardous waste generation (e.g., used oil, used filters, oily rags, etc.) would continue to be managed in accordance with the installation's HWMP and all applicable Federal, state, and local regulations. Given the amount of restoration-related construction ongoing in Bay County, as well as ongoing general residential and commercial development, other hazardous waste and construction debris will be generated for the foreseeable future. It is expected that these wastes will also be properly disposed.

A variety of ERP sites are located in proximity to, or collocated with the Proposed Actions and alternatives, and planned construction activities have potential to cause short-term adverse impacts to ongoing remediation activities at these sites. Implementation of the Proposed Actions and alternatives could affect or be affected by ERP sites. Construction or excavation work within ERP sites must be coordinated with AFCEC and any applicable land use controls are to be evaluated and addressed by evaluating the project to ensure continued protectiveness for human health and the environment. Worker safety during construction would be required to comply with OSHA safety requirements pertaining to worker exposure to hazardous materials, and with all applicable worker safety regulations.

Therefore, the Proposed Actions and alternatives, when combined with other past, present, and reasonably foreseeable projects would result in minor contributions to adverse cumulative impacts on hazardous materials/waste and solid waste.

Under the No-Action Alternative, the Proposed Actions and alternatives would not occur and there would be no associated contribution to cumulative impacts relative to hazardous wastes.

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## CHAPTER 6 REFERENCES

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- 16 U.S. Code §§703-712 – *Migratory Bird Treaty Act*
- 16 U.S. Code §1451 et seq. – *Coastal Zone Management Act*
- 16 U.S. Code §1531 et seq. – *Endangered Species Act of 1973, as amended*
- 33 U.S. Code §1344 et seq. – *Clean Water Act (Section 404)*
- 42 U.S. Code §4231 – *Intergovernmental Cooperation Act of 1968*
- 42 U.S. Code § 4331 – *National Environmental Policy Act, as amended*
- 42 U.S. Code §6901 et seq. – *Resource Conservation and Recovery Act, as amended*
- 42 U.S. Code §6921 – *Identification and Listing of Hazardous Waste*
- 42 U.S. Code §7401 et seq. – *Clean Air Act, as amended*
- 42 U.S. Code §7409 – *National Primary and Secondary Ambient Air Quality Standards*
- 42 U.S. Code §9601 et seq. – *Comprehensive Environmental Response, Compensation, and Liability Act*
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**Environmental Assessment for 8 Construction Sites Tyndall Air Force Base, Florida**

**APPENDIX A AGENCY COORDINATION AND PUBLIC INVOLVEMENT**



**Draft**  
**Environmental Assessment for 8 Construction Sites Tyndall Air Force Base, Florida**

**List of Agencies Contacted**

**Federal Agencies**

Ms. Catrina Martin  
Environmental Review Supervisor  
U.S. Fish and Wildlife Service  
1601 Balboa Avenue  
Panama City FL 32405

**State Agencies**

Mr. Chris Stahl, Coordinator  
Office of Intergovernmental Programs  
Florida Department of Environmental Protection  
3900 Commonwealth Blvd, Mail Station 47  
Tallahassee FL 32399

Dr. Timothy A. Parsons, Division Director  
State Historic Preservation Officer  
Florida Division of Historic Resources  
R.A. Gray Building  
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Tallahassee FL 32399-0250

Ms. Diana K. Pepe  
Northwest Region Conservation Biologist  
Florida Fish and Wildlife Conservation  
Commission  
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Quincy FL 32351

**Native American Tribes**

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Chairman  
Miccosukee Tribe of Indians of Florida  
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Miami FL 33144

Mr. David J. Proctor  
Traditional Cultural Advisor  
Muscogee (Creek) Nation  
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Okmulgee Oklahoma 74447

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Tribal Historic Preservation Officer  
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Atmore AL 36502

Mr. Greg Chilcoat  
Principal Chief  
Seminole Nation of Oklahoma  
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Wewoka OK 74884-5549

Paul N. Backhouse, Ph.D.  
Tribal Historic Preservation Officer  
Seminole Tribe of Florida  
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Clewiston FL 33440

Mr. Galen Cloud  
Tribal Historic Preservation Officer  
Thlopthlocco Tribal Town  
PO Box 188  
Okemah OK 74859



**DEPARTMENT OF THE AIR FORCE**  
**325<sup>TH</sup> CIVIL ENGINEER SQUADRON (ACC)**  
**TYNDALL AIR FORCE BASE FLORIDA**

Mr. José J. Cintron  
Chief, Environmental Element  
325th Civil Engineer Squadron  
103 Mississippi Road  
Tyndall AFB FL 32403-5014

Mr. Paul Lang  
Acting Project Leader  
U.S. Fish and Wildlife Service  
1601 Balboa Avenue  
Panama City FL 32405

Re: Environmental Assessment for 8 Construction Sites, Tyndall Air Force Base (AFB)

Dear Mr. Lang

The United States Air Force is currently preparing an Environmental Assessment (EA) for eight (8) near-term construction projects at Tyndall Air Force Base (AFB), Bay County, Florida (Proposed Action). The EA analyzes the potential environmental impacts of the Proposed Action, and is being prepared in accordance with the National Environmental Policy Act (NEPA) of 1969, the Council on Environmental Quality regulations implementing NEPA, and the Air Force NEPA regulations.

The following eight (8) projects comprise the Proposed Action included in the EA, which are shown in the enclosed **Figures A through H** and individually described below. As part of the NEPA process, the Air Force is considering reasonable alternatives to some of these projects, which are also described below and shown on the enclosed figures where applicable.

1. Construct New Explosive Ordnance Disposal (EOD) Gravel Road: Construct an approximately 480-foot-long gravel access road with a hammerhead style turnaround connecting the main EOD road to the detonation site (**Figure A**);
2. Dredge Weapons Evaluation Group (WEG) Small Boathouse Area: Dredge the WEG small boathouse area to a depth of three to five feet below the present elevation, with two alternative on-site locations for dredge spoils placement (**Figure B**);
3. Replace WEG Tower 1802: Construct a new communications tower, install approximately security fencing, place gravel within the fenced area, install utility connections to the tower via directional boring, and construct a tower access road (**Figure C**);



4. Improve Expeditionary/Encampment Roads: Widen the existing asphalt Expeditionary Road and Encampment Road from 12 feet wide to 26 feet wide, including two 12-foot-wide lanes with one-foot shoulders, construct a paved turnaround on Expeditionary Road near U.S. Highway 98, and construct a new entry control facility near the Expeditionary Road/U.S. Highway 98 intersection (**Figure D**);
5. Expand Fam Camp Site: Construct 30 additional concrete RV parking pads with new water, electrical, and sewage utility connections, replace up to two existing RV pads, and install a site fence. Two alternatives are being considered for the construction of a new kayak launch ramp as well as construction of a gravel emergency access road (**Figures E-1 and E-2**);
6. Construct Water Main Along North Site of Flightline: Install approximately 13,530 linear feet of 8-inch PVC water main pipe along the northeast side of the Flightline, connecting existing lines at Florida Avenue and Ammo Road, to complete a Flightline Water Loop (**Figure F**);
7. Construct Fishing/Observation Pier (Heritage Club): Construct a new wooden pier and observation/fishing area, including approximately 40 support pylons embedded into the soil (**Figure G**);
8. Renovate the Unite Site: Construct new recreational facilities (axe throwing course, paintball field, and archery range), administrative office space and a gravel parking area on between 16 and 22.5 acres at one of two alternative locations (**Figures H-1 and H-2**)

No adverse long-term impacts to vegetative communities, wildlife, or threatened or endangered species are anticipated to occur as a result of the Proposed Action. Short-term impacts to natural resources associated with construction activities will be limited to temporary terrestrial and marine soil disturbance, a brief increase in fugitive dust and air emissions, and intermittent noise that would end upon the completion of construction.

During the EA process, the Air Force will determine whether the Proposed Action would have adverse impacts on any fish or wildlife resources regulated by the U.S. Fish and Wildlife Service. The Air Force will prepare a Biological Assessment for the Proposed Action, including effects determinations on threatened and endangered species and their habitat areas that could be impacted by the Proposed Action. The Biological Assessment will be submitted to the USFWS for review and concurrence.

The Air Force respectfully requests your written comments and other input on the Proposed Action within 30 days of receipt of this letter so they can be considered during preparation of the draft EA and Biological Assessment. When completed, the draft EA will be submitted to your office for review and comment.

If you have any questions or require additional information, please contact Tyndall AFB's

Sincerely

CINTRON.JOSE  
J.1182275146

Digitally signed by  
CINTRON.JOSE.J.1182275146  
Date: 2021.08.18 15:10:56  
-05'00'

JOSÉ CINTRON, GS-13, DAF

Sent via email to: [paul\\_lang@fws.gov](mailto:paul_lang@fws.gov)

Attachments:

1. Project Location Map
2. Individual Project Diagrams (Figures A through H-2)







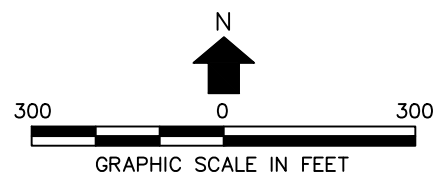
PROJECT LOCATION MAP

FIGURE 1





LEGEND	
	NEW EOD GRAVEL ROAD
	LIMITS OF DISTURBANCE






**Tyndall Air Force Base, Panama City FL**  
**ENVIRONMENTAL ASSESSMENT  
FOR 8 CONSTRUCTION SITES**

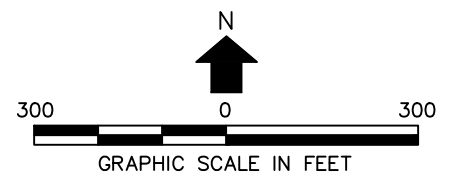
**CONSTRUCT  
NEW EOD GRAVEL ROAD  
(EOD DETONATION SITE)**

**FIGURE  
A**





LEGEND	
	DREDGE AREA
	PROPOSED SPOIL SITE
	LIMITS OF DISTURBANCE

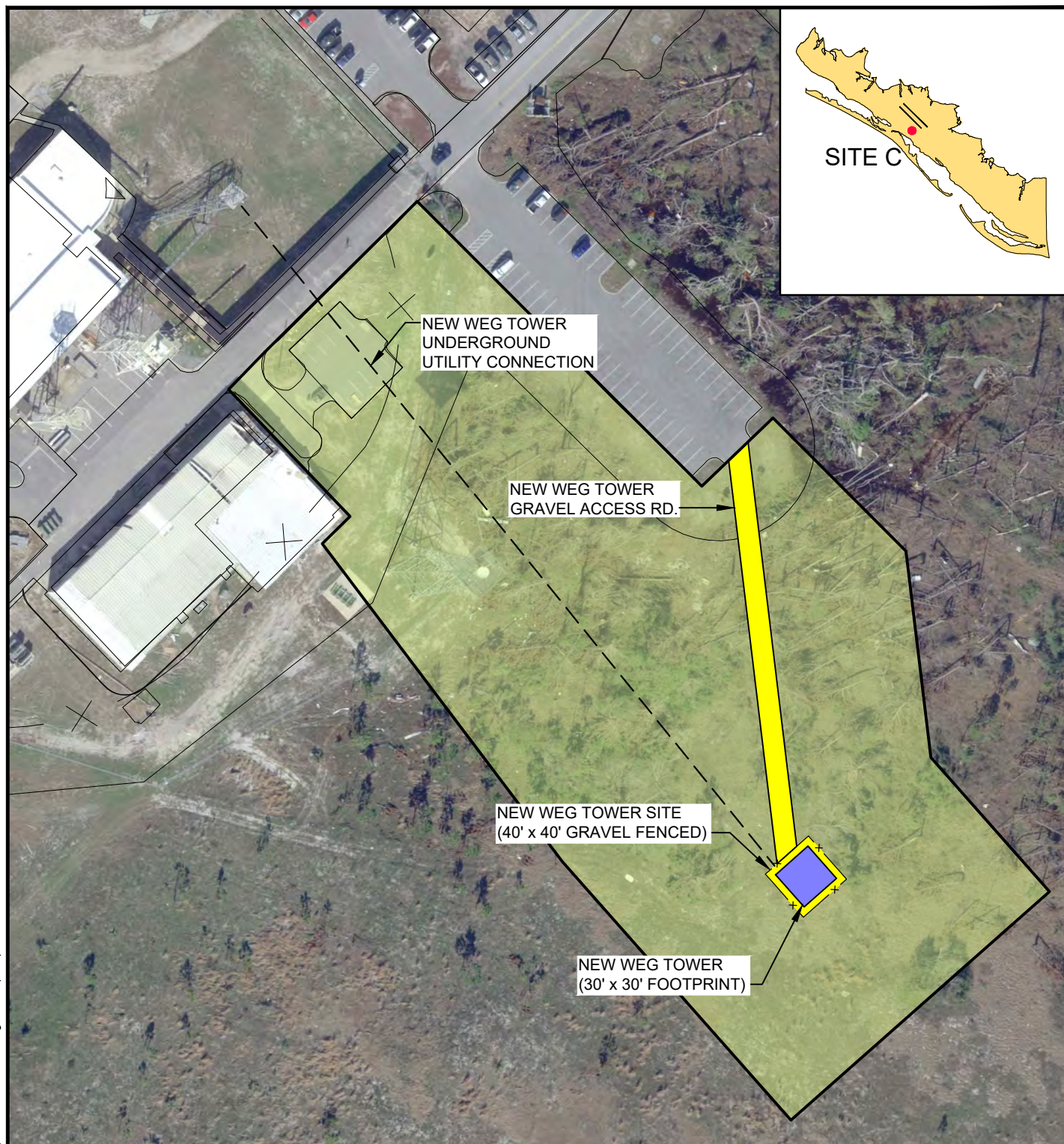




**Tyndall Air Force Base, Panama City FL**  
**ENVIRONMENTAL ASSESSMENT  
FOR 8 CONSTRUCTION SITES**

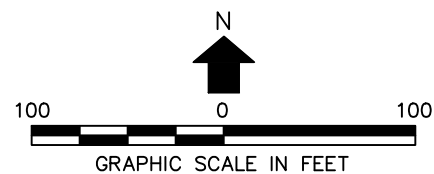
**DREDGE THE WEG  
SMALL BOATHOUSE AREA**

**FIGURE  
B**





LEGEND	
	NEW WEG TOWER
	NEW WEG TOWER ACCESS ROAD
	LIMITS OF DISTURBANCE



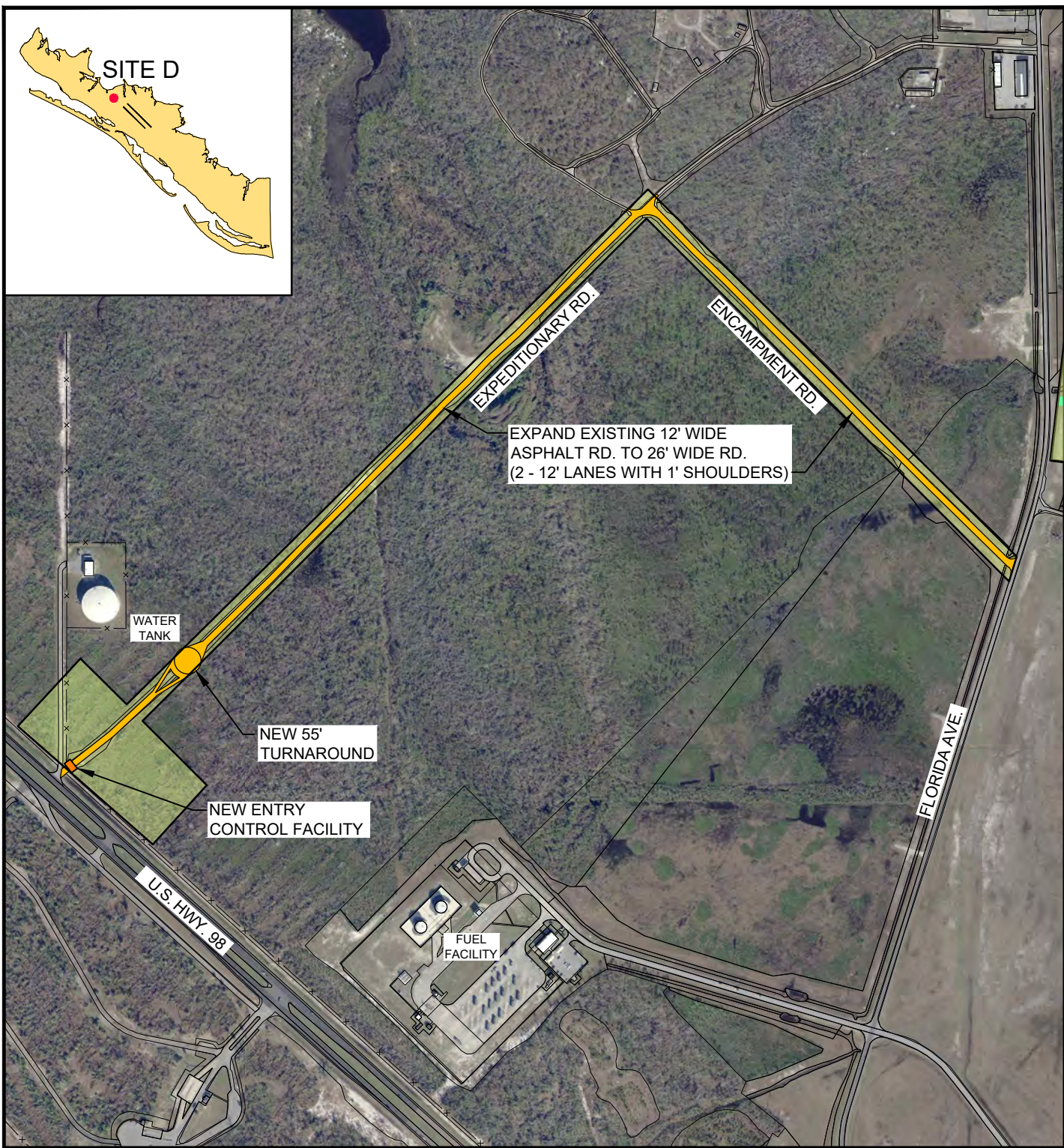
**Tyndall Air Force Base, Panama City FL**  
**ENVIRONMENTAL ASSESSMENT  
FOR 8 CONSTRUCTION SITES**




**REPLACE WEG TOWER 1802**

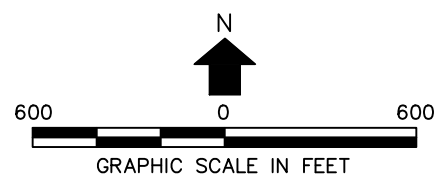
**FIGURE  
C**



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LEGEND	
	IMPROVE EXPEDITIONARY / ENCAMPMENT ROADS
	NEW ENTRY CONTROL FACILITY
	LIMITS OF DISTURBANCE

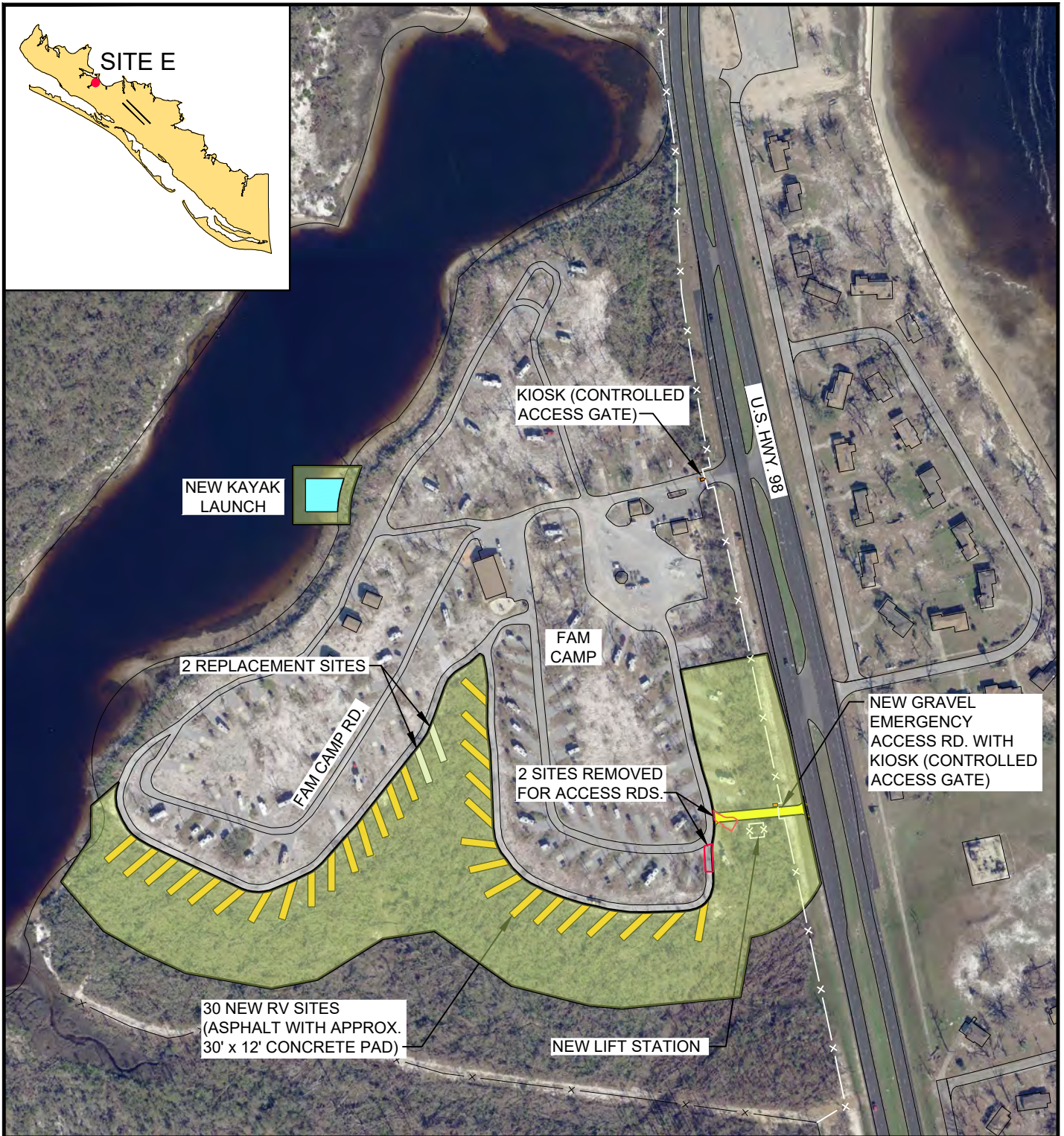







**Tyndall Air Force Base, Panama City FL**  
**ENVIRONMENTAL ASSESSMENT  
FOR 8 CONSTRUCTION SITES**

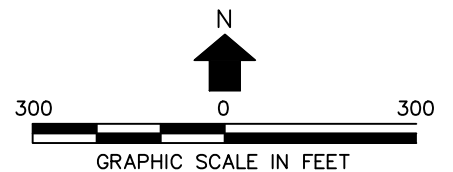
**IMPROVE  
EXPEDITIONARY /  
ENCAMPMENT ROADS**

**FIGURE  
D**





LEGEND	
	NEW RV SITES
	NEW EMERGENCY ACCESS ROAD
	NEW REPLACEMENT RV SITE
	LIMITS OF DISTURBANCE
	NEW BOAT LAUNCH RAMP



**Tyndall Air Force Base, Panama City FL**  
**ENVIRONMENTAL ASSESSMENT  
FOR 8 CONSTRUCTION SITES**






**EXPAND FAM CAMP SITE  
(ALTERNATIVE 1)**

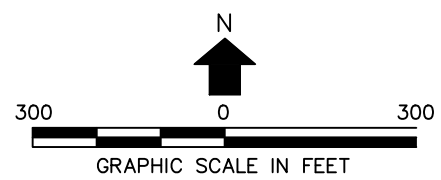
**FIGURE  
E-1**



C:\Civil 3D Projects\Tyndall\New Task 05242021\FIG A-H-L0D.dwg 07/14/2021 15:01



LEGEND			
	NEW RV SITES		NEW EMERGENCY ACCESS ROAD
	NEW REPLACEMENT RV SITE		LIMITS OF DISTURBANCE
	NEW BOAT LAUNCH RAMP		

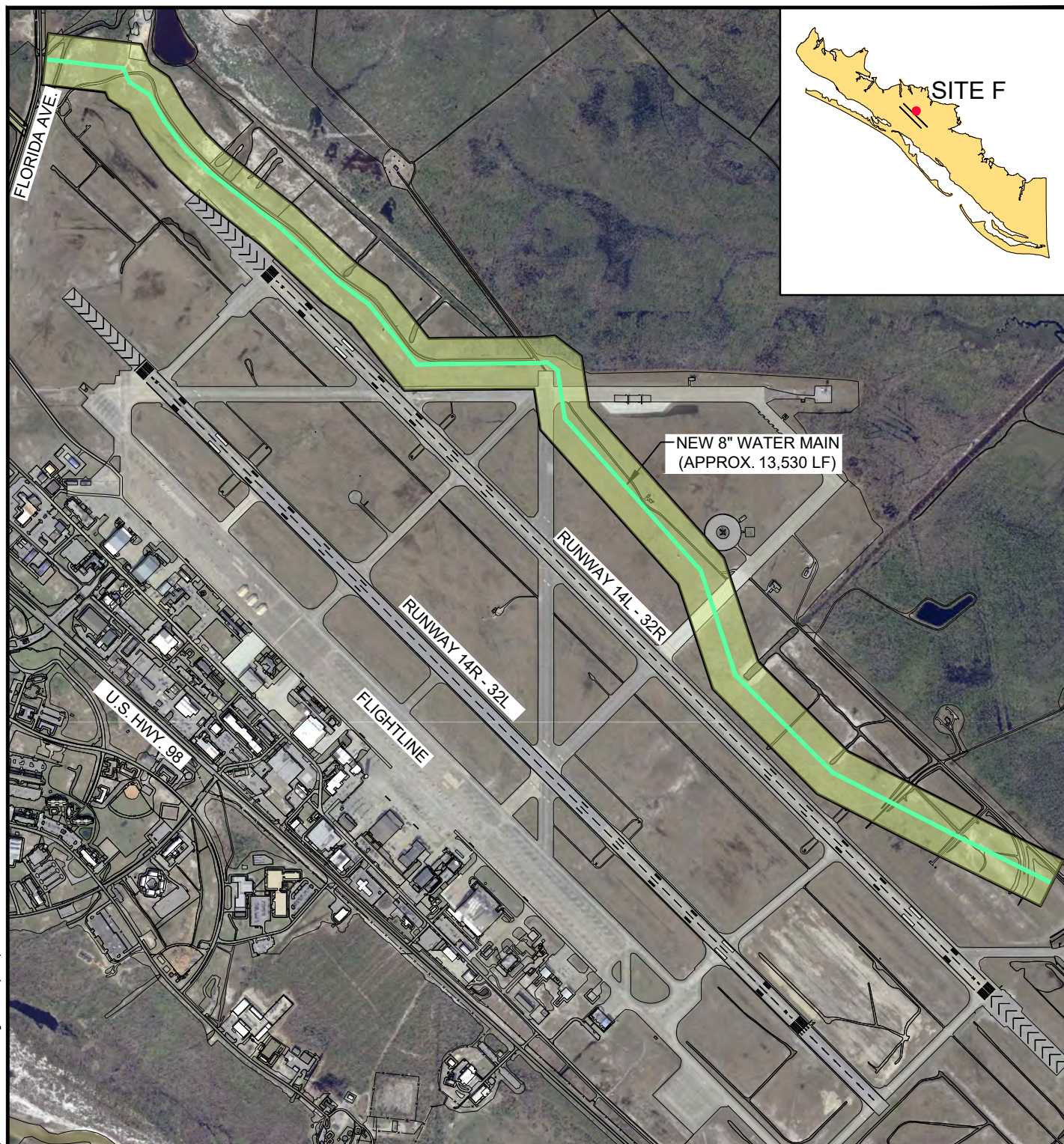


**Tyndall Air Force Base, Panama City FL**  
**ENVIRONMENTAL ASSESSMENT  
FOR 8 CONSTRUCTION SITES**

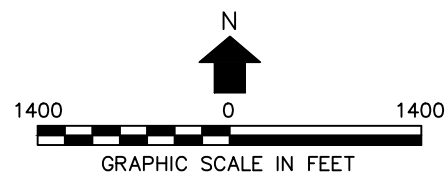
**EXPAND FAM CAMP SITE  
(ALTERNATIVE 2)**

FIGURE  
E-2





LEGEND	
	NEW 8" WATER MAIN
	LIMITS OF DISTURBANCE



**Tyndall Air Force Base, Panama City FL**  
**ENVIRONMENTAL ASSESSMENT  
 FOR 8 CONSTRUCTION SITES**



**CONSTRUCT WATER MAIN  
 ALONG NORTH SIDE OF  
 FLIGHTLINE**

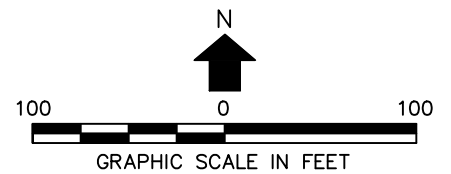
**FIGURE  
 F**



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LEGEND	
	NEW FISHING / OBSERVATION PIER
	LIMITS OF DISTURBANCE



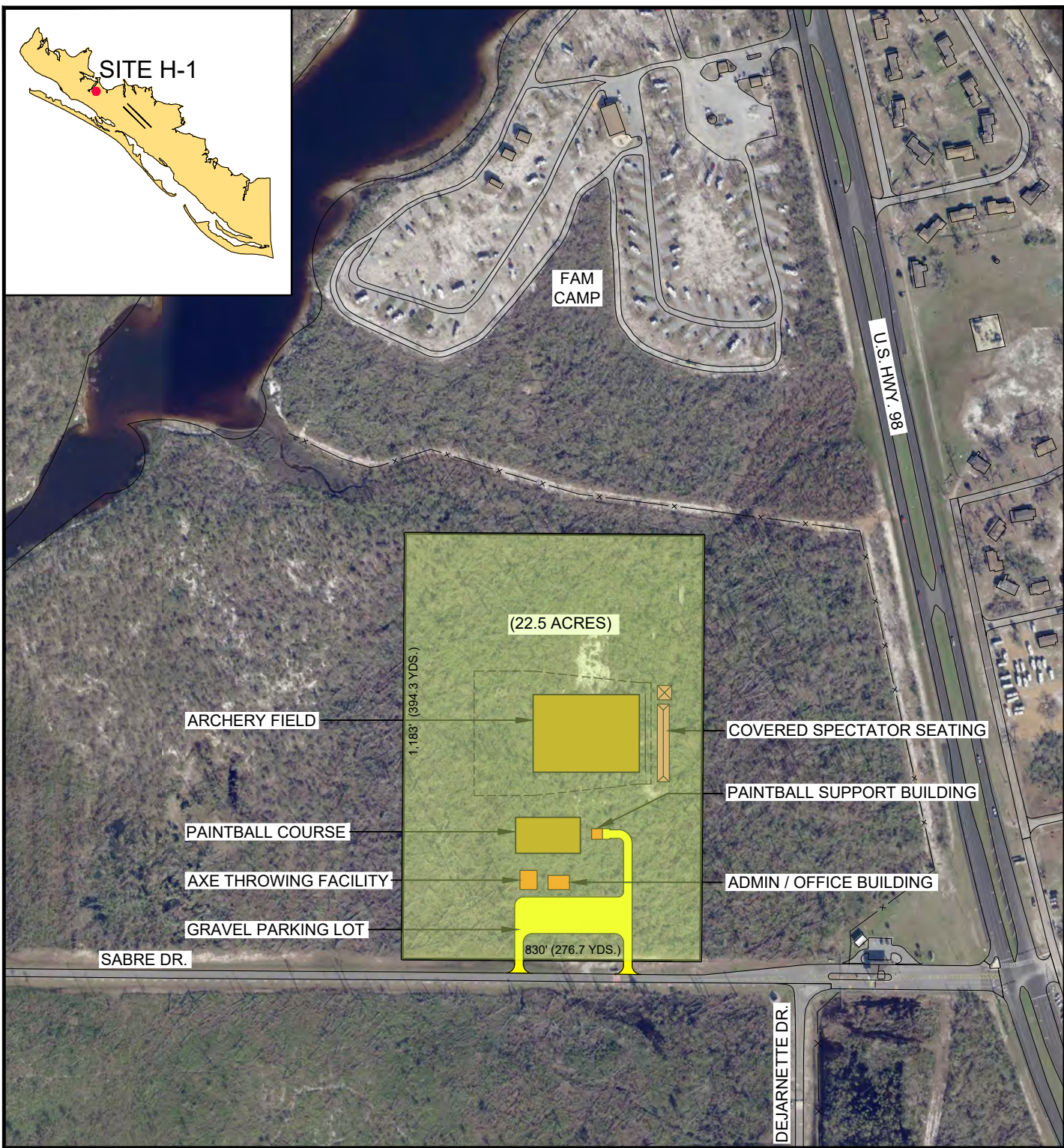
**Tyndall Air Force Base, Panama City FL**  
**ENVIRONMENTAL ASSESSMENT  
FOR 8 CONSTRUCTION SITES**






**CONSTRUCT FISHING /  
OBSERVATION PIER  
(HERITAGE CLUB)**

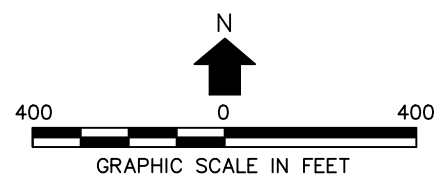
**FIGURE  
G**



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LEGEND	
	UNITE SITE
	POTENTIAL NEW BUILDINGS
	ARCHERY FIELD / PAINTBALL COURSE
	GRAVEL PARKING LOT
	LIMITS OF DISTURBANCE



**Tyndall Air Force Base, Panama City FL**  
**ENVIRONMENTAL ASSESSMENT**  
**FOR 8 CONSTRUCTION SITES**

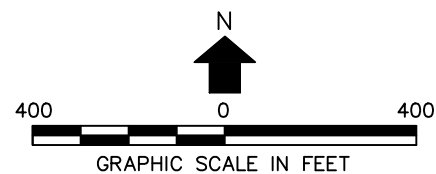
**RENOVATE UNITE SITE**  
**(ALTERNATIVE 1)**

**FIGURE**  
**H-1**





LEGEND	
	UNITE SITE
	POTENTIAL NEW BUILDINGS
	ARCHERY FIELD / PAINTBALL COURSE
	GRAVEL PARKING LOT
	LIMITS OF DISTURBANCE



**Tyndall Air Force Base, Panama City FL**  
**ENVIRONMENTAL ASSESSMENT**  
**FOR 8 CONSTRUCTION SITES**

**RENOVATE UNITE SITE**  
**(ALTERNATIVE 2)**

**FIGURE**  
**H-2**





**DEPARTMENT OF THE AIR FORCE**  
**325TH CIVIL ENGINEER SQUADRON (ACC)**  
**TYNDALL AIR FORCE BASE FLORIDA**

Mr. José J. Cintron  
Chief, Environmental Element  
325th Civil Engineer Squadron  
103 Mississippi Road  
Tyndall AFB FL 32403-5014

Mr. Chris Stahl, Coordinator  
Office of Intergovernmental Programs  
Department of Environmental Protection  
3900 Commonwealth Blvd, Mail Station 47  
Tallahassee FL 32399

Re: Environmental Assessment for 8 Construction Sites, Tyndall Air Force Base, Florida

Dear Mr. Stahl

The United States Air Force is currently preparing an Environmental Assessment (EA) for eight (8) near-term construction projects at Tyndall Air Force Base (AFB), Bay County, Florida (Proposed Action). The EA analyzes the potential environmental impacts of the Proposed Action, and is being prepared in accordance with the National Environmental Policy Act (NEPA) of 1969, the Council on Environmental Quality regulations implementing NEPA, and the Air Force NEPA regulations.

The following eight (8) projects comprise the Proposed Action included in the EA, which are shown in the enclosed **Figures A through H** and individually described below. As part of the NEPA process, the Air Force is considering reasonable alternatives to some of these projects, which are also described below and shown on the enclosed figures where applicable.

1. Construct New Explosive Ordnance Disposal (EOD) Gravel Road: Construct an approximately 480-foot-long gravel access road with a hammerhead style turnaround connecting the main EOD road to the detonation site (**Figure A**);
2. Dredge Weapons Evaluation Group (WEG) Small Boathouse Area: Dredge the WEG small boathouse area to a depth of three to five feet below the present elevation, with two alternative on-site locations for dredge spoils placement (**Figure B**);
3. Replace WEG Tower 1802: Construct a new communications tower, install security fencing, place gravel within the fenced area, install utility connections to the tower via directional boring, and construct a tower access road (**Figure C**);
4. Improve Expeditionary/Encampment Roads: Widen the existing asphalt Expeditionary Road and Encampment Road from 12 feet wide to 26 feet wide, including two 12-foot-

wide lanes with one-foot shoulders, construct a paved turnaround on Expeditionary Road near U.S. Highway 98, and construct a new entry control facility near the Expeditionary Road/U.S. Highway 98 intersection (**Figure D**);

5. Expand Fam Camp Site: Construct 30 additional concrete RV parking pads with new water, electrical, and sewage utility connections, replace up to two existing RV pads, and install a site fence. Two alternatives are being considered for the construction of a new kayak launch ramp as well as construction of a gravel emergency access road (**Figures E-1 and E-2**);
6. Construct Water Main Along North Site of Flightline: Install approximately 13,530 linear feet of 8-inch PVC water main pipe along the northeast side of the Flightline, connecting existing lines at Florida Avenue and Ammo Road, to complete a Flightline Water Loop (**Figure F**);
7. Construct Fishing/Observation Pier (Heritage Club): Construct a new wooden pier and observation/fishing area, including approximately 40 support pylons embedded into the soil (**Figure G**);
8. Renovate the Unite Site: Construct new recreational facilities (axe throwing course, paintball field, and archery range), administrative office space and a gravel parking area on between 16 and 22.5 acres at one of two alternative locations (**Figures H-1 and H-2**)

During the EA process, the Air Force will determine whether the Proposed Action would have adverse impacts on coastal resources protected under the state of Florida's Coastal Zone Management Program. Because portions of the Proposed Action occur directly in coastal waters (i.e., **Figures B, E and G**), the Air Force intends to prepare a Coastal Consistency Determination as part of the EA process in order to comply with Section 307 of the Coastal Zone Management Act of 1972. Per 15 CFR § 930.36(a), the Determination will be submitted to the State Clearinghouse for review and concurrence at least 90 days prior to final approval of the Proposed Action.

The Air Force respectfully requests your written comments and other input on the Proposed Action within 30 days of receipt of this letter so they can be considered during preparation of the draft EA and Coastal Consistency Determination. When completed, the draft EA will also be submitted to the State Clearinghouse for review and comment. If you have any questions or require additional information, please contact Tyndall AFB's Point of Contact, Mr. Edwin Wallace, via email at [edwin.wallace.1@us.af.mil](mailto:edwin.wallace.1@us.af.mil), or via telephone at (850) 283-2714.

Sincerely

CINTRON.JOSE  
J.1182275146

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JOSÉ CINTRON, GS-13, DAF

Sent via email to: [state.clearinghouse@dep.state.fl.us](mailto:state.clearinghouse@dep.state.fl.us); [Chris.Stahl@dep.state.fl.us](mailto:Chris.Stahl@dep.state.fl.us)

Attachments:

1. Project Location Map
2. Individual Project Diagrams (Figures A through H-2)





**DEPARTMENT OF THE AIR FORCE**  
**325<sup>TH</sup> CIVIL ENGINEER SQUADRON (ACC)**  
**TYNDALL AIR FORCE BASE FLORIDA**

Mr. José J. Cintron  
Chief, Environmental Element  
325th Civil Engineer Squadron  
103 Mississippi Road  
Tyndall AFB FL 32403-5014

Dr. Timothy A. Parsons, Division Director  
State Historic Preservation Officer  
Division of Historic Resources  
R.A. Gray Building  
500 South Bronough Street  
Tallahassee, FL 32399-0250

Re: Environmental Assessment for 8 Construction Sites, Tyndall AFB, Florida

Dear Dr. Parsons

In accordance with the National Historic Preservation Act (NHPA) and its implementing regulations (36 CFR 800), the United States Air Force is initiating consultation with your office for an undertaking which will involve eight (8) near-term construction projects at Tyndall Air Force Base (AFB), Bay County, Florida (Proposed Action). An Environmental Assessment (EA) to analyze the potential environmental impacts of the Proposed Action is being prepared in accordance with the National Environmental Policy Act (NEPA) of 1969, the Council on Environmental Quality regulations implementing NEPA, and the Air Force NEPA regulations.

The following eight (8) projects comprise the Proposed Action included in the EA, which are shown in the enclosed **Figures A through H** and individually described below. As part of the NEPA process, the Air Force is considering reasonable alternatives to some of these projects, which are also described below and shown on the enclosed figures where applicable.

1. Construct New Explosive Ordnance Disposal (EOD) Gravel Road: Construct an approximately 480-foot-long gravel access road with a hammerhead style turnaround connecting the main EOD road to the detonation site (**Figure A**);
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3. Replace WEG Tower 1802: Construct a new communications tower, install security fencing, place gravel within the fenced area, install utility connections to the tower via directional boring, and construct a tower access road (**Figure C**);

4. Improve Expeditionary/Encampment Roads: Widen the existing asphalt Expeditionary Road and Encampment Road from 12 feet wide to 26 feet wide, including two 12-foot-wide lanes with one-foot shoulders, construct a paved turnaround on Expeditionary Road near U.S. Highway 98, and construct a new entry control facility near the Expeditionary Road/U.S. Highway 98 intersection (**Figure D**);
5. Expand Fam Camp Site: Construct 30 additional concrete RV parking pads with new water, electrical, and sewage utility connections, replace up to two existing RV pads, and install a site fence. Two alternative are being considered for the construction of a new kayak launch ramp as well as construction of a gravel emergency access road (**Figures E-1 and E-2**);
6. Construct Water Main Along North Site of Flightline: Install approximately 13,530 linear feet of 8-inch PVC water main pipe along the northeast side of the Flightline, connecting existing lines at Florida Avenue and Ammo Road, to complete a Flightline Water Loop (**Figure F**);
7. Construct Fishing/Observation Pier (Heritage Club): Construct a new wooden pier and observation/fishing area, including approximately 40 support pylons embedded into the soil (**Figure G**);
8. Renovate the Unite Site: Construct new recreational facilities (axe throwing course, paintball field, and archery range), administrative office space and a gravel parking area on between 16 and 22.5 acres at one of two alternative locations (**Figures H-1 and H-2**)

As shown on the enclosed figures, limits of disturbance have been identified for each project/alternative which collectively serve as the Areas of Potential Effect (APE) for the Proposed Action. During the EA process, the Air Force will conduct a Phase I Archaeological Survey to determine whether the Proposed Action would adversely affect any encountered cultural resources. The Phase I Archeological Survey Report will be submitted to the Division of Historic Resources for review and concurrence.

The Air Force respectfully requests your written comments and other input on the Proposed Action within 30 days of receipt of this letter so they can be considered during preparation of the draft EA and Phase I Archeological Survey Report. When completed, the draft EA will be submitted to your office for review and comment. If you have any questions or require additional information, please contact Tyndall AFB's Point of Contact, Mr. Edwin Wallace, via email at [edwin.wallace.1@us.af.mil](mailto:edwin.wallace.1@us.af.mil), or via telephone at (850) 283-2714. Thank you for your assistance with this undertaking.

Sincerely


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JOSÉ CINTRON, GS-13, DAF

Sent via email to: [Timothy.Parsons@dos.myflorida.com](mailto:Timothy.Parsons@dos.myflorida.com); [Jason.Aldridge@dos.myflorida.com](mailto:Jason.Aldridge@dos.myflorida.com)

Attachments:

1. Project Location Map
2. Individual Project Diagrams (Figures A though H-2)





**DEPARTMENT OF THE AIR FORCE**  
**325<sup>TH</sup> CIVIL ENGINEER SQUADRON (ACC)**  
**TYNDALL AIR FORCE BASE FLORIDA**

Mr. José J. Cintron  
Chief, Environmental Element  
325th Civil Engineer Squadron  
103 Mississippi Road  
Tyndall AFB FL 32403-5014

Ms. Diana K. Pepe  
Northwest Region Conservation Biologist  
Florida Fish and Wildlife Conservation Commission  
5300 High Bridge Road  
Quincy FL 32351

Re: Environmental Assessment for 8 Construction Sites, Tyndall Air Force Base, Florida

Dear Ms. Pepe

The United States Air Force is currently preparing an Environmental Assessment (EA) for eight (8) near-term construction projects at Tyndall Air Force Base (AFB), Bay County, Florida (Proposed Action). The EA analyzes the potential environmental impacts of the Proposed Action, and is being prepared in accordance with the National Environmental Policy Act (NEPA) of 1969, the Council on Environmental Quality regulations implementing NEPA, and the Air Force NEPA regulations.

The following eight (8) projects comprise the Proposed Action included in the EA, which are shown in the enclosed **Figures A through H** and individually described below. As part of the NEPA process, the Air Force is considering reasonable alternatives to some of these projects, which are also described below and shown on the enclosed figures where applicable.

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wide lanes with one-foot shoulders, construct a paved turnaround on Expeditionary Road near U.S. Highway 98, and construct a new entry control facility near the Expeditionary Road/U.S. Highway 98 intersection (**Figure D**);

5. Expand Fam Camp Site: Construct 30 additional concrete RV parking pads with new water, electrical, and sewage utility connections, replace up to two existing RV pads, and install a site fence. Two alternative are being considered for the construction of a new kayak launch ramp as well as construction of a gravel emergency access road (**Figures E-1 and E-2**);
6. Construct Water Main Along North Site of Flightline: Install approximately 13,530 linear feet of 8-inch PVC water main pipe along the northeast side of the Flightline, connecting existing lines at Florida Avenue and Ammo Road, to complete a Flightline Water Loop (**Figure F**);
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8. Renovate the Unite Site: Construct new recreational facilities (axe throwing course, paintball field, and archery range), administrative office space and a gravel parking area on between 16 and 22.5 acres at one of two alternative locations (**Figures H-1 and H-2**)

During the EA process, the Air Force will determine whether the Proposed Action would have adverse impacts on any fish or wildlife resources regulated by the Florida Fish and Wildlife Conservation Commission (FWC). The Air Force respectfully requests your written comments and other input on the Proposed Action within 30 days of receipt of this letter so they can be considered during preparation of the draft EA. When completed, the draft EA will be submitted to your office for review and comment.

If you have any questions or require additional information, please contact Tyndall AFB's Point of Contact, Mr. Edwin Wallace, via email at [edwin.wallace.1@us.af.mil](mailto:edwin.wallace.1@us.af.mil), or via telephone at (850) 283-2714.

Sincerely

CINTRON.JOS  
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46

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JOSÉ CINTRON, GS-13, DAF

Sent via email to: [Diana.Pepe@MyFWC.com](mailto:Diana.Pepe@MyFWC.com); [billy.sermons@myfwc.com](mailto:billy.sermons@myfwc.com)

Attachments:

1. Project Location Map
2. Individual Project Diagrams (Figures A through H-2)





**DEPARTMENT OF THE AIR FORCE**  
**325TH FIGHTER WING (ACC)**  
**TYNDALL AIR FORCE BASE FLORIDA**

Colonel Gregory M. Moseley  
Commander  
325th Fighter Wing  
501 Airey Avenue, Suite 1  
Tyndall AFB FL 32403-5549

Mr. Billy Cypress  
Chairman  
Miccosukee Tribe of Indians of Florida  
Tamiami Station  
P.O. Box 440021  
Miami FL 33144

Dear Chairman Cypress

The United States Air Force is preparing an Environmental Assessment (EA) under the National Environmental Policy Act to evaluate potential environmental impacts associated with eight (8) near-term construction projects at Tyndall Air Force Base (AFB) in Bay County, Florida (Proposed Action). The EA analyzes the potential environmental impacts of the Proposed Action, and is being prepared in accordance with the National Environmental Policy Act (NEPA) of 1969, the Council on Environmental Quality regulations implementing NEPA, and the Air Force NEPA regulations.

The following eight (8) projects comprise the Proposed Action included in the EA, which are shown in the enclosed **Figures A through H** and individually described below. As part of the NEPA process, the Air Force is considering reasonable alternatives to some of these projects, which are also described below and shown on the enclosed figures where applicable.

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8. Renovate the Unite Site: Construct new recreational facilities (axe throwing course, paintball field, and archery range), administrative office space and a gravel parking area on either 16 or 22.5 acres at one of two alternative locations (**Figures H-1 and H-2**).

In accordance with Section 306108 of the National Historic Preservation Act (NHPA) and its implementing regulations at 36 CFR Part 800, the Air Force would like to initiate government-to-government consultation regarding the Proposed Action. As shown on the enclosed figures, limits of disturbance have been identified for each project/alternative which collectively serve as the Areas of Potential Effect (APE) for the Proposed Action. Please let us know if you are aware of any properties of cultural and religious significance to the Miccosukee Tribe of Indians of Florida within or in the vicinity of the APE's you believe this undertaking might adversely affect. Additionally, as a stakeholder in the environmental analysis process, the Air Force requests your input in identifying any issues or areas of concern you feel should be addressed.

During the EA process, the Air Force will conduct a Phase I Archaeological Survey to determine whether the Proposed Action would adversely affect any encountered cultural resources. The Phase I Archaeological Survey Report will be submitted to the Miccosukee Tribe of Indians of Florida for review and comment.

The Air Force respectfully requests your written comments and other input on the Proposed Action within 30 days of receipt of this letter so they can be considered during preparation of the draft EA and Phase I Archaeological Survey Report, though we will accept responses provided after 30 days. When completed, the draft EA will be submitted to your office for review and comment.



If you have any questions or require additional information, please contact Tyndall AFB's Point of Contact, Mr. Edwin Wallace, via email at [edwin.wallace.1@us.af.mil](mailto:edwin.wallace.1@us.af.mil), or via telephone at (850) 283-2714. Thank you for your assistance with this undertaking.

Sincerely,

A handwritten signature in black ink, appearing to read 'G. Moseley', written in a cursive style.

GREGORY M. MOSELEY, Colonel, USAF  
Commander

2 Attachments:

1. Project Location Map
2. Individual Project Diagrams (Figures A through H-2)

Sent via email to:

[kevind@miccosukeetribe.com](mailto:kevind@miccosukeetribe.com)  
[yalmeida@miccosukeetribe.com](mailto:yalmeida@miccosukeetribe.com)  
[hopel@miccosukeetribe.com](mailto:hopel@miccosukeetribe.com)



**DEPARTMENT OF THE AIR FORCE**  
**325TH FIGHTER WING (ACC)**  
**TYNDALL AIR FORCE BASE FLORIDA**

Colonel Gregory M. Moseley  
Commander  
325th Fighter Wing  
501 Airey Avenue, Suite 1  
Tyndall AFB FL 32403-5549

Mr. David J. Proctor  
Traditional Cultural Advisor  
Muscogee (Creek) Nation  
P.O. Box 580  
Okmulgee OK 74447

Dear Mr. Proctor

The United States Air Force is preparing an Environmental Assessment (EA) under the National Environmental Policy Act to evaluate potential environmental impacts associated with eight (8) near-term construction projects at Tyndall Air Force Base (AFB) in Bay County, Florida (Proposed Action). The EA analyzes the potential environmental impacts of the Proposed Action, and is being prepared in accordance with the National Environmental Policy Act (NEPA) of 1969, the Council on Environmental Quality regulations implementing NEPA, and the Air Force NEPA regulations.

The following eight (8) projects comprise the Proposed Action included in the EA, which are shown in the enclosed **Figures A through H** and individually described below. As part of the NEPA process, the Air Force is considering reasonable alternatives to some of these projects, which are also described below and shown on the enclosed figures where applicable.

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one-foot shoulders, construct a paved turnaround on Expeditionary Road near U.S. Highway 98, and construct a new entry control facility near the Expeditionary Road/U.S. Highway 98 intersection (**Figure D**).

5. Expand Fam Camp Site: Construct 30 additional concrete RV parking pads with new water, electrical, and sewage utility connections, replace up to two existing RV pads, and install a site fence. Two alternatives are being considered for the construction of a new kayak launch ramp as well as construction of a gravel emergency access road (**Figures E-1 and E-2**).

6. Construct Water Main Along North Site of Flightline: Install approximately 13,530 linear feet of 8-inch PVC water main pipe along the northeast side of the Flightline, connecting existing lines at Florida Avenue and Ammo Road, to complete a Flightline Water Loop (**Figure F**).

7. Construct Fishing/Observation Pier (Heritage Club): Construct a new wooden pier and observation/fishing area, including approximately 40 support pylons embedded into the soil (**Figure G**).

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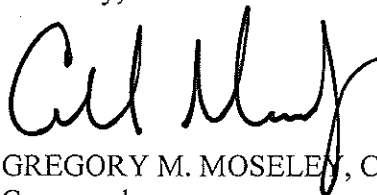
In accordance with Section 306108 of the National Historic Preservation Act (NHPA) and its implementing regulations at 36 CFR Part 800, the Air Force would like to initiate government-to-government consultation regarding the Proposed Action. As shown on the enclosed figures, limits of disturbance have been identified for each project/alternative which collectively serve as the Areas of Potential Effect (APE) for the Proposed Action. Please let us know if you are aware of any properties of cultural and religious significance to the Muscogee (Creek) Nation within or in the vicinity of the APEs you believe this undertaking might adversely affect. Additionally, as a stakeholder in the environmental analysis process, the Air Force requests your input in identifying any issues or areas of concern you feel should be addressed.

During the EA process, the Air Force will conduct a Phase I Archaeological Survey to determine whether the Proposed Action would adversely affect any encountered cultural resources. The Phase I Archaeological Survey Report will be submitted to the Muscogee (Creek) Nation for review and comment.

The Air Force respectfully requests your written comments and other input on the Proposed Action within 30 days of receipt of this letter so they can be considered during preparation of the draft EA and Phase I Archaeological Survey Report, though we will accept responses provided after 30 days. When completed, the draft EA will be submitted to your office for review and comment.

If you have any questions or require additional information, please contact Tyndall AFB's Point of Contact, Mr. Edwin Wallace, via email at [edwin.wallace.1@us.af.mil](mailto:edwin.wallace.1@us.af.mil), or via telephone at (850) 283-2714. Thank you for your assistance with this undertaking.

Sincerely,

A handwritten signature in black ink, appearing to read "Greg Moseley". The signature is fluid and cursive, with the first name "Greg" and last name "Moseley" clearly distinguishable.

GREGORY M. MOSELEY, Colonel, USAF  
Commander

2 Attachments:

1. Project Location Map
2. Individual Project Diagrams (Figures A through H-2)

Sent via email to:

[Section106@mcn-nsn.gov](mailto:Section106@mcn-nsn.gov)

[djproctor@mcn-nsn.gov](mailto:djproctor@mcn-nsn.gov)

[clowe@mcn-nsn.gov](mailto:clowe@mcn-nsn.gov)





**DEPARTMENT OF THE AIR FORCE**  
**325TH FIGHTER WING (ACC)**  
**TYNDALL AIR FORCE BASE FLORIDA**

Colonel Gregory M. Moseley  
Commander  
325th Fighter Wing  
501 Airey Avenue, Suite 1  
Tyndall AFB FL 32403-5549

Larry D. Haikey, MS  
Tribal Historic Preservation Officer  
Poarch Band of Creek Indians  
5811 Jack Springs Road  
Atmore AL 36502

Dear Mr. Haikey

The United States Air Force is preparing an Environmental Assessment (EA) under the National Environmental Policy Act to evaluate potential environmental impacts associated with eight (8) near-term construction projects at Tyndall Air Force Base (AFB) in Bay County, Florida (Proposed Action). The EA analyzes the potential environmental impacts of the Proposed Action, and is being prepared in accordance with the National Environmental Policy Act (NEPA) of 1969, the Council on Environmental Quality regulations implementing NEPA, and the Air Force NEPA regulations.

The following eight (8) projects comprise the Proposed Action included in the EA, which are shown in the enclosed **Figures A through H** and individually described below. As part of the NEPA process, the Air Force is considering reasonable alternatives to some of these projects, which are also described below and shown on the enclosed figures where applicable.

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In accordance with Section 306108 of the National Historic Preservation Act (NHPA) and its implementing regulations at 36 CFR Part 800, the Air Force would like to initiate government-to-government consultation regarding the Proposed Action. As shown on the enclosed figures, limits of disturbance have been identified for each project/alternative which collectively serve as the Areas of Potential Effect (APE) for the Proposed Action. Please let us know if you are aware of any properties of cultural and religious significance to the Poarch Band of Creek Indians within or in the vicinity of the APEs you believe this undertaking might adversely affect. Additionally, as a stakeholder in the environmental analysis process, the Air Force requests your input in identifying any issues or areas of concern you feel should be addressed.

During the EA process, the Air Force will conduct a Phase I Archaeological Survey to determine whether the Proposed Action would adversely affect any encountered cultural resources. The Phase I Archaeological Survey Report will be submitted to the Poarch Band of Creek Indians for review and comment.

The Air Force respectfully requests your written comments and other input on the Proposed Action within 30 days of receipt of this letter so they can be considered during preparation of the draft EA and Phase I Archaeological Survey Report, though we will accept responses provided after 30 days. When completed, the draft EA will be submitted to your office for review and comment.



If you have any questions or require additional information, please contact Tyndall AFB's Point of Contact, Mr. Edwin Wallace, via email at [edwin.wallace.1@us.af.mil](mailto:edwin.wallace.1@us.af.mil), or via telephone at (850) 283-2714. Thank you for your assistance with this undertaking.

Sincerely,

A handwritten signature in black ink, appearing to read 'Greg Mosley', written in a cursive style.

GREGORY M. MOSELEY, Colonel, USAF  
Commander

2 Attachments:

1. Project Location Map
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Sent via email to:

[THPO@pci-nsn.gov](mailto:THPO@pci-nsn.gov)

[Lhaikey@pci-nsn.gov](mailto:Lhaikey@pci-nsn.gov)



**DEPARTMENT OF THE AIR FORCE**  
**325TH FIGHTER WING (ACC)**  
**TYNDALL AIR FORCE BASE FLORIDA**

Colonel Gregory M. Moseley  
Commander  
325th Fighter Wing  
501 Airey Avenue, Suite 1  
Tyndall AFB FL 32403-5549

Mr. Greg Chilcoat  
Principal Chief  
Seminole Nation of Oklahoma  
PO Box 1498  
Wewoka OK 74884-5549

Dear Principal Chief Chilcoat

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Sincerely,

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GREGORY M. MOSELEY, Colonel, USAF  
Commander

2 Attachments:

1. Project Location Map
2. Individual Project Diagrams (Figures A through H-2)

Sent via email to:

[Lincoln.s@sno-nsn.gov](mailto:Lincoln.s@sno-nsn.gov)

[Franks.D@sno-nsn.gov](mailto:Franks.D@sno-nsn.gov)





**DEPARTMENT OF THE AIR FORCE**  
**325TH FIGHTER WING (ACC)**  
**TYNDALL AIR FORCE BASE FLORIDA**

Colonel Gregory M. Moseley  
Commander  
325th Fighter Wing  
501 Airey Avenue, Suite 1  
Tyndall AFB FL 32403-5549

Paul N. Backhouse, Ph.D.  
Tribal Historic Preservation Officer  
Seminole Tribe of Florida  
30290 Josie Billie Highway, PMB 1004  
Clewiston FL 33440

Dear Dr. Backhouse

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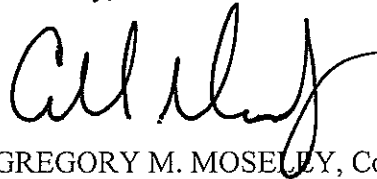
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GREGORY M. MOSELEY, Colonel, USAF  
Commander

2 Attachments:

1. Project Location Map
2. Individual Project Diagrams (Figures A through H-2)

Sent via email to: [THPOCompliance@semtribe.com](mailto:THPOCompliance@semtribe.com)



**DEPARTMENT OF THE AIR FORCE**  
**325TH FIGHTER WING (ACC)**  
**TYNDALL AIR FORCE BASE FLORIDA**

Colonel Gregory M. Moseley  
Commander  
325th Fighter Wing  
501 Airey Avenue, Suite 1  
Tyndall AFB FL 32403-5549

Mr. Galen Cloud  
Tribal Historic Preservation Officer  
Thlopthlocco Tribal Town  
PO Box 188  
Okemah OK 74859

Dear Mr. Cloud

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Daily Commercial | Ocala StarBanner  
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### STATE OF FLORIDA, COUNTY OF BAY

The Panama City News Herald, a newspaper printed and published in the city of Panama City, and of general circulation in the County of Bay, State of Florida, and personal knowledge of the facts herein state and that the notice hereto annexed was Published in said newspapers in the issue dated or by publication on the newspaper's website, if authorized, on:

04/20/2022

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SARAH BERTELSEN  
Notary Public  
State of Wisconsin

### NOTICE

To: All Interested Agencies,  
Groups, and Individuals

The U.S. Air Force is proposing eight near-term improvement projects of Tyndall Air Force Base, Bay County, Florida. These infrastructure and functionality improvements are necessary to provide continued mission support for host and tenant units. The eight projects are referred to as the Air Force's Proposed Action and include: 1) constructing a new gravel transport road at the Explosive Ordnance Disposal Range; 2) dredging the 325th Weapons Evaluation Group (WEG) Small Boat House Area; 3) replacing WEG Communications Tower 1802; 4) improving Expeditionary and Encampment Roads; 5) expanding the PAMCAMP recreational site; 6) constructing a north-side flightline water main; 7) constructing a fishing and observation pier at Heritage Club Building 1454; and 8) renovating the UNITE recreational site.

The Air Force is preparing an Environmental Assessment (EA) for the Proposed Action in accordance with the National Environmental Policy Act (NEPA) of 1969 and the Air Force Environmental Impact Analysis Process. The EA will analyze the potential environmental impacts of the Proposed Action. The Air Force will contact Federal, state and local regulatory agencies for their input on the Proposed Action during the preparation of the Preliminary Draft EA as part of the NEPA review process. The Air Force is also requesting early public comments to determine if there are any concerns regarding the projects listed in the EA and their potential environmental impacts, and is soliciting input or comments on potential project alternatives. The full Draft EA will be available for public review upon completion.

Portions of the Proposed Action would include construction activities adjacent to or within the 100-year floodplain, as well as wetlands inside the existing footprint of the installation. Public notice of these activities is required by Section 2(a) (4) of Executive Order (EO) 11988, Floodplain Management, and by Section 2(b) of EO 11990, Protection of Wetlands, and is being made available to the public by the Air Force in accordance with Title 32, Code of Federal Regulations (CFR), Part 989.24.

Please mail any written comments on the Proposed Action to 325 CES/CEI-EC, 101 Mississippi Road Building 36233, Tyndall AFB, FL 32403. Written comments will be accepted for 30 days from this publication notice.  
Pub: April 20, 2022  
PCNH 7193976

**Draft**  
**Environmental Assessment for 8 Construction Sites Tyndall Air Force Base, Florida**

**APPENDIX B BIOLOGICAL ASSESSMENT**



# **ENVIRONMENTAL ASSESSMENT FOR 8 CONSTRUCTION SITES**

**TYNDALL AIR FORCE BASE, FLORIDA**

## **BIOLOGICAL ASSESSMENT**



PREPARED FOR:

**Department of the Air Force  
and**

**U.S. Army Corps of Engineers Mobile District**

**Contract W9127819D0025/Task Order W9127821F0147**

June 2022

**Biological Assessment**  
**Environmental Assessment for 8 Construction Sites Tyndall Air Force Base, Florida**

**LIST OF ACRONYMS AND ABBREVIATIONS**

325 WEG	325 <sup>th</sup> Weapons Evaluation Group
83 FWS	83 <sup>rd</sup> Fighter Weapons Squadron
AFB	Air Force Base
BA	Biological Assessment
CFA	Core Foraging Area
CFR	Code of Federal Regulations
EA	Environmental Assessment
ECF	Entry Control Facilities
EOD	Explosive Ordnance Disposal
ESA	Endangered Species Act
F.A.C.	Florida Administrative Code
FAMCAMP	Family Camp
FDEP	Florida Department of Environmental Protection
FLUCFCS	Florida Land Use, Cover and Forms Classification System
FWC	Florida Fish and Wildlife Conservation Commission
GIS	Geographic Information Systems
m	Meter
INRMP	Integrated Natural Resources Management Plan
IPaC	Information for Planning and Consultation
LF	Linear Feet
LOD	Limits of Disturbance
MWR	Morale, Welfare and Readiness
NEPA	National Environmental Policy Act
NMFS	National Marine Fisheries Service
NWFWMD	Northwest Florida Water Management District
ORV	Off Road Vehicle
PVC	Polyvinyl Chloride
RV	Recreational Vehicle
SAV	Submerged Aquatic Vegetation
SF	Square Foot/Square Feet
U.S.C.	U.S. Code
USACE	U.S. Army Corps of Engineers
USFWS	U.S. Fish and Wildlife Service
WEG	Weapons Evaluation Group



**Biological Assessment**  
**Environmental Assessment for 8 Construction Sites Tyndall Air Force Base, Florida**

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**Environmental Assessment for 8 Construction Sites Tyndall Air Force Base, Florida**

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**Biological Assessment**  
**Environmental Assessment for 8 Construction Sites Tyndall Air Force Base, Florida**

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**Biological Assessment**  
**Environmental Assessment for 8 Construction Sites Tyndall Air Force Base, Florida**

## **1.0 INTRODUCTION**

AECOM is contracted to U.S. Army Corps of Engineers (USACE) Mobile District (Contract W9127819D0025/Task Order W9127821F0147) to perform a floral and faunal survey and evaluation to support an Environmental Assessment (EA) for near-term construction projects planned at Tyndall Air Force Base (AFB). Tyndall AFB occupies approximately 29,276 acres in Bay County, Florida, approximately 13 miles southeast of Panama City. Eight individual projects to be implemented in Fiscal Year 2023 (collectively referred to as the EA “Proposed Actions”) have been identified for evaluation in the EA, which is necessary to comply with the National Environmental Policy Act of 1969 (NEPA) and its implementing regulations. The EA projects include construction of new facilities and infrastructure, replacement or repair and renovation of existing facilities, and enhancement of recreational amenities across the installation to promote morale, welfare and readiness.

Floral and faunal survey and reconnaissance has been completed to define the current extent of potentially significant impacts to rare, threatened or endangered species within the EA project areas. During the EA process, Tyndall AFB may need to consult with the U.S. Fish and Wildlife Service (USFWS) on potential impacts to these species pursuant to the Endangered Species Act (ESA) (16 U.S. Code [U.S.C.] 1532 et. seq.) of 1973, as amended. The ESA was enacted to provide a program for the preservation of endangered and threatened species and to provide protection for the ecosystems upon which these species depend for their survival. Federal agencies are required to utilize their authorities to carry out programs for the conservation of threatened and endangered species and to determine whether projects may affect threatened and endangered species and/or designated critical habitat. A Biological Assessment (BA) is required for construction projects that are major Federal actions significantly affecting the quality of the human environment as defined in the NEPA (42 U.S.C. 4332(2)(c)).

This BA has been prepared to identify potential impacts to listed species within the survey areas of the Proposed Action. The BA is intended to: (1) describe the Proposed Actions; (2) discuss the biology and distribution of plant and animal species that have the potential to be present in the project vicinity and have protection under the ESA; and (3) determine the potential effect of the Proposed Actions on such ESA protected species.

### **1.1 PURPOSE FOR THE PROPOSED ACTION**

The purpose of implementing the Proposed Actions is to provide facility, infrastructure and functionality improvements necessary to provide continued mission support for host and tenant units at Tyndall AFB. The Proposed Actions are needed to improve and maintain function and capability in the facilities and infrastructure at the installation, and to prevent deterioration of these functions and capabilities that can occur over time due to obsolescence and evolving mission needs. Implementing these Actions is required to allow host and tenant units at Tyndall AFB to successfully complete their missions, and to ensure continued Airmen readiness.



### **1.2 DESCRIPTION OF THE PROPOSED ACTION**

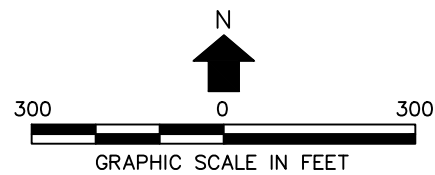
The Proposed Actions include eight proposed individual construction projects (and their alternatives, as appropriate), described below.

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1. Construct New Explosive Ordnance Disposal (EOD) Gravel Road: The current EOD Range and detonation site is appropriately sited and fully approved to dispose of heavy ordnance. However, under existing conditions, heavy ordnance must be transported in via the main EOD road and lowered into the detonation site from atop an earthen berm on the north side of the detonation site, adding time and effort to completion of detonation activities by assigned personnel. The Proposed Action seeks to implement an efficiency improvement to current heavy ordnance offloading and disposal activities. The Proposed Action would construct an approximately 480-foot-long gravel access road with a hammerhead style turnaround connecting the existing main EOD road to the existing detonation site (**Figure 1.2-1**)
2. Dredge the 325th Weapons Evaluation Group (325 WEG) Small Boathouse Area: 325 WEG operations in the 9700 Area of Tyndall AFB are facilitated by both roadway access and maritime access points. The WEG Boathouse (Building 9709) is the primary access point for small boats to this area, which sustained significant damage during Hurricane Michael in 2018. Repair of the boathouse dock area has been separately approved and environmentally evaluated, and is in the process of being implemented. However, current bottom conditions in this area are not conducive to access by small boats during low tide, and therefore dredging is required once the boat docks are again operational. The area must be dredged to a depth of between 3 and 5 feet below present bottom elevation to provide access during low tide operations. The Air Force is considering two action alternatives to the Proposed Action in the EA:
  - Alternative 1: Dredge the small boathouse docks to a depth of between three and five feet below present bottom elevation, and place clean dredge spoils immediately to the north and to the west of Buildings 9700 and 9706 (**Figure 1.2-2**).
  - Alternative 2: Dredge the small boathouse docks to a depth of between three and five feet below present bottom elevation, and place either clean or contaminated dredge spoils in an area north of Research Road (**Figure 1.2-2**).
3. Replace WEG Tower 1802: WEG Communications Tower 1802 was damaged and rendered unusable due to Hurricane Michael in 2018. Prior to being damaged, the tower provided communications functions required for mission readiness by the 83rd Fighter Weapons Squadron (83 FWS). 83 FWS requires restoration of the previous functions, and also seeks better coverage and line-of-sight for communications during unmanned drone missions. Functionality of this facility needs to be replaced to accomplish these objectives. The Proposed Action would construct a new 110-foot-tall, four-legged communications tower with a 30 feet by 30 feet ground surface area, install approximately 1,600 square feet (SF) of security fencing, place gravel within the fenced area, install utility connections to the tower via directional boring, and construct an approximately 5,000-SF unpaved tower access road (**Figure 1.2-3**).
4. Improve Expeditionary Road and Encampment Road (Expeditionary/Encampment Roads): Expeditionary/Encampment Roads, located north of U.S. Highway 98 and west of Florida Avenue on Tyndall AFB, have historically been gravel forestry roads. Since commencing reconstruction activities after Hurricane Michael in 2018, these roads have seen an increase in traffic. Aside from the main Flightline gates there is not another ingress point to areas north of Florida Avenue (e.g., the Flightline and the 6000 area). Construction of these roadways to 12-foot asphalt roads has been separately approved and environmentally evaluated, and is in the process of being implemented.



LEGEND	
	NEW EOD GRAVEL ROAD
	LIMITS OF DISTURBANCE

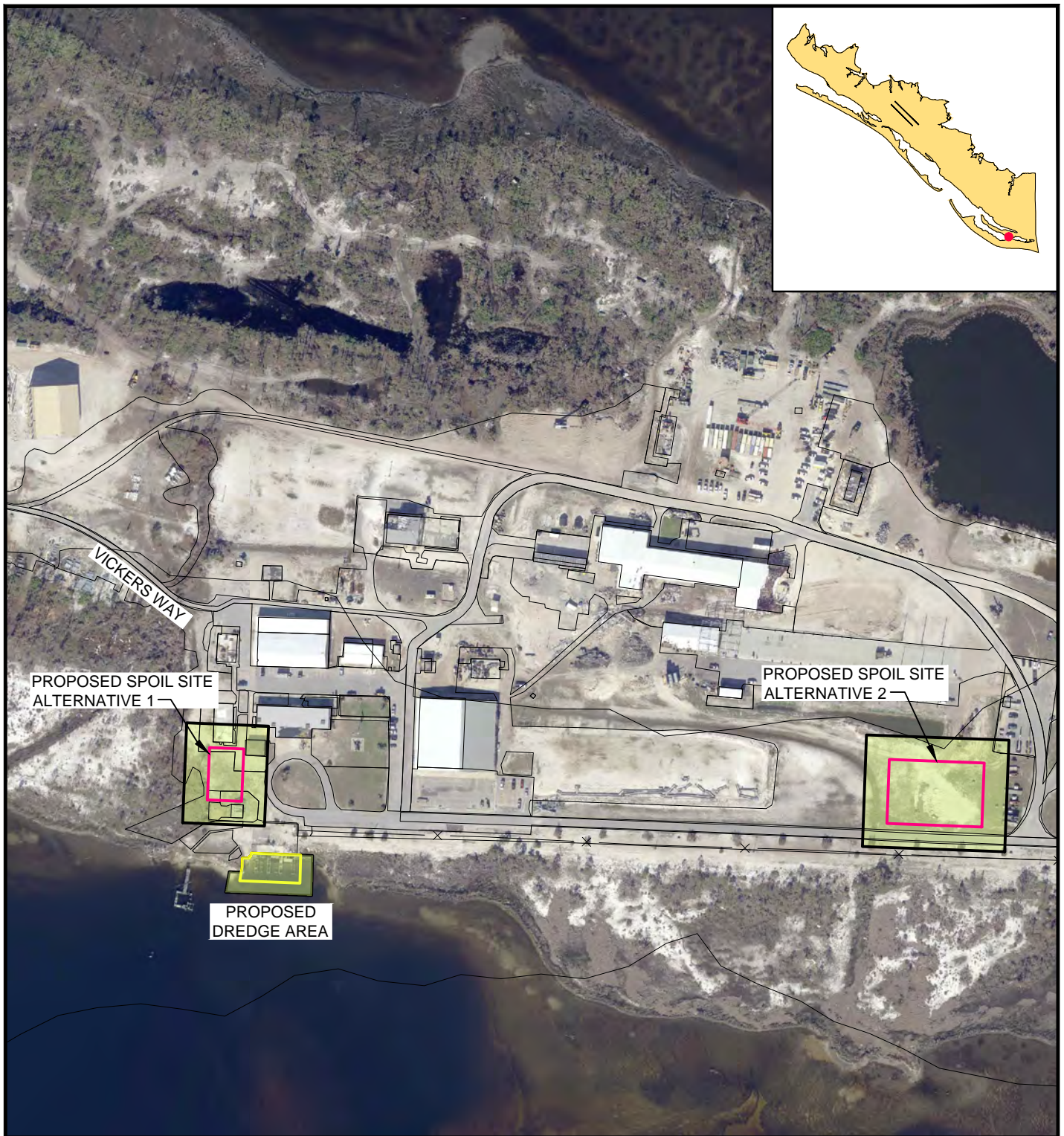





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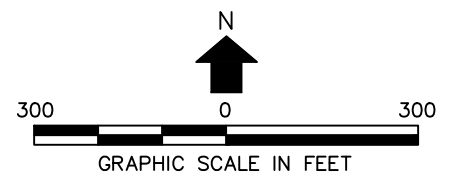
CONSTRUCT  
NEW EOD GRAVEL ROAD  
(EOD DETONATION SITE)

FIGURE  
1.2-1





LEGEND	
 DREDGE AREA	 LIMITS OF DISTURBANCE
 PROPOSED SPOIL SITE	

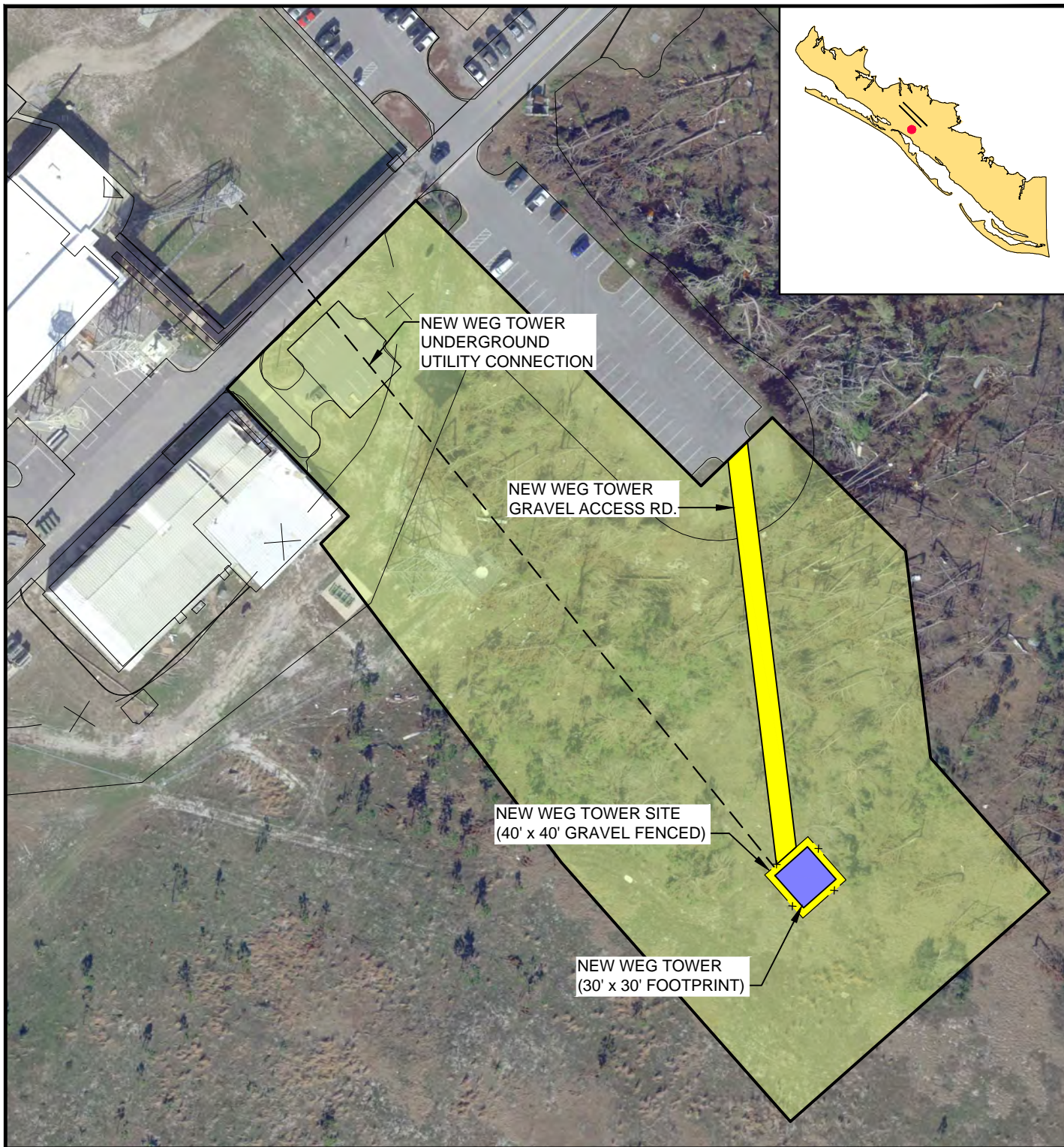


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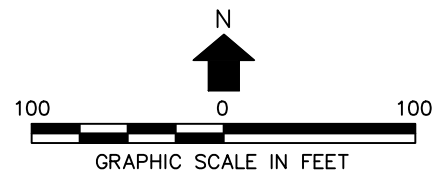
## DREDGE THE WEG SMALL BOATHOUSE AREA

FIGURE  
1.2-2





LEGEND	
	NEW WEG TOWER
	NEW WEG TOWER ACCESS ROAD
	LIMITS OF DISTURBANCE



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REPLACE WEG TOWER 1802

FIGURE  
1.2-3

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Further improvements are needed to accommodate construction traffic. The Proposed Action seeks to expand lanes along these roadways and install Entry Control Facilities (ECF) to help facilitate construction traffic and secure access. The Proposed Action would widen the existing asphalt Expeditionary Road and Encampment Road from 12 feet wide to 26 feet wide, including two 12-foot-wide lanes with one-foot shoulders, construct a 55-foot paved turnaround on Expeditionary Road near U.S. Highway 98, and construct a new ECF near the Expeditionary Road/U.S. Highway 98 intersection (**Figure 1.2-4**)

5. Expand Family Camp (FAMCAMP) Site: FAMCAMP is located west of U.S. Highway 98, north of Sabre Drive. FAMCAMP is a significant revenue generator for Tyndall AFB and provides many morale, welfare and readiness (MWR) programs and amenities to airmen, their families, and the public. The goal of the Proposed Action is to increase the number of Recreational Vehicle (RV) hookups and parking pads to increase residential capacity at the site, and create kayak launches/landings to give users better access to the water. Another objective of the Proposed Action is to install additional egress pathways for emergency response scenarios. The Air Force is considering two action alternatives to the Proposed Action in the EA:

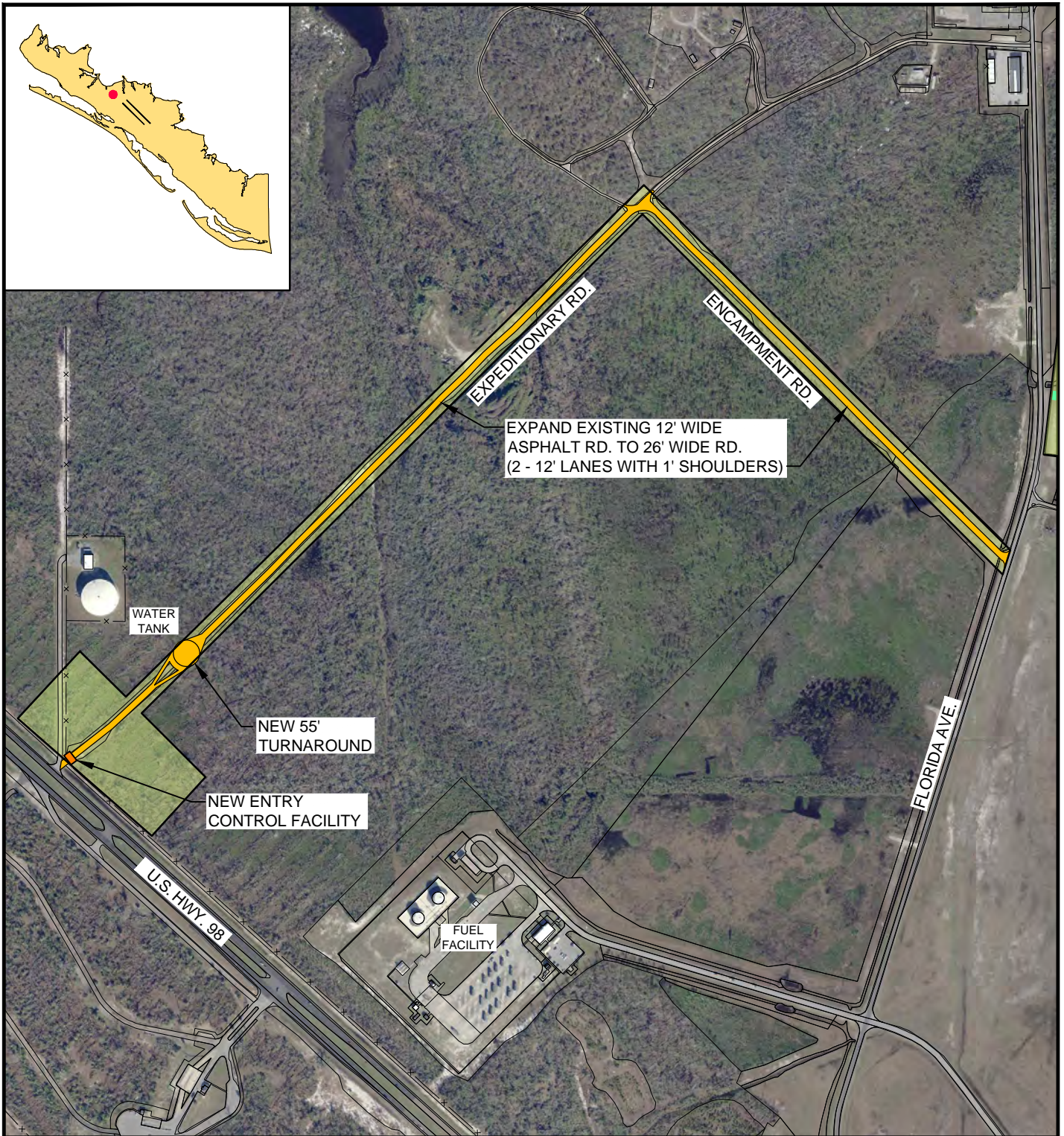
– Alternative 1: Construct a new gravel emergency access road and controlled access gates on both the proposed and existing entrances. Replace two existing RV pads that would be displaced due to planned construction activities such that there is no net loss of currently available RV slots. Construct 30 additional 350- to 400-SF concrete RV parking pads with new water, electrical, and sewage utility connections and install a site containment fence. Construct a new kayak launch in the northwest area of the FAMCAMP site with stairs leading down to the water (**Figure 1.2-5**).




– Alternative 2: Construct a new gravel emergency access road and controlled access gates on both the proposed and existing entrances. Replace one existing RV pad that would be displaced due to planned construction activities such that there is no net loss of currently available RV slots. Construct 30 additional 350- to 400-SF concrete RV parking pads with new water, electrical, and sewage utility connections and install a site containment fence. Construct a new kayak launch in the southwest area of the FAMCAMP site at grade with the existing waterline (**Figure 1.2-6**).

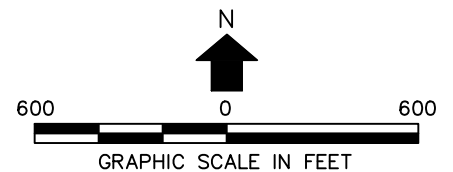
6. Construct Water Main Along North Side of Flightline: Airfield and Flightline drainage improvements are ongoing as part of the Hurricane Michael reconstruction efforts. Additional connectivity is needed to provide water quality and conveyance to support these improvements. The Proposed Action would connect the lines running from Florida Avenue and Ammo Road to form a Flightline Water Loop along the northside of the airfield. The goal of this Proposed Action is to improve water quality issues and provide water utilities for future development of the North Flightline area. The Proposed Action would install approximately 15,000 linear feet (LF) of 8-inch polyvinyl chloride (PVC) water main pipe along the northeast side of Flightline, connecting existing lines at Florida Avenue and Ammo Road, to complete a Flightline Water Loop (**Figure 1.2-7**).



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LEGEND	
	IMPROVE EXPEDITIONARY / ENCAMPMENT ROADS
	NEW ENTRY CONTROL FACILITY
	LIMITS OF DISTURBANCE

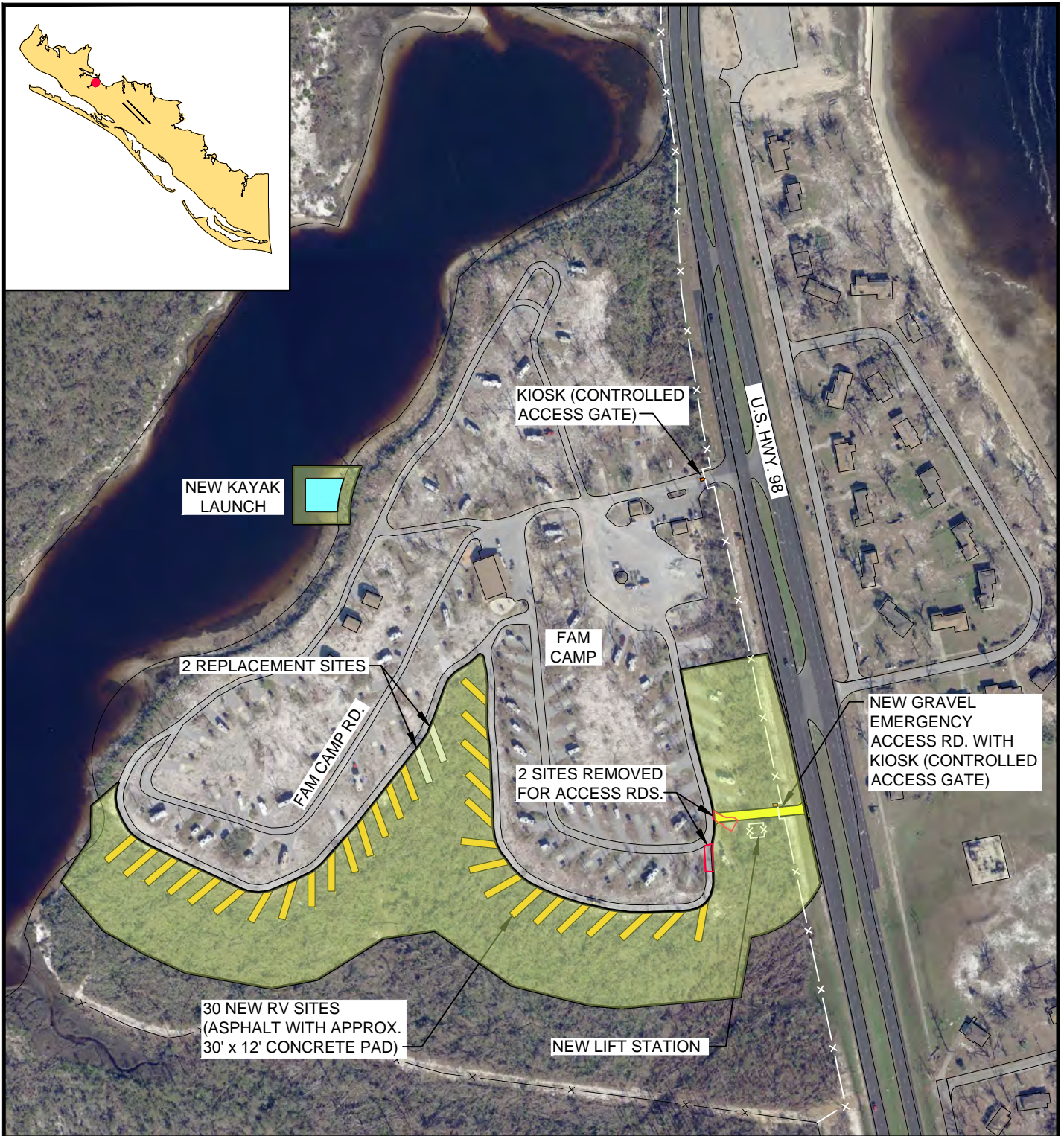







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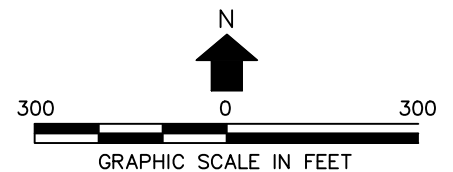
## IMPROVE EXPEDITIONARY / ENCAMPMENT ROADS

FIGURE  
1.2-4





LEGEND	
	NEW RV SITES
	NEW EMERGENCY ACCESS ROAD
	NEW REPLACEMENT RV SITE
	LIMITS OF DISTURBANCE
	NEW BOAT LAUNCH RAMP

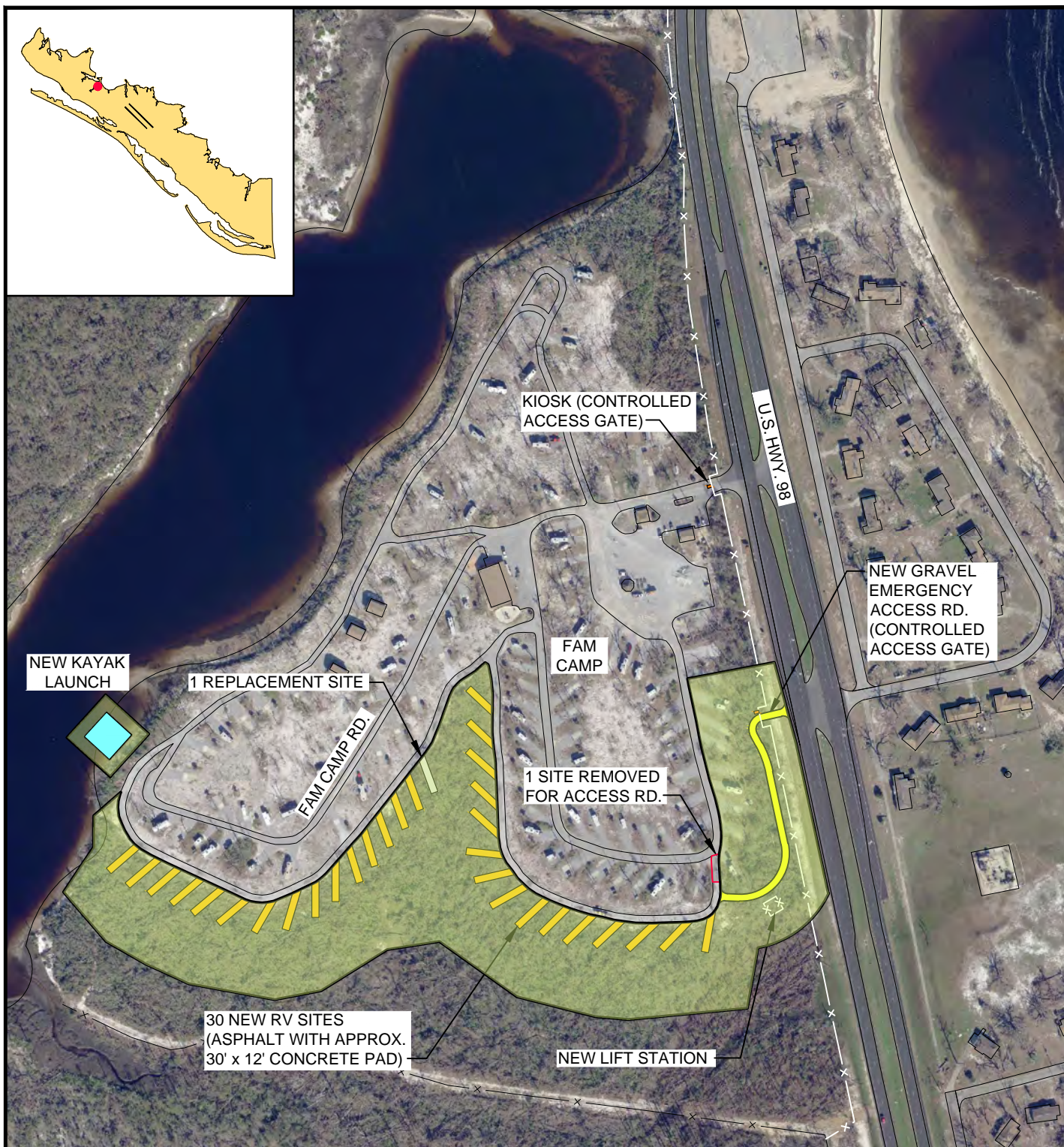


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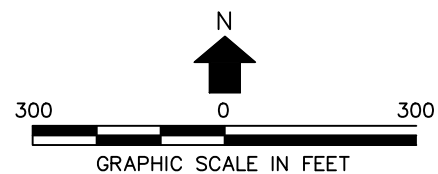
## EXPAND FAM CAMP SITE (ALTERNATIVE 1)

FIGURE  
1.2-5





LEGEND			
	NEW RV SITES		NEW EMERGENCY ACCESS ROAD
	NEW REPLACEMENT RV SITE		LIMITS OF DISTURBANCE
	NEW BOAT LAUNCH RAMP		

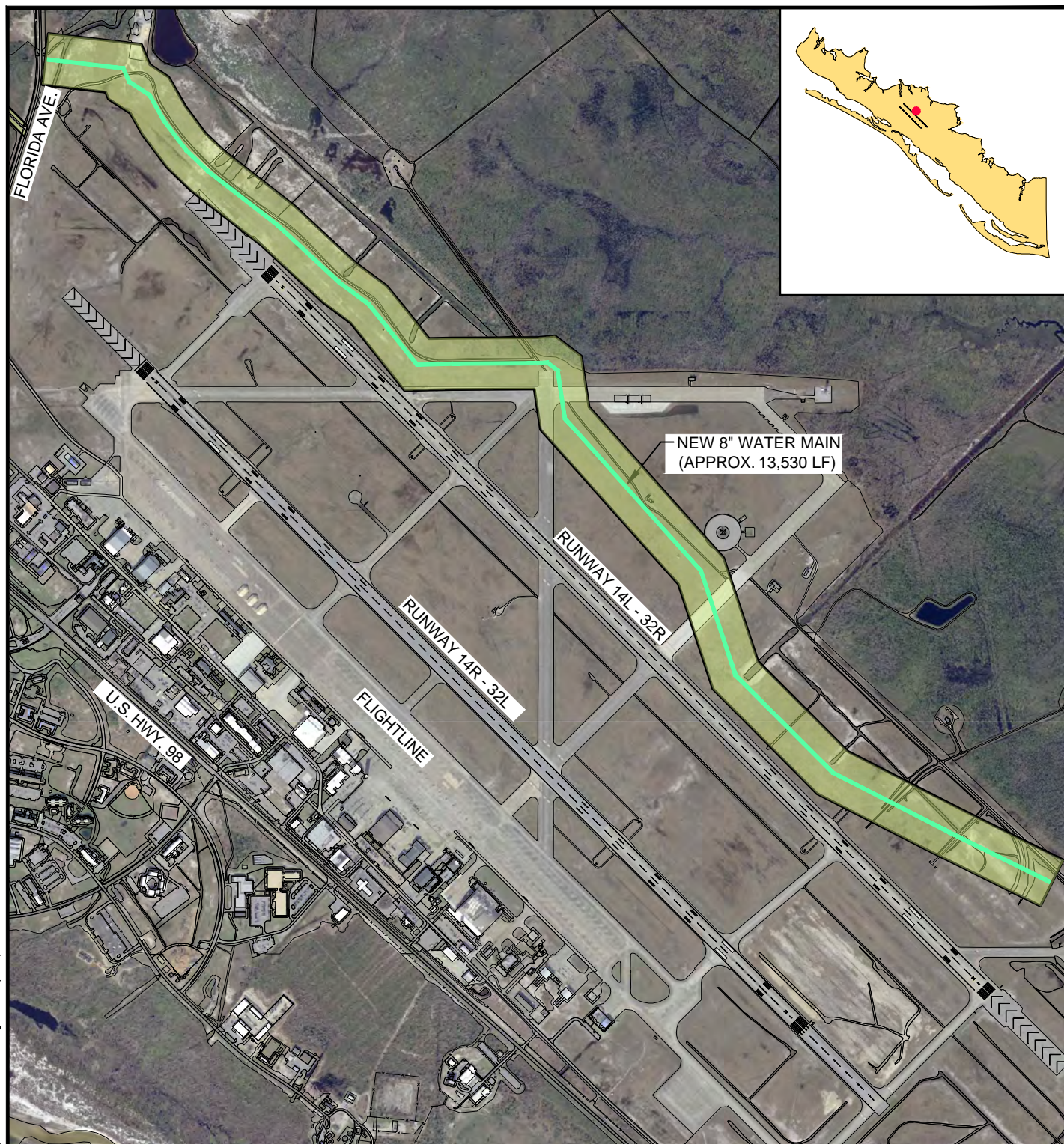


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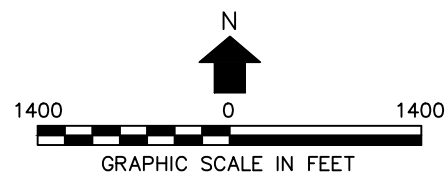
## EXPAND FAM CAMP SITE (ALTERNATIVE 2)

FIGURE  
1.2-6





LEGEND	
	NEW 8" WATER MAIN
	LIMITS OF DISTURBANCE



Tyndall Air Force Base, Panama City FL  
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CONSTRUCT WATER MAIN  
ALONG NORTH SIDE OF  
FLIGHTLINE

FIGURE  
1.2-7

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7. Construct Fishing/Observation Pier at Heritage Club (Building 1454): Future plans for the Heritage Club facilities, which have gone unused since Hurricane Michael in 2018, include installation of outdoor amenities such as an amphitheater and other public outdoor use areas. Although these development plans are not part of the Proposed Action in the EA and will be addressed at a future time, the Proposed Action seeks to increase near-term use of the facility in a way that is compatible with the planned future construction, by constructing a fishing and observation pier. The Air Force is considering two action alternatives to the Proposed Action in the EA:

- Alternative 1: Construct a new wooden pier approximately 200 feet long by 15 feet wide, with a 50-foot by 20-foot observation/fishing area, including approximately 40 12-inch-diameter support pylons embedded into the soil (**Figure 1.2-8**).

- Alternative 2: Construct a new concrete pier approximately 200 feet long by 20 feet wide, with a 75-foot by 20-foot observation/fishing area, including approximately 55 12-inch-diameter support pylons embedded into the soil (**Figure 1.2-9**).

8. Renovate the UNITE Site: The UNITE Program at Tyndall AFB is managed by the 325 Force Support Squadron (FSS) as a means to build cohesion for active-duty troops, reserve and civilians at Tyndall AFB. The Proposed Action involves creating outdoor recreational facilities and supporting infrastructure that can be utilized by these parties in order to increase MWR opportunities and revenue at Tyndall AFB. The Air Force is considering two action alternatives to the Proposed Action in the EA:

- Alternative 1: Construct new recreational facilities (axe throwing course, paintball field, and archery range), administrative office space and a gravel parking area on a 22.5-acre site located north of Sabre Drive and west of U.S. Highway 98 (**Figure 1.2-10**).

- Alternative 2: Construct new recreational facilities (axe throwing course, paintball field, and archery range), administrative office space and a gravel parking area on a 16-acre site at the corner of Sabre Drive and Prime Beef Road (**Figure 1.2-11**).

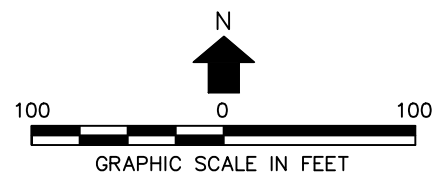
Limits of disturbance (LOD) were identified based on the notional construction layouts depicted in **Figures 1.2-1 through 1.2-11**. The LODs represent buffer distances around the planned construction areas to account for direct disturbance as well as incidental disturbance due to construction operations. Buffer distances used to establish the LODs range from 25 feet to 50 feet, although with select projects, a larger distance was used due to the nature of the proposed construction or to provide flexibility in refining the project concepts, if necessary, once detailed design begins.

**Table 1.2-1** summarizes the total acreage included in the LOD for each project and alternative to be surveyed. Of note, the total acreages include some overlap for alternatives which have shared or common areas between them (e.g., WEG Boathouse, FAMCAMP and Heritage Club alternatives), and therefore some double counting is inherent to the totals presented on **Table 1.2-1**.





LEGEND	
	NEW FISHING / OBSERVATION PIER
	LIMITS OF DISTURBANCE





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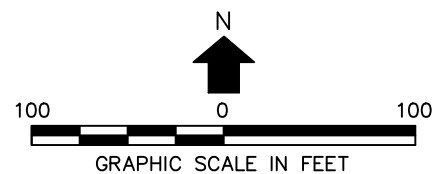
CONSTRUCT PIER AT  
HERITAGE CLUB  
(ALTERNATIVE 1)

FIGURE  
1.2-8





LEGEND	
	NEW FISHING / OBSERVATION PIER
	LIMITS OF DISTURBANCE

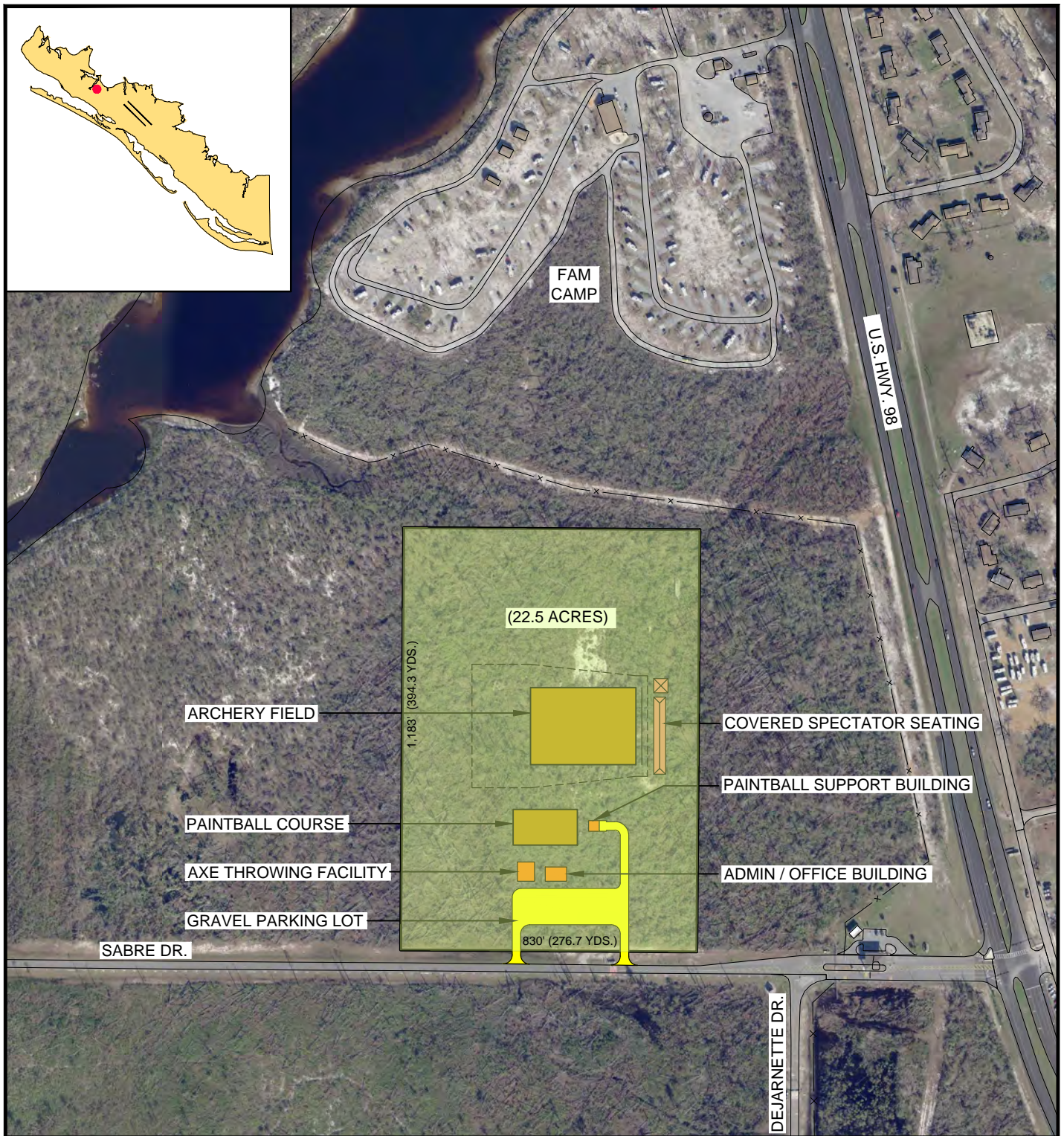


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CONSTRUCT PIER AT  
HERITAGE CLUB  
(ALTERNATIVE 2)

FIGURE  
1.2-9



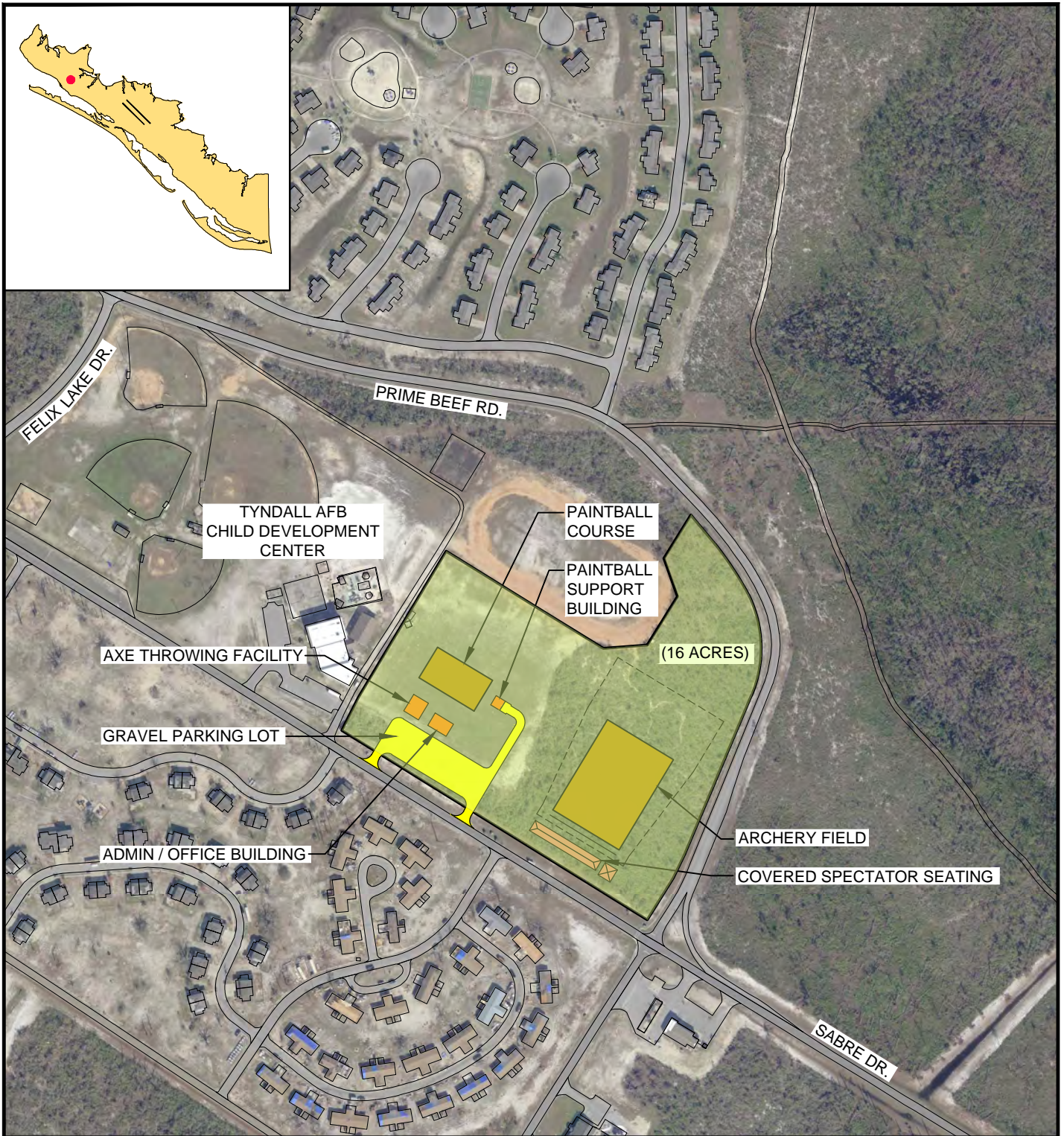







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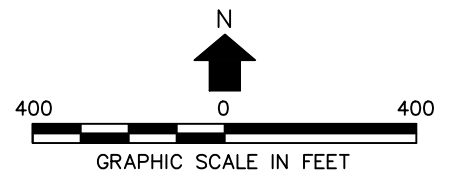
## RENOVATE UNITE SITE (ALTERNATIVE 1)

FIGURE  
1.2-10





LEGEND	
	UNITE SITE
	POTENTIAL NEW BUILDINGS
	ARCHERY FIELD / PAINTBALL COURSE
	GRAVEL PARKING LOT
	LIMITS OF DISTURBANCE



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## RENOVATE UNITE SITE (ALTERNATIVE 2)

FIGURE  
1.2-11



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**TABLE 1.2-1 LOD AND SURVEY AREA SUMMARY**

Project	Acres (total)
Construct New EOD Gravel Road ( <b>Figure 1.2-1</b> )	2.65
Dredge the WEG Small Boathouse Area (Alternative 1) ( <b>Figure 1.2-2</b> )	1.14
Dredge the WEG Small Boathouse Area (Alternative 2) ( <b>Figure 1.2-2</b> )	1.92
Replace WEG Tower 1802 ( <b>Figure 1.2-3</b> )	3.68
Improve Expeditionary/Encampment Roads ( <b>Figure 1.2-4</b> )	16.94
Expand FAMCAMP Site (Alternative 1) ( <b>Figure 1.2-5</b> )	11.04
Expand FAMCAMP Site (Alternative 2) ( <b>Figure 1.2-6</b> )	11.05
Construct Water Main on North Side of Flightline ( <b>Figure 1.2-7</b> )	154.86
Construct Fishing/Observation Pier at Heritage Club (Alternative 1) ( <b>Figure 1.2-8</b> )	0.37
Construct Fishing/Observation Pier at Heritage Club (Alternative 2) ( <b>Figure 1.2-9</b> )	0.37
Renovate UNITE Site (Alternative 1) ( <b>Figure 1.2-10</b> )	22.55
Renovate UNITE Site (Alternative 2) ( <b>Figure 1.2-11</b> )	16.04
<b>Total<sup>1</sup></b>	<b>242.61</b>

<sup>1</sup> The total acreage reflects double counting of Fam Camp, WEG Boathouse and Heritage Club Alternatives which have shared/overlapping area between them. The corrected total acreage when adjusting for this double counting 235.92 total acres.  
 Values may reflect rounding.

**Biological Assessment**  
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**2.0 METHODOLOGY**

The purpose of this BA is to describe the existing environmental conditions of the study area and the potential impacts to federal and state listed species and submerged aquatic vegetation (SAV) that could occur as a result of the Proposed Actions. The Action Area for the BA encompasses the total construction footprint for all eight proposed projects and their alternatives, and comprises a total of 242.61 acres (**Figures 1.2-1 through 1.2-11**).

**2.1 AGENCY COORDINATION**

As part of the NEPA process, an Advance Notification of the Proposed Actions was sent to the Florida Department of Environmental Protection (FDEP) State Clearinghouse requesting comments on the Proposed Actions. In addition, an official species list was requested from the USFWS Information for Planning and Consultation (IPaC) database (consultation code 04EF2000-2020-SLI-0368) and is provided in **Appendix A**.

**2.2 DATA COLLECTION AND FIELD REVIEW**

AECOM environmental scientists familiar with Florida's natural communities conducted a field review within the Action Area in August 2021, September 2021, November 2021 and April 2022. During the field review, each vegetative community and land use type within the Action Area was visually inspected to assess approximate boundaries and document dominant vegetation. Exotic plant infestations and other disturbances such as erosion and existing structures (i.e., riprap) were noted. Field activities also included identifying wildlife and signs of wildlife usage within the Action Area and within adjacent habitats. The survey areas at Tyndall AFB were surveyed for the presence of all federal and state listed plant and animal species that are known to, or have the potential to, occur on Tyndall AFB. Aquatic habitats were also surveyed for the presence, function, and cover-abundance of SAV. Critical habitat was also evaluated within the survey areas.

**2.2.1 FEDERALLY AND STATE-LISTED SPECIES**

Federal and state listed species were surveyed through direct observation of the listed species and by visually inspecting habitats for potential species utilization for foraging and/or nesting. A desktop review of documented species occurrences, including listed plant species observations, bald eagle nest locations, and wood stork rookery locations, were completed prior to field review and any previously documented occurrences within the survey areas were field verified. Specific survey methodologies for the following species were conducted in accordance with applicable guidance provided by the Florida Fish and Wildlife Conservation Commission (FWC) and the USFWS.

**2.2.1.1 *Gopher Tortoise***

Survey methods for the state listed gopher tortoise (federally listed as a candidate species) were published by the FWC. The gopher tortoise is a burrowing reptile that occupies upland habitat throughout Florida. Ideal habitat for this species includes pine flatwoods, scrub, dry prairies, pastures, yards, and along fence lines. A 100% gopher tortoise survey was completed within all suitable habitats in accordance with the



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methodology listed in Appendix 4 of the FWC's *Gopher Tortoise Permitting Guidelines* (revised July 2020).

**2.2.1.2 Eastern Indigo Snake**

Reference materials for the eastern indigo snake were published by the USFWS. The eastern indigo snake moves between habitats seasonally including xeric pinelands, scrub, mesic flatwoods, dry prairies, wet prairies, and swamps. However, it typically exhibits a preference for upland habitat and is known to use gopher tortoise burrows for shelter to escape hot or cold ambient temperatures within its range. The survey areas were inspected for direct evidence of eastern indigo snakes, as well as above ground and underground refugia, including gopher tortoise burrows. The presence of gopher tortoise burrows, holes, cavities, or other refugia, as well as acreage of xeric habitat, were used to evaluate impacts of the Proposed Actions on the eastern indigo snake, in accordance with the USFWS's *Programmatic Concurrence for Use of the Original Eastern Indigo Snake Key* dated January 25, 2010, Addendum dated August 13, 2013.

**2.2.1.3 Telephus Spurge**

Telephus spurge is a perennial herb that inhabits longleaf pine savannas, scrubby and mesic flatwoods, and coastal scrub. This species has been studied at Tyndall AFB by USFWS personnel, including botanist Vivian Negron-Ortiz with the USFWS Panama City Field Office and Melanie Kaeser, USFWS liaison for Tyndall AFB. Parameters in monitoring telephus spurge, including dynamic variations in dormancy, were identified in their paper: *Timing and Patterns of Size, Reproduction, and Seed Germination in Florida Endemic Euphorbia telephioides (Euphorbiaceae): Management and Conservation Implications*. Two seasonal dormancy cycles were identified: an obligate winter dormancy from October to January that is initiated by cold temperatures; and a non-synchronized dormancy during July and August that is induced by drought and high temperatures. In addition to these seasonal dormancies, telephus spurge is capable of a prolonged vegetative dormancy in which it is alive below ground but lacks above ground parts.

The survey areas were inspected during time periods outside of the known telephus spurge dormancy cycles. Additionally, USFWS Liaison Melanie Kaeser was present at the start of the survey to provide expertise in identification of telephus spurge and differentiation between similar species, which includes the pineland spurge (*Euphorbia inundata*).

**2.2.2 SUBMERGED AQUATIC VEGETATION**

SAV includes any species of seagrass and rhizophytic macroalgae. Patches of SAV can migrate to unvegetated areas; therefore, SAV habitat includes both areas that are currently vegetated by SAV as well as unvegetated areas that are adjacent to SAV, have historically supported SAV, and have the ability to support SAV based on conditions including water environment, sediment characteristics, and light availability. Prior to the SAV survey, a desktop assessment was completed to gather relevant information on SAV resources in the survey areas. Historical aerial photography was reviewed to determine if the survey areas have historically supported SAV.

The SAV survey was completed during the peak growing season, between June 1<sup>st</sup> and September 30<sup>th</sup>. The survey included a reconnaissance survey to assess the presence of SAV, and a mapping and characterization survey was completed.

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**2.2.2.1 Reconnaissance Survey**

Reconnaissance surveys were completed using transects running perpendicular to the shore and within the established LOD and extended in some areas as necessary to ensure compliance with applicable USACE guidelines (i.e., 50 feet beyond the construction area). Given the small size of each survey area, reconnaissance consisted of an in-water survey initiated from shore.

The distance between survey transects was minimized to the maximum extent practicable to thoroughly survey the benthos. The spacing of the survey transects was dictated by visibility conditions at the time of survey. At a minimum, survey transects were no greater than the visibility at the time of survey (e.g., 1-meter [m] transect spacing if visibility is 1-m).

**2.2.2.2 Mapping and Characterization Survey**

The spatial distribution of SAV within the survey areas was mapped by environmental scientists and a visual assessment of the condition of each mapped SAV area was completed, as described in the following sections.

**Indicators of Function**

The visual assessment documented the following indicators of function: location and landscape support, water environment and community structure (as defined in 62-345.500 Florida Administrative Code [F.A.C.]). Readily observable site conditions such as sediment type, relative water depth, and current direction (if apparent) were noted. Water quality issues, anthropogenic impacts, boat traffic, and recreational use within and adjacent to survey areas were documented. Landscape features including other natural communities, shoals, or man-made structures were described. Wildlife observed at the site and signs thereof, including evidence of bioturbation, were documented.

**Community Structure**

Community structure was qualitatively assessed through description of canopy height, flowering, epiphyte coverage, and disease. Community structure was quantitatively evaluated through quadrats placed evenly along the transect line, within SAV patches. Quadrats were 1-m<sup>2</sup> (1 m x 1 m) in size. The density quadrats to be sampled was dependent on the number of transects, but the intent was to sample a minimum of 5 m<sup>2</sup> for each 0.1 acre of survey area.

The cover-abundance, or percent cover, of SAV was visually assessed within the quadrat. The percent cover of SAV was visually assessed and reported using the Braun-Blanquet cover-abundance scores and converted to percent cover using the standard conversion (Table 2.2-1). Cover-abundance methods remained consistent throughout the survey areas.

**TABLE 2.2-1 BRAUN-BLANQUET COVER-ABUNDANCE SCORES AND CONVERSIONS TO PERCENT COVER**

Score	Description of Cover	Approximate Percent Cover
0	Absent from quadrat	0
0.1	A solitary shoot, <5% cover	0.02
0.5	Few (<5) shoots, <5% cover	0.1



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Score	Description of Cover	Approximate Percent Cover
1	Many (>5) shoots, <5% cover	2.5
2	5 - 25% cover	15
3	25 - 50% cover	37.5
4	50 - 75% cover	62.5
5	75 - 100% cover	87.5

Prior to assessing the cover-abundance of SAV, drift algae, which can obscure and smother SAV, was removed and its abundance documented as none, sparse, moderate, or abundant. The cover-abundance of the following was then documented: the total cover-abundance of SAV, including the total cover of all seagrass and rhizophytic macroalgae taxa; the total cover-abundance of all seagrass species and the total cover-abundance of all rhizophytic macroalgae genera; and the cover-abundance of each seagrass species and each rhizophytic macroalgae genera present within the quadrat. The results of this assessment were used to calculate the frequency of occurrence (percentage of all quadrats that contained SAV), the density (average cover-abundance for all quadrats sampled) and the abundance (average cover-abundance for only those quadrats containing SAV). These metrics were calculated for 1) all SAV, 2) all seagrass, 3) all rhizophytic macroalgae, 4) each seagrass species and 5) each rhizophytic macroalgae genus.

### **2.2.3 CRITICAL HABITAT**

Critical habitat is defined as the physical and biological features essential for a species' conservation, such as food, water and shelter, and other features. Critical habitat for the Choctawhatchee beach mouse, St. Andrew beach mouse, piping plover, loggerhead sea turtle, and Gulf sturgeon is located within the boundaries of Tyndall AFB but outside of the survey areas. Survey areas in proximity to critical habitat were traversed and evaluated for the presence of, or potential use by, listed species during the field reviews.

**Biological Assessment**  
**Environmental Assessment for 8 Construction Sites Tyndall Air Force Base, Florida**

### 3.0 EXISTING LAND USES AND VEGETATIVE COVER

Land use/vegetative cover types mapped within the survey areas were classified using Florida Land Use, Cover and Forms Classification System (FLUCFCS) categories and were adapted from the Northwest Florida Water Management District (NFWFMD) Land Use Geographic Information System (GIS) database and Tyndall AFB's land use cover GIS data. **Table 3.0-1** summarizes the land/vegetative cover types mapped within each survey area, which is also shown on **Figures 3.0-1** through **3.0-11**. A summary description of each land use/vegetative cover type (excluding developed land uses) is provided below.

**TABLE 3.0-1 PROJECT AREA LAND COVER**

Project	FLUCFCS Code	Description	Acres
Construct New EOD Gravel Road (Figure 3.0-1)	6420	Saltwater Marsh	2.31
	7410	Rural land in transition without positive indicators of intended activity	0.25
	<i>Subtotal</i>		2.56
Dredge the WEG Small Boathouse Area - Alternative 1 (Figure 3.0-2)	1554	Aircraft Building and Repair	0.61
	3220	Coastal Scrub	0.04
	6420	Saltwater Marsh	0.08
	<i>Subtotal</i>		0.73
Dredge the WEG Small Boathouse Area - Alternative 2 (Figure 3.0-3)	1554	Aircraft Building and Repair	1.45
	<i>Subtotal</i>		1.45
Replace WEG Tower 1802 (Figure 3.0-4)	3100	Herbaceous (Dry Prairie)	2.34
	4140	Pine - Mesic Oak	0.70
	6410	Freshwater Marsh	0.60
	<i>Subtotal</i>		3.64
Improve Expeditionary/ Encampment Roads (Figure 3.0-5)	3100	Herbaceous (Dry Prairie)	3.46
	3290	Other Shrubs and Brush	0.02
	4140	Pine - Mesic Oak	6.21
	4360	Upland Scrub, Pine and Hardwoods	2.35
	5100	Streams and Waterways	0.07
	6310	Wetland Shrub	1.68
	6420	Saltwater Marsh	0.06
	6430	Wet Prairie	0.13
	8330	Water Supply Plants	0.30
	8350	Solid Waste Disposal	0.93
	<i>Subtotal</i>		15.21
Expand Fam Camp Site - Alternative 1 (Figure 3.0-6)	3100	Herbaceous (Dry Prairie)	0.15
	4130	Sand Pine	9.26
	4270	Live Oak	1.02
	5420	Bays and Estuaries	0.17
	6410	Freshwater Marsh	0.46
	6420	Saltwater Marsh	0.19
	<i>Subtotal</i>		11.25
Expand Fam Camp Site - Alternative 2 (Figure 3.0-7)	3100	Herbaceous (Dry Prairie)	0.15
	4130	Sand Pine	9.26
	4270	Live Oak	1.01
	5420	Bays and Estuaries	0.31
	6410	Freshwater Marsh	0.46

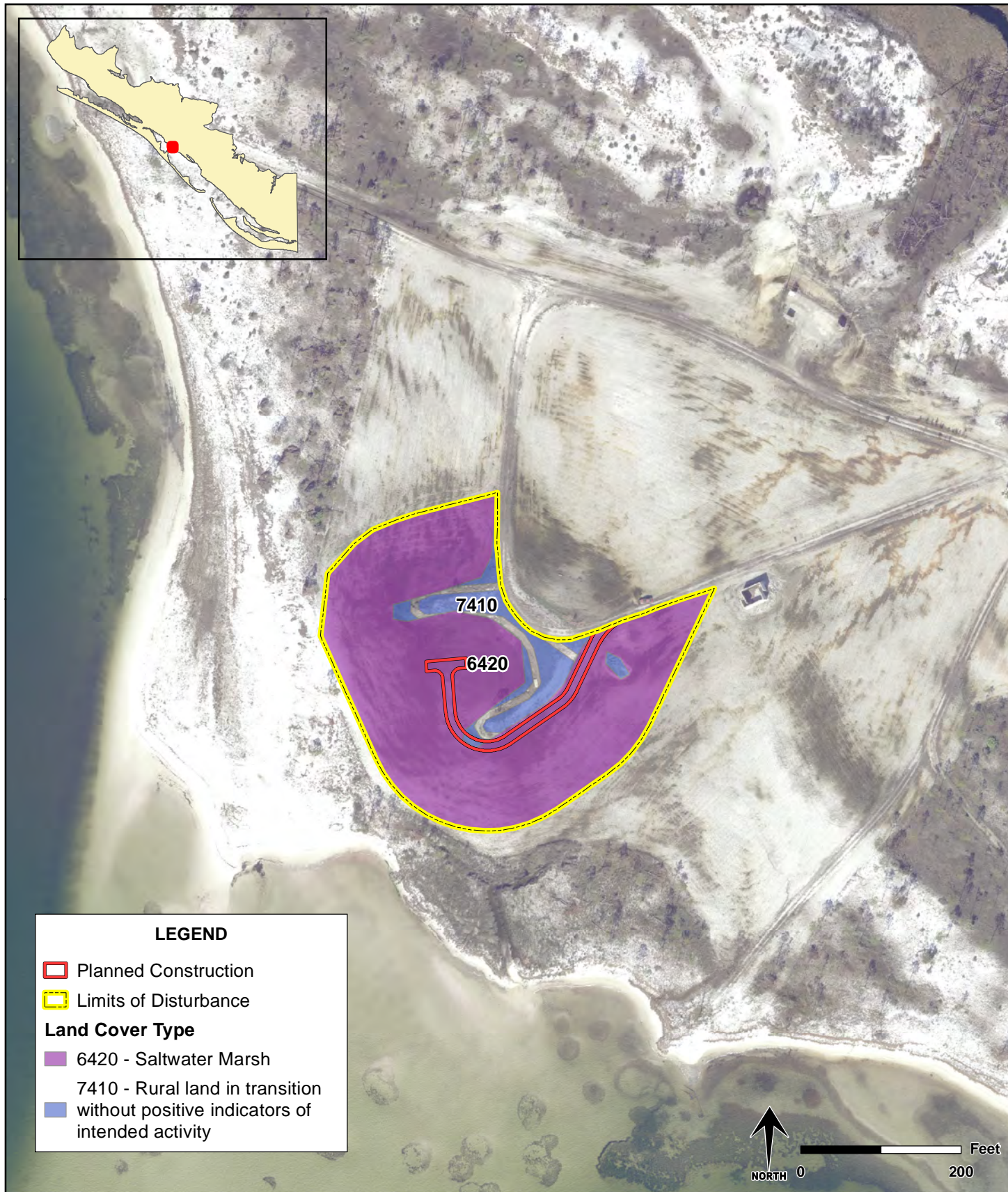


**Biological Assessment**  
**Environmental Assessment for 8 Construction Sites Tyndall Air Force Base, Florida**

Project	FLUCFCS Code	Description	Acres
	6420	Saltwater Marsh	0.13
		<i>Subtotal</i>	<i>11.32</i>
Construct Water Main on North Side of Flightline (Figure 3.0-8)	3100	Herbaceous (Dry Prairie)	1.37
	4250	Temperate Hardwoods	0.02
	4410	Coniferous Plantations, Slash Pine	0.38
	5100	Streams and Waterways	4.74
	5300	Reservoirs	21.68
	6430	Wet Prairie	3.03
	8110	Airports	115.45
		<i>Subtotal</i>	<i>146.67</i>
Construct Fishing/Observation Pier (Heritage Club) – Alternative 1 (Figure 3.0-9)	5420	Bays and Estuaries	0.32
	6410	Freshwater Marsh	0.07
	6420	Saltwater Marsh	0.29
		<i>Subtotal</i>	<i>0.68</i>
Construct Fishing/Observation Pier (Heritage Club) – Alternative 2 (Figure 3.0-9)	5420	Bays and Estuaries	0.32
	6410	Freshwater Marsh	0.07
	6420	Saltwater Marsh	0.29
		<i>Subtotal</i>	<i>0.68</i>
Renovate Unite Site - Alternative 1 (Figure 3.0-10)	3100	Herbaceous (Dry Prairie)	0.19
	3290	Other Shrubs and Brush	15.40
	6310	Wetland Shrub	6.81
	6410	Freshwater Marsh	0.14
		<i>Subtotal</i>	<i>22.54</i>
Renovate Unite Site - Alternative 2 (Figure 3.0-11)	1210	Fixed Single Family Units	0.26
	1713	High Schools	5.39
	4360	Upland Scrub, Pine and Hardwoods	10.25
	5100	Streams and Waterways	0.15
		<i>Subtotal</i>	<i>16.05</i>
<b>Total<sup>1</sup></b>			<b>204.07</b>

Values may reflect rounding.

Source: Florida Land use, Cover and Forms Classification System, Third Edition, Florida Department of Transportation Surveying and Mapping Office, Geographic Mapping Section, January 1999; 2015-2016 NWFWM Land Use GIS Data, Published 02 February 2018; Land Cover Geodatabase provided by Tyndall AFB August 2019.



**Tyndall Air Force Base, Panama City, FL**

**ENVIRONMENTAL ASSESSMENT  
FOR 8 CONSTRUCTION SITES**

**LAND COVER:  
CONSTRUCT NEW EOD  
GRAVEL ROAD**

**FIGURE  
3.0-1**





**Tyndall Air Force Base, Panama City, FL**  
**ENVIRONMENTAL ASSESSMENT  
FOR 8 CONSTRUCTION SITES**

**LAND COVER:  
DREDGE THE WEG  
SMALL BOATHOUSE AREA (ALT 1)**

**FIGURE  
3.0-2**



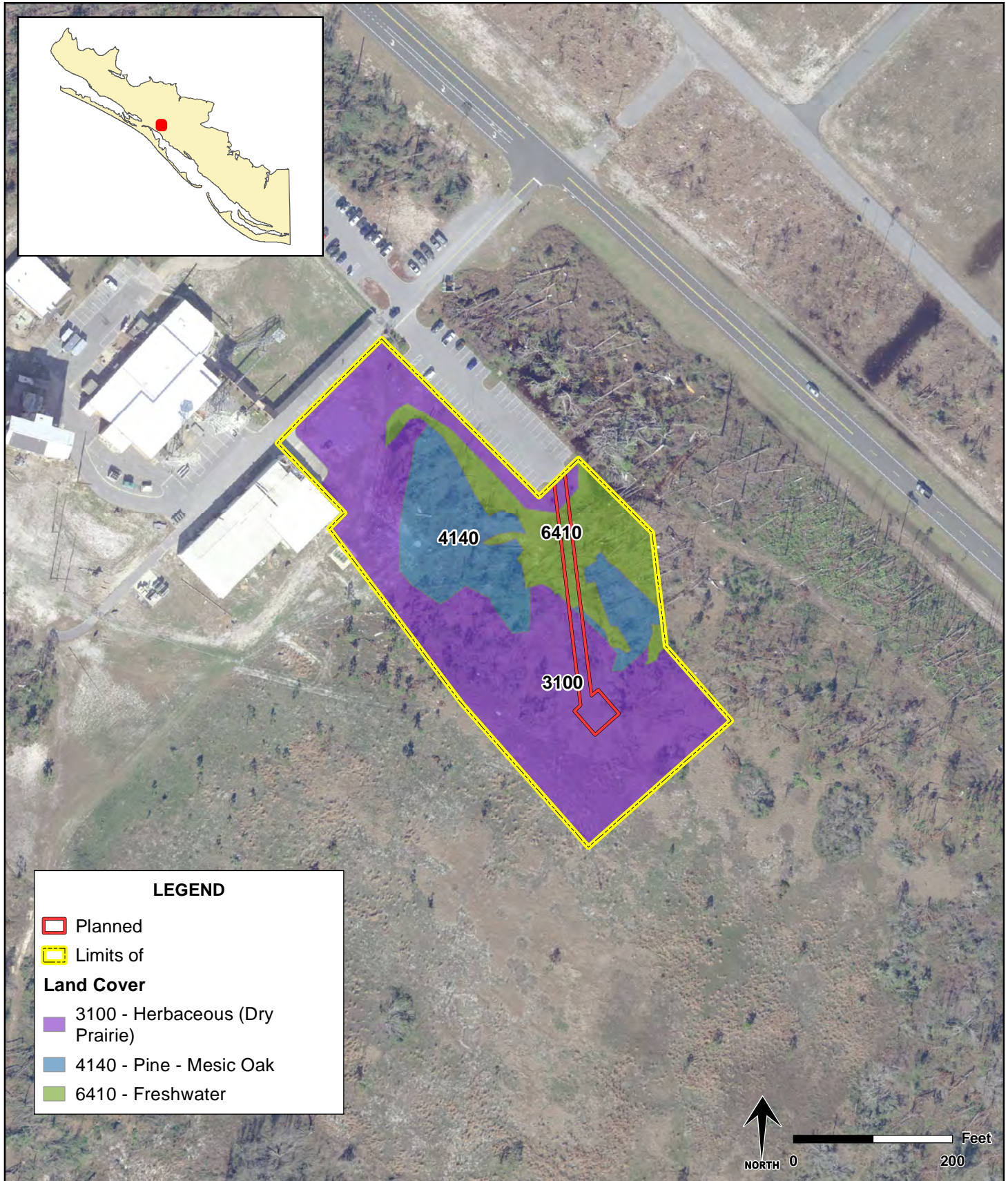


**Tyndall Air Force Base, Panama City, FL**  
**ENVIRONMENTAL ASSESSMENT  
FOR 8 CONSTRUCTION SITES**

**LAND COVER:  
DREDGE THE WEG  
SMALL BOATHOUSE AREA (ALT 2)**

**FIGURE  
3.0-3**



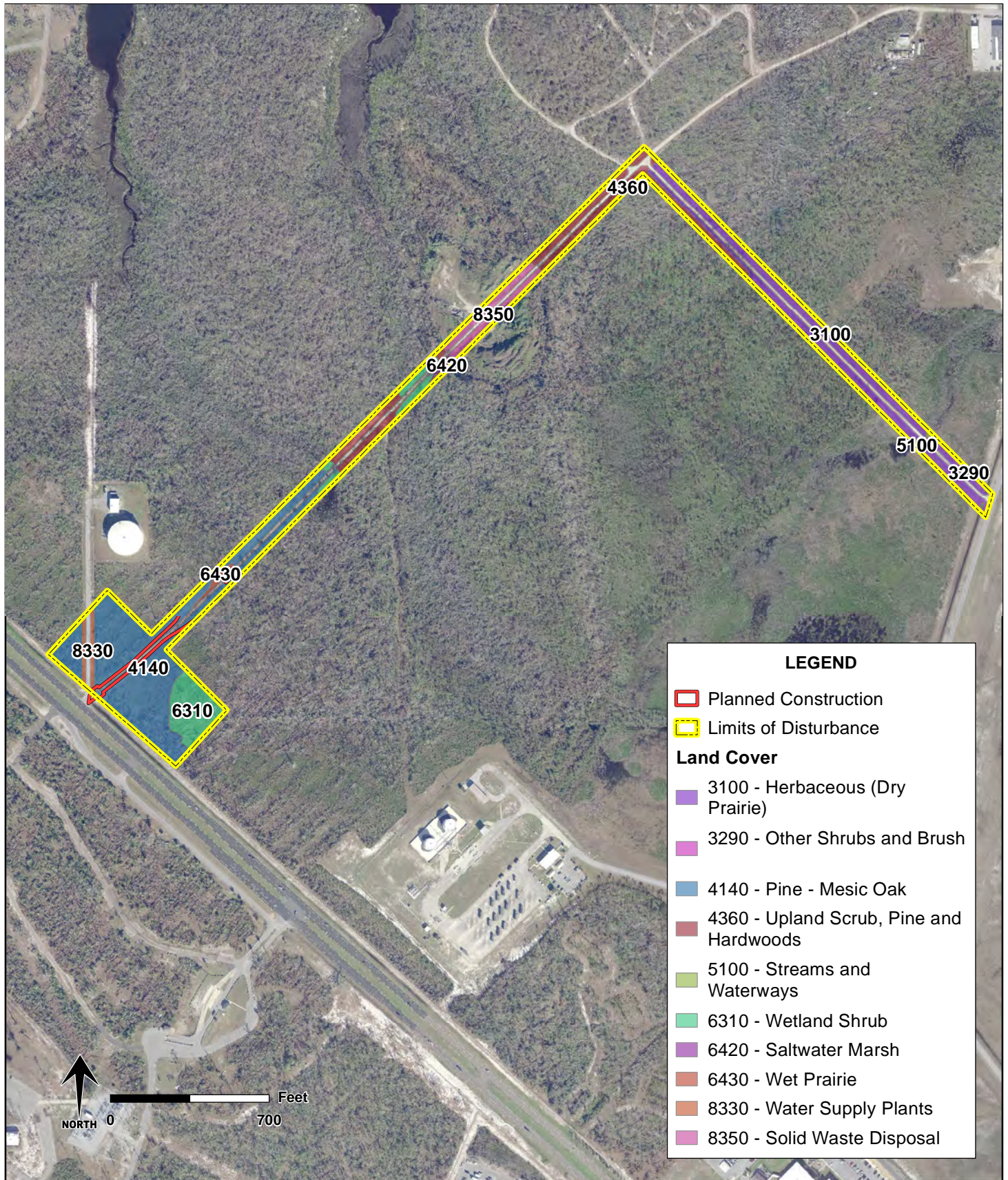


**Tyndall Air Force Base, Panama City, FL**  
**ENVIRONMENTAL ASSESSMENT  
FOR 8 CONSTRUCTION SITES**

**LAND COVER:  
REPLACE WEG TOWER 1802**

**FIGURE  
3.0-4**



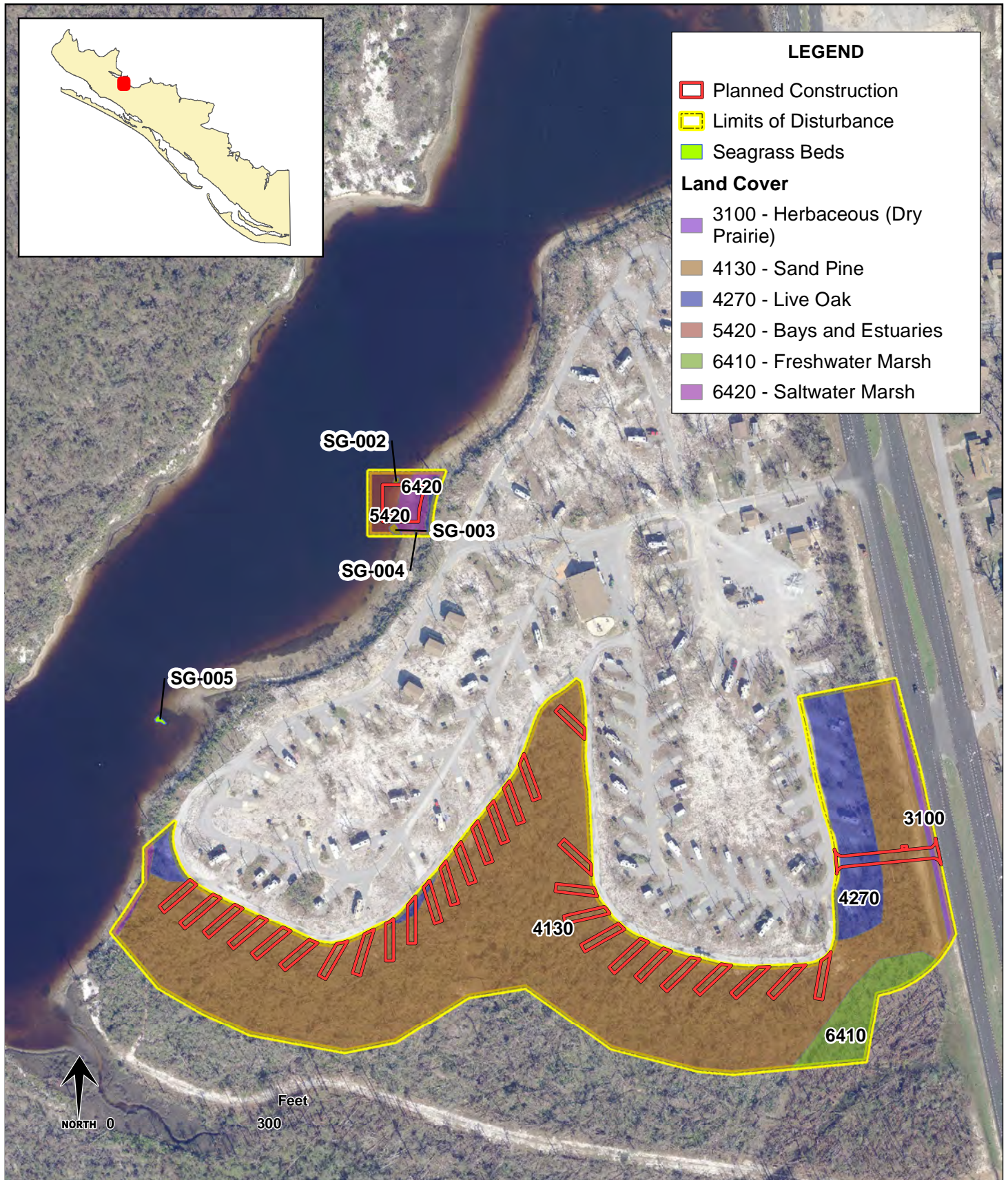


**Tyndall Air Force Base, Panama City, FL**  
**ENVIRONMENTAL ASSESSMENT  
 FOR 8 CONSTRUCTION SITES**

**LAND COVER:  
 IMPROVE EXPEDITIONARY/  
 ENCAMPMENT ROADS**

**FIGURE  
 3.0-5**



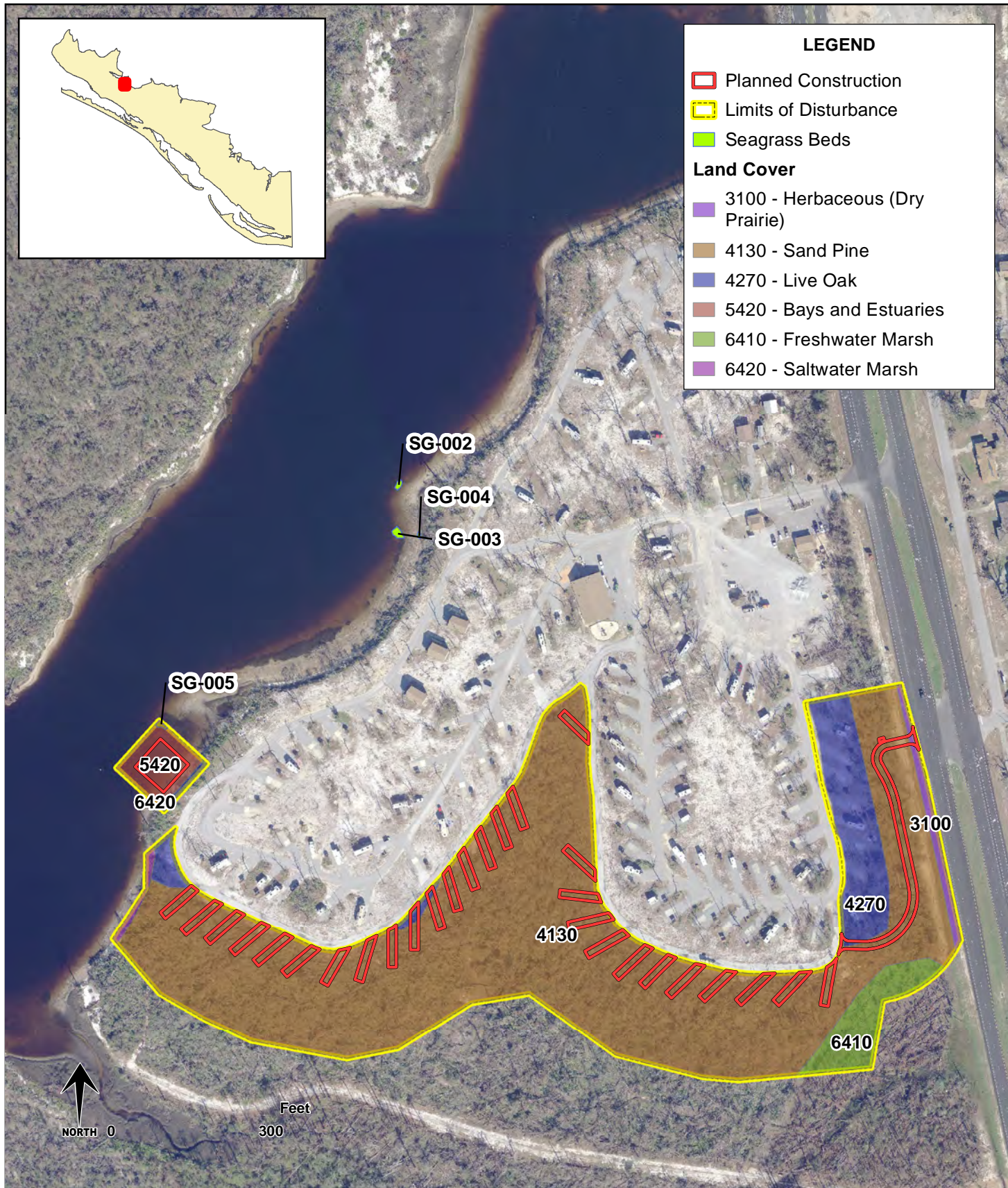


Tyndall Air Force Base, Panama City, FL  
ENVIRONMENTAL ASSESSMENT  
FOR 8 CONSTRUCTION SITES

LAND COVER:  
EXPAND FAM CAMP SITE  
(ALTERNATIVE 1)

FIGURE  
3.0-6



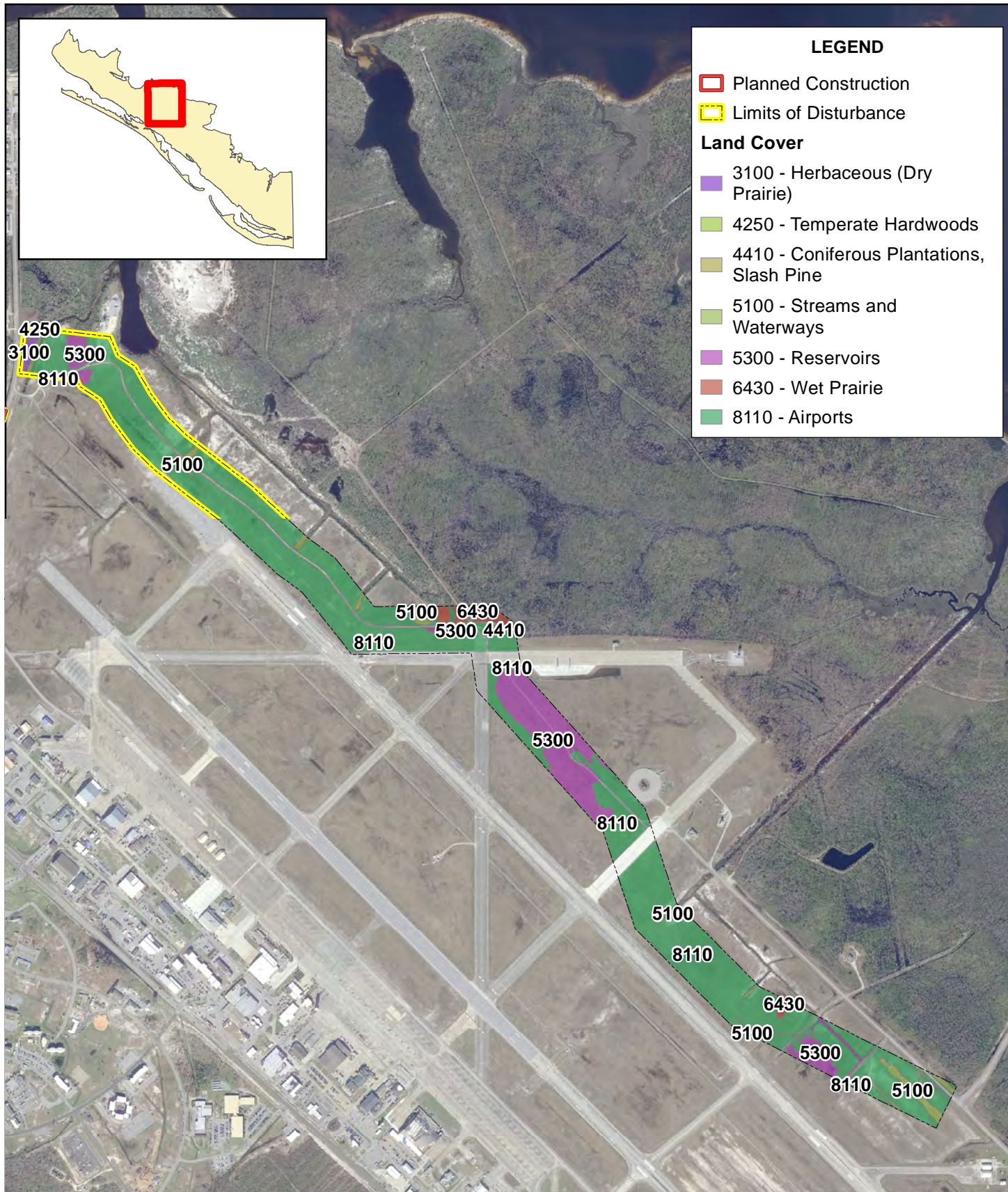


Tyndall Air Force Base, Panama City, FL  
ENVIRONMENTAL ASSESSMENT  
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LAND COVER:  
EXPAND FAM CAMP SITE  
(ALTERNATIVE 2)

FIGURE  
3.0-7





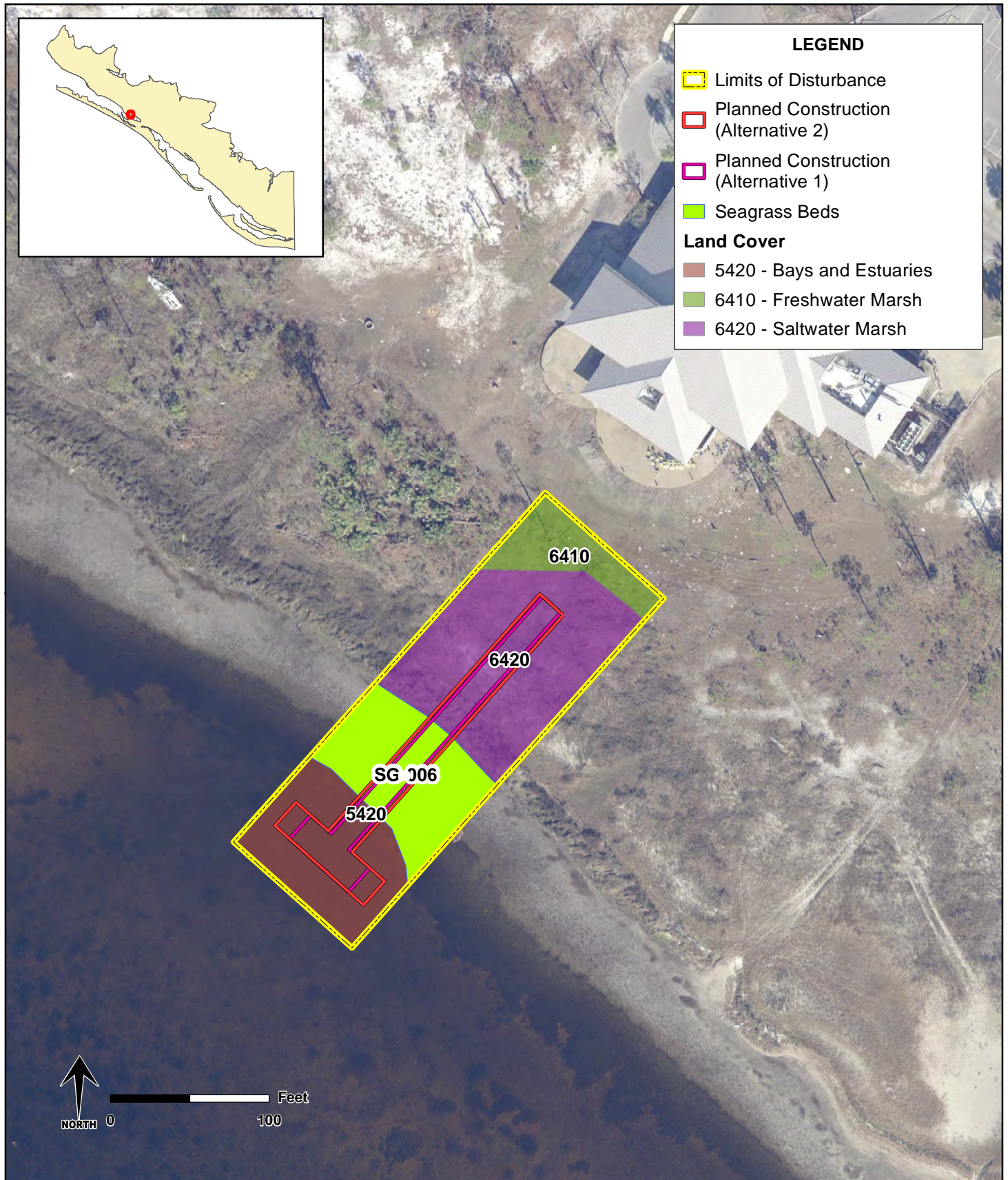
**Tyndall Air Force Base, Panama City, FL**

**ENVIRONMENTAL ASSESSMENT  
FOR 8 CONSTRUCTION SITES**

**LAND COVER:  
CONSTRUCT WATER MAIN ON  
NORTH SIDE OF FLIGHTLINE**

**FIGURE  
3.0-8**





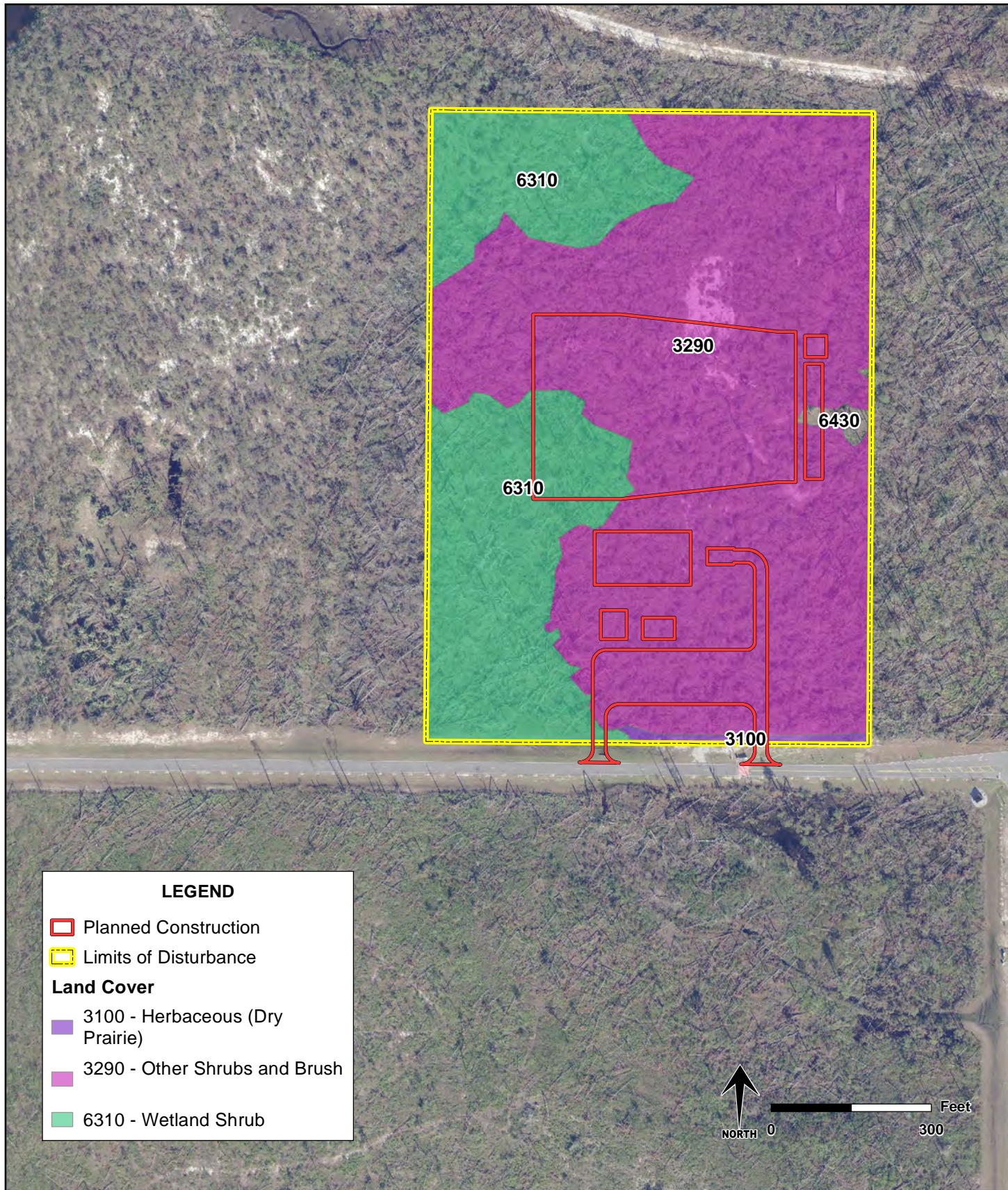
**Tyndall Air Force Base, Panama City, FL**

**ENVIRONMENTAL ASSESSMENT  
FOR 8 CONSTRUCTION SITES**

**LAND COVER:  
HERITAGE CLUB PIER  
(BOTH ALTERNATIVES)**

**FIGURE  
3.0-9**





#### LEGEND

- Planned Construction
- Limits of Disturbance

#### Land Cover

- 3100 - Herbaceous (Dry Prairie)
- 3290 - Other Shrubs and Brush
- 6310 - Wetland Shrub

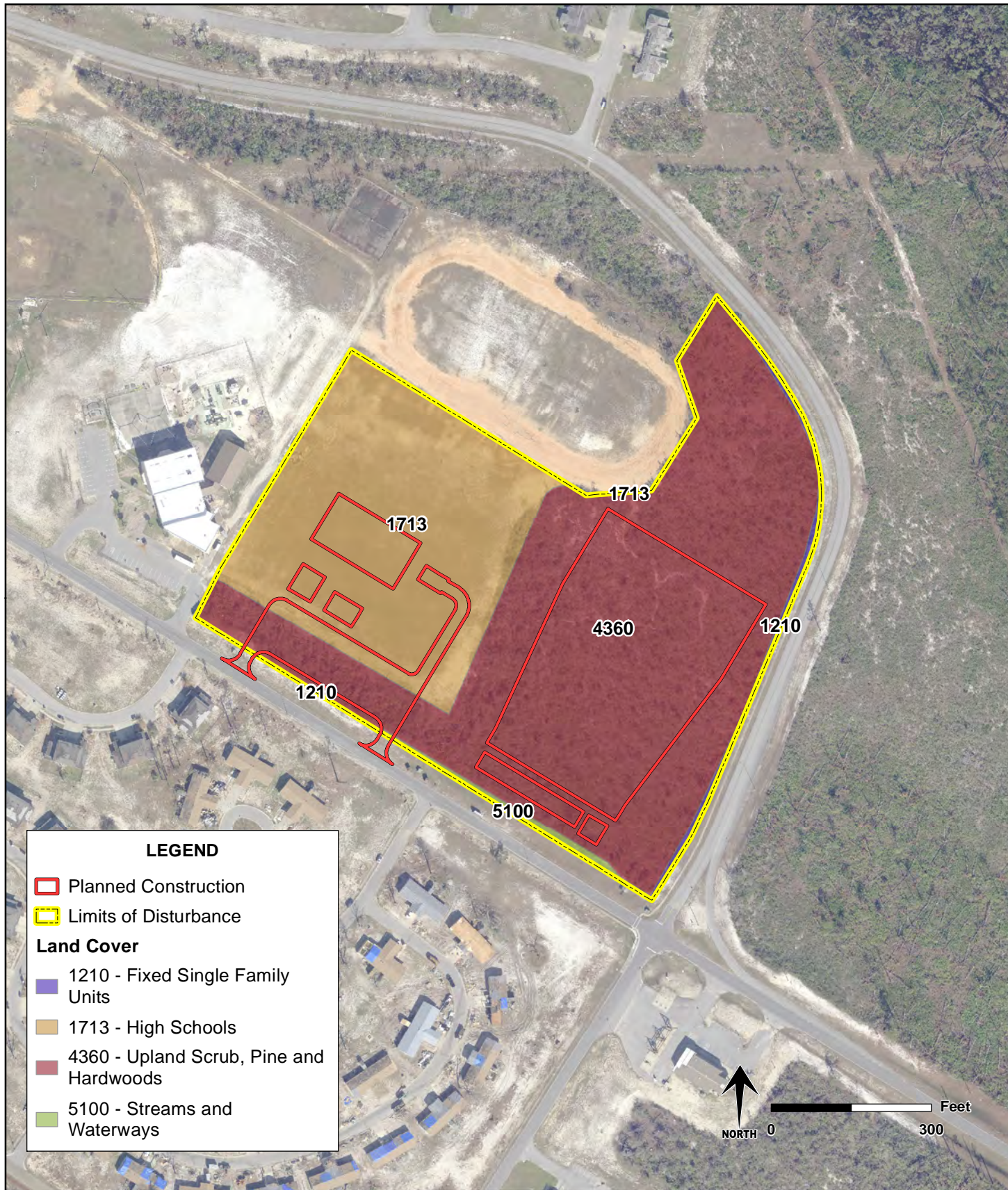


**Tyndall Air Force Base, Panama City, FL**  
**ENVIRONMENTAL ASSESSMENT  
FOR 8 CONSTRUCTION SITES**

**LAND COVER:  
RENOVATE UNITE SITE  
(ALTERNATIVE 1)**

**FIGURE  
3.0-10**





**Tyndall Air Force Base, Panama City, FL**  
**ENVIRONMENTAL ASSESSMENT  
FOR 8 CONSTRUCTION SITES**

**LAND COVER:  
RENOVATE UNITE SITE  
(ALTERNATIVE 2)**

**FIGURE  
3.0-11**



**Biological Assessment**  
**Environmental Assessment for 8 Construction Sites Tyndall Air Force Base, Florida**

**3.1 UPLAND LAND USE/VEGETATIVE COVER**

Herbaceous (Dry Prairie)

FLUCFCS: 3100

Herbaceous (dry prairies) were observed throughout the WEG Tower 1802, Expeditionary/Encampment Roads, FAMCAMP Site (both alternatives), north side of the Flightline, and the UNITE Site (Alternative 1) project LODs. Dominant vegetative species observed during the field reviews included fogfruit (*Phyla fruticosa*), Mexican clover (*Richardia brasiliensis*), common ragweed (*Ambrosia artemisiifolia*), bahiagrass (*Paspalum notatum*), rough buttonweed (*Hexasepalum teres*), bitterweed (*Helenium amarum*), and Baldwin's flatsedge (*Cyperus croceus*), as well as mowed and maintained areas. Invasive exotic species observed included torpedograss (*Panicum repens*).

Coastal Scrub

FLUCFCS: 3220

This vegetative cover was observed along the coast of WEG Small Boathouse Area (both alternatives) project LOD. Dominant vegetative species observed during the field review included dogfennel (*Eupatorium capilifolium*), saw palmetto (*Sabal palmetto*), fetterbush (*Lyonia lucida*), rattlebox (*Sesbania punicea*), saltbush (*Baccharis halimifolia*), sea oats (*Uniola paniculata*), prickly pear (*Opuntia humifusa*), common ragweed, and inkberry (*Ilex glabra*). Invasive exotic species included Chinese tallow (*Triadica sebifera*).

Other Scrubs and Brushes

FLUCFCS: 3290

Other scrubs and brushes were observed along the Expeditionary/Encampment Roads and within the UNITE Site Alternative 1 project LOD. Dominant vegetative species observed during the field review included ragweed, broomsedge bluestem (*Andropogon virginicus*), saw palmetto, winged sumac (*Rhus copallinum*), American beautyberry (*Callicarpa americana*), camphorweed (*Heterotheca subaxillaris*), white beggar-ticks (*Bidens alba*), saltbush, sand blackberry (*Rubus cuneifolius*), witchgrass (*Dichanthelium* sp.), and inkberry.

Sand Pine

FLUCFCS: 4130

This vegetative community was observed throughout the FAMCAMP Site (both alternatives) project LODs. Dominant vegetative species observed during the field review included sand pine (*Pinus clausa*), sand live oak (*Quercus geminata*), red cedar (*Juniperus virginiana*), southern magnolia (*Magnolia grandiflora*), yaupon (*Ilex vomitoria*), and shiny blueberry (*Vaccinium myrsinites*).

Pine – Mesic Oak

FLUCFCS: 4140

Pine and mesic oak habitat were observed within portions of WEG Tower 1802 project LOD and along Expeditionary/Encampment Roads. Dominant vegetative species observed during the field review included slash pine (*Pinus elliottii*), Chapman's oak (*Quercus chapmanii*), wax myrtle (*Morella cerifera*), and myrtle oak (*Quercus myrtifolia*).

**Biological Assessment**  
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Temperate Hardwoods

FLUCFCS: 4250

The Action Area includes temperate hardwoods located within the northern portion of the Flightline Water Main project LOD. Impact from Hurricane Michael was evident throughout the temperate hardwood habitat. Dominant vegetative species observed during the field review included laurel oak (*Quercus laurifolia*), water oak (*Quercus nigra*), sweetbay (*Magnolia virginiana*), and sweetgum (*Liquidambar styraciflua*).

Live Oak

FLUCFCS: 4270

Impact from Hurricane Michael was evident throughout live oak habitat located throughout portions of FAMCAMP Site (both alternatives). Dominant vegetative species observed during the field review included sand live oak, live oak, southern magnolia, and Chapman's oak.

Upland Scrub, Pine, and Hardwoods

FLUCFCS: 4360

Pine and hardwoods were historically and recently harvested, and impact from Hurricane Michael was evident within all land use cover types throughout Tyndall AFB. This vegetative cover type was observed along the Expeditionary/Encampment Roads and throughout UNITE Site Alternative 2 project LOD. Dominant vegetative species observed during the field review included American beautyberry, rattlebox, wax myrtle, Yaupon holly (*Ilex vomitoria*), St. John's wort (*Hypericum* spp.), fetterbush, broomsedge bluestem, and devilwood (*Osmanthus americanus*).

Coniferous Plantations, Slash Pine

FLUCFCS: 4410

Slash pine plantations throughout Tyndall AFB were historically and recently harvested, and impact from Hurricane Michael was evident. Within the Action Area, this vegetative cover was observed within the northern portion of the Flightline Water Main project LOD. Dominant vegetation observed included slash pine, loblolly pine (*Pinus taeda*), and wax myrtle.

### **3.2 WETLAND LAND USE/VEGETATIVE COVER**

Streams and Waterways

FLUCFCS: 5100

Adjacent roadside ditches were observed along the Expeditionary/Encampment Roads and along the southwest boundary of UNITE Site (Alternative 2) project LOD, adjacent to Sabre Drive. Maintained channels were observed throughout the northern portion of the Flightline Water Main project LOD. Roadside ditches were mowed and maintained. Maintained channels that receive stormwater runoff from developed portions of the Flightline were hydrologically connected to Fred Bayou. The channels were devoid of vegetation. Dominant vegetative species observed adjacent to the maintained channels included wax myrtle, saltbush, saw palmetto, American beautyberry, sand pine, common ragweed, Bahia grass, and horseweed (*Conzya canadensis*). Invasive species observed included torpedograss.



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Reservoirs

FLUCFCS: 5300

Within the northern portion of the Flightline Water Main project LOD, swales collect and transport stormwater runoff to adjacent maintained channels. These swales provide water quality improvements, groundwater recharge, and herbaceous plant habitat. Hydrologic indicators observed during the field reviews included saturation and algal mats. Sources of hydrology included groundwater and stormwater runoff from the adjacent infrastructure, and water levels were generally appropriate throughout this Action Area. Soils consisted of stripped matrix, dark surfaces, thin dark surfaces, and sandy mucky mineral soil types. Portions of these swales are mowed and maintained, others are dominated by southern umbrellasedge (*Fuirena scirpoidea*), hairy umbrellasedge (*Fuirena squarrosa*), starrush whitetop (*Rhynchospora colorata*), arrowhead (*Sagittaria* spp.), marshpennywort (*Hydrocotyle* spp.), sedges (*Cyperus* spp.) and rushes (*Rhynchospora* spp.). Invasive exotic species observed included torpedograss.

Bays and Estuaries

FLUCFCS: 5400

The Action Area within FAMCAMP project LODs is located within East Bay and the Action Area within Heritage Club project LOD is located within St. Andrew's Bay. Both consisted of unconsolidated sandy bottoms. Water levels were generally appropriate throughout this community type and portions of the streams adjacent to the shoreline included SAV.

Wetland Scrub

FLUCFCS: 6310

Wetland scrub is found along Expeditionary/Encampment Roads and within the UNITE Site (Alternative 1) project LOD, and impact from Hurricane Michael was evident. These wetlands provide water quality improvements, groundwater recharge, plant habitat, and wildlife habitat for breeding and nesting species. Hydrologic indicators observed during the field reviews included saturation and surface water pools within vehicle ruts. Sources of hydrology include groundwater and stormwater runoff from the surrounding uplands. Water levels were generally appropriate throughout this community type. Soils consisted of stripped matrix, dark surfaces, and thin dark surfaces. No vegetation was observed within the canopy stratum. Vegetative species observed within the herbaceous stratum included sparse loblolly pine, sweetbay, titi, black titi (*Cliftonia monophylla*), inkberry, and wax myrtle. Vegetation observed within the herbaceous stratum included needlepod rush (*Juncus scirpoides*), witchgrass, southern umbrellasedge, Carolina redroot (*Lachnanthes caroliniana*), broomsedge bluestem, Virginia chain fern (*Woodwardia virginica*), dogfennel, lovegrass (*Eragrostis elliottii*), fourpetal St. John's-wort (*Hypericum tetrapetalum*), sweetscent (*Pluchea odorata*), lanceleaf rosegiant (*Sabatia difformis*), Canada goldenrod (*Solidago canadensis*), fetterbush, beakrush (*Rhynchospora* spp.), nutgrass (*Cyperus rotundus*), bottlebrush (*Aristida spiciformis*), fourpetal St. John's-wort, blue maidencane (*Amphicarpum muehlenbergianum*), dwarf huckleberry (*Gaylussacia dumosa*), and tall nutgrass (*Scleria triglomerata*).

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Freshwater Marsh

FLUCFCS: 6410

This vegetative cover was found in the WEG Small Boathouse Area (Alternative 2), WEG Tower 1802, Expeditionary/Encampment Roads, FAMCAMP Site (both alternatives), and the UNITE Site (Alternative 1) project LODs. At the time of the field review, these marshes were highly disturbed due to heavy equipment removing vegetative debris as a result of Hurricane Michael, as well as harvesting the remaining canopy. Vegetative species observed during the field review included centipedegrass (*Eremochloa ophiuroides*), false rosemary (*Conradina canescens*), rustweed (*Polypremum procumbens*), slash pine saplings, saltbush, broomsedge bluestem, sandweed (*Hypericum fasciculatum*), and muscadine (*Vitis rotundifolia*). Invasive exotic species observed during the field review included torpedograss.

Saltwater Marsh

FLUCFCS: 6420

This community type was observed in the WEG Small Boathouse Area (Alternative 1), Expeditionary/Encampment Roads, FAMCAMP Site (both alternatives), and the Fishing/Observation Pier at Heritage Club (both alternatives) project LODs. Impact from Hurricane Michael was evident. These wetlands provide water quality improvements, groundwater recharge, plant habitat, and wildlife habitat for breeding and nesting species. Water levels were generally appropriate for this community type, and soils were tidally influenced and inundated at the time of the field review. Dominant vegetative species observed included needle rush (*Juncus roemerianus*) and marshhay cordgrass (*Spartina patens*). Other species observed included shoreline seapurslane (*Sesuvium portulacastrum*), saltwater falsewillow (*Baccharis angustifolia*), softstem bulrush (*Schoenoplectus tabernaemontani*), southern umbrellasedge, and saltbush.

Wet Prairies

FLUCFCS: 6430

Wet prairies were observed within the northern side of the Flightline Water Main, the Fishing/Observation Pier at Heritage Club (both alternatives), and the UNITE Site (Alternative 1) project LODs. Within the UNITE Site (Alternative 1) LOD, the wet prairie appears to have been created as a result of logging activities. These wetlands were historically forested wetlands, but have been impacted due to Hurricane Michael. They provide water quality improvements and groundwater recharge for the surrounding vegetation and wildlife. Sources of hydrology included stormwater runoff from surrounding wetlands, uplands, and development. Water levels were generally appropriate for this community type during the field reviews. Hydrologic indicators included drift deposits, a high water table, and standing water, and soils were dark and sandy. Vegetative species observed during the field reviews included Carolina redroot, southern umbrella sedge, warty panicum (*Panicum verrucosum*), saw palmetto, inkberry, southern beaksedge (*Rhynchospora microcarpa*), horseweed, Baldwin's spikerush (*Eleocharis baldwinii*), erect centella (*Centella erecta*), tenangle pipewort (*Panicum repens*), pink sundew (*Drosera capillaris*), and herb-of-grace (*Bacopa monnieri*). Invasive exotic species observed during the field review included torpedograss.



**Biological Assessment**  
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**3.3 VEGETATION AND WILDLIFE**

**3.3.1 VEGETATION**

Tyndall AFB is located in the Florida Coastal Lowlands-Gulf Section of the Coastal Plain Mixed Forest Province. Vegetative communities at Tyndall AFB include both natural and altered community types. Historically, natural areas at Tyndall AFB were composed primarily of coastal ecosystems and upland longleaf pine (*Pinus palustris*) ecosystems. Historical pine flatwoods have been largely impacted from timber harvesting and development. Timber at Tyndall AFB sustained catastrophic wind damage from Hurricane Michael in 2018. Following the hurricane, forest management actions included clearing of 9,000 acres of timber, removal of the debris, and restoration of the longleaf pine ecosystem. Management activities within the longleaf pine restoration areas include mechanical and chemical treatment, seeding and planting groundcover, and use of prescribed fire. Longleaf pine restoration is scheduled for completion in 2024. In addition to the longleaf pine ecosystem, numerous natural upland and wetland community types remain at Tyndall AFB. The majority of the natural and altered community types at Tyndall AFB have the potential to provide habitat for a variety of wildlife species, and these altered community types include residential and transportation.

**3.3.2 WILDLIFE**

The large amount of undeveloped land and wide range of natural community types at Tyndall AFB provides habitat for a variety of mammals, reptiles, birds, amphibians, fish, and plants. Common mammal species include the least shrew (*Cryptodius parva*), eastern red bat (*Lasiurus borealis*), eastern mole (*Scalopus aquaticus*), cotton mouse (*Peromyscus gossypinus*), eastern gray squirrel (*Sciurus carolinensis*), red fox (*Vulpes vulpes*), gray fox (*Urocyon cinereoargenteus*), raccoon (*Procyon lotor*), white-tailed deer (*Odocoileus virginianus*), and Virginia opossum (*Didelphis virginiana*).

**3.4 LISTED SPECIES**

**3.4.1 FEDERALLY LISTED SPECIES**

Federally listed species are species protected by the federal government pursuant to the ESA of 1973, as amended. An official species list of threatened and endangered species that may occur within the Action Area, or may be affected by the Proposed Actions, was generated using USFWS's IPaC project planning tool on the Environmental Conservation Online System. The official species list is included in **Appendix A**. In addition to the official species list, the 2020 *Integrated Natural Resources Management Plan for Tyndall AFB, Florida* was consulted to broaden the list of species that are known to, or have the potential to, occur within Tyndall AFB or within proximity to the survey areas (summarized in **Table 3.4-1**).

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**TABLE 3.4-1 FEDERALLY LISTED SPECIES ASSOCIATED WITH TYNDALL AFB**

Scientific Name	Common Name	Federal Status	Location
<b>Mammals</b>			
<i>Peromyscus polionatus allophrys</i>	Choctawhatchee beach mouse	E	Tyndall AFB
<i>Peromyscus polionatus peninsularis</i>	St. Andrew beach mouse	E	Tyndall AFB
<i>Trichechus manatus</i>	West Indian manatee	T	Gulf of Mexico
<b>Reptiles</b>			
<i>Alligator mississippiensis</i>	American alligator	T(S/A)	Tyndall AFB
<i>Caretta caretta</i>	Loggerhead sea turtle	T	Tyndall AFB, Gulf of Mexico
<i>Chelonia mydas</i>	Green sea turtle	T	Tyndall AFB, Gulf of Mexico
<i>Dermochelys coriacea</i>	Leatherback sea turtle	E	Tyndall AFB, Gulf of Mexico
<i>Drymarchon corais couperi</i>	Eastern indigo snake	T	Tyndall AFB
<i>Gopherus polyphemus</i>	Gopher tortoise	C	Tyndall AFB
<i>Lepidochelys kempii</i>	Kemp's ridley sea turtle	E	Tyndall AFB, Gulf of Mexico
<b>Birds</b>			
<i>Calidris canutus rufa</i>	Red knot	T	Tyndall AFB
<i>Charadrius melodus</i>	Piping plover	T	Tyndall AFB
<i>Mycteria americana</i>	Wood stork	T	Tyndall AFB
<b>Fish</b>			
<i>Acipenser oxyrinchus desotoi</i>	Gulf sturgeon	T	Gulf of Mexico
<i>Pristis pectinate</i>	Smalltooth sawfish	E	Gulf of Mexico
<b>Plants</b>			
<i>Euphorbia telephoides</i>	Telephus spurge	T	Tyndall AFB
<i>Harperocallis flava</i>	Harper's beauty	E	Tyndall AFB
<i>Macbridea alba</i>	White birds-in-a-nest	T	Tyndall AFB
<i>Pinguicula ionantha</i>	Godfrey's butterwort	T	Tyndall AFB
<i>Scutellaria floridana</i>	Florida skullcap	T	Tyndall AFB

Sources: Tyndall AFB, 2020. *Integrated Natural Resources Management Plan for Tyndall AFB, Florida*. U.S. Air Force, Tyndall Air Force Base, Florida; USFWS, 2021. Environmental Conservation Online System Information for Planning and Consultation (<https://ecos.fws.gov/ipac/>), accessed July 13, 2021.

Notes: E – Endangered; C – Candidate; T – Threatened; T(S/A) – Threatened due to Similarity of Appearance

### 3.4.2 STATE LISTED SPECIES

State-listed species are those plant and animal species managed by the State of Florida pursuant to Chapter 5B-40 F.A.C. and Chapter 68A-27 F.A.C., respectively. The 2020 *Integrated Natural Resources Management Plan for Tyndall AFB, Florida* was used to compile a list of state-listed species that are known to, or have the potential to, occur within Tyndall AFB or within proximity to the survey area (summarized in **Table 3.4-2**).

**TABLE 3.4-2 STATE LISTED SPECIES ASSOCIATED WITH TYNDALL AFB**

Scientific Name	Common Name	State Status	Location
<b>Mammals</b>			
<i>Ursus americanus floridanus</i>	Florida black bear	FBBCR	Tyndall AFB
<b>Reptiles</b>			
<i>Gopherus polyphemus</i>	Gopher tortoise	T	Tyndall AFB
<i>Pituophis melanoleucus mugitus</i>	Florida pine snake	T	Tyndall AFB
<b>Birds</b>			



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Scientific Name	Common Name	State Status	Location
<i>Charadrius nivosus</i>	Snowy plover	T	Tyndall AFB
<i>Egretta caerulea</i>	Little blue heron	T	Tyndall AFB
<i>Egretta rufescens</i>	Reddish egret	T	Tyndall AFB
<i>Egretta tricolor</i>	Tri-colored heron	T	Tyndall AFB
<i>Haematopus palliatus</i>	American oystercatcher	T	Tyndall AFB
<i>Haliaeetus leucocephalus</i>	Bald eagle	BGEPA	Tyndall AFB
<i>Rynchops niger</i>	Black skimmer	T	Tyndall AFB
<i>Sternula antillarum</i>	Least tern	T	Tyndall AFB
<b>Plants</b>			
<i>Asclepias viridula</i>	Southern milkweed	T	Tyndall AFB
<i>Chrysopsis godfreyi</i>	Godfrey's golden aster	E	Tyndall AFB
<i>Cleistes bifaria</i>	Small spreading pogonia	E	Tyndall AFB
<i>Drosera filiformis</i>	Dew thread sundew	E	Tyndall AFB
<i>Drosera intermedia</i>	Spoon-leaved sundew	T	Tyndall AFB
<i>Euphorbia telephoides</i>	Telephus spurge	E	Tyndall AFB
<i>Eurybia spinulosa</i>	Apalachicola aster	E	Tyndall AFB
<i>Gentiana pennelliana</i>	Wiregrass gentian	E	Tyndall AFB
<i>Harperocallis flava</i>	Harper's beauty	E	Tyndall AFB
<i>Justicia crassifolia</i>	Thick-leaved water willow	E	Tyndall AFB
<i>Lilium catesbaei</i>	Southern red lily	T	Tyndall AFB
<i>Lupinus westianus</i>	Gulf coast lupine	T	Tyndall AFB
<i>Macbridea alba</i>	White birds-in-a-nest	E	Tyndall AFB
<i>Oxypolis greenmanii</i>	Giant water dropwort	E	Tyndall AFB
<i>Physostegia godfreyi</i>	Apalachicola dragonhead	T	Tyndall AFB
<i>Pinguicula ionantha</i>	Godfrey's butterwort	E	Tyndall AFB
<i>Pinguicula lutea</i>	Yellow-flowered butterwort	T	Tyndall AFB
<i>Pinguicula planifolia</i>	Chapman's butterwort	T	Tyndall AFB
<i>Pogonia ophioglossoides</i>	Snakemouth orchid	T	Tyndall AFB
<i>Polygonella macrophylla</i>	Large-leaved jointweed	T	Tyndall AFB
<i>Ruellia noctiflora</i>	Nightflowering wild petunia	E	Tyndall AFB
<i>Sarracenia psittacina</i>	Parrot pitcher plant	T	Tyndall AFB
<i>Sarracenia rosea</i>	Purple pitcher plant	T	Tyndall AFB
<i>Scutellaria floridana</i>	Florida skullcap	E	Tyndall AFB
<i>Verbesina chapmanii</i>	Chapman's crownbeard	T	Tyndall AFB
<i>Xyris isoetifolia</i>	Quillwort yellow-eyed grass	E	Tyndall AFB
<i>Xyris longispala</i>	Karst pond yellow-eyed grass	E	Tyndall AFB
<i>Xyris scabrifolia</i>	Harper's yellow-eyed grass	T	Tyndall AFB

Sources: Florida Department of State, 2021. Chapter 5B-40.0055 F.A.C.: Regulated Plant Index (Effective Date 1/8/2020); Florida Department of State, 2021. Chapter 68A-27.003 F.A.C.: Florida's Endangered and Threatened Species List (Effective Date: 5/27/2021); Tyndall AFB, 2020. Integrated Natural Resources Management Plan for Tyndall AFB, Florida. U.S. Air Force, Tyndall Air Force Base, Florida.

Notes: BGEPA – Bald and Golden Eagle Protection Act; FBBCR – Florida Black Bear Conservation Rule; E – Endangered; T – Threatened

### 3.5 CRITICAL HABITAT

Critical Habitat designated by Congress in 50 Code of Federal Regulations (CFR) Part 424 for the Choctawhatchee beach mouse, St. Andrew beach mouse, piping plover, loggerhead sea turtle and Gulf sturgeon is located within the boundaries of Tyndall AFB. **Table 3.5-1** summarizes the distance of the designated critical habitat for each of these species to the nearest survey area. As shown, Choctawhatchee beach mouse critical habitat is located within 30 feet of the limits of disturbance for the EOD range gravel road construction project. Piping Plover critical habitat is within 950 feet from the limits of disturbance for the fishing/observation pier project at Heritage Club. Critical Habitat for the St. Andrew beach mouse is

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- 1 located within approximately 1,200 feet of the WEG boathouse dredging project limits. Remaining critical  
2 habitat areas are approximately half a mile or more from the nearest project area.

3 **TABLE 3.5-1 CRITICAL HABITAT DISTANCES TO NEAREST PROJECT AREA**

Nearest Project Area	Species Name	Habitat Distance (feet)
Construct New EOD Gravel Road	Choctawhatchee beach mouse	27
Dredge the WEG Small Boathouse Area	St. Andrew beach mouse	1,202
	Loggerhead sea turtle	9,333
Construct Fishing/Observation Pier (Heritage Club)	Piping Plover	924
	Gulf sturgeon	2,301

- 4 Source: USFWS Threatened & Endangered Species Active Critical Habitat Report, updated July 2021



## **4.0 SURVEY RESULTS**

### **4.1 FLORA**

#### **4.1.1 FEDERALLY LISTED PLANT SPECIES**

##### **Telephus Spurge**

The telephus spurge is federally listed as threatened by USFWS and state listed as endangered by FWC due to habitat loss associated with historical coastal and roadway development. This species is found in longleaf pine savannas, scrubby and mesic flatwoods, and coastal scrub on low sand ridges near the Gulf of Mexico. The Action Area was surveyed for the presence of the telephus spurge. Within Tyndall AFB, scrubby and mesic flatwoods and coastal scrub habitats were observed during the field reviews, and the survey was conducted outside of known dormancy cycles. Large clusters of plants were detected in 2017 in close proximity to the EOD range portion of the Action Area, and in 2018 near PQM Lake, and in 2019 at the location of a Proposed Commercial Gate area proposed to support Hurricane Michael reconstruction. This species was not observed during field reviews.

##### **Harper's Beauty**

Harper's beauty is federally listed as endangered by USFWS and state listed as endangered by FWC due to habitat loss associated with timber production, mechanical site preparation, and loss of habitat through natural succession following fire suppression. Although data on population trends and habitat conditions across this species' range is lacking, Harper's beauty is known to occur along roadsides (USFWS 2016). Although known suitable habitat for Harper's beauty was observed within the Action Area, this species was not observed during field reviews.

##### **White Birds-In-A-Nest**

White birds-in-a-nest are federally listed as threatened by USFWS and state listed as endangered by FWC due habitat loss associated with the conservation of flatwoods to pine plantations resulting from canopy closure and mechanical site preparation. Ideal habitat for this species includes wet to mesic pine flatwoods and associated roadsides. Although suitable habitat for this species was observed within the Action Area, white birds-in-a-nest were not observed during field reviews.

##### **Godfrey's Butterwort**

Godfrey's butterwort is federally listed as threatened by USFWS state listed as endangered by FWC due low populations resulting from successional changes to habitat resulting from elongated fire return intervals (suppression of prescribed burns during the flowering season and conducting prescribed burns during the dormant season) and the alteration of habitat from the timber industry and development. This species is endemic to the Florida Panhandle including Bay, Calhoun, Franklin, Gulf, Liberty, and Wakulla counties. Its habitat includes open acidic soils of seepage bogs on gentle slopes, deep quagmire bogs, ditches, and depressions in grassy pine flatwoods and grassy savannas, often occurring in shallow standing water. As of 2022, Godfrey's Butterwort is known to occur on 10 sites at Tyndall AFB. Although the Action Area contained suitable habitat for this species, none were observed during field reviews.

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**Florida Skullcap**

Florida skullcap is federally listed as threatened by USFWS and state listed as endangered by FWC due to habitat loss resulting from the timber industry, coastal real estate, roadway development, and fire suppression. This species is found in a variety of community types including disturbed wetland savannas, wet longleaf pine flatwoods, wet prairies, grassy seepage bogs at the edge of forested or shrubby wetlands, and within ecotones of mesic flatwoods, swamp sites, and grassy margins of wetland habitats. Although the Action Area contained suitable habitat for the Florida skullcap, this species was not observed during field reviews.

**4.1.2 STATE LISTED PLANT SPECIES**

**Southern Milkweed**

Southern milkweed is listed as threatened by FWC due habitat loss associated with the timber industry. This species' ideal habitat consists of wet flatwoods, prairies, seepage slopes, and pitcherplant bogs. It is known to occur on Tyndall AFB in wet pine flatwoods. Although the Action Area contained suitable habitat for this species within the wet prairies, the Action Area is not within the species' known range and the southern milkweed was not observed during field reviews.

**Godfrey's Golden Aster**

Godfrey's golden aster is listed as endangered by FWC due to habitat loss associated with coastal development, vehicle and foot traffic, and storm events. This species is found within black dunes and along sandy pathways throughout coastal scrub habitat. The Action Area did not contain suitable habitat for this species, and Godfrey's golden aster was not observed during field reviews.

**Small Spreading Pogonia**

The small spreading pogonia is listed as endangered by FWC due to habitat loss associated with land-use conversion, habitat fragmentation, forest management practices, and succession. Ideal habitat for this species consists of savannas, meadows, and openings in oak or pine woodlands with moist soils. The flower blooms in April and May in coastal plain regions. Although the Action Area contained suitable habitat within the meadows and pine woodlands, the small spreading pogonia was not observed during field reviews.

**Dew Thread Sundew**

The dew thread sundew is listed as endangered by FWC due to habitat loss associated with coastal and real estate development. Ideal habitat for this species includes freshwater ponds, streamside seepage bogs or fens, interdunal swales, coastal peat bogs, roadside depressions, and moist borrow pits. Although the Action Area contained suitable habitat for this species, the dew thread sundew was not observed during field reviews.

**Spoon-Leafed Sundew**

The spoon-leafed sundew is listed as threatened by FWC due to habitat loss associated with the timber industry and real estate development. This species is found in moist habitats including bogs, fens, wet sandy shorelines, and wet meadows. Although the Action Area contained suitable habitat within the wet sandy shorelines and wet meadows, the spoon-leafed sundew was not observed during field reviews.



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**Apalachicola Aster**

The Apalachicola aster is listed as endangered by FWC due to low populations resulting from its restricted habitat, and residential and commercial development within the area. This species is found along the Apalachicola river drainage basin within moist to dry, acid sandy peat soils and fire-maintained savannas within longleaf pinelands. The species is endemic to Florida occurring in Bay, Calhoun, Gulf and Franklin Counties, and Tyndall AFB is located within the species' known range. Suitable habitat on Tyndall AFB includes longleaf pine restoration areas in pine flatwoods with wiregrass, gallberry and saw palmetto, as well as wet prairie, particularly in the Drone Recovery Field area. Although the Action Area does contain suitable habitat, the Apalachicola aster was not observed during field reviews.

**Wiregrass Gentian**

The wiregrass gentian is listed as endangered by FWC due to habitat loss associated with fire suppression, degradation of the watershed, and the conversion of pine flatwoods to slash pine plantations. Ideal habitat for this species includes open wiregrass-dominated wet prairies, wet flatwoods, and slash pine plantations. Although the Action Area contained suitable habitat, the wiregrass gentian was not observed during field reviews.

**Thick-Leaved Water Willow**

The thick-leaved water willow is listed as endangered by FWC due to habitat loss associated with intense forestry management and pine plantation development. Ideal habitat for this species includes open, sunny wet prairies and flatwoods with abundant wiregrass, and along shallow ditches adjacent to roadways. Although the Action Area contained suitable habitat for this species, the thick-leaved water willow was not observed during field reviews.

**Southern Red Lily**

The southern red lily is listed as threatened by FWC due to habitat loss associated with the conversion of pine land to mechanically harvested pine plantations. Fire suppression also hinders population growth as this species is adapted to frequent fires. Ideal habitat for this species is native long-leaf pine and slash pine savannas. Although the Action Area contained suitable habitat for this species, the southern red lily was not observed during field reviews.

**Gulf Coast Lupine**

The gulf coast lupine is listed as threatened by FWC due to habitat loss associated with coastal development. This species is found within beach dunes, along coastal grasslands, coastal scrub, sandhills, and disturbed areas such as roadsides. Although suitable habitat for this species is located throughout the Action Area, the gulf coast lupine was not observed during field reviews.

**Giant Water Dropwort**

The giant water dropwort is listed as endangered by FWC due to habitat loss associated with residential and commercial development, and intense silvicultural methods that alter natural hydrology. This species can be found in open sunny areas with saturated peat and mucky soils such as those found in shrub bogs, margins of cypress or gum ponds, freshwater marshes, wet ditches, and depressions in flatwoods. Although suitable habitat for this species is located throughout the Action Area, the giant water dropwort was not observed during field reviews.

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**Apalachicola Dragonhead**

The Apalachicola dragonhead is listed as threatened by FWC due to habitat loss associated with drainage and construction preparation for development. This species is endemic to the lowlands of the Apalachicola River, and found within Bay, Calhoun, Franklin, Liberty, Walton and Gulf Counties within longleaf pine restoration areas in pine flatwoods, wet/mesic/scrubby flatwoods, wet prairies, and roadside ditches adjacent to pine flatwoods. Although the species is known to occur on Tyndall AFB and the Action Area contained suitable habitat within the wet flatwoods and longleaf pines, the Apalachicola dragonhead was not observed during field reviews.

**Yellow-Flowered Butterwort**

The yellow-flowered butterwort is listed as threatened by FWC due to habitat loss associated with coastal and residential development. This species is found within bogs, open pine woods, marshes, and moist savannas with sandy soils. The Action Area does contain suitable habitat, but yellow-flowered butterwort was not observed during field reviews.

**Chapman's Butterwort**

Chapman's butterwort is listed as threatened by FWC due to habitat loss associated with land-use conversion, habitat fragmentation, and forest management practices. This species is found within shallow waters, margins of peaty ponds, bogs, boggy flatwoods, ditches, and drainage canals. Although suitable habitat for this species is located throughout the Action Area, Chapman's butterwort was not observed during field reviews.

**Snakemouth Orchid**

The snakemouth orchid is listed as threatened by FWC due to habitat loss associated with fire suppression. This species is found in sphagnum bogs, meadows, pine savannas, flatwoods, and wet prairies. Although suitable habitat for this species is located throughout the Action Area, snakemouth orchid was not observed during field reviews.

**Large-Leaved Jointweed**

The large-leaved jointweed is listed as threatened by FWC due to habitat loss associated with development pressures. This species is found within scrubby habitats including open, unshaded, deep, white sands of sand pine-oak or rosemary scrub ridges and dunes near the coast. The Action Area did not contain suitable habitat for this species and the large-leaved jointweed was not observed during field reviews.

**Nightflowering Wild Petunia**

The nightflowering wild petunia is listed as endangered by FWC due to habitat loss associated with land-use conversion, habitat fragmentation, forest management practices, and succession. This species is found in open pine savannas with mesic to hydric soils with a shrub-free understory and a high diversity of herbs dominating the herbaceous stratum. This species is known to occur on Tyndall AFB. The Action Area contains suitable habitat for nightflowering wild petunia, but it was not observed during field surveys.

**Parrot Pitcher Plant**

The parrot pitcher plant is listed as threatened by FWC due to habitat loss associated with drainage, logging, and woody encroachment due to fire suppression. This species is found in open and sunny ecotones, bogs, wet prairies, savannas, and gaps along streams and swamps with moist, acidic soils. Although suitable



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habitat for this species is located throughout the Action Area, the parrot pitcher plant was not observed during field reviews.

**Purple Pitcher Plant**

The purple pitcher plant is listed as threatened by FWC due to habitat loss associated with fire suppression and horticultural collection. This species is found within the central Florida panhandle in open to shaded pine savannas, seep bogs, along streams, ditches, shrubby thickets, swamp edges, and sometimes within the interiors of swamps. Although suitable habitat for this species is located throughout the Action Area, the purple pitcher plant was not observed during field reviews.

**Chapman's Crownbeard**

Chapman's crownbeard is listed as threatened by FWC due to habitat loss associated with the conversion of habitat to row-planted slash pine, and shading from a shrubby understory and grasses. This species is found in bogs, seasonally wet pine savannas and flatwoods, open stands of slash or longleaf pine, grass-sedge formations where wiregrass is dominant, and grassy cypress depressions. Although the Action Area contains suitable habitat for this species, Chapman's crownbeard was not observed during field reviews.

**Quillwort Yellow-Eyed Grass**

The quillwort yellow-eyed grass is listed as endangered by FWC due to habitat loss associated with land-use conversion including turning pond edges into sandy beaches for recreation, habitat fragmentation, human disturbance, and forest management practices. This species is found in margins of karst ponds, sinkhole lakes, sandhill upland lakes, seepage slopes, bogs, and wet prairies. Although the Action Area contained suitable habitat within the wet prairies, the quillwort yellow-eyed grass was not observed during field reviews.

**Karst Pond Yellow-Eyed Grass**

The karst pond yellow-eyed grass is listed as endangered by FWC due to low populations associated with clearing and mowing of vegetation around pond edges, increased recreational use of ponds (particularly Off Road Vehicles [ORV] within or adjacent to pond shores), residential development, adjacent upland disturbances, and maintenance and use of adjacent roads. Ideal habitat for this species includes moist to wet sandy shores of limesink lakes, ponds, sandhill upland lakes, and gaps in shrubby vegetation and meadows. The Action Area contained marginal suitable habitat within the gaps of shrubby vegetation and meadows; however, the karst pond yellow-eyed grass was not observed during field reviews.

**Harper's Yellow-eyed Grass**

Harper's yellow-eyed grass is listed as threatened by FWC due to habitat loss associated with fire suppression and land conversion for development and agricultural practices, feral hog rooting, erosion, saturation, hydrological changes related to pine plantation management and land development. This species is found within sandhill seepage bogs and wet pine savannas. The Action Area did not contain suitable habitat and Harper's yellow-eyed grass was not observed during field reviews.

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**4.2 FAUNA**

**4.2.1 FEDERALLY LISTED MAMMAL SPECIES**

**Choctawhatchee Beach Mouse**

The Choctawhatchee beach mouse was federally listed as endangered as of June 6, 1985. As a result of Shell Island and Crooked Island West becoming connected in 1998 via East Pass, there has been increased opportunity for Choctawhatchee beach mice inhabiting Shell Island to expand their range to Crooked Island West, where presence was confirmed by trapping events in 2000 and 2019. Tyndall AFB and USFWS continue to survey for the presence of this species monthly using tracking tubes. Ideal habitat for this species includes primary, secondary, and occasional tertiary sand dunes with a moderate cover of grasses and forbs. High, stable areas supporting sand live oak may be important habitat for this species if the hurricane has damaged the dune habitat. The Action Area did not contain suitable habitat for this species, and none were observed during field reviews. According to the USFWS Online Critical Habitat Mapper, portions of Tyndall AFB coastline are designated critical habitat for the Choctawhatchee beach mouse. However, the nearest Action Area includes construction of a new EOD gravel road located approximately 27 feet from designated critical habitat.

**St. Andrew Beach Mouse**

The St. Andrew beach mouse was federally listed as endangered on December 18, 1998. The St. Andrew beach mouse is a subspecies of the old field mouse and is known to occur within the northern end of St. Joseph Peninsula and eastern Bay County. Populations have historically been known to occur on Crooked Island East. Tyndall AFB and USFWS continue to survey for the presence of this species monthly using tracking tubes. Ideal habitat for this species includes primary, secondary, and occasional tertiary sand dunes with a moderate cover of grasses and forbs. High, stable areas supporting sand live oak may be important habitat for this species if the hurricane has damaged the dune habitat. The Action Area did contain suitable habitat for this species, and the St. Andrew beach mouse was not observed during field reviews.

**West Indian Manatee**

The West Indian manatee is listed as threatened by USFWS due to low populations resulting from historical hunting and poaching, habitat fragmentation, collisions with watercrafts, harmful algal blooms, and a loss of warm water refugia. This species is found within freshwater, brackish water, coastal tidal rivers and streams, mangrove swamps, salt marshes, and freshwater springs. In northern Florida, manatees feed on smooth cordgrass (*Spartina alterniflora*) in salt marshes at high tide (Baugh et al. 1989, Zoosma 1991). The Action Area contained suitable habitat for this species were dredging of the WEG small boathouse and construction of the fishing and observation pier will occur.

**4.2.2 FEDERALLY LISTED REPTILE SPECIES**

**American Alligator**

The American alligator is listed as threatened by USFWS due to their similar appearance to other crocodilian species. Suitable habitat for this species consists of freshwater marshes, ponds, rivers, swamps, bayous, canals, and large spring runs; they can also be found in brackish water. The Action Area contained suitable habitat within areas where in-water construction activities will occur. However, the American alligator is a mobile species, and none were observed during field reviews.



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**Loggerhead Sea Turtle**

The loggerhead sea turtle is listed as threatened by USFWS due to habitat loss associated with coastal development, beach armoring, and the degradation of foraging habitat. This species' population has declined as a result of disorientation of hatchlings by beachfront lighting, nesting predation by native and non-native predators, marine pollution and debris, watercraft strikes, disease, climate change, and incidental take from channel dredging and commercial trawling, longline, and gill net fisheries. The loggerhead sea turtle has a wide distribution range, including hundreds of miles off the coast as well as inshore areas such as bays, lagoons, salt marshes, creeks, ship channels, and the mouth of large rivers. Coral reefs, rocky places, and shipwrecks are often feeding areas. The loggerhead sea turtle is the most common nesting sea turtle on Tyndall AFB and is known to nest on Shell Island, Crooked Island West, Crooked Island East, and Buck Beach. The Action Area contained suitable habitat for this species within areas where in-water construction activities will occur; however, none were observed during field reviews. According to the USFWS Online Critical Habitat Mapper, portions of Tyndall AFB coastline are designated critical habitat for the loggerhead sea turtle. However, the nearest Action Area where dredging activities will occur is within the WEG boathouse area located approximately 9,333 feet from designated critical habitat.

**Green Sea Turtle**

The green sea turtle is listed as threatened by USFWS due to low populations associated with commercial harvesting for eggs, food, merchandise; as well as incidental take from commercial shrimp trawling. This species is found near coastlines, islands, bays, and in areas with seagrass beds. Green sea turtle nesting has been recorded on Tyndall AFB since 1999 on Shell Island, Crooked Island West, and Crooked Island East. They are rarely observed within the open ocean. The Action Area contained suitable habitat for this species within areas where in-water construction activities will occur; however, this species was not observed during field reviews.

**Leatherback Sea Turtle**

The leatherback sea turtle is listed as endangered by USFWS due to habitat loss associated with coastal development, and a declining population as a result of disorientation of hatchlings by beachfront lighting, nesting predation by native and non-native predators, marine pollution and debris, and watercraft strikes. This species is found mostly in open oceans; however, adult females require sandy beaches for nesting. Ideal habitat includes beaches in proximity to deep water and generally rough seas (USFWS 2018). Two nesting events have been observed on Crooked Island East and Shell Island since 2000. The Action Area contained marginal suitable habitat for this species along the coast; however, this species was not observed during field reviews.

**Eastern Indigo Snake**

The eastern indigo snake is listed as threatened by USFWS due to habitat destruction, fragmentation, and degradation associated with urban development. This species utilizes a variety of habitats including mesic flatwoods, upland pine forests, swamps, wet prairies, xeric pinelands, scrub, and swamps. It may seek shelter in gopher tortoise burrows to escape hot or cold ambient temperatures within its range. The Action Area contained suitable habitat for this species; however, no gopher tortoise burrows were within the Action Area, and the eastern indigo snake was not observed during field reviews.

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**Kemp's Ridley Sea Turtle**

Kemp's Ridley sea turtle is listed as endangered by USFWS due to declining populations as a result of incidental catch from fishing gear, direct harvest of eggs, loss and degradation of habitat as a result of coastal development and sea level rise, predation by native and non-native predators, marine pollution and debris, watercraft strikes, and climate change. This species is found throughout the Gulf of Mexico and U.S. Atlantic seaboard, within nearshore coastal habitats with muddy or sandy bottoms where their preferred prey is found. This species is primarily found in Louisiana. Kemp's Ridley sea turtle is known to occasionally utilize the barrier islands at Tyndall AFB for nesting. The first confirmed nest on Tyndall AFB was detected in 2016 on Crooked Island West. Although the Action Area contained marginal suitable habitat for this species, none were observed during field reviews.

**4.2.3 FEDERALLY LISTED BIRD SPECIES**

**Red Knot**

The red knot is listed as threatened by USFWS due to declining populations as a result of historical commercial hunting, coastal development, sea level rise, shoreline stabilization, dredging, reduced food availability at stopover areas, disturbance by vehicles, people, dogs, aircrafts, boats, and climate change. The red knot is a migratory species whose ideal habitat in Florida includes sandy beaches, saltmarshes, lagoons, mudflats of estuaries and bays, and mangrove swamps that contain an abundance of horseshoe crabs (*Limulus polyphemus*). They are also found in peat banks, salt ponds, eelgrass beds, and coastal spits. The red knot is observed at Tyndall during migration and has been detected on Tyndall's shorelines during annual surveys. Although suitable habitat for this species is located throughout the Action Area, none were observed during the field reviews and field reviews occurred during the migratory season (May and September).

**Piping Plover**

The piping plover is listed as threatened by USFWS due to habitat loss and degradation associated with commercial, residential, and recreational development, dams or water control structures, habitat disturbance from humans, dogs, cats, and other animals, cars, aircraft, boats, and climate change. Ideal habitat for this species includes wide, flat, open, sandy beaches with very little grass or other vegetation. Nesting territories include small creeks and wetlands. The piping plover is observed at Tyndall during migration and has been detected on Tyndall's shorelines during annual surveys. The Action Area contained suitable habitat for this species; however, the piping plover was not observed during field reviews and field reviews occurred during the fall migratory season. According to the USFWS Online Critical Habitat Mapper, portions of Tyndall AFB coastline are designated critical habitat for the piping plover. However, the nearest Action Area includes construction of the fishing and observation pier located approximately 924 feet from designated critical habitat.

**Wood Stork**

The wood stork is listed as threatened by USFWS due to a sharp decline in breeding populations. This opportunistic wading bird utilizes various open hydric pine-cypress habitats, herbaceous marshes, and man-made wetlands and canals. A specialized method of feeding, commonly referred to as groping, limits its foraging ability to shallow waters with dense concentrations of small fish. Wood storks use freshwater and estuarine habitats for nesting, foraging, and roosting. They are typically colonial nesters and construct their nests in medium to tall trees located within wetlands or on islands. Suitable wood stork foraging habitat



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includes wetlands and surface waters with relatively calm water, uncluttered by dense thickets of aquatic vegetation, and either permanently or seasonally sustain a water depth between two and 15 inches.

The USFWS has defined a radius of 13 miles from a nesting wood stork colony as designated Core Foraging Area (CFA) for that colony. Although suitable wood stork foraging habitat is located within the salt marshes, canals, and drainage ditches that connect to East Bay, St. Andrews Sound, Pearl Bayou, and Fred Bayou, the Action Area is not located within designated CFA and the wood stork was not observed during field reviews.

#### **4.2.4 FEDERALLY LISTED FISH SPECIES**

##### **Gulf Sturgeon**

The Gulf sturgeon is listed as threatened by USFWS due to declining populations as a result of overfishing, incidental take, and contamination from pesticides and heavy metals. Other threats include habitat loss associated with the construction of water control structures and navigation maintenance activities within canals and rivers. Mature Gulf sturgeons migrate between freshwater marine and estuarine spawning areas and saltwater non-spawning areas throughout the year, while juveniles generally stay in the river mouth year round for the first two years. The Action Area does not contain suitable habitat for this species and the Gulf sturgeon was not observed during field reviews. According to the USFWS Online Critical Habitat Mapper, portions of Tyndall AFB coastline are designated critical habitat for the Gulf sturgeon. However, the nearest Action Area includes construction of the fishing and observation pier located approximately 2,301 feet from designated critical habitat.

##### **Smalltooth Sawfish**

The smalltooth sawfish is listed as endangered by the National Marine Fisheries Service (NMFS) due to historical overfishing and habitat destruction. Suitable habitat for juveniles includes coastal areas such as estuaries, creeks, canals, river mouths, and bays with un-vegetated mud or sand bottoms, especially along red mangrove shorelines. Other potential habitat includes water under docks, bridges, and piers. Adult smalltooth sawfish are found in open water habitats and coral reefs along the Florida panhandle. Although portions of the Action Area contained suitable habitat for this species, critical habitat designated for the smalltooth sawfish is located not within the Tyndall AFB shoreline and none were observed during field reviews.

#### **4.2.5 STATE LISTED REPTILE SPECIES**

##### **Gopher Tortoise**

The gopher tortoise is listed as threatened by FWC, and is a candidate for federal listing by USFWS, due to habitat loss, degradation, and a declining number of individuals. Gopher tortoises require well-drained, loose sandy soils for burrowing, and low-growing herbs and grasses for food. These conditions can be found in a variety of habitats including pine flatwoods, scrub, dry prairies, pastures, yards, and along fence lines. A gopher tortoise survey was conducted by AECOM environmental staff from February 6, 2021 through February 10, 2021 and September 1, 2021 through November 16, 2021, during which no individuals and no potentially occupied burrows were observed within the Action Area.

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**Florida Pine Snake**

The Florida pine snake is listed as threatened by FWC due to habitat loss and fragmentation as a result of commercial and residential development, silviculture, mining, and road construction. Other threats include predation of adults, hatchlings, or eggs from nine-banded armadillos, feral hogs, and domestic pets. Ideal habitat for this species includes areas with well-drained sandy soils with moderate to open canopy cover found in sandhills and former sandhills, including old fields and pastures, sand pine scrub, and scrubby flatwoods. They spend most of their time in burrows excavated by gopher tortoises and pocket gophers. The Action Area contains suitable habitat for this species, including gopher tortoise burrows. However, none were observed during field reviews nor during the gopher tortoise survey.

**4.2.6 STATE LISTED BIRD SPECIES**

**Snowy Plover**

The snowy plover is listed as threatened by FWC due to habitat loss and fragmentation associated with coastal development and increased recreational activities. Other threats include predation and harassment from pets. Ideal habitat for this species includes dry, sandy beaches, where they nest in shallow depressions, usually near some vegetation or debris, and forage in tidal flats along inlets and creeks. The Action Area contained suitable habitat along the coastline; however, this species was not observed during field reviews.

**Little Blue Heron and Tricolored Heron**

The little blue heron and tricolored heron are listed as threatened by FWC due to declining populations as a result of coastal development, disturbances within foraging and breeding habitats, degradation of feeding habitat, reduced prey availability, and predators. Other threats include exposure to pesticides, toxins, and infection by parasites. These species nest and forage within fresh and saltwater habitats such as freshwater marshes, coastal beaches, mangrove swamps, cypress swamps, hardwood swamps, bay swamps, and wet prairies. Although suitable habitat was located throughout the Action Area, none were observed during field reviews.

**Reddish Egret**

The reddish egret is listed as threatened by FWC due to declining populations as a result of historical plume hunting, coastal development including dredging, filling, and bulkheading, and recreational activities. This species is almost exclusively coastal and typically nests on coastal mangrove islands, or within Brazilian pepper (*Schinus terebinthifolia*) stands on manmade dredge spoil islands near suitable foraging habitat (shallow water). The reddish egret nests from Pinellas County on the Gulf coast and Brevard County on the Atlantic coast, south to the Florida Keys. The Florida panhandle contains non-breeding habitat. Although the Action Area contained marginal suitable habitat along the coast, none were observed during field reviews.

**American Oystercatcher**

The American oystercatcher is listed as threatened by FWC due to declining populations as a result of habitat loss associated with coastal development, recreational activities, and disturbance from pedestrians, dogs, and boats. This species requires large areas of beach, sandbars, mud flats, and shellfish beds for foraging, and uses sandy areas, beach wracks, and marsh grass for nesting. Although marginal suitable habitat for this species is located along the Tyndall AFB coastline, the American oystercatcher was not observed during field reviews.



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**Black Skimmer**

The black skimmer is listed as threatened by FWC due to habitat loss associated with coastal development, recreational activities, roaming dogs, vehicles allowed to drive on the beach, storms and high tides, and sea level rise. Black skimmers are found exclusively within coastal areas, usually around sandy beaches and islands; and forage in tidal waters of bays, estuaries, lagoons, creeks, rivers, ditches, and saltmarsh pool. Nesting black skimmers use open sandy areas, gravel or shell bars with sparse vegetation, or broad mats or wrack in saltmarshes. The Action Area contained suitable foraging and nesting habitat within the coastline and saltmarshes; however, this species was not observed during field reviews.

**Least Tern**

The least tern is listed as threatened by FWC due to declining populations as a result of coastal development, destructive storms, and predation by birds and mammals. Ideal habitat for this species includes beaches, lagoons, bays, and estuaries. Alternatively, this species utilizes gravel rooftops, dredge spoil islands, construction sites, causeways, and mined lands. Nesting areas have a substrate of well-drained sand or gravel with little vegetation. The Action Area contained suitable alternative nesting habitat; however, the least tern was not observed during field reviews.

**4.2.7 OTHER SPECIES OF CONCERN**

**Florida Black Bear**

The Florida black bear is not state or federally listed; however, this species is protected by the Florida Black Bear Conservation Rule (F.A.C. 68A-4.009). In December 2019, the state presented an updated comprehensive Florida Black Bear Management Plan, which included updates to the original data, an expansion of the Bear Management Unit Profiles, and a new section on population management techniques. The Florida black bear inhabits a variety of habitats including a mixture of flatwoods, swamps, scrub oak ridges, bayheads, and hammocks. They require secluded forests for forging and denning. According to the 2019 Florida Black Bear Management Plan, the Action Area lies within the common area of distribution. Although the Action Area has been impacted by Hurricane Michael and logging activities and suitable foraging and denning habitat are limited at this time, Florida black bears are frequently observed in Tyndall's forested wetlands, pine flatwoods, and sand pine scrub areas and have been observed in all areas of the installation except the barrier islands.

**Bald Eagle**

The bald eagle is no longer state or federally listed; however, it is protected under the Bald and Golden Eagle Protection Act in accordance with 16 U.S.C. 668, the Migratory Bird Treaty Act in accordance with 16 U.S.C. 703, and the state's bald eagle rule (68A-16.002 F.A.C.). This species lives near rivers, lakes, and marshes where they can hunt for fish. If an active nest is observed, in accordance with the USFWS bald eagle nest guidelines, a 330-foot radial buffer must be maintained during non-breeding season (October 1 – May 15) and a 660-foot radial buffer must be maintained during breeding season (May 16 – September 30). Bald eagle nests have been documented across the installation. The most recent surveys were completed in winter 2022 revealing 9 active bald eagle nests and 3 inactive nest sites. However, no new active nests were observed within a 660-foot radius of the Action Area during the field reviews.

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### 4.3 SUBMERGED AQUATIC VEGETATION

**Table 4.3-1** summarizes the results of the SAV survey for each of the six beds delineated for the Proposed actions.

**TABLE 4.3-1 SAV SURVEY RESULTS**

Project Area	Bed ID	Drift Algae Observed	Rhizophytic Macroalgae Observed	SAV Total Percent Cover	Total Cover <i>Halodule wrightii</i>	Total Cover <i>Thalassia testudinum</i>
Dredge the WEG Small Boathouse Area - Alternative 1 (Figure 3.0-2)	SG-001	None	None	80%	80%	20%
Expand Fam Camp Site - Alternative 1 (Figure 3.0-6)	SG-002	None	None	60%	60%	None Observed
Expand Fam Camp Site - Alternative 1 (Figure 3.0-6)	SG-003	None	None	60%	50%	10%
Expand Fam Camp Site - Alternative 1 (Figure 3.0-6)	SG-004	None	None	80%	80%	None Observed
Expand Fam Camp Site - Alternative 2 (Figure 3.0-7)	SG-005	None	None	80%	80%	None Observed
Construct Fishing/Observation Pier (Heritage Club) – Both Alternatives (Figure 3.0-9)	SG-006	None	None	95%	60%	40%

#### Shoalweed (*Halodule wrightii*)

Shoalweed is a perennial submerged aquatic herb found along the seacoast of warmer oceans, and is native to Florida. This species will colonize areas too shallow for other species to thrive and on banks that have been damaged, by forming dense meadows, creating important habitat for invertebrates and fish. Shoalweed resembles land grass, with stiff, green, strap-shaped blades that grow up to 13 inches long, and produces egg shaped fruit. During the field reviews, this species was observed within the WEG Small Boathouse LOD, the FAMCAMP project LODs at a depth ranging from 6-9 inches, and within the Heritage Club (both alternatives) LOD where the fishing and observation pier will be constructed, at a depth ranging from 1.5-4.5 inches.

#### Turtlegrass (*Thalassia testudinum*)

Turtlegrass is a perennial submerged aquatic herb found along the coastline of Bay County in large colonies, and is native to Florida. This species grows in meadows formed in calm shallow waters with muddy sand and coarse sandy clayey seabeds along rhizomes. Leaves are linear and grow up to 12 inches long with rounded tips. This species is eaten by turtles and herbivorous fish and provides habitat for juvenile fish. During the field reviews, this species was observed in small amounts within the WEG Small Boathouse LOD, the FAMCAMP Alternative 1 LOD and within the Heritage Club (both alternatives) LOD where the fishing and observation pier will be constructed, at a depth ranging from 2.5-4.5 inches.



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## 5.0 EFFECTS OF PROPOSED ACTION

Included in this section is a determination for each proposed or listed species and proposed or designated critical habitat that may be present in the Action Areas. Definitions of determinations are listed below.

- No effect: There will be no impacts, positive or negative, to listed or proposed resources. Generally, no listed resources will be exposed to the action and its environmental consequences.
- May affect, but not likely to adversely affect: All effects are beneficial, insignificant, or discountable. Beneficial effects have contemporaneous positive effects without any adverse effects to the species or habitat. Insignificant effects relate to the size of the impact and include those effects that are undetectable, not measurable, or cannot be evaluated. Discountable effects are those extremely unlikely to occur.
- May affect, and is likely to adversely affect: Listed resources are likely to be exposed to the action or its environmental consequences and will respond in a negative manner to the exposure.

**Table 5.0-1** summarizes the effects determination discussed in the forthcoming sections. Consultation with the USFWS will be sought to obtain written concurrence with all effect determinations, other than determinations of no effect. Federal designations were given to state listed species for consistency.

**TABLE 5.0-1 EFFECTS DETERMINATION SUMMARY**

Scientific Name	Common Name	Federal Status	State Status	Determination
<b>Mammals</b>				
<i>Peromyscus polionatus altophrys</i>	Choctawhatchee beach mouse	E	-	"No effect"
<i>Peromyscus polionatus peninsularis</i>	St. Andrew beach mouse	E	-	"No effect"
<i>Trichechus manatus</i>	West Indian manatee	T	-	"May affect, not likely to adversely affect"
<i>Ursus americanus floridanus</i>	Florida black bear	-	FBBCR	"May affect, not likely to adversely affect"
<b>Reptiles</b>				
<i>Alligator mississippiensis</i>	American alligator	T(S/A)	-	"May affect, not likely to adversely affect"
<i>Caretta caretta</i>	Loggerhead sea turtle	T	-	"May affect, not likely to adversely affect"
<i>Chelonia mydas</i>	Green sea turtle	E	-	"May affect, not likely to adversely affect"
<i>Dermochelys coriacea</i>	Leatherback sea turtle	E	-	"May affect, not likely to adversely affect"
<i>Drymarchon corais couperi</i>	Eastern indigo snake	T	-	"May affect, not likely to adversely affect"
<i>Gopherus polyphemus</i>	Gopher tortoise	C	T	"May affect, not likely to adversely affect"
<i>Lepidochelys kempii</i>	Kemp's ridley sea turtle	E	-	"May affect, not likely to adversely affect"
<i>Pituophis melanoleucus mugitus</i>	Florida pine snake	-	T	"No effect"

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Scientific Name	Common Name	Federal Status	State Status	Determination
<b>Birds</b>				
<i>Calidris canutus rufa</i>	Red knot	T	-	"May affect, not likely to adversely affect"
<i>Charadrius melodus</i>	Piping plover	T	-	"May affect, not likely to adversely affect"
<i>Charadrius nivosus</i>	Snowy plover	-	T	"May affect, not likely to adversely affect"
<i>Egretta caerulea</i>	Little blue heron	-	T	"May affect, not likely to adversely affect"
<i>Egretta rufescens</i>	Reddish egret	-	T	"No effect"
<i>Egretta tricolor</i>	Tri-colored heron	-	T	"May affect, not likely to adversely affect"
<i>Haematopus palliatus</i>	American oystercatcher	-	T	"May affect, not likely to adversely affect"
<i>Haliaeetus leucocephalus</i>	Bald eagle	-	BGEPA	"No effect"
<i>Mycteria americana</i>	Wood stork	T	-	"May affect, not likely to adversely affect"
<i>Rynchops niger</i>	Black skimmer	-	T	"May affect, not likely to adversely affect"
<i>Sternula antillarum</i>	Least tern	-	T	"May affect, not likely to adversely affect"
<b>Fish</b>				
<i>Acipenser oxyrinchus desotoi</i>	Gulf sturgeon	T	-	"May affect, not likely to adversely affect"
<i>Pristis pectinate</i>	Smalltooth sawfish	E	-	"No effect"
<b>Plants</b>				
<i>Asclepias viridula</i>	Southern milkweed	-	T	"No effect"
<i>Chrysopsis godfreyi</i>	Godfrey's golden aster	-	E	"No effect"
<i>Cleistes bifaria</i>	Small spreading pogonia	-	E	"May affect, not likely to adversely affect"
<i>Drosera filiformis</i>	Dew thread sundew	-	E	"May affect, not likely to adversely affect"
<i>Drosera intermedia</i>	Spoon-leafed sundew	-	T	"May affect, not likely to adversely affect"
<i>Euphorbia telephioides</i>	Telephus spurge	T	E	"May affect, not likely to adversely affect"
<i>Eurybia spinulosa</i>	Apalachicola aster	-	E	"May affect, not likely to adversely affect"
<i>Gentiana pennelliana</i>	Wiregrass gentian	-	E	"May affect, not likely to adversely affect"
<i>Harperocallis flava</i>	Harper's beauty	E	E	"May affect, not likely to adversely affect"
<i>Justicia crassifolia</i>	Thick-leaved water willow	-	E	"May affect, not likely to adversely affect"
<i>Lilium catesbaei</i>	Southern red lily	-	T	"No effect"
<i>Lupinus westianus</i>	Gulf coast lupine	-	T	"May affect, not likely to adversely affect"
<i>Macbridea alba</i>	White birds-in-a-nest	T	E	"May affect, not likely to adversely affect"
<i>Oxypolis greenmanii</i>	Giant water dropwort	-	E	"May affect, not likely to adversely affect"



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Scientific Name	Common Name	Federal Status	State Status	Determination
<i>Physostegia godfreyi</i>	Apalachicola dragonhead	-	T	"May affect, not likely to adversely affect"
<i>Pinguicula ionantha</i>	Godfrey's butterwort	T	E	"May affect, not likely to adversely affect"
<i>Pinguicula lutea</i>	Yellow-flowered butterwort	-	T	"May affect, not likely to adversely affect"
<i>Pinguicula planifolia</i>	Chapman's butterwort	-	T	"May affect, not likely to adversely affect"
<i>Pogonia ophioglossoides</i>	Snakemouth orchid	-	T	"May affect, not likely to adversely affect"
<i>Polygonella macrophylla</i>	Large-leaved jointweed	-	T	"No effect"
<i>Ruellia noctiflora</i>	Nightflowering wild petunia	-	E	"May affect, not likely to adversely affect"
<i>Sarracenia psittacina</i>	Parrot pitcher plant	-	T	"May affect, not likely to adversely affect"
<i>Sarracenia rosea</i>	Purple pitcher plant	-	T	"May affect, not likely to adversely affect"
<i>Scutellaria floridana</i>	Florida skullcap	T	E	"May affect, not likely to adversely affect"
<i>Verbesina chapmanii</i>	Chapman's crownbeard	-	T	"May affect, not likely to adversely affect"
<i>Xyris isoetifolia</i>	Quillwort yellow-eyed grass	-	E	"May affect, not likely to adversely affect"
<i>Xyris longisepala</i>	Karst pond yellow-eyed grass	-	E	"May affect, not likely to adversely affect"
<i>Xyris scabrifolia</i>	Harper's yellow-eyed grass	-	T	"No effect"

Sources: Tyndall AFB, 2020. *Integrated Natural Resources Management Plan for Tyndall AFB, Florida*. U.S. Air Force, Tyndall Air Force Base, Florida; USFWS, 2021. Environmental Conservation Online System Information for Planning and Consultation (<https://ecos.fws.gov/ipac/>), accessed July 13, 2021.  
Notes: BGEPA – Bald and Golden Eagle Protection Act; FBBCR – Florida Black Bear Conservation Rule; E – Endangered; C – Candidate; T – Threatened; T(S/A) – Threatened due to Similarity of Appearance

## 5.1 EFFECTS ON LISTED SPECIES

The proposed project would result in permanent modifications to habitat potentially utilized by listed and protected species. The potential effects of impacting habitat utilized by state and federally listed species within the Action Area are discussed below.

### 5.1.1 FLORA

#### 5.1.1.1 Federally Listed Plant Species

##### Telephus Spurge

The telephus spurge is found in longleaf leaf pine savannas, scrubby and mesic flatwoods, and coastal scrub on low sand ridges near the Gulf of Mexico. The Action Area was surveyed for the presence of the telephus spurge. Within Tyndall AFB, scrubby and mesic flatwoods and coastal scrub habitats were observed during the field reviews, and the survey was conducted outside of known dormancy cycles. Large clusters of plants were detected in 2017 in close proximity to the EOD range portion of the Action Area, and in 2018 near PQM Lake, and in 2019 at the location of a Proposed Commercial Gate area proposed to support Hurricane Michael reconstruction. This species was not observed during field reviews. Therefore, it is anticipated that

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construction activities within the Action Area would result in an ESA effect determination of “may affect, not likely to adversely affect” the telephus spurge.

**Harper’s Beauty**

Although data regarding Harper’s beauty population trends and habitat conditions across this species’ range is lacking, Harper’s beauty is known to occur along roadsides (USFWS 2016). Known suitable habitat for this species was observed within the Action Area; however, none were observed during field reviews. Therefore, it is anticipated that construction activities within the Action Area would result in an ESA effect determination of “may affect, but not likely to adversely affect” Harper’s beauty.

**White Birds-In-A-Nest**

White birds-in-a-nest is found in wet to mesic pine flatwoods and associated roadsides. Although suitable habitat for this species was observed within the Action Area, white birds-in-a-nest were not observed during field reviews. Therefore, it is anticipated that construction activities within the Action Area would result in an ESA effect determination of “may affect, but not likely to adversely affect” white birds-in-a-nest.

**Godfrey’s Butterwort**

Godfrey’s butterwort is endemic to the Florida Panhandle including Bay, Calhoun, Franklin, Gulf, Liberty, and Wakulla counties. It is found on open acidic soils of seepage bogs on gentle slopes, deep quagmire bogs, ditches, and depressions in grassy pine flatwoods and grassy savannas, often occurring in shallow standing water. As of 2022, Godfrey’s Butterwort is known to occur on 10 sites at Tyndall AFB. Although the Action Area contained suitable habitat for this species, none were observed during field reviews. Therefore, it is anticipated that construction activities within the Action Area would result in an ESA effect determination of “may affect, but not likely to adversely affect” Godfrey’s butterwort.

**Florida Skullcap**

Florida skullcap is found in a variety of community types including disturbed wetland savannas, wet longleaf pine flatwoods, wet prairies, grassy seepage bogs at the edge of forested or shrubby wetlands, and within ecotones of mesic flatwoods, swamp sites, and grassy margins of wetland habitats. Although the Action Area contained suitable habitat for the Florida skullcap, this species was not observed during field reviews. Therefore, it is anticipated that construction activities within the Action Area would result in an ESA effect determination of “may affect, but not likely to adversely affect” the Florida skullcap.

**5.1.1.2 State Listed Plant Species**

**Southern Milkweed**

Southern milkweed’s ideal habitat consists of wet flatwoods, prairies, seepage slopes, and pitcherplant bogs. It is known to occur on Tyndall AFB in wet pine flatwoods. Although the Action Area contained suitable habitat within the wet prairies, the Action Area is not located within the species’ known range and the southern milkweed was not observed during field reviews. Therefore, it is anticipated that construction activities within the Action Area would have “no effect” on the southern milkweed.

**Godfrey’s Golden Aster**

Godfrey’s golden aster is found within black dunes and along sandy pathways throughout coastal scrub habitat. The Action Area did not contain suitable habitat for this species, and Godfrey’s golden aster was



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not observed during field reviews. Therefore, it is anticipated that construction activities within the Action Area would have “no effect” on Godfrey’s golden aster.

**Small Spreading Pogonia**

The small spreading pogonia is found within savanna’s, meadows, and openings in oak or pine woodlands with moist soils. The flower blooms in April and May in coastal plain regions. Although the Action Area contained suitable habitat within the meadows and pine woodlands, the small spreading pogonia was not observed during field reviews. Therefore, it is anticipated that construction activities within the Action Area would result in an ESA effect determination of “may affect, but not likely adversely affect” the small spreading pogonia.

**Dew Thread Sundew**

The dew thread sundew is found within freshwater ponds, streamside seepage bogs or fens, interdunal swales, coastal peat bogs, roadside depressions, and moist borrow pits. Although the Action Area contained suitable habitat for this species, the dew thread sundew was not observed during field reviews. Therefore, the proposed project would result in an ESA determination of “may affect, but not likely to adversely affect” on this species as a result of construction activities within the Action Area.

**Spoon-Leafed Sundew**

The spoon-leafed sundew is found in moist habitats including bogs, fens, wet sandy shorelines, and wet meadows. Although the Action Area contained suitable habitat within the wet sandy shorelines and wet meadows, the spoon-leafed sundew was not observed during field reviews. Therefore, the proposed project would result in an ESA determination of “may affect, but not likely to adversely affect” on this species as a result of construction activities within the Action Area.

**Apalachicola Aster**

The Apalachicola aster is found along the Apalachicola river drainage basin within moist to dry, acid sandy peat soils and fire-maintained savannas within longleaf pinelands. Suitable habitat on Tyndall AFB includes longleaf pine restoration areas in pine flatwoods with wiregrass, gallberry and saw palmetto, as well as wet prairie, particularly in the Drone Recovery Field area. Although the Action Area does contain these habitat types, the Apalachicola aster was not observed during field reviews. Therefore, it is anticipated that construction activities within the Action Area “may affect but are not likely to adversely affect” on the Apalachicola aster.

**Wiregrass Gentian**

The wiregrass gentian is found within open wiregrass-dominated wet prairies, wet flatwoods, and slash pine plantations. Although the Action Area contained suitable habitat, the wiregrass gentian was not observed during field reviews. Therefore, it is anticipated that construction activities within the Action Area would result in an ESA effect determination of “may affect, but not likely to adversely affect” the wiregrass gentian.

**Thick-Leaved Water Willow**

The thick-leaved water willow is found within open, sunny wet prairies and flatwoods with abundant wiregrass, and along shallow ditches adjacent to roadways. Although the Action Area contained suitable habitat for this species, the thick-leaved water willow was not observed during field reviews. Therefore, it

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is anticipated that construction activities within the Action Area would result in an ESA effect determination of “may affect, but not likely to adversely affect” the thick-leaved water willow.

**Southern Red Lily**

The southern red lily is found in native long-leaf pine and slash pine savannas. The Action Area did not contain suitable habitat for this species and the southern red lily was not observed during field reviews. Therefore, it is anticipated that construction activities within the Action Area would have “no effect” on the southern red lily.

**Gulf Coast Lupine**

The gulf coast lupine is found within beach dunes, along coastal grasslands, coastal scrub, sandhills, and disturbed areas such as roadsides. Although suitable habitat for this species is located throughout the Action Area, the gulf coast lupine was not observed during field reviews. Therefore, it is anticipated that construction activities within the Action Area would result in an ESA effect determination of “may affect, but not likely to adversely affect” the gulf coast lupine.

**Giant Water Dropwort**

The giant water dropwort is found in open sunny areas with saturated peat and mucky soils such as those found in shrub bogs, margins of cypress or gum ponds, freshwater marshes, wet ditches, and depressions in flatwoods. Although suitable habitat for this species is located throughout the Action Area, the giant water dropwort was not observed during field reviews. Therefore, it is anticipated that construction activities within the Action Area would result in an ESA effect determination of “may affect, but not likely to adversely affect” the giant water dropwort.

**Apalachicola Dragonhead**

The Apalachicola dragonhead is endemic to the lowlands of the Apalachicola River, and found within Bay, Calhoun, Franklin, Liberty, Walton and Gulf Counties within longleaf pine restoration areas in pine flatwoods, wet/mesic/scrubby flatwoods, wet prairies, and roadside ditches adjacent to pine flatwoods. Although the species is known to occur on Tyndall AFB and the Action Area contained suitable habitat within the wet flatwoods and longleaf pines, the Apalachicola dragonhead was not observed during field reviews. Therefore, it is anticipated that construction activities within the Action Area” may affect but are not likely to adversely affect” the Apalachicola dragonhead.

**Yellow-Flowered Butterwort**

The yellow-flowered butterwort is found within bogs, open pine woods, marshes, and moist savannas with sandy soils. The Action Area does contain suitable habitat, but yellow-flowered butterwort was not observed during field reviews. Therefore, it is anticipated that construction activities within the Action Area” may affect but are not likely to adversely affect” the yellow-flowered butterwort.

**Chapman’s Butterwort**

Chapman’s butterwort is found within shallow waters, margins of peaty ponds, bogs, boggy flatwoods, ditches, and drainage canals. Although suitable habitat for this species is located throughout the Action Area, Chapman’s butterwort was not observed during field reviews. Therefore, it is anticipated that construction activities within the Action Area would result in an ESA effect determination of “may affect, but not likely to adversely affect” as the Chapman’s butterwort



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**Snakemouth Orchid**

The snakemouth orchid is found in sphagnum bogs, meadows, pine savannas, flatwoods, and wet prairies. Although suitable habitat for this species is located throughout the Action Area, snakemouth orchid was not observed during field reviews. Therefore, it is anticipated that construction activities within the Action Area would result in an ESA effect determination of “may affect, but not likely to adversely affect” the snakemouth orchid.

**Large-Leaved Jointweed**

The large-leaved jointweed is found within scrubby habitats including open, unshaded, deep, white sands of sand pine-oak or rosemary scrub ridges and dunes near the coast. The Action Area did not contain suitable habitat for this species and the large-leaved jointweed was not observed during field reviews. Therefore, it is anticipated that construction activities within the Action Area would have “no effect” on the large-leaved jointweed.

**Nightflowering Wild Petunia**

The nightflowering wild petunia is found in open pine savannas with mesic to hydric soils with a shrub-free understory and a high diversity of herbs dominating the herbaceous stratum. This species is known to occur on Tyndall AFB. The Action Area contains suitable habitat for nightflowering wild petunia, but it was not observed during field surveys. Therefore, it is anticipated that construction activities within the Action Area “may affect but are not likely to adversely affect” the nightflowering wild petunia.

**Parrot Pitcher Plant**

The parrot pitcher plant is found in open and sunny ecotones, bogs, wet prairies, savannas, and gaps along streams and swamps with moist, acidic soils. Although suitable habitat for this species is located throughout the Action Area, the parrot pitcher plant was not observed during field reviews. Therefore, the proposed project “may affect, but not likely to adversely affect” this species as a result of construction activities within the Action Area.

**Purple Pitcher Plant**

The purple pitcher plant is found within the central Florida panhandle in open to shaded pine savannas, seep bogs, along streams, ditches, shrubby thickets, swamp edges, and sometimes within the interiors of swamps. Although suitable habitat for this species is located throughout the Action Area, the purple pitcher plant was not observed during field reviews. Therefore, it is anticipated that construction activities within the Action Area would result in an ESA effect determination of “may affect, but not likely to adversely affect” the purple pitcher plant.

**Chapman’s Crownbeard**

Chapman’s crownbeard is found in bogs, seasonally wet pine savannas and flatwoods, open stands of slash or longleaf pine, grass-sedge formations where wiregrass is dominant, and grassy cypress depressions. Although the Action Area contained suitable habitat for this species, Chapman’s crownbeard was not observed during field reviews. Therefore, it is anticipated that construction activities within the Action Area would result in an ESA effect determination of “may affect, but not likely to adversely affect” the Chapman’s crownbeard.

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**Quillwort Yellow-Eyed Grass**

The quillwort yellow-eyed grass is found in margins of karst ponds, sinkhole lakes, sandhill upland lakes, seepage slopes, bogs, and wet prairies. Although the Action Area contained suitable habitat within the wet prairies, the quillwort yellow-eyed grass was not observed during field reviews. Therefore, it is anticipated that construction activities within the Action Area would result in an ESA effect determination of “may affect, but not likely to adversely affect” the quillwort yellow-eyed grass.

**Karst Pond Yellow-Eyed Grass**

The karst pond yellow-eyed grass is found within moist to wet sandy shores of limesink lakes, ponds, sandhill upland lakes, and gaps in shrubby vegetation and meadows. Although the Action Area contained marginal suitable habitat within the gaps of shrubby vegetation and meadows, the karst pond yellow-eyed grass was not observed during field reviews. Therefore, it is anticipated that construction activities within the Action Area would result in an ESA effect determination of “may affect, but not likely to adversely affect” the karst pond yellow-eyed grass.

**Harper’s Yellow-eyed Grass**

Harper’s yellow-eyed grass is found within sandhill seepage bogs and wet pine savannas. The Action Area did not contain suitable habitat and Harper’s yellow-eyed grass was not observed during field reviews. Therefore, it is anticipated that construction activities within the Action Area would have “no effect” on Harper’s yellow-eyed grass.

**5.1.2 FAUNA**

**5.1.2.1 Federally Listed Mammal Species**

**Choctawhatchee Beach Mouse**

The Choctawhatchee beach mouse is found in primary, secondary, and occasional tertiary sand dunes with a moderate cover of grasses and forbs. High, stable areas supporting sand live oak may be important habitat for this species if hurricane damage occurs to dune habitat. The Action Area did not contain suitable habitat for this species, and the Choctawhatchee beach mouse was not observed during field reviews. Although portions of Tyndall AFB coastline contain critical habitat designated for the Choctawhatchee beach mouse, the nearest Action Area is located approximately 27 feet from designated critical habitat. Therefore, it is anticipated that construction activities within the Action Area would result in an ESA effect determination of “no effect” for the Choctawhatchee beach mouse.

**St. Andrew Beach Mouse**

The St. Andrew beach mouse is known to occur within the northern end of St. Joseph Peninsula and eastern Bay County. Ideal habitat for this species includes primary, secondary, and occasionally tertiary sand dunes with a moderate cover of grasses and forbs. High, stable areas supporting sand live oak may be important habitat for this species if hurricane damage occurs to dune habitat. The Action Area did not contain suitable habitat for this species, and the St. Andrew beach mouse was not observed during field reviews. Therefore, it is anticipated that construction activities within the Action Area would result in an ESA effect determination of “no effect” for the St. Andrew beach mouse.



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**West Indian Manatee**

The West Indian manatee is found within freshwater, brackish water, coastal tidal rivers and streams, mangrove swamps, salt marshes, and freshwater springs. The Action Area contained suitable habitat for this species where dredging of the WEG small boathouse and construction of the fishing and observation pier will occur. The FDEP and the USACE have developed *The Corps of Engineers, Jacksonville District, and the State of Florida Effect Determination Key for the Manatee in Florida (April 2013)*. The Action Area is located within waters accessible to the West Indian manatee; however, in-water construction activities will not restrict manatee movement or act as a barrier. To prevent potential adverse impacts to this species, the *2011 Standard Manatee Conditions for In-Water Work* will be adhered to during all in-water construction activities. Therefore, it is anticipated that construction activities within the Action Area would result in an ESA effect determination of “may affect, but not likely to adversely affect” the West Indian manatee.

**5.1.2.2 Federally Listed Reptile Species**

**American Alligator**

The American alligator is found within freshwater marshes, ponds, rivers, swamps, bayous, canals, and large spring runs; they can also be found in brackish water. The Action Area contained suitable habitat for this species within areas where in-water construction activities will occur. However, the American alligator is a mobile species, and none were observed during field reviews. Therefore, it is anticipated that construction activities within the Action Area would result in an ESA effect determination of “may affect, but is not likely to adversely affect” the American alligator.

**Loggerhead Sea Turtle**

The loggerhead sea turtle is found hundreds of miles off the coast of Florida as well as inshore areas such as bays, lagoons, salt marshes, creeks, ship channels, and the mouth of large rivers. Coral reefs, rocky places, and shipwrecks are often feeding areas. The loggerhead sea turtle is the most common nesting sea turtle on Tyndall AFB and is known to nest on Shell Island, Crooked Island West, Crooked Island East, and Buck Beach. The Action Area contained suitable habitat for this species within areas where in-water construction activities will occur; however, none were observed during field reviews. Tyndall AFB contains designated critical habitat for the loggerhead sea turtle; however, the nearest Action Area is located approximately 9,333 feet from designated critical habitat. To prevent potential adverse impacts to this species, the *Sea Turtle and Smalltooth Sawfish Construction Conditions (Revised March 23, 2006)* will be adhered to during all in-water construction. Installation activities will also continue to adhere to management practices outlined in the Integrated Natural Resources Management Plan (INRMP), including but not limited to, predator control, resolution of beach lighting issues, enforcement of beach driving restrictions, and restoration/protection of nesting habitat. Therefore, it is anticipated that construction activities located within the Action Area would result in an ESA effect determination of “may affect, but not likely to adversely affect” the loggerhead sea turtle.

**Green Sea Turtle**

The green sea turtle is found near coastlines, islands, bays, and in areas with seagrass beds. They are rarely observed within the open ocean. Green sea turtle nesting has been recorded on Tyndall AFB since 1999 on Shell Island, Crooked Island West, and Crooked Island East. The Action Area contained suitable habitat for this species within areas where in-water construction activities will occur; however, this species was

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not observed during field reviews. To prevent potential adverse impacts to the green sea turtle, the *Sea Turtle and Smalltooth Sawfish Construction Conditions (Revised March 23, 2006)* will be adhered to during all in-water construction. Installation activities will also continue to adhere to management practices outlined in the INRMP, including but not limited to, predator control, resolution of beach lighting issues, enforcement of beach driving restrictions, and restoration/protection of nesting habitat. Therefore, it is anticipated that construction activities within the Action Area would result in an ESA effect determination of “may affect, but not likely to adversely affect” the green sea turtle.

**Leatherback Sea Turtle**

The leatherback sea turtle is found in open oceans; however, adult females require sandy beaches for nesting. Ideal habitat includes beaches in proximity to deep water and generally rough seas (USFWS 2018). Two nesting events have been observed on Crooked Island East and Shell Island since 2000. The Action Area contained marginal suitable habitat along the coast; however, this species was not observed during field reviews. To prevent potential adverse impacts to this species, the *Sea Turtle and Smalltooth Sawfish Construction Conditions (Revised March 23, 2006)* will be adhered to during all in-water construction activities. Installation activities will also continue to adhere to management practices outlined in the INRMP, including but not limited to, predator control, resolution of beach lighting issues, enforcement of beach driving restrictions, and restoration/protection of nesting habitat. Therefore, it is anticipated that construction activities within the Action Area would result in an ESA effect determination of “may affect, but not likely to adversely affect” the leatherback sea turtle.

**Eastern Indigo Snake**

The eastern indigo snake utilizes a variety of habitats including mesic flatwoods, upland pine forests, swamps, wet prairies, xeric pinelands, scrub, and swamps. It may seek shelter in gopher tortoise burrows to escape hot or cold ambient temperatures within its range. Although the Action Area contained suitable habitat for this species, none were observed during field reviews.

To determine this project's potential effect on the eastern indigo snake, impacts were assessed using the *Consultation Key for the Eastern Indigo Snake – Revised August 2017*. Since this project will not affect more than 25-acres of an eastern indigo snake’s home range, the project will not impair the ability of an individual to feed, breed, or shelter. Therefore, it is anticipated that construction activities within the Action Area would result in an ESA effect determination of “may affect, but not likely to adversely affect” the eastern indigo snake.

**Kemp’s Ridley Sea Turtle**

Kemp’s ridley sea turtle is found throughout the Gulf of Mexico and U.S. Atlantic seaboard, within nearshore coastal habitats with muddy or sandy bottoms where their preferred prey is found. This species is primarily found in Louisiana. Kemp’s Ridley sea turtle is known to occasionally utilize the barrier islands at Tyndall AFB for nesting. Although the Action Area contained marginal suitable habitat for this species, none were observed during field reviews. To prevent potential adverse impacts to this species, the *Sea Turtle and Smalltooth Sawfish Construction Conditions (Revised March 23, 2006)* will be adhered to during all in-water construction activities. Installation activities will also continue to adhere to management practices outlined in the INRMP, including but not limited to, predator control, resolution of beach lighting issues, enforcement of beach driving restrictions, and restoration/protection of nesting habitat. Therefore,



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it is anticipated that construction activities within the Action Area would result in an ESA effect determination of “may affect, but not likely to adversely affect” to Kemp’s ridley sea turtle.

**5.1.2.3 Federally Listed Bird Species**

**Red Knot**

The red knot is a migratory species whose ideal habitat in Florida includes sandy beaches, saltmarshes, lagoons, mudflats of estuaries and bays, and mangrove swamps that contain an abundance of horseshoe crabs. They are also found in peat banks, salt ponds, eelgrass beds, and coastal spits. The red knot is observed at Tyndall during migration and has been detected on Tyndall’s shorelines during annual surveys. Although suitable habitat for this species is located throughout the Action Area, none were observed during the field reviews and field reviews occurred during the migratory season (May and September). Therefore, it is anticipated that construction activities within the Action Area would result in an ESA effect determination of “may affect, but not likely to adversely affect” the red knot.

**Piping Plover**

The piping plover is found within wide, flat, open, sandy beaches with very little grass or other vegetation. Nesting territories include small creeks and wetlands. The piping plover is observed at Tyndall during migration and has been detected on Tyndall’s shorelines during annual surveys. The Action Area contained suitable habitat along the coast and portions of Tyndall AFB coastline are designated critical habitat for the piping plover. However, the nearest Action Area is located approximately 924 feet from designated critical habitat. The piping plover was not observed during field reviews, and field reviews occurred during the fall migratory season. Therefore, it is anticipated that construction activities within the Action Area would result in an ESA effect determination of “may affect, but not likely to adversely affect” the piping plover.

**Wood Stork**

The wood stork is found in various open hydric pine-cypress habitats, herbaceous marshes, and man-made wetlands and canals. A specialized method of feeding limits foraging to shallow waters with dense concentrations of small fish. Wood storks use freshwater and estuarine habitats for nesting, foraging, and roosting. They are typically colonial nesters and construct their nests in medium to tall trees located within wetlands or on islands. Suitable wood stork foraging habitat includes wetlands and surface waters with relatively calm water, uncluttered by dense thickets of aquatic vegetation, and either permanently or seasonally sustain a water depth between two and 15 inches. Although suitable foraging habitat is located within the salt marshes, canals, and drainage ditches that connect to East Bay, St. Andrews Sound, Pearl Bayou, and Fred Bayou, the Action Area is not located within their designated CFA and the wood stork was not observed during field reviews. Therefore, it is anticipated that construction activities within the Action Area would result in an ESA effect determination of “may affect, but not likely to adversely affect” to the wood stork.

**5.1.2.4 Federally Listed Fish Species**

**Gulf Sturgeon**

Mature Gulf sturgeons migrate between freshwater marine and estuarine spawning areas and saltwater non-spawning areas throughout the year, while juveniles generally stay in the river mouth year round for the first two years. The Action Area does not contain suitable habitat for this species and the Gulf sturgeon was not observed during field reviews. Although portions of Tyndall AFB coastline contain critical habitat

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designated for the Gulf sturgeon, the nearest Action Area is located approximately 2,301 feet from designated critical habitat. Therefore, it is anticipated that construction activities within the Action Area would result in an ESA effect determination of “may affect, but not likely to adversely affect” the Gulf sturgeon.

**Smalltooth Sawfish**

Habitat for juvenile smalltooth sawfish includes coastal areas such as estuaries, creeks, canals, river mouths, and bays with un-vegetated mud or sand bottoms, especially along red mangrove shorelines. Other potential habitat includes water under docks, bridges, and piers. Adult smalltooth sawfish are found in open water habitats and coral reefs along the Florida panhandle. Although portions of the Action Area contained suitable habitat for this species, critical habitat designated for the smalltooth sawfish is not located within the Tyndall AFB shoreline and none were observed during field reviews. Therefore, it is anticipated that construction activities within the Action Area would result in an ESA effect determination of “no effect” on the smalltooth sawfish.

**5.1.2.5 State Listed Reptile Species**

**Gopher Tortoise**

The gopher tortoise requires well-drained, loose sandy soils for burrowing, and low-growing herbs and grasses for food. These conditions can be found in a variety of habitats including pine flatwoods, scrub, dry prairies, pastures, yards, and along fence lines. A gopher tortoise survey was conducted by AECOM environmental staff in November 2021 and April 2022, during which no individuals and no potentially occupied burrows were observed within the Action Area. If potentially occupied gopher tortoise burrows are found during construction, Tyndall AFB, in accordance with FWC’s *Gopher Tortoise Permitting Guidelines* (revised July 2020), will maintain a minimum 25-foot radial buffer around the burrow to avoid impacts to the species. The buffer will not isolate gopher tortoise mobility. If a buffer cannot be maintained, a gopher tortoise relocation permit (10 or fewer burrows) will be obtained through FWC. Although suitable habitat is located within and adjacent to the Action Area, construction activities would not impact gopher tortoise burrows. Therefore, it is anticipated that construction activities within the Action Area would result in an ESA effect determination of “may affect, but not likely adversely affect” the gopher tortoise.

**Florida Pine Snake**

The Florida pine snake is found within well-drained sandy soils with moderate to open canopy cover located in sandhills and former sandhills, including old fields and pastures, sand pine scrub, and scrubby flatwoods. They spend most of their time in burrows excavated by gopher tortoises and pocket gophers. The Action Area contained suitable habitat for this species, including gopher tortoise burrows. However, none were observed during field reviews nor during the gopher tortoise survey. Therefore, it is anticipated that construction activities within the Action Area would have “no effect” on the Florida pine snake.

**5.1.2.6 State Listed Bird Species**

**Snowy Plover**

The snowy plover is found within dry, sandy beaches, where they nest in shallow depressions, usually near some vegetation or debris, and forage in tidal flats along inlets and creeks. The Action Area contained suitable habitat along the coastline; however, the snowy plover was not observed during field reviews.

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Therefore, it is anticipated that construction activities within the Action Area would result in an ESA effect determination of “may affect, but not likely to adversely affect” the snowy plover.

**Little Blue Heron and Tricolored Heron**

The little blue heron and tricolored heron nest and forage within fresh and saltwater habitats such as freshwater marshes, coastal beaches, mangrove swamps, cypress swamps, hardwood swamps, bay swamps, and wet prairies. Although suitable habitat was located throughout the Action Area, none were observed during field reviews. Therefore, it is anticipated that construction activities within the Action Area would result in an ESA effect determination of “may affect, but not likely to adversely affect” the little blue heron and tricolored heron.

**Reddish Egret**

The reddish egret is almost exclusively coastal and typically nests on coastal mangrove islands, or within Brazilian pepper stands located on manmade dredge spoil islands near suitable foraging habitat (shallow water). The reddish egret nests from Pinellas County on the Gulf coast and Brevard County on the Atlantic coast, south to the Florida Keys. The Florida panhandle contains non-breeding habitat. Although the Action Area contained marginal suitable habitat along the coast, none were observed during field reviews. Therefore, it is anticipated that construction activities within the Action Area would have “no effect” on the reddish egret.

**American Oystercatcher**

The American oystercatcher requires large areas of beach, sandbars, mud flats, and shellfish beds for foraging, and use sandy areas, beach wracks, and marsh grass for nesting. Although marginal suitable habitat for this species is located along the Tyndall AFB coastline, and the American oystercatcher was not observed during field reviews. Therefore, it is anticipated that construction activities within the Action Area would result in an ESA effect determination of “may affect, but not likely to adversely affect” the American oystercatcher.

**Black Skimmer**

The black skimmer is found exclusively within coastal areas, usually around sandy beaches and islands; and forages in tidal waters of bays, estuaries, lagoons, creeks, rivers, ditches, and saltmarsh pool. Nesting black skimmers use open sandy areas, gravel or shell bars with sparse vegetation, or broad mats or wrack in saltmarshes. The Action Area contained suitable foraging and nesting habitat within the coastline and saltmarshes; however, this species was not observed during field reviews. Therefore, it is anticipated that construction activities within the Action Area would result in an ESA effect determination of “may affect, but not likely to adversely affect” the black skimmer.

**Least Tern**

The least tern is found along beaches, lagoons, bays, and estuaries. Alternatively, this species utilizes gravel rooftops, dredge spoil islands, construction sites, causeways, and mined lands. Nesting areas have a substrate of well-drained sand or gravel with little vegetation. The Action Area contained suitable alternative nesting habitat; however, the least tern was not observed during field reviews. Therefore, it is anticipated that construction activities within the Action Area would result in an ESA effect determination of “may affect, but not likely to adversely affect” the least tern.



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**5.1.2.7 Other Species of Concern**

**Florida Black Bear**

The Florida black bear is found in a variety of habitats including a mixture of flatwoods, swamps, scrub oak ridges, bayheads, and hammocks. They require secluded forests for forging and denning. According to the 2019 Florida Black Bear Management Plan, the Action Area lies within the common area of distribution. Florida black bears have been observed in all areas of the installation except the barrier islands. Although the Action Area has been impacted by Hurricane Michael and logging activities and suitable foraging and denning habitat are limited at this time, Florida black bears are frequently observed in Tyndall's forested wetlands, pine flatwoods, and sand pine scrub areas. Therefore, it is anticipated that construction activities within the Action Area would result in an ESA effect determination of "may affect, but not likely to adversely affect" the Florida black bear.

**Bald Eagle**

The bald eagle lives near rivers, lakes, and marshes where they can hunt for fish. Bald eagle nests have been documented across the installation. The most recent surveys were completed in winter 2022 revealing 9 active bald eagle nests and 3 inactive nest sites. However, no new active nests were observed within a 660-foot radius of the Action Area during the field reviews. Therefore, it is anticipated that construction activities within the Action Area would have "no effect" on the bald eagle.

**5.2 CRITICAL HABITAT**

As previously described, Critical Habitat designated by Congress in 50 CFR Part 424 for the Choctawhatchee beach mouse, St. Andrew beach mouse, piping plover, loggerhead sea turtle and Gulf sturgeon is located within the boundaries of Tyndall AFB. Project areas do not directly intersect designated critical habitat, and based on field reconnaissance performed for this BA, no evidence of species occupancy in the Action Area was observed. Therefore, it is not expected that the Proposed Actions would impact designated critical habitat.

**5.3 SUBMERGED AQUATIC VEGETATION**

SAV includes any species of seagrass and rhizophytic macroalgae. Patches of SAV can migrate to unvegetated areas; therefore, SAV habitat includes both areas that are currently vegetated by SAV as well as unvegetated areas that are adjacent to SAV, have historically supported SAV, and have the ability to support SAV based on conditions including water environment, sediment characteristics, and light availability. SAV surveys were conducted on September 1 and 2, 2021. The survey was conducted during the seagrass growing season (June 1 to September 30) identified by regulatory agencies. Delineated SAV beds within the areas of the Proposed Actions and alternatives are described as follows.

SAV beds were delineated within the LODs for the WEG Small Boathouse dredging alternatives, the FAMCAMP (both alternatives), and the Heritage Club pier (both alternatives). For the WEG Small Boathouse and FAMCAMP alternatives, direct impacts may be able to be avoided based on current planned construction. However, dredging/disturbance activities may induce increased turbidity in the surrounding waters which could cause indirect impacts to the delineated areas.

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- 1 For the Heritage Club pier alternatives, direct impacts due to pile placement would occur and likely could  
2 not be avoided due to the continuity and density of the vegetation in this area. Turbidity-related indirect  
3 impacts as described above may also occur, and may also include indirect impacts due to shading.
- 4 During the design process, exact impact areas will be refined, and the actions would be subject to the  
5 permitting process. Additional avoidance and minimization measures may be required, including pre- and  
6 post-construction SAV surveys, installation of turbidity curtains around construction areas. Development  
7 and implementation of a Turbidity Control and Monitoring Plan could be required to ensure that turbidity  
8 does not exceed 29 Nephelometric Turbidity Units, and that nearby seagrass beds will not be affected by  
9 turbidity.

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**6.0 CONSERVATION MEASURES**

Based on the analysis presented in this EA, the following conservation measures are recommended for the Proposed Actions in order to minimize potential effects to rare, threatened or endangered species at Tyndall AFB.

- To prevent potential adverse impacts to the West Indian manatee, the *2011 Standard Manatee Conditions for In-Water Work* will be adhered to during all in-water construction activities.
- To prevent potential adverse impacts to the loggerhead sea turtle, the green sea turtle, the leatherback sea turtle and the Kemp's ridley sea turtle, the *Sea Turtle and Smalltooth Sawfish Construction Conditions* (Revised March 23, 2006) will be adhered to during all in-water construction activities.
- To prevent potential adverse impacts to the loggerhead sea turtle, the green sea turtle, the leatherback sea turtle and the Kemp's ridley sea turtle,, installation activities will also continue to adhere to management practices outlined in the INRMP, including but not limited to, predator control, resolution of beach lighting issues, enforcement of beach driving restrictions, and restoration/protection of nesting habitat.
- If potentially occupied gopher tortoise burrows are found during construction, Tyndall AFB, in accordance with FWC's *Gopher Tortoise Permitting Guidelines* (revised July 2020), will maintain a minimum 25-foot radial buffer around the burrow to avoid impacts to the species. The buffer will not isolate gopher tortoise mobility. If a buffer cannot be maintained, a gopher tortoise relocation permit (10 or fewer burrows) will be obtained through FWC.
- During the design and permitting process, develop avoidance and minimization measures for impacts to SAV, which may include (but may not necessarily be limited to): pre- and post-construction SAV surveys, installation of turbidity curtains around construction areas, and development and implementation of a Turbidity Control and Monitoring Plan



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**7.0 REFERENCES**

- 16 U.S. Code 668 - Bald and Golden Eagles
- 16 U.S. Code 703-712 – *Migratory Bird Treaty Act*
- 16 U.S. Code 1532 et. seq. – *Endangered Species Act of 1973*
- 16 U.S. Code 1801 et. Seq. – *Magnuson-Stevens Fishery Conservation and Management Act*
- 16 U.S. Code 1802(10) – *Definitions: Essential Fish Habitat*
- 42 U.S. Code 4331 – *National Environmental Policy Act, as amended*
- 42 U.S. Code 4332(2)(c) – *Cooperation of Agencies; Reports; Availability of Information; Recommendations; International and National Coordination of Efforts*
- 50 Code of Federal Regulations Part 424 – *Listing Endangered and Threatened Species and Designating Critical Habitat*
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27 2010, Addendum August 13, 2013.
- 28 USFWS, 2021. Environmental Conservation Online System Information for Planning and Consultation.  
29 Accessed July 13, 2021 from <https://ecos.fws.gov/ipac/>.
- 30 USFWS, 2021. Threatened & Endangered Species Active Critical Habitat Report. Updated July 2021.

**Biological Assessment**  
**Environmental Assessment for 8 Construction Sites Tyndall Air Force Base, Florida**

**Appendix A USFWS Official Species List and IPaC Report**





## United States Department of the Interior



FISH AND WILDLIFE SERVICE  
Panama City Ecological Services Field Office  
1601 Balboa Avenue  
Panama City, FL 32405-3792  
Phone: (850) 769-0552 Fax: (850) 763-2177  
<http://www.fws.gov/panamacity/specieslist.html>  
<http://www.fws.gov/panamacity/pcdata.html>

In Reply Refer To:

July 13, 2021

Consultation Code: 04EF3000-2021-SLI-0583

Event Code: 04EF3000-2021-E-00883

Project Name: Environmental Assessment for 8 Construction Sites, Tyndall Air Force Base, Florida

Subject: List of threatened and endangered species that may occur in your proposed project location or may be affected by your proposed project

To Whom It May Concern:

The enclosed species list identifies threatened, endangered, proposed and candidate species, as well as final designated critical habitat, that may occur within the boundary of your proposed project and/or may be affected by your proposed project. The species list fulfills the requirements of the U.S. Fish and Wildlife Service (Service) under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 *et seq.*).

New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list. Please feel free to contact us if you need more current information or assistance regarding the potential impacts to federally proposed, listed, and candidate species and federally designated and proposed critical habitat. Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the Act, the accuracy of this species list should be verified after 90 days. This verification can be completed formally or informally as desired. The Service recommends that verification be completed by visiting the ECOS-IPaC website at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested through the ECOS-IPaC system by completing the same process used to receive the enclosed list.

The purpose of the Act is to provide a means whereby threatened and endangered species and the ecosystems upon which they depend may be conserved. Under sections 7(a)(1) and 7(a)(2) of the Act and its implementing regulations (50 CFR 402 *et seq.*), Federal agencies are required to utilize their authorities to carry out programs for the conservation of threatened and endangered species and to determine whether projects may affect threatened and endangered species and/or designated critical habitat.

A Biological Assessment is required for construction projects (or other undertakings having similar physical impacts) that are major Federal actions significantly affecting the quality of the human environment as defined in the National Environmental Policy Act (42 U.S.C. 4332(2)(c)). For projects other than major construction activities, the Service suggests that a biological evaluation similar to a Biological Assessment be prepared to determine whether the project may affect listed or proposed species and/or designated or proposed critical habitat. Recommended contents of a Biological Assessment are described at 50 CFR 402.12.

If a Federal agency determines, based on the Biological Assessment or biological evaluation, that listed species and/or designated critical habitat may be affected by the proposed project, the agency is required to consult with the Service pursuant to 50 CFR 402. In addition, the Service recommends that candidate species, proposed species and proposed critical habitat be addressed within the consultation. More information on the regulations and procedures for section 7 consultation, including the role of permit or license applicants, can be found in the "Endangered Species Consultation Handbook" at:

<http://www.fws.gov/endangered/esa-library/pdf/TOC-GLOS.PDF>

Please be aware that bald and golden eagles are protected under the Bald and Golden Eagle Protection Act (16 U.S.C. 668 *et seq.*), and projects affecting these species may require development of an eagle conservation plan ([http://www.fws.gov/windenergy/eagle\\_guidance.html](http://www.fws.gov/windenergy/eagle_guidance.html)). Additionally, wind energy projects should follow the wind energy guidelines (<http://www.fws.gov/windenergy/>) for minimizing impacts to migratory birds and bats.

Guidance for minimizing impacts to migratory birds for projects including communications towers (e.g., cellular, digital television, radio, and emergency broadcast) can be found at:

<http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/towers.htm>;

<http://www.towerkill.com>; and

[http://](http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/comtow.html)

[www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/comtow.html](http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/comtow.html).

We appreciate your concern for threatened and endangered species. The Service encourages Federal agencies to include conservation of threatened and endangered species into their project planning to further the purposes of the Act. Please include the Consultation Tracking Number in the header of this letter with any request for consultation or correspondence about your project that you submit to our office. All correspondence should be submitted to [panamacityregs@fws.gov](mailto:panamacityregs@fws.gov).

Attachment(s):

- Official Species List

## Official Species List

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

**Panama City Ecological Services Field Office**

1601 Balboa Avenue

Panama City, FL 32405-3792

(850) 769-0552

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## Project Summary

Consultation Code: 04EF3000-2021-SLI-0583

Event Code: 04EF3000-2021-E-00883

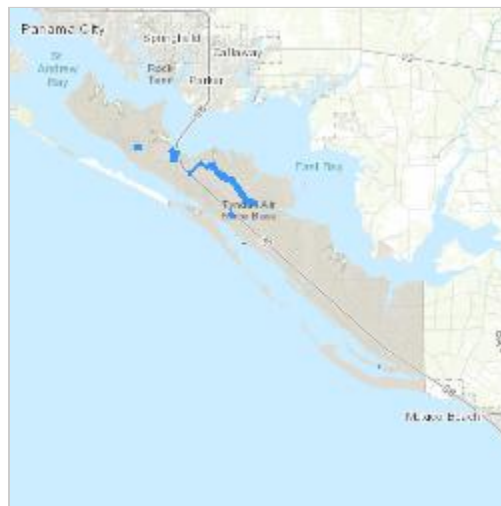
Project Name: Environmental Assessment for 8 Construction Sites, Tyndall Air Force Base, Florida

Project Type: DEVELOPMENT

Project Description: The project descriptions at each construction site are as follows: construct new Explosive Ordnance Disposal (EOD) gravel road; dredge Weapons Evaluation Group (WEG) small boathouse area at Building 9709; replace WEG Tower 1802; improve expeditionary/encampment roads; expand fam camp site; construct water main along north side of flightline; construct fishing/observation pier (Heritage Club); and renovate Unite Site.

Project Location:

Approximate location of the project can be viewed in Google Maps: <https://www.google.com/maps/@30.0963241,-85.63889718437247,14z>



Counties: Bay County, Florida

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## Endangered Species Act Species

There is a total of 14 threatened, endangered, or candidate species on this species list.

Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species.

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries<sup>1</sup>, as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

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1. [NOAA Fisheries](#), also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

## Mammals

NAME	STATUS
Choctawhatchee Beach Mouse <i>Peromyscus polionotus alloparys</i> There is <b>final</b> critical habitat for this species. The location of the critical habitat is not available. Species profile: <a href="https://ecos.fws.gov/ecp/species/3520">https://ecos.fws.gov/ecp/species/3520</a>	Endangered
St. Andrew Beach Mouse <i>Peromyscus polionotus peninsularis</i> There is <b>final</b> critical habitat for this species. The location of the critical habitat is not available. Species profile: <a href="https://ecos.fws.gov/ecp/species/4111">https://ecos.fws.gov/ecp/species/4111</a>	Endangered
West Indian Manatee <i>Trichechus manatus</i> There is <b>final</b> critical habitat for this species. The location of the critical habitat is not available. <b><i>This species is also protected by the Marine Mammal Protection Act, and may have additional consultation requirements.</i></b> Species profile: <a href="https://ecos.fws.gov/ecp/species/4469">https://ecos.fws.gov/ecp/species/4469</a>	Threatened

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## Birds

NAME	STATUS
<b>Piping Plover</b> <i>Charadrius melodus</i> Population: [Atlantic Coast and Northern Great Plains populations] - Wherever found, except those areas where listed as endangered. There is <b>final</b> critical habitat for this species. The location of the critical habitat is not available. Species profile: <a href="https://ecos.fws.gov/ecp/species/6039">https://ecos.fws.gov/ecp/species/6039</a>	Threatened
<b>Red Knot</b> <i>Calidris canutus rufa</i> No critical habitat has been designated for this species. Species profile: <a href="https://ecos.fws.gov/ecp/species/1864">https://ecos.fws.gov/ecp/species/1864</a>	Threatened
<b>Wood Stork</b> <i>Mycteria americana</i> Population: AL, FL, GA, MS, NC, SC No critical habitat has been designated for this species. Species profile: <a href="https://ecos.fws.gov/ecp/species/8477">https://ecos.fws.gov/ecp/species/8477</a>	Threatened

## Reptiles

NAME	STATUS
<b>Eastern Indigo Snake</b> <i>Drymarchon corais couperi</i> No critical habitat has been designated for this species. Species profile: <a href="https://ecos.fws.gov/ecp/species/646">https://ecos.fws.gov/ecp/species/646</a>	Threatened
<b>Gopher Tortoise</b> <i>Gopherus polyphemus</i> Population: eastern No critical habitat has been designated for this species. Species profile: <a href="https://ecos.fws.gov/ecp/species/6994">https://ecos.fws.gov/ecp/species/6994</a>	Candidate

## Fishes

NAME	STATUS
<b>Gulf Sturgeon</b> <i>Acipenser oxyrinchus (=oxyrhynchus) desotoi</i> There is <b>final</b> critical habitat for this species. The location of the critical habitat is not available. Species profile: <a href="https://ecos.fws.gov/ecp/species/651">https://ecos.fws.gov/ecp/species/651</a>	Threatened



## Flowering Plants

NAME	STATUS
Florida Skullcap <i>Scutellaria floridana</i> No critical habitat has been designated for this species. Species profile: <a href="https://ecos.fws.gov/ecp/species/2240">https://ecos.fws.gov/ecp/species/2240</a>	Threatened
Godfrey's Butterwort <i>Pinguicula ionantha</i> No critical habitat has been designated for this species. Species profile: <a href="https://ecos.fws.gov/ecp/species/6805">https://ecos.fws.gov/ecp/species/6805</a>	Threatened
Harper's Beauty <i>Harperocallis flava</i> No critical habitat has been designated for this species. Species profile: <a href="https://ecos.fws.gov/ecp/species/3735">https://ecos.fws.gov/ecp/species/3735</a>	Endangered
Telephus Spurge <i>Euphorbia telephioides</i> No critical habitat has been designated for this species. Species profile: <a href="https://ecos.fws.gov/ecp/species/5499">https://ecos.fws.gov/ecp/species/5499</a>	Threatened
White Birds-in-a-nest <i>Macbridea alba</i> No critical habitat has been designated for this species. Species profile: <a href="https://ecos.fws.gov/ecp/species/6291">https://ecos.fws.gov/ecp/species/6291</a>	Threatened

## Critical habitats

THERE ARE NO CRITICAL HABITATS WITHIN YOUR PROJECT AREA UNDER THIS OFFICE'S JURISDICTION.

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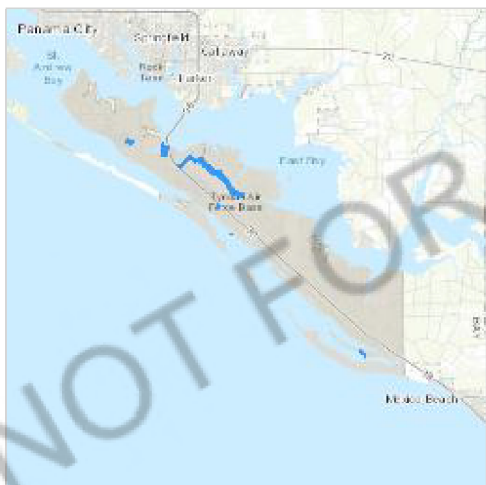
# IPaC resource list

This report is an automatically generated list of species and other resources such as critical habitat (collectively referred to as *trust resources*) under the U.S. Fish and Wildlife Service's (USFWS) jurisdiction that are known or expected to be on or near the project area referenced below. The list may also include trust resources that occur outside of the project area, but that could potentially be directly or indirectly affected by activities in the project area. However, determining the likelihood and extent of effects a project may have on trust resources typically requires gathering additional site-specific (e.g., vegetation/species surveys) and project-specific (e.g., magnitude and timing of proposed activities) information.

Below is a summary of the project information you provided and contact information for the USFWS office(s) with jurisdiction in the defined project area. Please read the introduction to each section that follows (Endangered Species, Migratory Birds, USFWS Facilities, and NWI Wetlands) for additional information applicable to the trust resources addressed in that section.

## Location

Bay County, Florida



## Local office

Panama City Ecological Services Field Office

☎ (850) 769-0552

📠 (850) 763-2177

1601 Balboa Avenue

Panama City, FL 32405-3792

<http://www.fws.gov/panamacity/specieslist.html>

<http://www.fws.gov/panamacity/pdata.html>

# Endangered species

**This resource list is for informational purposes only and does not constitute an analysis of project level impacts.**

The primary information used to generate this list is the known or expected range of each species. Additional areas of influence (AOI) for species are also considered. An AOI includes areas outside of the species range if the species could be indirectly affected by activities in that area (e.g., placing a dam upstream of a fish population even if that fish does not occur at the dam site, may indirectly impact the species by reducing or eliminating water flow downstream). Because species can move, and site conditions can change, the species on this list are not guaranteed to be found on or near the project area. To fully determine any potential effects to species, additional site-specific and project-specific information is often required.

Section 7 of the Endangered Species Act **requires** Federal agencies to "request of the Secretary information whether any species which is listed or proposed to be listed may be present in the area of such proposed action" for any project that is conducted, permitted, funded, or licensed by any Federal agency. A letter from the local office and a species list which fulfills this requirement can **only** be obtained by requesting an official species list from either the Regulatory Review section in IPaC (see directions below) or from the local field office directly.

For project evaluations that require USFWS concurrence/review, please return to the IPaC website and request an official species list by doing the following:

1. Draw the project location and click CONTINUE.
2. Click DEFINE PROJECT.
3. Log in (if directed to do so).
4. Provide a name and description for your project.
5. Click REQUEST SPECIES LIST.

Listed species<sup>1</sup> and their critical habitats are managed by the [Ecological Services Program](#) of the U.S. Fish and Wildlife Service (USFWS) and the fisheries division of the National Oceanic and Atmospheric Administration (NOAA Fisheries<sup>2</sup>).

Species and critical habitats under the sole responsibility of NOAA Fisheries are **not** shown on this list. Please contact [NOAA Fisheries](#) for [species under their jurisdiction](#).

1. Species listed under the [Endangered Species Act](#) are threatened or endangered; IPaC also shows species that are candidates, or proposed, for listing. See the [listing status page](#) for more information. IPaC only shows species that are regulated by USFWS (see FAQ).
2. [NOAA Fisheries](#), also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

The following species are potentially affected by activities in this location:

## Mammals

NAME

STATUS



**Choctawhatchee Beach Mouse** *Peromyscus polionotus* **Endangered**  
*allophrys*  
 Wherever found  
 There is **final** critical habitat for this species. The location of the critical habitat is not available.  
<https://ecos.fws.gov/ecp/species/3520>

**St. Andrew Beach Mouse** *Peromyscus polionotus peninsularis* **Endangered**  
 Wherever found  
 There is **final** critical habitat for this species. The location of the critical habitat is not available.  
<https://ecos.fws.gov/ecp/species/4111>

**West Indian Manatee** *Trichechus manatus* **Threatened**  
*Wherever found*  
 There is **final** critical habitat for this species. The location of the critical habitat is not available.  
<https://ecos.fws.gov/ecp/species/4469>  
**Marine mammal**

## Birds

NAME	STATUS
<b>Piping Plover</b> <i>Charadrius melodus</i> There is <b>final</b> critical habitat for this species. The location of the critical habitat is not available. <a href="https://ecos.fws.gov/ecp/species/6039">https://ecos.fws.gov/ecp/species/6039</a>	<b>Threatened</b>
<b>Red Knot</b> <i>Calidris canutus rufa</i> Wherever found No critical habitat has been designated for this species. <a href="https://ecos.fws.gov/ecp/species/1864">https://ecos.fws.gov/ecp/species/1864</a>	<b>Threatened</b>
<b>Wood Stork</b> <i>Mycteria americana</i> No critical habitat has been designated for this species. <a href="https://ecos.fws.gov/ecp/species/8477">https://ecos.fws.gov/ecp/species/8477</a>	<b>Threatened</b>

## Reptiles

NAME	STATUS
<b>Eastern Indigo Snake</b> <i>Drymarchon corais couperi</i> Wherever found No critical habitat has been designated for this species. <a href="https://ecos.fws.gov/ecp/species/646">https://ecos.fws.gov/ecp/species/646</a>	<b>Threatened</b>
<b>Gopher Tortoise</b> <i>Gopherus polyphemus</i> No critical habitat has been designated for this species. <a href="https://ecos.fws.gov/ecp/species/6994">https://ecos.fws.gov/ecp/species/6994</a>	<b>Candidate</b>

## Fishes

NAME	STATUS
<b>Gulf Sturgeon</b> <i>Acipenser oxyrinchus (=oxyrhynchus) desotoi</i> Wherever found There is <b>final</b> critical habitat for this species. The location of the critical habitat is not available. <a href="https://ecos.fws.gov/ecp/species/651">https://ecos.fws.gov/ecp/species/651</a>	Threatened

## Flowering Plants

NAME	STATUS
<b>Florida Skullcap</b> <i>Scutellaria floridana</i> Wherever found No critical habitat has been designated for this species. <a href="https://ecos.fws.gov/ecp/species/2240">https://ecos.fws.gov/ecp/species/2240</a>	Threatened
<b>Godfrey's Butterwort</b> <i>Pinguicula ionantha</i> Wherever found No critical habitat has been designated for this species. <a href="https://ecos.fws.gov/ecp/species/6805">https://ecos.fws.gov/ecp/species/6805</a>	Threatened
<b>Harper's Beauty</b> <i>Harperocallis flava</i> Wherever found No critical habitat has been designated for this species. <a href="https://ecos.fws.gov/ecp/species/3735">https://ecos.fws.gov/ecp/species/3735</a>	Endangered
<b>Telephus Spurge</b> <i>Euphorbia telephioides</i> Wherever found No critical habitat has been designated for this species. <a href="https://ecos.fws.gov/ecp/species/5499">https://ecos.fws.gov/ecp/species/5499</a>	Threatened
<b>White Birds-in-a-nest</b> <i>Macbridea alba</i> Wherever found No critical habitat has been designated for this species. <a href="https://ecos.fws.gov/ecp/species/6291">https://ecos.fws.gov/ecp/species/6291</a>	Threatened

## Critical habitats

Potential effects to critical habitat(s) in this location must be analyzed along with the endangered species themselves.

THERE ARE NO CRITICAL HABITATS AT THIS LOCATION.

# Migratory birds

Certain birds are protected under the Migratory Bird Treaty Act<sup>1</sup> and the Bald and Golden Eagle Protection Act<sup>2</sup>.

Any person or organization who plans or conducts activities that may result in impacts to migratory birds, eagles, and their habitats should follow appropriate regulations and consider implementing appropriate conservation measures, as described [below](#).

1. The [Migratory Birds Treaty Act](#) of 1918.
2. The [Bald and Golden Eagle Protection Act](#) of 1940.

Additional information can be found using the following links:

- Birds of Conservation Concern <http://www.fws.gov/birds/management/managed-species/birds-of-conservation-concern.php>
- Measures for avoiding and minimizing impacts to birds <http://www.fws.gov/birds/management/project-assessment-tools-and-guidance/conservation-measures.php>
- Nationwide conservation measures for birds <http://www.fws.gov/migratorybirds/pdf/management/nationwidestandardconservationmeasures.pdf>

The birds listed below are birds of particular concern either because they occur on the [USFWS Birds of Conservation Concern](#) (BCC) list or warrant special attention in your project location. To learn more about the levels of concern for birds on your list and how this list is generated, see the FAQ [below](#). This is not a list of every bird you may find in this location, nor a guarantee that every bird on this list will be found in your project area. To see exact locations of where birders and the general public have sighted birds in and around your project area, visit the [E-bird data mapping tool](#) (Tip: enter your location, desired date range and a species on your list). For projects that occur off the Atlantic Coast, additional maps and models detailing the relative occurrence and abundance of bird species on your list are available. Links to additional information about Atlantic Coast birds, and other important information about your migratory bird list, including how to properly interpret and use your migratory bird report, can be found [below](#).

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to migratory birds on your list, click on the PROBABILITY OF PRESENCE SUMMARY at the top of your list to see when these birds are most likely to be present and breeding in your project area.

NAME

BREEDING SEASON (IF A  
BREEDING SEASON IS INDICATED  
FOR A BIRD ON YOUR LIST, THE  
BIRD MAY BREED IN YOUR  
PROJECT AREA SOMETIME WITHIN  
THE TIMEFRAME SPECIFIED,  
WHICH IS A VERY LIBERAL  
ESTIMATE OF THE DATES INSIDE  
WHICH THE BIRD BREEDS  
ACROSS ITS ENTIRE RANGE.



"BREEDS ELSEWHERE" INDICATES  
 THAT THE BIRD DOES NOT LIKELY  
 BREED IN YOUR PROJECT AREA.)

#### American Kestrel *Falco sparverius paulus*

This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA

<https://ecos.fws.gov/ecp/species/9587>

Breeds Apr 1 to Aug 31

#### Bald Eagle *Haliaeetus leucocephalus*

This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.

<https://ecos.fws.gov/ecp/species/1626>

Breeds Sep 1 to Jul 31

#### Black Skimmer *Rynchops niger*

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

<https://ecos.fws.gov/ecp/species/5234>

Breeds May 20 to Sep 15

#### Bonaparte's Gull *Chroicocephalus philadelphia*

This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.

Breeds elsewhere

#### Brown Pelican *Pelecanus occidentalis*

This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.

<https://ecos.fws.gov/ecp/species/6034>

Breeds Jan 15 to Sep 30

#### Common Ground-dove *Columbina passerina exigua*

This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA

Breeds Feb 1 to Dec 31

#### Common Loon *gavia immer*

This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.

<https://ecos.fws.gov/ecp/species/4464>

Breeds Apr 15 to Oct 31

Double-crested Cormorant <i>phalacrocorax auritus</i> This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities. <a href="https://ecos.fws.gov/ecp/species/3478">https://ecos.fws.gov/ecp/species/3478</a>	Breeds Apr 20 to Aug 31
Dunlin <i>Calidris alpina arctica</i> This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA	Breeds elsewhere
Gull-billed Tern <i>Gelochelidon nilotica</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. <a href="https://ecos.fws.gov/ecp/species/9501">https://ecos.fws.gov/ecp/species/9501</a>	Breeds May 1 to Jul 31
Herring Gull <i>Larus argentatus</i> This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.	Breeds Apr 20 to Aug 31
Kentucky Warbler <i>Oporornis formosus</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds Apr 20 to Aug 20
Least Tern <i>Sterna antillarum</i> This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA	Breeds Apr 20 to Sep 10
Northern Gannet <i>Morus bassanus</i> This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.	Breeds elsewhere
Parasitic Jaeger <i>Stercorarius parasiticus</i> This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.	Breeds elsewhere
Red-breasted Merganser <i>Mergus serrator</i> This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.	Breeds elsewhere

<b>Red-headed Woodpecker</b> <i>Melanerpes erythrocephalus</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds May 10 to Sep 10
<b>Red-necked Phalarope</b> <i>Phalaropus lobatus</i> This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.	Breeds elsewhere
<b>Red-throated Loon</b> <i>Gavia stellata</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds elsewhere
<b>Ring-billed Gull</b> <i>Larus delawarensis</i> This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.	Breeds elsewhere
<b>Royal Tern</b> <i>Thalasseus maximus</i> This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.	Breeds Apr 15 to Aug 31
<b>Ruddy Turnstone</b> <i>Arenaria interpres morinella</i> This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA	Breeds elsewhere
<b>Semipalmated Sandpiper</b> <i>Calidris pusilla</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds elsewhere
<b>Short-billed Dowitcher</b> <i>Limnodromus griseus</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. <a href="https://ecos.fws.gov/ecp/species/9480">https://ecos.fws.gov/ecp/species/9480</a>	Breeds elsewhere
<b>White-winged Scoter</b> <i>Melanitta fusca</i> This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.	Breeds elsewhere



**Willet** *Tringa semipalmata*

Breeds Apr 20 to Aug 5

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

**Wilson's Plover** *Charadrius wilsonia*

Breeds Apr 1 to Aug 20

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

## Probability of Presence Summary

The graphs below provide our best understanding of when birds of concern are most likely to be present in your project area. This information can be used to tailor and schedule your project activities to avoid or minimize impacts to birds. Please make sure you read and understand the FAQ "Proper Interpretation and Use of Your Migratory Bird Report" before using or attempting to interpret this report.

### Probability of Presence (■)

Each green bar represents the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during a particular week of the year. (A year is represented as 12 4-week months.) A taller bar indicates a higher probability of species presence. The survey effort (see below) can be used to establish a level of confidence in the presence score. One can have higher confidence in the presence score if the corresponding survey effort is also high.

How is the probability of presence score calculated? The calculation is done in three steps:

1. The probability of presence for each week is calculated as the number of survey events in the week where the species was detected divided by the total number of survey events for that week. For example, if in week 12 there were 20 survey events and the Spotted Towhee was found in 5 of them, the probability of presence of the Spotted Towhee in week 12 is 0.25.
2. To properly present the pattern of presence across the year, the relative probability of presence is calculated. This is the probability of presence divided by the maximum probability of presence across all weeks. For example, imagine the probability of presence in week 20 for the Spotted Towhee is 0.05, and that the probability of presence at week 12 (0.25) is the maximum of any week of the year. The relative probability of presence on week 12 is  $0.25/0.25 = 1$ ; at week 20 it is  $0.05/0.25 = 0.2$ .
3. The relative probability of presence calculated in the previous step undergoes a statistical conversion so that all possible values fall between 0 and 10, inclusive. This is the probability of presence score.

To see a bar's probability of presence score, simply hover your mouse cursor over the bar.

### Breeding Season (■)

Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.

### Survey Effort (|)

Vertical black lines superimposed on probability of presence bars indicate the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps. The number of surveys is expressed as a range, for example, 33 to 64 surveys.

To see a bar's survey effort range, simply hover your mouse cursor over the bar.

No Data (—)

A week is marked as having no data if there were no survey events for that week.

Survey Timeframe

Surveys from only the last 10 years are used in order to ensure delivery of currently relevant information. The exception to this is areas off the Atlantic coast, where bird returns are based on all years of available data, since data in these areas is currently much more sparse.







The diagram shows a sequence of blocks representing the distributive property. It starts with a group of 2 tens blocks and 3 tens blocks, followed by a multiplication sign and a group of 4 ones blocks. This is followed by an equals sign, then a group of 2 tens blocks multiplied by 4 ones blocks, plus a group of 3 tens blocks multiplied by 4 ones blocks.

[illegible]



Red-breasted  
Merganser  
Non-BCC  
Vulnerable (This is  
not a Bird of  
Conservation  
Concern (BCC) in  
this area, but  
warrants attention  
because of the  
Eagle Act or for  
potential  
susceptibilities in  
offshore areas  
from certain types  
of development or  
activities.)



Red-headed  
Woodpecker  
BCC Rangewide  
(CON) (This is a  
Bird of  
Conservation  
Concern (BCC)  
throughout its  
range in the  
continental USA  
and Alaska.)



Red-necked  
Phalarope  
Non-BCC  
Vulnerable (This is  
not a Bird of  
Conservation  
Concern (BCC) in  
this area, but  
warrants attention  
because of the  
Eagle Act or for  
potential  
susceptibilities in  
offshore areas  
from certain types  
of development or  
activities.)

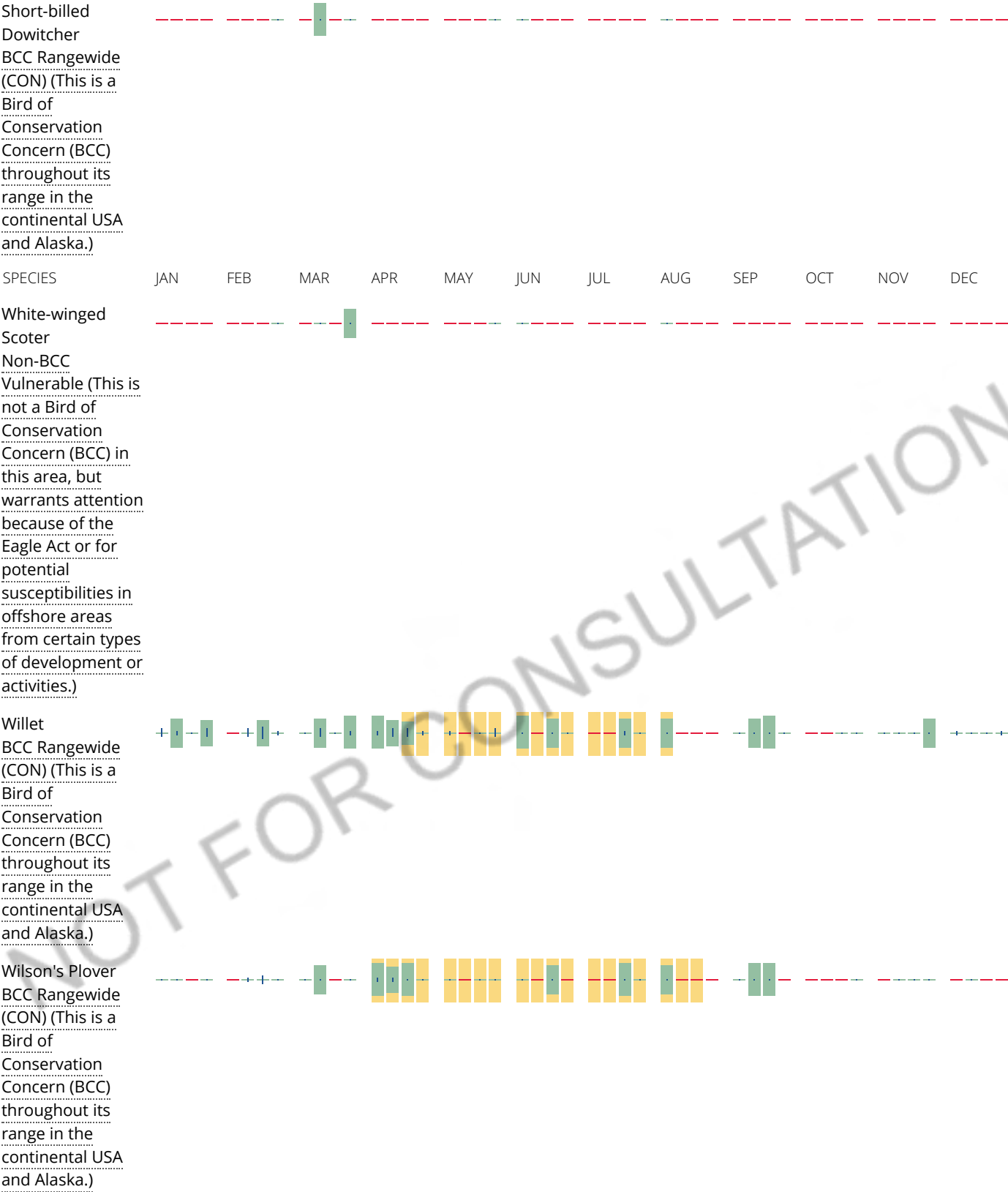


Red-throated Loon  
BCC Rangewide  
(CON) (This is a  
Bird of  
Conservation  
Concern (BCC)  
throughout its  
range in the  
continental USA  
and Alaska.)









Tell me more about conservation measures I can implement to avoid or minimize impacts to migratory birds.

[Nationwide Conservation Measures](#) describes measures that can help avoid and minimize impacts to all birds at any location year round. Implementation of these measures is particularly important when birds are most likely to occur in the project area. When birds may be breeding in the area, identifying the locations of any active nests and avoiding their destruction is a very helpful impact minimization measure. To see when birds are most likely to

occur and be breeding in your project area, view the Probability of Presence Summary. [Additional measures](#) or [permits](#) may be advisable depending on the type of activity you are conducting and the type of infrastructure or bird species present on your project site.

### What does IPaC use to generate the migratory birds potentially occurring in my specified location?

The Migratory Bird Resource List is comprised of USFWS [Birds of Conservation Concern \(BCC\)](#) and other species that may warrant special attention in your project location.

The migratory bird list generated for your project is derived from data provided by the [Avian Knowledge Network \(AKN\)](#). The AKN data is based on a growing collection of [survey, banding, and citizen science datasets](#) and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) which your project intersects, and that have been identified as warranting special attention because they are a BCC species in that area, an eagle ([Eagle Act](#) requirements may apply), or a species that has a particular vulnerability to offshore activities or development.

Again, the Migratory Bird Resource list includes only a subset of birds that may occur in your project area. It is not representative of all birds that may occur in your project area. To get a list of all birds potentially present in your project area, please visit the [AKN Phenology Tool](#).

### What does IPaC use to generate the probability of presence graphs for the migratory birds potentially occurring in my specified location?

The probability of presence graphs associated with your migratory bird list are based on data provided by the [Avian Knowledge Network \(AKN\)](#). This data is derived from a growing collection of [survey, banding, and citizen science datasets](#).

Probability of presence data is continuously being updated as new and better information becomes available. To learn more about how the probability of presence graphs are produced and how to interpret them, go to the Probability of Presence Summary and then click on the "Tell me about these graphs" link.

### How do I know if a bird is breeding, wintering, migrating or present year-round in my project area?

To see what part of a particular bird's range your project area falls within (i.e. breeding, wintering, migrating or year-round), you may refer to the following resources: [The Cornell Lab of Ornithology All About Birds Bird Guide](#), or (if you are unsuccessful in locating the bird of interest there), the [Cornell Lab of Ornithology Neotropical Birds guide](#). If a bird on your migratory bird species list has a breeding season associated with it, if that bird does occur in your project area, there may be nests present at some point within the timeframe specified. If "Breeds elsewhere" is indicated, then the bird likely does not breed in your project area.

### What are the levels of concern for migratory birds?

Migratory birds delivered through IPaC fall into the following distinct categories of concern:

1. "BCC Rangewide" birds are [Birds of Conservation Concern](#) (BCC) that are of concern throughout their range anywhere within the USA (including Hawaii, the Pacific Islands, Puerto Rico, and the Virgin Islands);
2. "BCC - BCR" birds are BCCs that are of concern only in particular Bird Conservation Regions (BCRs) in the continental USA; and
3. "Non-BCC - Vulnerable" birds are not BCC species in your project area, but appear on your list either because of the [Eagle Act](#) requirements (for eagles) or (for non-eagles) potential susceptibilities in offshore areas from certain types of development or activities (e.g. offshore energy development or longline fishing).

Although it is important to try to avoid and minimize impacts to all birds, efforts should be made, in particular, to avoid and minimize impacts to the birds on this list, especially eagles and BCC species of rangewide concern. For more information on conservation measures you can implement to help avoid and minimize migratory bird impacts and requirements for eagles, please see the FAQs for these topics.



## Details about birds that are potentially affected by offshore projects

For additional details about the relative occurrence and abundance of both individual bird species and groups of bird species within your project area off the Atlantic Coast, please visit the [Northeast Ocean Data Portal](#). The Portal also offers data and information about other taxa besides birds that may be helpful to you in your project review. Alternately, you may download the bird model results files underlying the portal maps through the [NOAA NCCOS Integrative Statistical Modeling and Predictive Mapping of Marine Bird Distributions and Abundance on the Atlantic Outer Continental Shelf](#) project webpage.

Bird tracking data can also provide additional details about occurrence and habitat use throughout the year, including migration. Models relying on survey data may not include this information. For additional information on marine bird tracking data, see the [Diving Bird Study](#) and the [nanotag studies](#) or contact [Caleb Spiegel](#) or [Pam Loring](#).

## What if I have eagles on my list?

If your project has the potential to disturb or kill eagles, you may need to [obtain a permit](#) to avoid violating the Eagle Act should such impacts occur.

## Proper Interpretation and Use of Your Migratory Bird Report

The migratory bird list generated is not a list of all birds in your project area, only a subset of birds of priority concern. To learn more about how your list is generated, and see options for identifying what other birds may be in your project area, please see the FAQ "What does IPaC use to generate the migratory birds potentially occurring in my specified location". Please be aware this report provides the "probability of presence" of birds within the 10 km grid cell(s) that overlap your project; not your exact project footprint. On the graphs provided, please also look carefully at the survey effort (indicated by the black vertical bar) and for the existence of the "no data" indicator (a red horizontal bar). A high survey effort is the key component. If the survey effort is high, then the probability of presence score can be viewed as more dependable. In contrast, a low survey effort bar or no data bar means a lack of data and, therefore, a lack of certainty about presence of the species. This list is not perfect; it is simply a starting point for identifying what birds of concern have the potential to be in your project area, when they might be there, and if they might be breeding (which means nests might be present). The list helps you know what to look for to confirm presence, and helps guide you in knowing when to implement conservation measures to avoid or minimize potential impacts from your project activities, should presence be confirmed. To learn more about conservation measures, visit the FAQ "Tell me about conservation measures I can implement to avoid or minimize impacts to migratory birds" at the bottom of your migratory bird trust resources page.

# Marine mammals

Marine mammals are protected under the [Marine Mammal Protection Act](#). Some are also protected under the Endangered Species Act<sup>1</sup> and the Convention on International Trade in Endangered Species of Wild Fauna and Flora<sup>2</sup>.

The responsibilities for the protection, conservation, and management of marine mammals are shared by the U.S. Fish and Wildlife Service [responsible for otters, walruses, polar bears, manatees, and dugongs] and NOAA Fisheries<sup>3</sup> [responsible for seals, sea lions, whales, dolphins, and porpoises]. Marine mammals under the responsibility of NOAA Fisheries are **not** shown on this list; for additional information on those species please visit the [Marine Mammals](#) page of the NOAA Fisheries website.

The Marine Mammal Protection Act prohibits the take (to harass, hunt, capture, kill, or attempt to harass, hunt, capture or kill) of marine mammals and further coordination may be necessary for project evaluation. Please contact the U.S. Fish and Wildlife Service Field Office shown.

1. The [Endangered Species Act](#) (ESA) of 1973.
2. The [Convention on International Trade in Endangered Species of Wild Fauna and Flora](#) (CITES) is a treaty to ensure that international trade in plants and animals does not threaten their survival in the wild.
3. [NOAA Fisheries](#), also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

The following marine mammals under the responsibility of the U.S. Fish and Wildlife Service are potentially affected by activities in this location:

NAME

West Indian Manatee *Trichechus manatus*  
<https://ecos.fws.gov/ecp/species/4469>

## Facilities

## National Wildlife Refuge lands

Any activity proposed on lands managed by the [National Wildlife Refuge](#) system must undergo a 'Compatibility Determination' conducted by the Refuge. Please contact the individual Refuges to discuss any questions or concerns.

THERE ARE NO REFUGE LANDS AT THIS LOCATION.

# Fish hatcheries

THERE ARE NO FISH HATCHERIES AT THIS LOCATION.

## Wetlands in the National Wetlands Inventory

Impacts to [NWI wetlands](#) and other aquatic habitats may be subject to regulation under Section 404 of the Clean Water Act, or other State/Federal statutes.

For more information please contact the Regulatory Program of the local [U.S. Army Corps of Engineers District](#).

Please note that the NWI data being shown may be out of date. We are currently working to update our NWI data set. We recommend you verify these results with a site visit to determine the actual extent of wetlands on site.

This location overlaps the following wetlands:

### ESTUARINE AND MARINE DEEPWATER

[E1UBL](#)

[E1AB3L](#)

### ESTUARINE AND MARINE WETLAND

[E2AB3M](#)

[E2EM1P](#)

[E2USM](#)

### FRESHWATER EMERGENT WETLAND

[PEM1A](#)

[PEM1Cx](#)

[PEM1C](#)

[PEM1/SS3A](#)

[PEM1E](#)

[PEM1Rx](#)

[PEM1Fx](#)

### FRESHWATER FORESTED/SHRUB WETLAND

[PFO4/SS3C](#)

[PFO1F](#)

[PFO4Cd](#)

[PSS3/EM1R](#)

[PFO4C](#)

[PFO4/3C](#)

[PSS1/3C](#)

[PFO4/1C](#)

[PFO1/4C](#)

[PSS1E](#)



A full description for each wetland code can be found at the [National Wetlands Inventory website](#)

### Data limitations

The Service's objective of mapping wetlands and deepwater habitats is to produce reconnaissance level information on the location, type and size of these resources. The maps are prepared from the analysis of high altitude imagery. Wetlands are identified based on vegetation, visible hydrology and geography. A margin of error is inherent in the use of imagery; thus, detailed on-the-ground inspection of any particular site may result in revision of the wetland boundaries or classification established through image analysis.

The accuracy of image interpretation depends on the quality of the imagery, the experience of the image analysts, the amount and quality of the collateral data and the amount of ground truth verification work conducted. Metadata should be consulted to determine the date of the source imagery used and any mapping problems.

Wetlands or other mapped features may have changed since the date of the imagery or field work. There may be occasional differences in polygon boundaries or classifications between the information depicted on the map and the actual conditions on site.

### Data exclusions

Certain wetland habitats are excluded from the National mapping program because of the limitations of aerial imagery as the primary data source used to detect wetlands. These habitats include seagrasses or submerged aquatic vegetation that are found in the intertidal and subtidal zones of estuaries and nearshore coastal waters. Some deepwater reef communities (coral or tubercid worm reefs) have also been excluded from the inventory. These habitats, because of their depth, go undetected by aerial imagery.

### Data precautions

Federal, state, and local regulatory agencies with jurisdiction over wetlands may define and describe wetlands in a different manner than that used in this inventory. There is no attempt, in either the design or products of this inventory, to define the limits of proprietary jurisdiction of any Federal, state, or local government or to establish the geographical scope of the regulatory programs of government agencies. Persons intending to engage in activities involving modifications within or adjacent to wetland areas should seek the advice of appropriate federal, state, or local agencies concerning specified agency regulatory programs and proprietary jurisdictions that may affect such activities.

**Draft**  
**Environmental Assessment for 8 Construction Sites Tyndall Air Force Base, Florida**

**APPENDIX C CULTURAL RESOURCES ASSESSMENT SURVEY**

**ENVIRONMENTAL ASSESSMENT FOR 8 CONSTRUCTION  
SITES**

**TYNDALL AIR FORCE BASE, FLORIDA**

**CULTURAL RESOURCES ASSESSMENT SURVEY REPORT**



PREPARED FOR:

**Department of the Air Force  
and**

**U.S. Army Corps of Engineers Mobile District**

**Contract W9127819D0025/Task Order W9127821F0147**

February 2022



**Cultural Resources Assessment Survey Report  
Environmental Assessment for 8 Construction Sites Tyndall Air Force Base, Florida**

**LIST OF ACRONYMS AND ABBREVIATIONS**

325 WEG	325th Weapons Evaluation Group
83 FWS	83rd Fighter Weapons Squadron
A.D.	Anno Domini
AFB	Air Force Base
AMSL	Above Mean Sea Level
APE	Area of Potential Effect
B.C.	Before Christ
B.P.	Before Present
bgs	Below Ground Surface
ca.	Circa
CFR	Code of Federal Regulations
cm	Centimeters
CRMP	Cultural Resources Management Program
DEM	Digital Elevation Model
DoD	Department of Defense
EA	Environmental Assessment
ECF	Entry Control Facility
EOD	Explosive Ordnance Disposal
F	Fahrenheit
FMSF	Florida Master Site File
g	Gram
GIS	Geographic Information Systems
GPS	Global Positioning System
ICRMP	Integrated Cultural Resources Management Plan
LiDAR	Light Detection and Ranging
LOD	Limits of Disturbance
m	Meter
MWR	Morale, Welfare, and Recreation
NAS	Naval Air Station
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
NRHP	National Register of Historic Places
PL	Public Law
PPK	Projectile Point/Knife
RV	Recreational Vehicle
SBES	Single Beam Echo Sounder
SBP	Sub Bottom Profiler
SF	Square Foot
SHPO	State Historic Preservation Office
SSS	Side Scan Sonar
STP	Shovel Test Pit
USACE	U.S. Army Corps of Engineers
USAF	U.S. Air Force
USDA	U.S. Department of Agriculture
WASP	Women's Air Force Service Pilots
WEG	Weapons Evaluation Group

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**Cultural Resources Assessment Survey Report**  
**Environmental Assessment for 8 Construction Sites Tyndall Air Force Base, Florida**

## **1.0 INTRODUCTION**

AECOM is contracted to U.S. Army Corps of Engineers (USACE) Mobile District (Contract W9127819D0025/Task Order W9127821F0147) to perform archaeological resource survey and evaluation to support an Environmental Assessment (EA) for near-term construction projects planned at Tyndall Air Force Base (AFB). Tyndall AFB occupies approximately 29,276 acres in Bay County, Florida, approximately 13 miles southeast of Panama City. Eight individual projects to be implemented in Fiscal Year 2023 (collectively referred to as the EA “Proposed Action”) have been identified for evaluation in the EA, which is necessary to comply with the National Environmental Policy Act of 1969 (NEPA) and its implementing regulations. The EA projects include construction of new facilities and infrastructure, replacement or repair and renovation of existing facilities, and enhancement of recreational amenities across the installation to promote morale, welfare and readiness.

As part of the Department of Defense (DoD), Tyndall AFB is charged with responsible management of historic properties under its jurisdiction. The installation is required to consider the effects of its actions on historic properties in accordance with legislation and regulations that include, but are not limited to, the Antiquities Act of 1906, the Historic Sites Act of 1935, the National Historic Preservation Act (NHPA) of 1966 as amended, 36 Code of Federal Regulations (CFR) Part 800, the Archaeological and Historical Preservation Act of 1974, the Archaeological Resources Protection Act of 1979, the NEPA, the Native American Graves Protection and Repatriation Act of 1990, the American Indian Religious Freedom Act, and Air Force Manual 32-7003.

Staffed by Secretary of the Interior-qualified professionals, the goal of the Cultural Resources Management Program (CRMP) at Tyndall AFB is achieving compliance with these mandates without impeding the base mission. Contractors are held to strict adherence with the above laws and regulations as well as the guidelines issued by the State of Florida, (Florida State Historic Preservation Office [SHPO]). Tyndall AFB program guidance, objectives, and standard operating procedures are also incorporated into the Integrated Cultural Resources Management Plan (ICRMP), the implementation of which integrates Tyndall AFB’s preservation obligations into comprehensive base planning so as to foster the military mission, while still complying with land management legislation.

Archaeological investigation is warranted to define the current extent of potentially significant cultural resources within the EA project areas. The investigations and results described in this Cultural Resources Assessment Survey report will provide Tyndall AFB the information needed to complete consultations with the SHPO and federally-recognized Native American tribes who have an interest and affiliation within Tyndall AFB lands, pursuant to Section 306108 of the NHPA and its implementing regulations at 36 CFR Part 800.

### **1.1 PURPOSE FOR THE PROPOSED ACTION**

The purpose of implementing the Proposed Actions is to provide facility, infrastructure and functionality improvements necessary to provide continued mission support for host and tenant units at Tyndall AFB.. Implementing the Proposed Actions is required to allow host and tenant units at Tyndall AFB to



**Cultural Resources Assessment Survey Report**  
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successfully complete their missions, to prevent deterioration of functions and capabilities that can occur over time due to obsolescence and evolving mission needs, and to ensure continued Airmen readiness.

## **1.2 DESCRIPTION OF THE PROPOSED ACTION**

The Proposed Actions include eight proposed individual construction projects (and their alternatives, as appropriate), described below.

1. Construct New Explosive Ordnance Disposal (EOD) Gravel Road: The current EOD Range and detonation site is appropriately sited and fully approved to dispose of heavy ordnance. However, under existing conditions, heavy ordnance must be transported in via the main EOD road and lowered into the detonation site from atop an earthen berm on the north side of the detonation site, adding time and effort to completion of detonation activities by assigned personnel. The Proposed Action seeks to implement an efficiency improvement to current heavy ordnance offloading and disposal activities. The Proposed Action would construct an approximately 480-foot-long gravel access road with a hammerhead style turnaround connecting the existing main EOD road to the existing detonation site (**Figure 1.2-1**)
2. Dredge the 325th Weapons Evaluation Group (325 WEG) Small Boathouse Area: 325 WEG operations in the 9700 Area of Tyndall AFB are facilitated by both roadway access and maritime access points. The WEG Boathouse (Building 9709) is the primary access point for small boats to this area, which sustained significant damage during Hurricane Michael in 2018. Repair of the boathouse dock area has been separately approved and environmentally evaluated, and is in the process of being implemented. However, current bottom conditions in this area are not conducive to access by small boats during low tide, and therefore dredging is required once the boat docks are again operational. The area must be dredged to a depth of between 3 and 5 feet below present bottom elevation to provide access during low tide operations. The Air Force is considering two action alternatives to the Proposed Action in the EA:
  - Alternative 1: Dredge the small boathouse docks to a depth of between three and five feet below present bottom elevation, and place clean dredge spoils immediately to the north and to the west of Buildings 9700 and 9706 (**Figure 1.2-2**).
  - Alternative 2: Dredge the small boathouse docks to a depth of between three and five feet below present bottom elevation, and place either clean or contaminated dredge spoils in an area north of Vickers Way (**Figure 1.2-2**).
3. Replace WEG Tower 1802: WEG Communications Tower 1802 was damaged and rendered unusable due to Hurricane Michael in 2018. Prior to being damaged, the tower provided communications functions required for mission readiness by the 83rd Fighter Weapons Squadron (83 FWS). 83 FWS requires restoration of the previous functions, and also seeks better coverage and line-of-sight for communications during unmanned drone missions. Functionality of this facility needs to be replaced to accomplish these objectives. The Proposed Action would construct a new 110-foot-tall, four-legged communications tower with a 30 feet by 30 feet ground surface area, install approximately 1,600 square feet (SF) of security fencing, place gravel within the fenced area, install utility connections to the tower via directional boring, and construct an approximately 5,000-SF unpaved tower access road (**Figure 1.2-3**).

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- 1       4. Improve Expeditionary/Encampment Roads: Expeditionary Road and Encampment Road, located  
2       north of U.S. Highway 98 and west of Florida Avenue on Tyndall AFB, have historically been  
3       gravel forestry roads. Since commencing reconstruction activities after Hurricane Michael in 2018,  
4       these roads have seen an increase in traffic. Aside from the main Flightline gates there is not another  
5       ingress point to areas north of Florida Avenue (e.g., the Flightline and the 6000 area). Construction  
6       of these roadways to 12-foot asphalt roads has been separately approved and environmentally  
7       evaluated, and is in the process of being implemented.

8       Further improvements are needed to accommodate construction traffic. The Proposed Action seeks  
9       to expand lanes along these roadways and install Entry Control Facilities (ECF) to help facilitate  
10      construction traffic and secure access. The Proposed Action would widen the existing asphalt  
11      Expeditionary Road and Encampment Road from 12 feet wide to 26 feet wide, including two 12-  
12      foot-wide lanes with one-foot shoulders, construct a 55-foot paved turnaround on Expeditionary  
13      Road near U.S. Highway 98, and construct a new ECF near the Expeditionary Road/U.S. Highway  
14      98 intersection (**Figure 1.2-4**)

- 15      5. Expand FAMCAMP Site: FAMCAMP is located west of U.S. Highway 98, north of Sabre Drive.  
16      FAMCAMP is a significant revenue generator for Tyndall AFB and provides many morale, welfare  
17      and recreation (MWR) programs and amenities to airmen, their families, and the public. The goal  
18      of the Proposed Action is to increase the number of Recreational Vehicle (RV) hookups and  
19      parking pads to increase residential capacity at the site, and create kayak launches/landings to give  
20      users better access to the water. Another objective of the Proposed Action is to install additional  
21      egress pathways for emergency response scenarios. The Air Force is considering two action  
22      alternatives to the Proposed Action in the EA:

23           – Alternative 1: Construct a new gravel emergency access road and controlled access gates  
24           on both the proposed and existing entrances. Replace two existing RV pads that would be  
25           displaced due to planned construction activities such that there is no net loss of currently  
26           available RV slots. Construct 30 additional 350- to 400-SF concrete RV parking pads with  
27           new water, electrical, and sewage utility connections and install a site containment fence.  
28           Construct a new kayak launch in the northwest area of the FAMCAMP site with stairs  
29           leading down to the water (**Figure 1.2-5**).

30           – Alternative 2: Construct a new gravel emergency access road and controlled access gates  
31           on both the proposed and existing entrances. Replace one existing RV pad that would be  
32           displaced due to planned construction activities such that there is no net loss of currently  
33           available RV slots. Construct 30 additional 350- to 400-SF concrete RV parking pads with  
34           new water, electrical, and sewage utility connections and install a site containment fence.  
35           Construct a new kayak launch in the southwest area of the FAMCAMP site at grade with  
36           the existing waterline (**Figure 1.2-6**).

- 37      6. Construct Water Main Along North Side of Flightline: Airfield and Flightline drainage  
38      improvements are ongoing as part of the Hurricane Michael reconstruction efforts. Additional  
39      connectivity is needed to provide water quality and conveyance to support these improvements.  
40      The Proposed Action would connect the lines running from Florida Avenue and Ammo Road to  
41      form a Flightline Water Loop along the northside of the airfield. The goal of this Proposed Action  
42      is to improve water quality issues and provide water utilities for future development of the North

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Flightline area. The Proposed Action would install approximately 15,000 linear feet of 8-inch PVC water main pipe along the northeast side of Flightline, connecting existing lines at Florida Avenue and Ammo Road, to complete a Flightline Water Loop (**Figure 1.2-7**).

7. Construct Fishing/Observation Pier at Heritage Club (Building 1454): Future plans for the Heritage Club facilities, which have gone unused since Hurricane Michael in 2018, include installation of outdoor amenities such as an amphitheater and other public outdoor use areas. Although these development plans are not part of the Proposed Action in this EA and will be addressed at a future time, the Proposed Action seeks to increase near-term use of the facility in a way that is compatible with the planned future construction, by constructing a fishing and observation pier. The Air Force is considering two action alternatives to the Proposed Action in the EA:

- Alternative 1: Construct a new wooden pier approximately 200 feet long by 15 feet wide, with a 50-foot by 20-foot observation/fishing area, including approximately 40 12-inch-diameter support pylons embedded into the soil (**Figure 1.2-8**).
- Alternative 2: Construct a new concrete pier approximately 200 feet long by 20 feet wide, with a 75-foot by 20-foot observation/fishing area, including approximately 55 12-inch-diameter support pylons embedded into the soil (**Figure 1.2-9**).

8. Renovate the UNITE Site: The UNITE Program at Tyndall AFB is managed by the 325 Force Support Squadron as a means to build cohesion for active duty troops, reserve and civilians at Tyndall AFB. The Proposed Action involves creating outdoor recreational facilities and supporting infrastructure that can be utilized by these parties in order to increase MWR opportunities and revenue at Tyndall. The Air Force is considering two action alternatives to the Proposed Action in the EA:

- Alternative 1: Construct new recreational facilities (axe throwing course, paintball field, and archery range), administrative office space and a gravel parking area on a 22.5-acre site located north of Sabre Drive and west of U.S. Highway 98 (**Figure 1.2-10**).
- Alternative 2: Construct new recreational facilities (axe throwing course, paintball field, and archery range), administrative office space and a gravel parking area on a 16-acre site at the corner of Sabre Drive and Prime Beef Road (**Figure 1.2-11**).

### **1.2.1 LIMITS OF DISTURBANCE AND AREAS OF POTENTIAL EFFECT**

Limits of disturbance (LOD) were identified based on the notional construction layouts depicted in **Figures 1.2-1 through 1.2-11**. The LODs represent buffer distances around the planned construction areas to account for direct disturbance as well as incidental disturbance due to construction operations. Buffer distances used to establish the LODs range from 25 feet to 50 feet, although with select projects, a larger distance was used due to the nature of the proposed construction or to provide flexibility in refining the project concepts, if necessary, once detailed design begins.

The LODs described above also serve as the Areas of Potential Effect (APE) to be evaluated for cultural resources and used for NHPA consultations. Some portions of the LOD/APE have already been surveyed for cultural resources during previous identification efforts, and therefore, those areas do not require additional survey for this effort. Additional details on previous investigations can be found in **Section 3.3**.



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**Table 1.2-1** summarizes the total acreage included in the LOD/APE for each project and alternative to be surveyed, with an indication of how many of those acres have already been surveyed and how many will therefore require cultural survey for the EA. Of note, the total acreages include some overlap for alternatives which have shared or common areas between them (e.g., WEG Boathouse, Heritage Club and Fam Camp alternatives), and therefore some double counting is inherent to the totals presented on **Table 1.2-1**.

**TABLE 1.2-1 LOD AND SURVEY AREA SUMMARY**

Project	Acres (previously surveyed)	Acres (current survey)	Acres (total)
Construct New EOD Gravel Road ( <b>Figure 1.2-1</b> )	0.00	2.65	2.65
Dredge the WEG Small Boathouse Area - Alternative 1 ( <b>Figure 1.2-2</b> )	0.25	0.89	1.14
Dredge the WEG Small Boathouse Area - Alternative 2 ( <b>Figure 1.2-2</b> )	5.32	0.31	5.63
Replace WEG Tower 1802 ( <b>Figure 1.2-3</b> )	0.00	3.68	3.68
Improve Expeditionary/Encampment Roads ( <b>Figure 1.2-4</b> )	9.63	7.30	16.93
Expand Fam Camp Site - Alternative 1 ( <b>Figure 1.2-5</b> )	10.57	0.74	11.32
Expand Fam Camp Site - Alternative 2 ( <b>Figure 1.2-6</b> )	10.57	0.73	11.31
Construct Water Main on North Side of Flightline ( <b>Figure 1.2-7</b> )	0.58	154.70	155.28
Construct Fishing/Observation Pier (Heritage Club) ( <b>Figure 1.2-8</b> )	0.38	0.30	0.68
Construct Fishing/Observation Pier (Heritage Club - Alternative 2 ( <b>Figure 1.2-9</b> ))	0.38	0.30	0.68
Renovate Unite Site - Alternative 1 ( <b>Figure 1.2-10</b> )	22.21	0.34	22.55
Renovate Unite Site - Alternative 2 ( <b>Figure 1.2-11</b> )	15.56	0.49	16.05
<b>Total<sup>1</sup></b>	<b>75.07</b>	<b>172.13</b>	<b>247.20</b>

<sup>1</sup> The total acreage reflects double counting of Fam Camp, and WEG Boathouse, and Heritage Club Alternatives which have shared/overlapping area between them. The corrected total acreage when adjusting for this double counting is 64.49 acres already surveyed, 171.43 acres to be surveyed, and 235.92 total acres.  
 Values may reflect rounding.







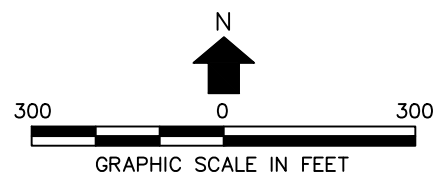
PROJECT LOCATION MAP

FIGURE 1.2-0





LEGEND	
	NEW EOD GRAVEL ROAD
	LIMITS OF DISTURBANCE






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ENVIRONMENTAL ASSESSMENT  
FOR 8 CONSTRUCTION SITES

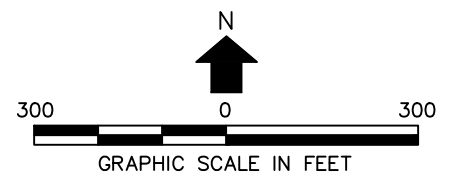
CONSTRUCT  
NEW EOD GRAVEL ROAD  
(EOD DETONATION SITE)

FIGURE  
1.2-1





LEGEND	
	DREDGE AREA
	LIMITS OF DISTURBANCE
	PROPOSED SPOIL SITE

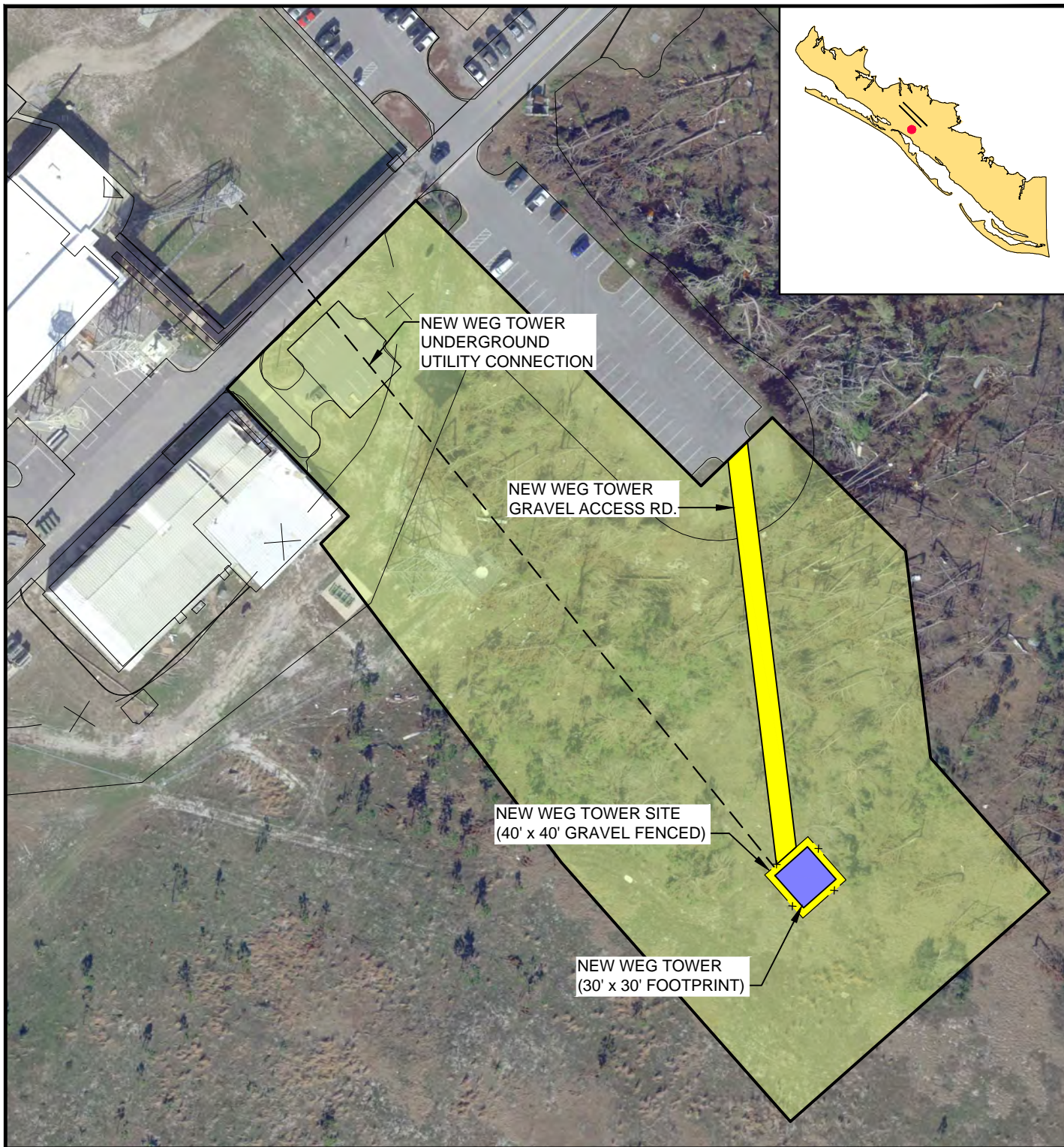


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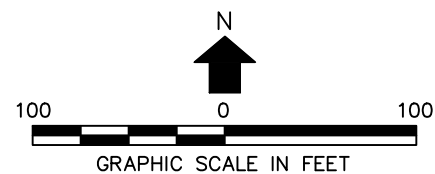
DREDGE THE WEG  
SMALL BOATHOUSE AREA

FIGURE  
1.2-2





LEGEND	
	NEW WEG TOWER
	NEW WEG TOWER ACCESS ROAD
	LIMITS OF DISTURBANCE

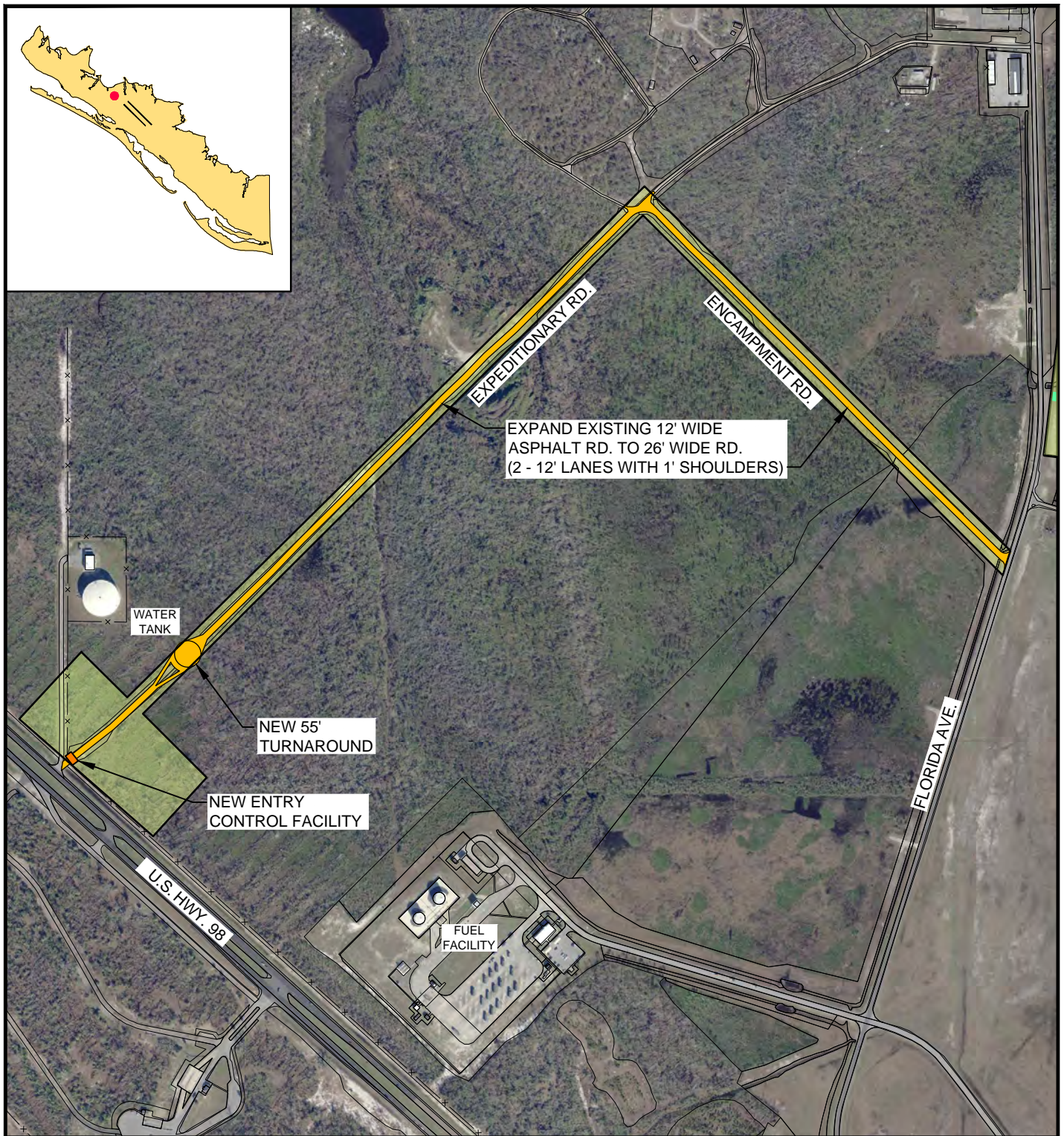





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FOR 8 CONSTRUCTION SITES

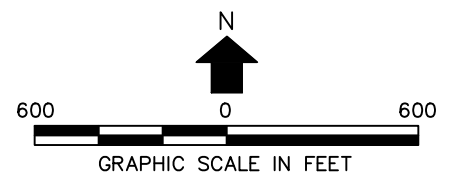
REPLACE WEG TOWER 1802

FIGURE  
1.2-3





LEGEND	
	IMPROVE EXPEDITIONARY / ENCAMPMENT ROADS
	NEW ENTRY CONTROL FACILITY
	LIMITS OF DISTURBANCE

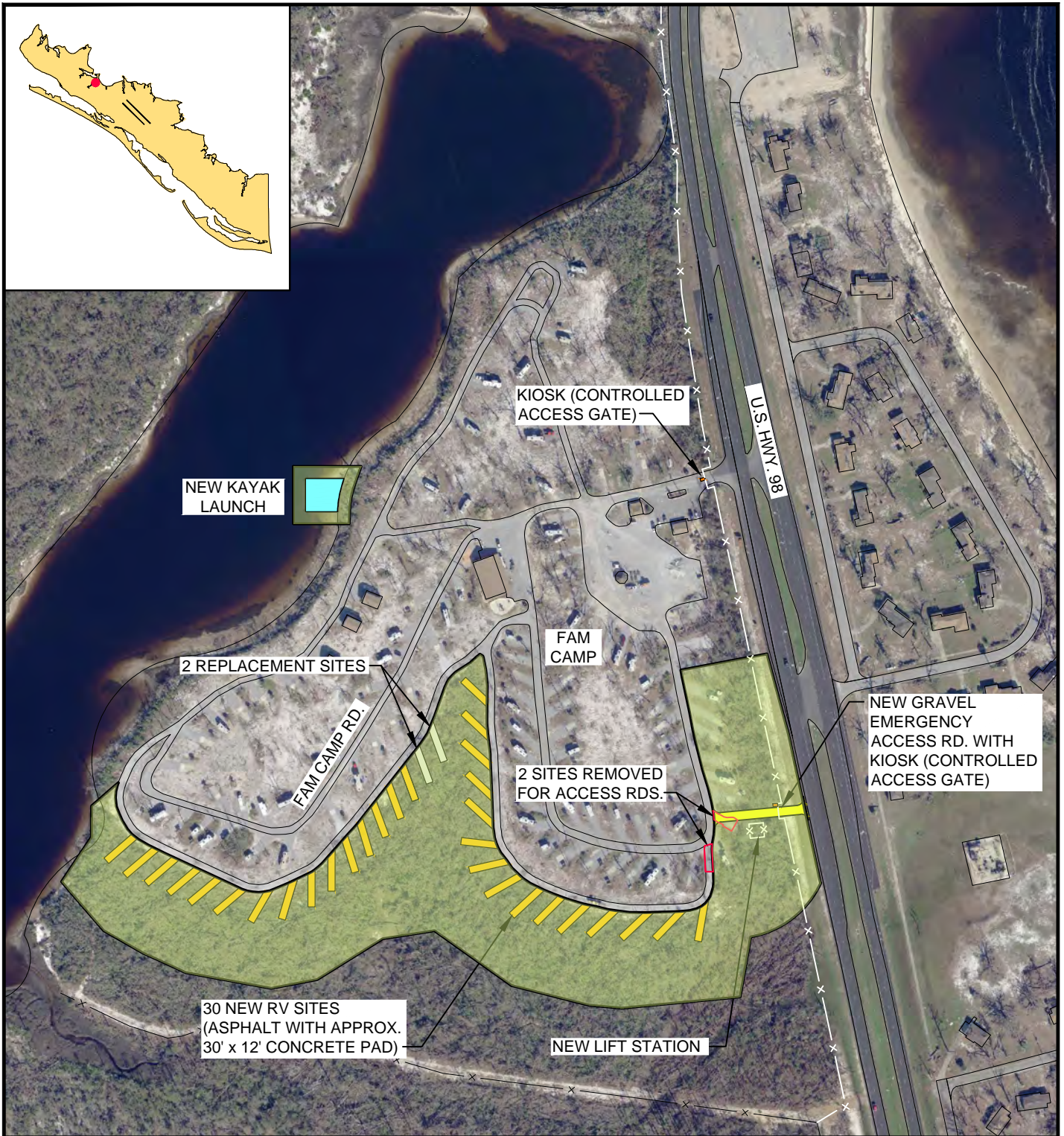







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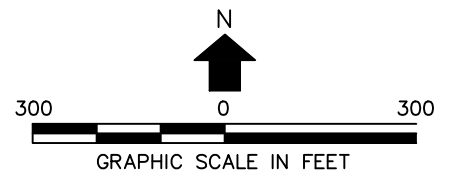
## IMPROVE EXPEDITIONARY / ENCAMPMENT ROADS

FIGURE  
1.2-4





LEGEND	
	NEW RV SITES
	NEW EMERGENCY ACCESS ROAD
	NEW REPLACEMENT RV SITE
	LIMITS OF DISTURBANCE
	NEW BOAT LAUNCH RAMP

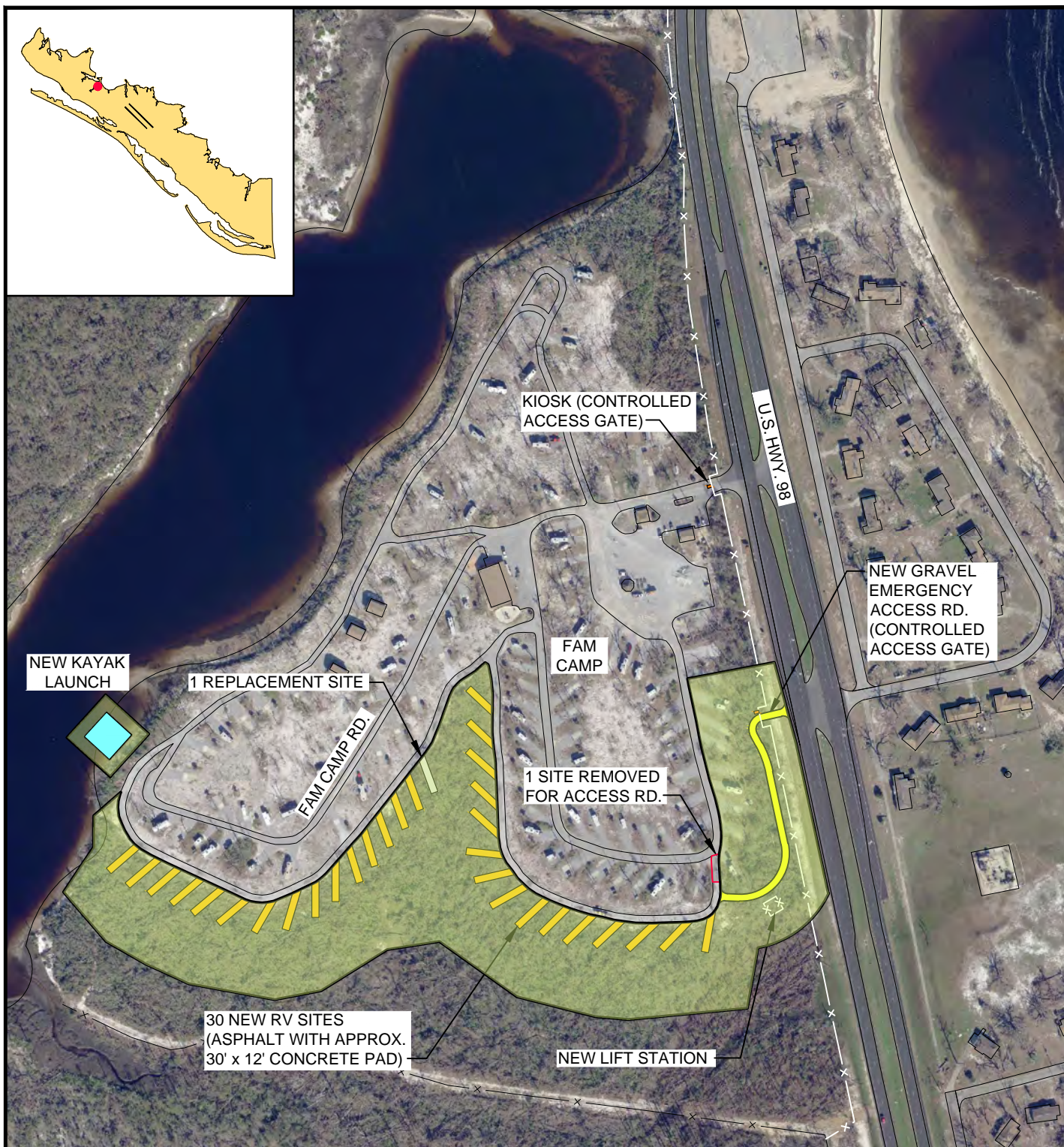







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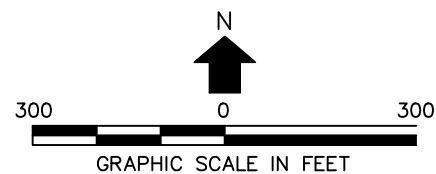
## EXPAND FAM CAMP SITE (ALTERNATIVE 1)

FIGURE  
1.2-5





LEGEND	
	NEW RV SITES
	NEW REPLACEMENT RV SITE
	NEW BOAT LAUNCH RAMP
	NEW EMERGENCY ACCESS ROAD
	LIMITS OF DISTURBANCE

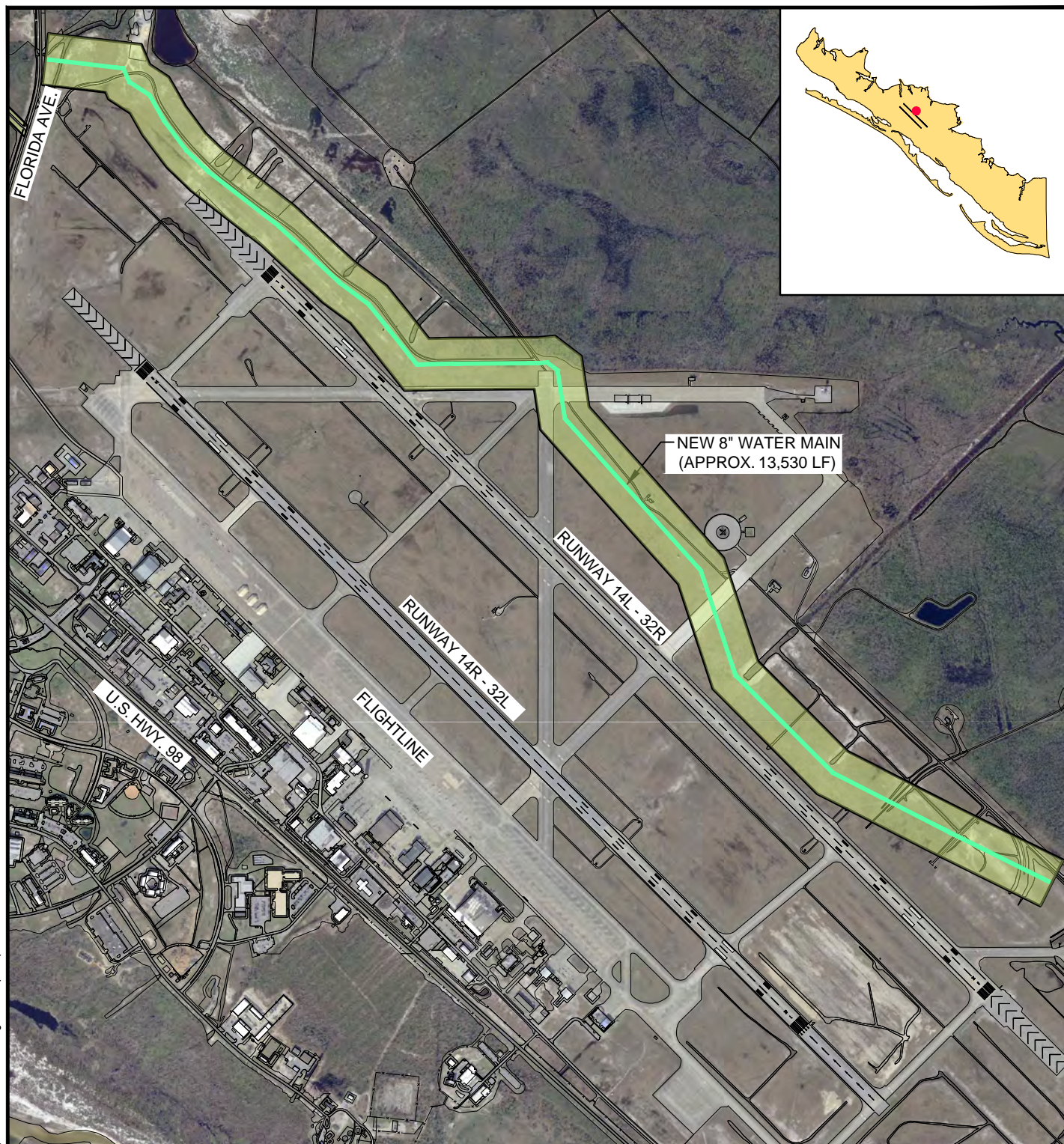


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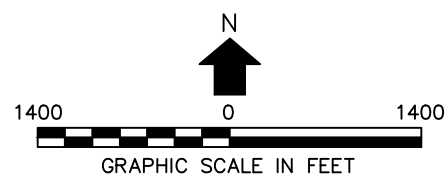
## EXPAND FAM CAMP SITE (ALTERNATIVE 2)

FIGURE  
1.2-6





LEGEND	
	NEW 8" WATER MAIN
	LIMITS OF DISTURBANCE



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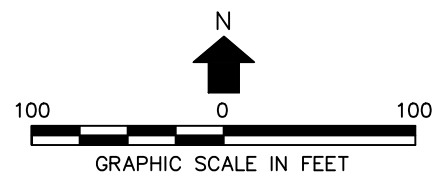
CONSTRUCT WATER MAIN  
ALONG NORTH SIDE OF  
FLIGHTLINE

FIGURE  
1.2-7





LEGEND	
	NEW FISHING / OBSERVATION PIER
	LIMITS OF DISTURBANCE



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FOR 8 CONSTRUCTION SITES

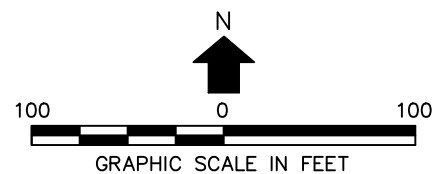
CONSTRUCT PIER AT  
HERITAGE CLUB  
(ALTERNATIVE 1)

FIGURE  
1.2-8





LEGEND	
	NEW FISHING / OBSERVATION PIER
	LIMITS OF DISTURBANCE

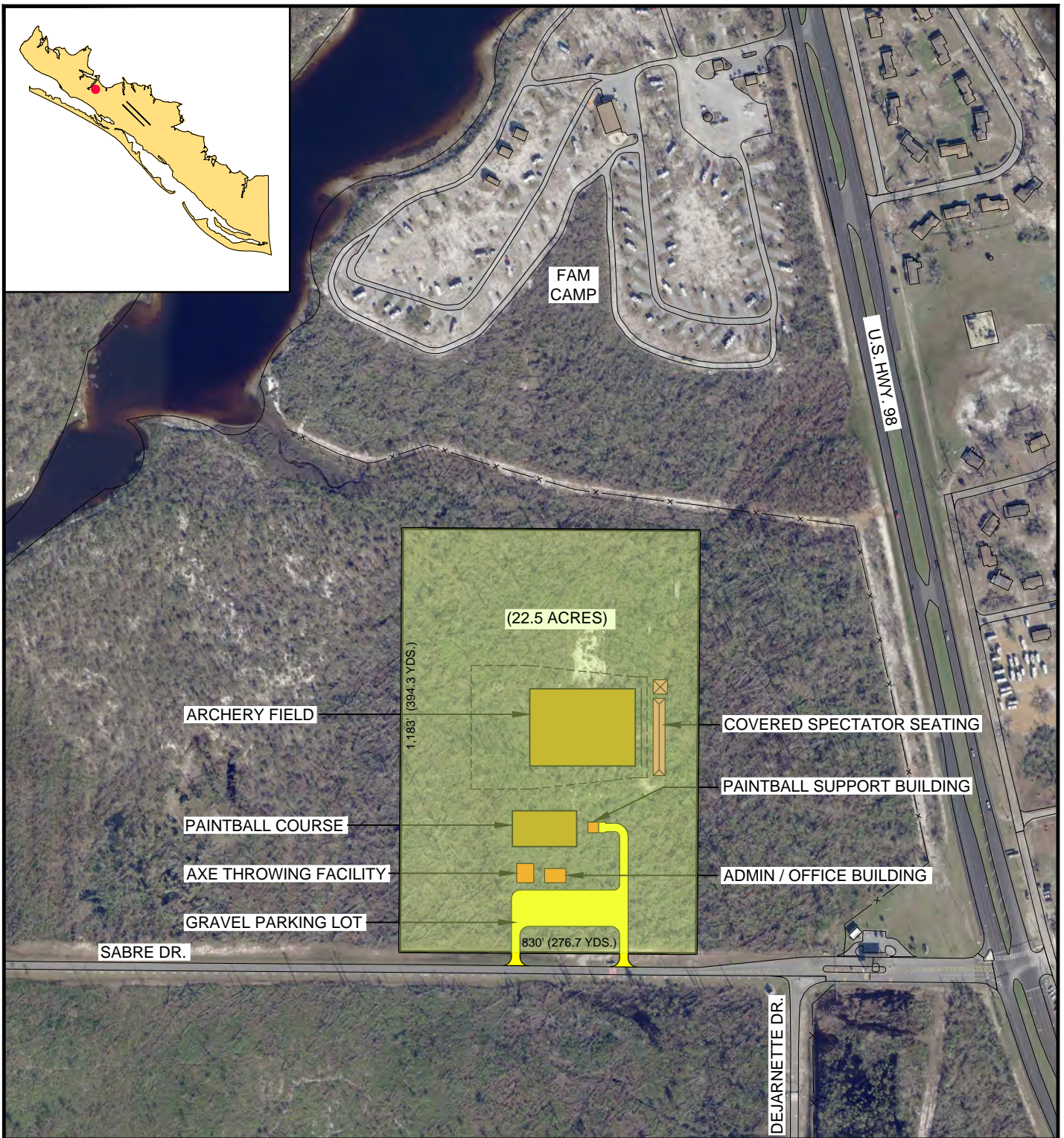







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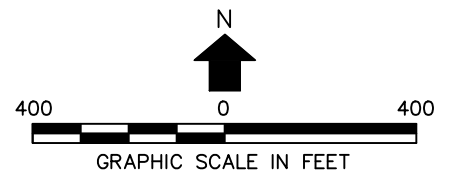
CONSTRUCT PIER AT  
HERITAGE CLUB  
(ALTERNATIVE 2)

FIGURE  
1.2-9





LEGEND	
	UNITE SITE
	POTENTIAL NEW BUILDINGS
	ARCHERY FIELD / PAINTBALL COURSE
	GRAVEL PARKING LOT
	LIMITS OF DISTURBANCE








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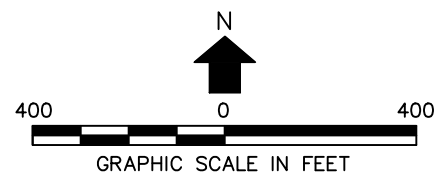
## RENOVATE UNITE SITE (ALTERNATIVE 1)

FIGURE  
1.2-10





LEGEND	
	UNITE SITE
	POTENTIAL NEW BUILDINGS
	ARCHERY FIELD / PAINTBALL COURSE
	GRAVEL PARKING LOT
	LIMITS OF DISTURBANCE



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RENOVATE UNITE SITE  
(ALTERNATIVE 2)

FIGURE  
1.2-11

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## **2.0 ENVIRONMENTAL OVERVIEW**

This section provides an overview of environmental conditions within and surrounding the APEs established for the archaeological survey, including climatic, geological, pedological and floral/faunal data.

### **2.1 SETTING**

Tyndall AFB is located in the Lower Coastal Plain province of Florida along a northwest/southeast-trending peninsula bounded to the north and west by the East Bay and to the south by St. Andrews Bay, St. Andrews Sound, barrier islands, and the Gulf of Mexico. Because of the proximity to the ocean, features such as beach dunes, wave cut bluffs, and tidal marshes are interspersed with the flat woods.

#### **2.1.1 CLIMATE**

The climate of the project area is characterized as warm, temperate, and humid. Summers are long, warm, and humid, while winters are short and mild to cool (Duffee et al. 1984). Prevailing winds generally blow from the south and southwest in the spring, summer, and fall and from the north or northwest in the winter. Warm weather temperatures average approximately 82 degrees Fahrenheit (F), while winters average approximately 57 degrees F. A typical year has approximately 300 frost-free days. Annual precipitation, which is evenly distributed throughout the year, normally exceeds 60 inches. These modern climatic conditions have existed for about 2,000 years.

#### **2.1.2 GEOMORPHOLOGY**

This area of the Florida Panhandle is underlain by the Florida Block of the Apalachicola Embayment, a Triassic Event (550 million years Before Present [B.P.]) that uplifted part of the block in the northern part of the panhandle, extending into Georgia. Tyndall AFB is situated on multiple strata of alternating sands, marine shells, limestone, and shale. The depth to the Florida Block is about 1.3 kilometers (km; ARROW 2005).

The topography of Tyndall AFB includes two terraces identified by the Bay County Soil Survey based on elevation (U.S. Department of Agriculture [USDA] 1984). These include the Silver Bluff Terrace, with an elevation of 0 to 3.3 meters (m) above mean sea level (AMSL), and the Pamlico Terrace, with an elevation between 2.4 and 7.6 m AMSL. The Pamlico Terrace was formed in the Pleistocene, likely during the Sangamon interglacial period (130,000-110,000 B.P.) (Otvos 2005). The Silver Bluff Terrace is much younger and may have been formed in both the Pleistocene and Holocene (MacNeil 1950; Otvos 1992).

#### **2.1.3 SOILS**

Soils at Tyndall AFB are formed from sandy, marine sediments and are predominately sandy, acidic, poorly drained, have low shrink-swell potential, and are relatively close to the underlying water table. The characteristics of the soil types found within the survey APEs are provided in **Table 2.1-1** and shown on **Figures 2.1-1** through **2.1-9**. The acreage tabulation is broken down based on whether or not the area was surveyed prior to the current archaeological investigations in each project area, and also indicates drainage

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classification which is used in part to identify archaeological probability areas for a testing schema (see Sections 4.3. and 4.4).

**2.1.1 FLORA AND FAUNA**

The large acreage of undeveloped land and wide range of natural community types at Tyndall AFB provides habitat for a variety of mammals, reptiles, birds, amphibians, fish, and plants. Common mammal species include the least shrew (*Cryptodius parva*), eastern red bat (*Lasiurus borealis*), eastern mole (*Scalopus aquaticus*), cotton mouse (*Peromyscus gossypinus*), eastern gray squirrel (*Sciurus carolinensis*), salt marsh rabbit (*Sylvilagus aquaticus*), red fox (*Vulpes vulpes*), gray fox (*Urocyon cinereoargenteus*), raccoon (*Procyon lotor*), white-tailed deer (*Odocoileus virginianus*), and Virginia opossum (*Didelphis virginiana*).

Typical herpetofauna include the green anole (*Anolis carolinensis*), six-lined racerunner (*Cnemidophorus sexlineatus*), slender glass lizard (*Ophisaurus attenuatus*), garter snake (*Thamnophis sirtalis*), black racer (*Coluber constrictor*), and cottonmouth (*Agkistrodon piscivorus*).

Regularly encountered avian species include the great blue heron (*Ardea herodias*), northern bobwhite (*Colinus virginianus*), great horned owl (*Bubo virginianus*), red-shouldered hawk (*Buteo lineatus*), red-winged blackbird (*Agelaius phoeniceus*), belted kingfisher (*Megasceryle alcyon*), American crow (*Corvus brachyrhynchos*), and flycatchers (*Tyrannidae spp.*).

Representative fish species include the sheepshead minnow (*Cyprinodon variegatus*), long-nosed killifish (*Fundulus similis*), largemouth bass (*Micropterus salmoides*), bluegill (*Lepomis macrochirus*), redear sunfish (*L. microlophus*), crappie (*Pomoxis sp.*), threadfin shad (*Dorosoma petenense*), grass carp (*Ctenopharyngodon idella*), and channel catfish (*Ictalurus punctatus*).

In addition to the commonly encountered species listed above, several federal and state protected animal and plant species have been documented at Tyndall AFB or are known to occur in proximity to Tyndall AFB. These species are addressed in the Tyndall AFB Integrated Natural Resources Management Plan.



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1

**TABLE 2.1-1 PROJECT AREA SOILS**

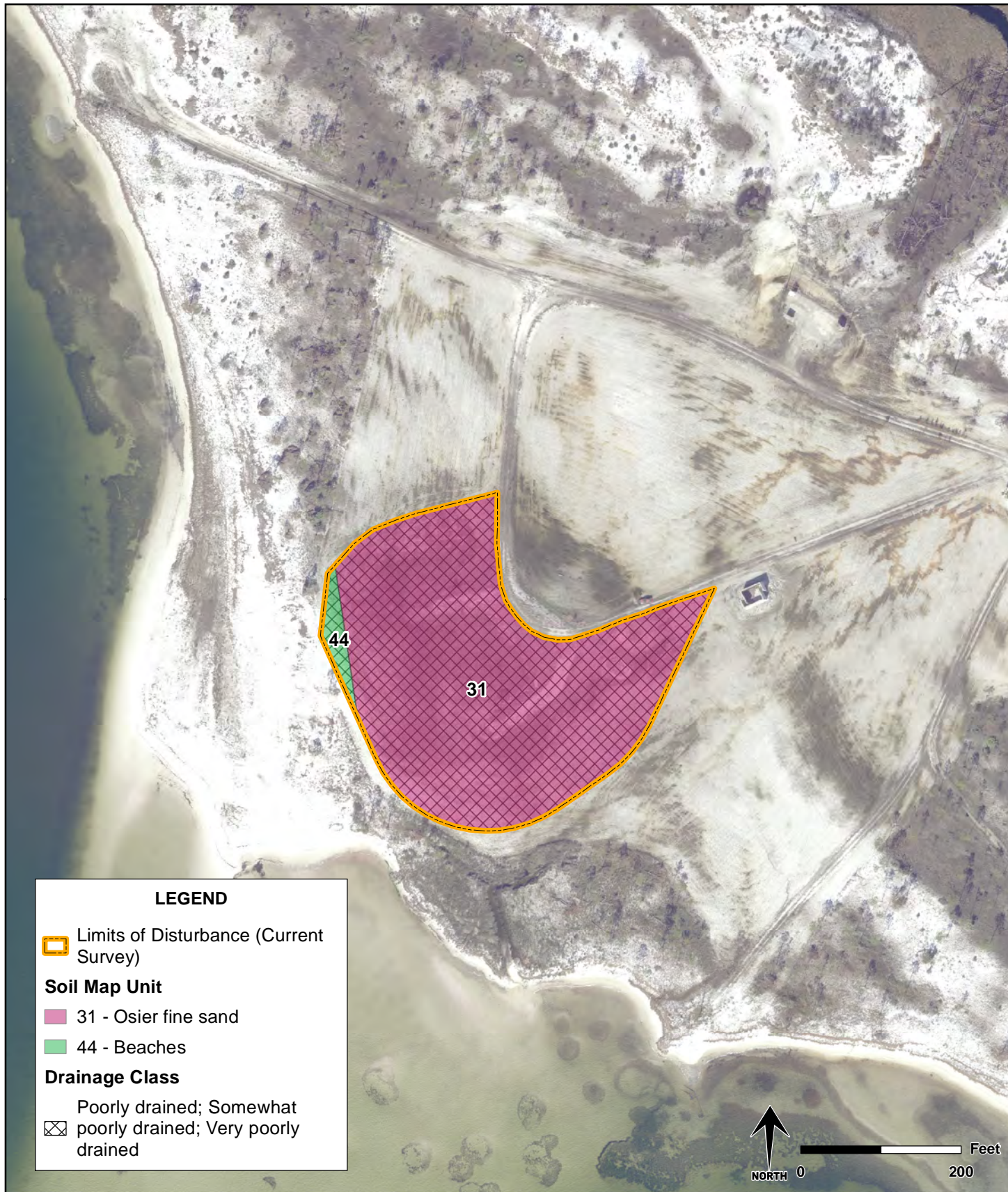
Project	Map Unit	Drainage Classification	Acres (previously surveyed)	Acres (current survey)	Acres (total)
Construct New EOD Gravel Road (Figure 2.1-1)	31 - Osier fine sand	Poorly drained	0.00	2.57	2.57
	44 - Beaches	Poorly drained	0.00	0.08	0.08
<i>Subtotal</i>			0.00	2.65	2.65
Dredge the WEG Small Boathouse Area - Alternative 1 (Figure 2.1-2)	100 - Waters of the Gulf of Mexico	Not specified	0.00	0.17	0.17
	48 - Fripp-Corolla complex, 2 to 30 percent slopes	Excessively drained	0.25	0.72	0.97
<i>Subtotal</i>			0.25	0.89	1.14
Dredge the WEG Small Boathouse Area - Alternative 2 (Figure 2.1-2)	100 - Waters of the Gulf of Mexico		0.00	0.17	0.17
	48 - Fripp-Corolla complex, 2 to 30 percent slopes	Excessively drained	5.32	0.14	5.46
<i>Subtotal</i>			5.32	0.31	5.63
Replace WEG Tower 1802 (Figure 2.1-3)	13 - Leon sand, 0 to 2 percent slopes	Poorly drained	0.00	2.52	2.52
	22 - Pamlico-Dorovan complex	Very poorly drained	0.00	0.87	0.87
	27 - Mandarin sand, 0 to 2 percent slopes	Somewhat poorly drained	0.00	0.29	0.29
<i>Subtotal</i>			0.00	3.68	3.68
Improve Expeditionary/ Encampment Roads (Figure 2.1-4)	13 - Leon sand, 0 to 2 percent slopes	Poorly drained	3.63	2.05	5.68
	22 - Pamlico-Dorovan complex	Very poorly drained	0.20	1.41	1.62
	27 - Mandarin sand, 0 to 2 percent slopes	Somewhat poorly drained	3.27	0.01	3.28
	29 - Rutlege sand, 0 to 2 percent slopes	Very poorly drained	0.86	0.00	0.86
	30 - Pottsborg-Pottsborg, wet, sand, 0 to 2 percent slopes	Poorly drained	0.00	1.58	1.58
	40 - Arents, 0 to 5 percent slopes	Somewhat poorly drained	0.00	0.01	0.01
	42 - Resota fine sand, 0 to 5 percent slopes	Moderately well drained	1.37	1.37	2.74
	47 - Pits	Not specified	0.29	0.88	1.17
<i>Subtotal</i>			9.63	7.30	16.93
Expand Fam Camp Site - Alternative 1 (Figure 2.1-5)	40 - Arents, 0 to 5 percent slopes	Somewhat poorly drained	0.57	0.08	0.65
	45 - Kureb sand, 0 to 5 percent slopes	Excessively drained	10.01	0.39	10.39
<i>Subtotal</i>			10.57	0.46	11.04
Expand Fam Camp Site - Alternative 2 (Figure 2.1-5)	40 - Arents, 0 to 5 percent slopes	Somewhat poorly drained	0.57	0.08	0.65
	45 - Kureb sand, 0 to 5 percent slopes	Excessively drained	10.01	0.39	10.40
<i>Subtotal</i>			10.57	0.47	11.05

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Project	Map Unit	Drainage Classification	Acres (previously surveyed)	Acres (current survey)	Acres (total)
Construct Water Main on North Side of Flightline (Figure 2.1-6)	27 - Mandarin sand, 0 to 2 percent slopes	Somewhat poorly drained	0.58	0.64	1.22
	29 - Rutlege sand, 0 to 2 percent slopes	Very poorly drained	0.00	1.93	1.93
	31 - Osier fine sand	Poorly drained	0.00	0.29	0.29
	40 - Arents, 0 to 5 percent slopes	Somewhat poorly drained	0.00	151.30	151.30
	42 - Resota fine sand, 0 to 5 percent slopes	Moderately well drained	0.00	0.12	0.12
<i>Subtotal</i>			0.58	154.28	154.86
Construct Fishing/Observation Pier Heritage Club - Both Alternatives) (Figure 2.1-7)	31 - Osier fine sand	Poorly drained	0.37	0.00	0.37
<i>Subtotal</i>			0.37	0.00	0.37
Renovate Unite Site - Alternative 1 (Figure 2.1-8)	13 - Leon sand, 0 to 2 percent slopes	Poorly drained	0.01	0.02	0.03
	29 - Rutlege sand, 0 to 2 percent slopes	Very poorly drained	6.62	0.17	6.79
	40 - Arents, 0 to 5 percent slopes	Somewhat poorly drained	1.08	0.00	1.08
	42 - Resota fine sand, 0 to 5 percent slopes	Moderately well drained	14.50	0.15	14.65
<i>Subtotal</i>			22.21	0.34	22.55
Renovate Unite Site - Alternative 2 (Figure 2.1-9)	13 - Leon sand, 0 to 2 percent slopes	Poorly drained	0.23	0.00	0.23
	27 - Mandarin sand, 0 to 2 percent slopes	Somewhat poorly drained	9.97	0.25	10.21
	42 - Resota fine sand, 0 to 5 percent slopes	Moderately well drained	5.36	0.24	5.60
<i>Subtotal</i>			15.56	0.49	16.05
<b>Grand Total</b>			<b>75.06</b>	<b>170.87</b>	<b>245.94</b>

Values may reflect rounding.

Sources: USDA, Soil Conservation Service, 1984. Soil Survey of Bay County, Florida. USDA, Natural Resources Conservation Service, 2020. Web Soil Survey. Internet URL:  
<https://websoilsurvey.sc.egov.usda.gov/App/WebSoilSurvey.aspx>.



**Tyndall Air Force Base, Panama City, FL**  
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**SOILS:**  
**CONSTRUCT NEW EOD  
GRAVEL ROAD**

**FIGURE  
2.1-1**





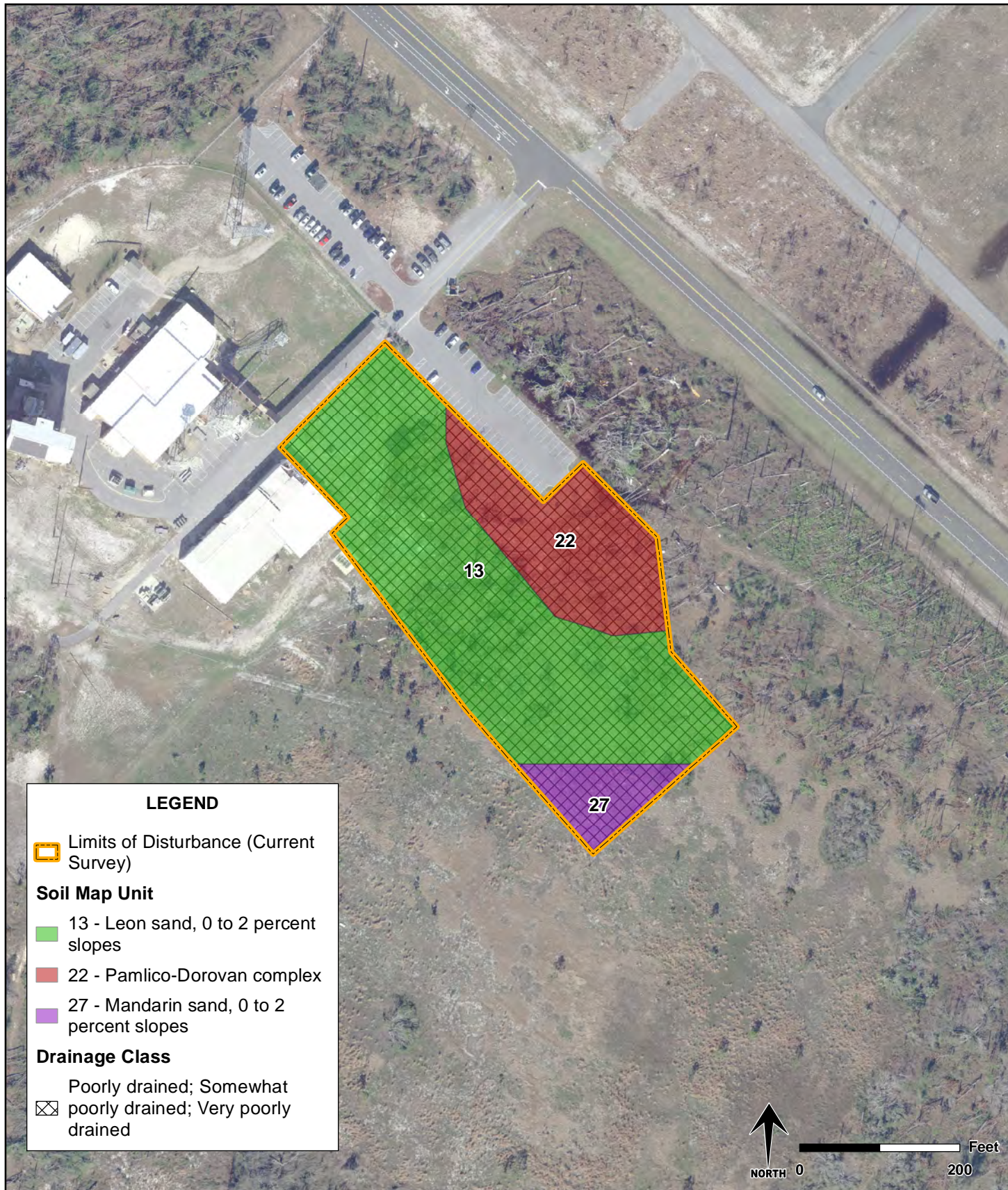
**Tyndall Air Force Base, Panama City, FL**

**ENVIRONMENTAL ASSESSMENT  
FOR 8 CONSTRUCTION SITES**

**SOILS:  
DREDGE THE WEG  
SMALL BOATHOUSE AREA**

**FIGURE  
2.1-2**



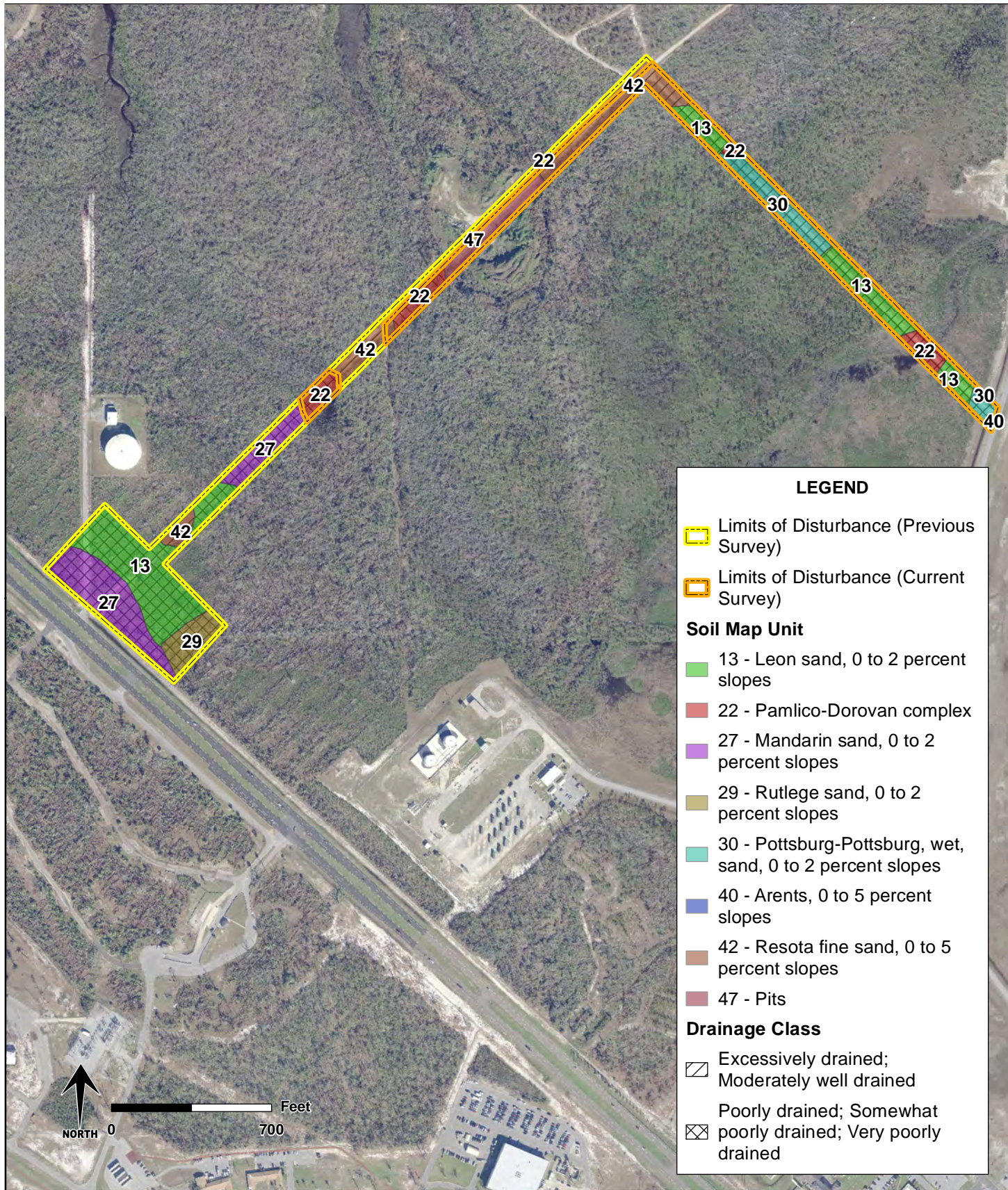


**Tyndall Air Force Base, Panama City, FL**  
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**SOILS:**  
**REPLACE WEG TOWER 1802**

**FIGURE  
 2.1-3**





**Tyndall Air Force Base, Panama City, FL**  
**ENVIRONMENTAL ASSESSMENT  
 FOR 8 CONSTRUCTION SITES**

**SOILS:  
 IMPROVE EXPEDITIONARY/  
 ENCAMPMENT ROADS**

**FIGURE  
 2.1-4**



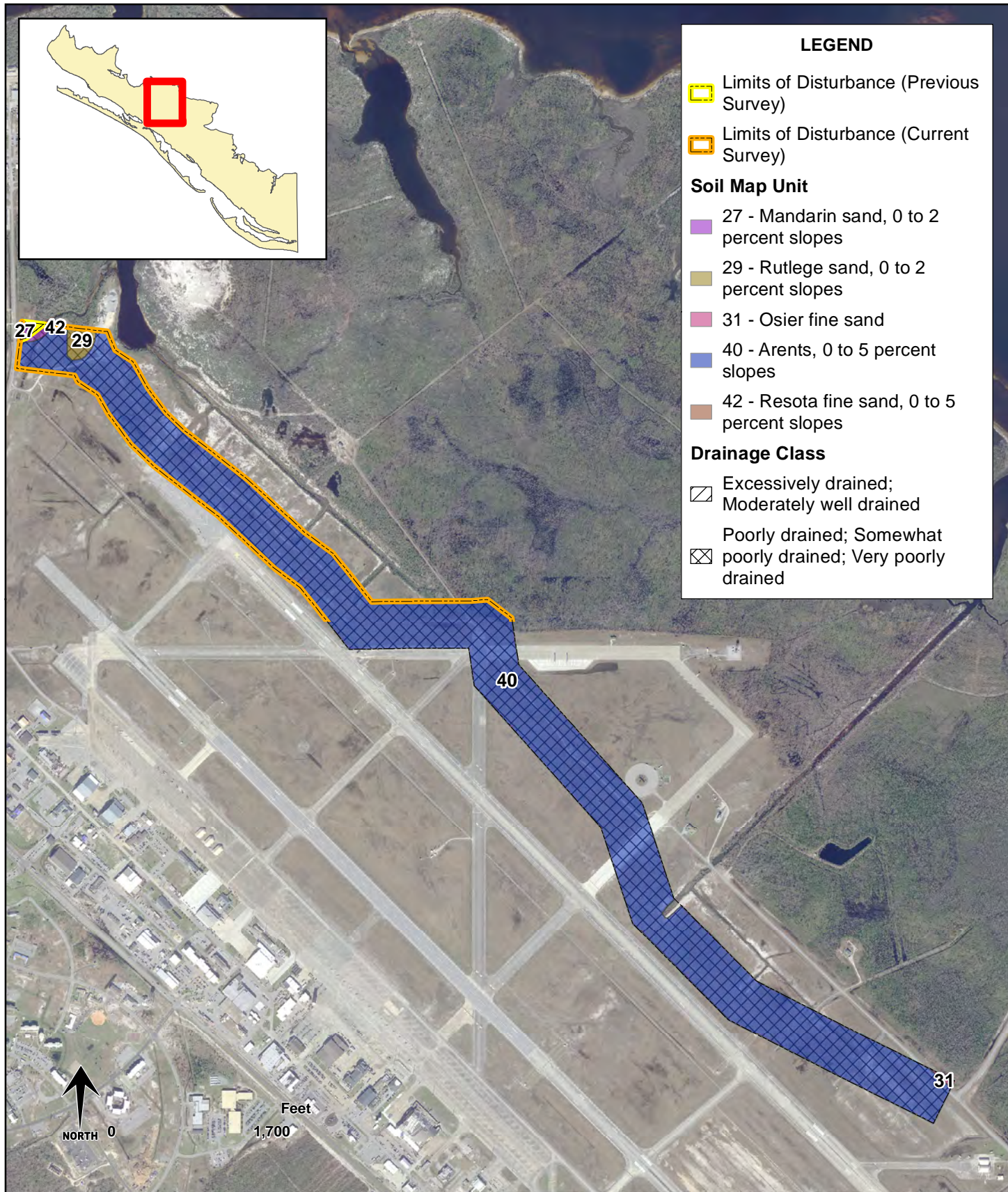


**Tyndall Air Force Base, Panama City, FL**  
**ENVIRONMENTAL ASSESSMENT  
FOR 8 CONSTRUCTION SITES**

**SOILS:  
EXPAND FAM CAMP SITE  
BOTH ALTERNATIVES**

**FIGURE  
2.1-5**





**Tyndall Air Force Base, Panama City, FL**  
**ENVIRONMENTAL ASSESSMENT  
FOR 8 CONSTRUCTION SITES**

**SOILS:  
CONSTRUCT WATER MAIN ON  
NORTH SIDE OF FLIGHTLINE**

**FIGURE  
2.1-6**



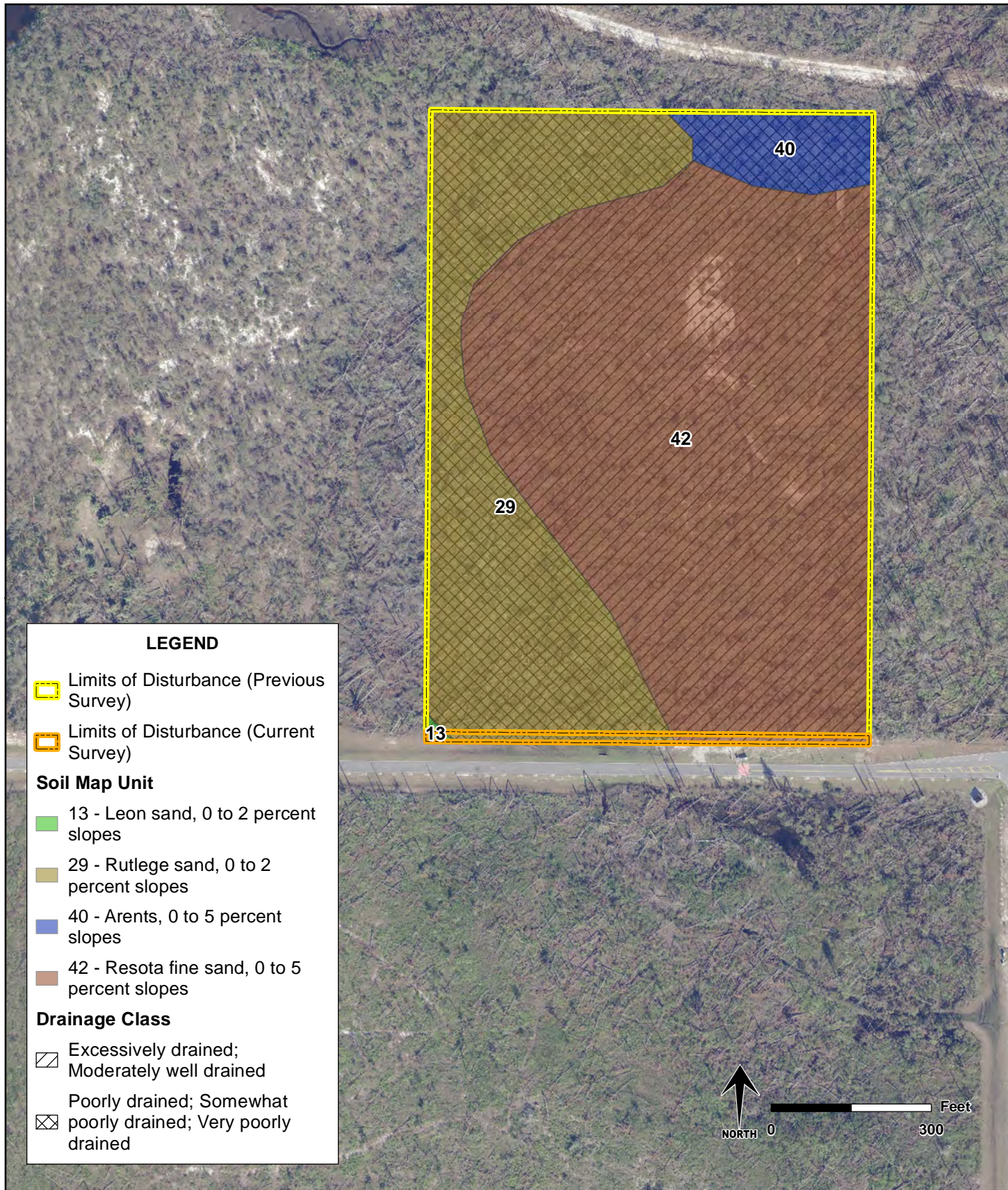


**Tyndall Air Force Base, Panama City, FL**  
**ENVIRONMENTAL ASSESSMENT  
FOR 8 CONSTRUCTION SITES**

**SOILS: CONSTRUCT  
PIER - HERITAGE CLUB  
(BOTH ALTERNATIVES)**

**FIGURE  
2.1-7**





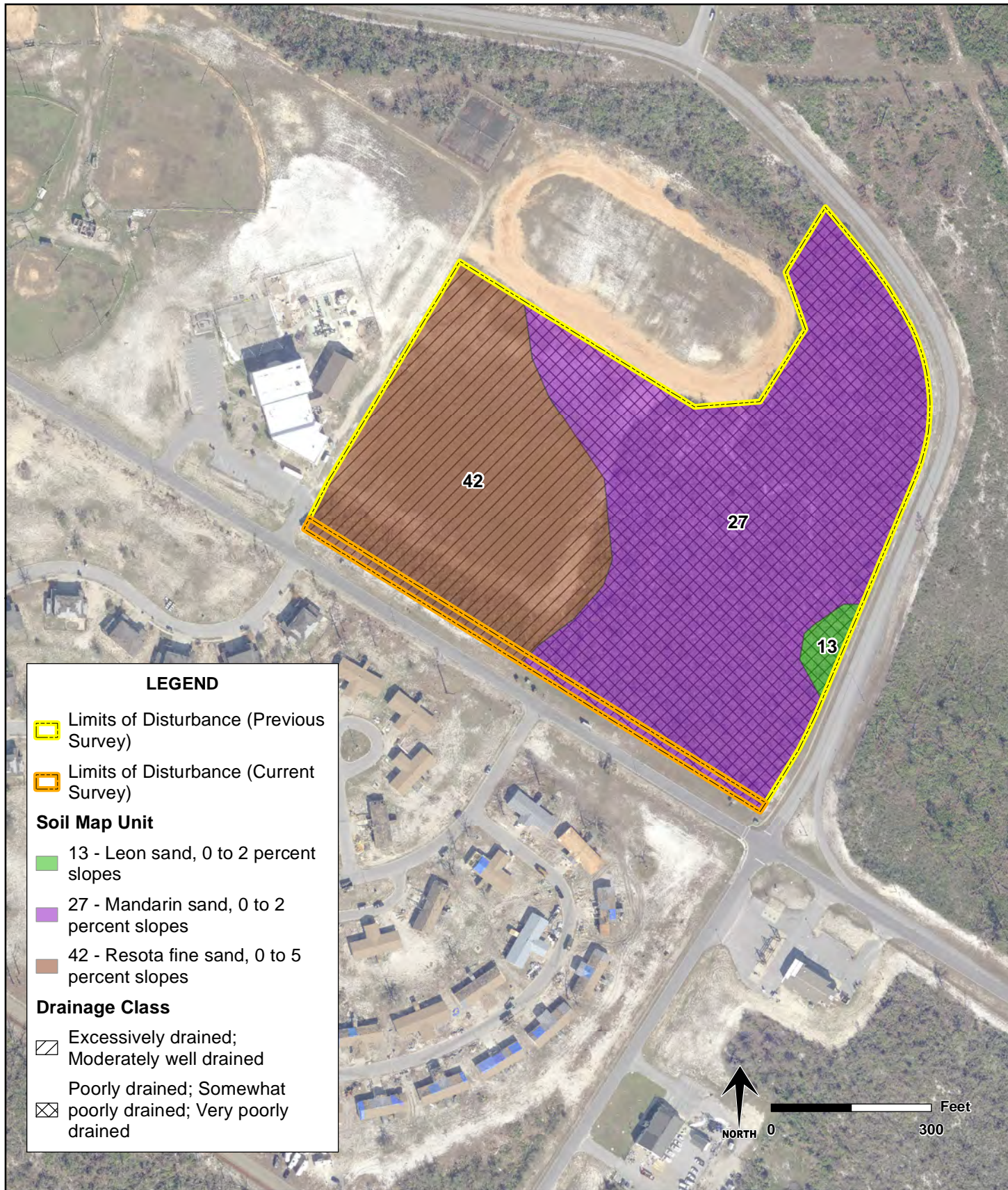
**Tyndall Air Force Base, Panama City, FL**

**ENVIRONMENTAL ASSESSMENT  
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**SOILS:  
RENOVATE UNITE SITE  
(ALTERNATIVE 1)**

**FIGURE  
2.1-8**





**Tyndall Air Force Base, Panama City, FL**  
**ENVIRONMENTAL ASSESSMENT**  
**FOR 8 CONSTRUCTION SITES**

**SOILS:**  
**RENOVATE UNITE SITE**  
**(ALTERNATIVE 2)**

**FIGURE**  
**2.1-9**



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### 3.0 CULTURAL OVERVIEW

This section describes archaeological investigations previously conducted within one-half mile of the project survey areas, as well as the prehistoric and historic context of region. The SHPO has developed cultural contexts that provide a necessary framework for the description and analysis of known and anticipated cultural resources. The contexts are organized by geographic region, time/developmental period, and theme, and are the basis for evaluating the significance of resources within the project area.

#### 3.1 PREHISTORIC CONTEXT

The SHPO divides the prehistory of the State of Florida into four general periods (Payne and Milanich 1992):

- Paleoindian (12,000-7,900 Before Christ [B.C.]),
- Archaic (8,000-500 B.C.),
- Woodland (500 B.C.- Anno Domini [A.D.] 1000), and
- Mississippian (A.D. 1000-1500).

The culture periods cover the time from the earliest occupation of the region by humans until contact with people from Europe at the beginning of the sixteenth century. Each main period typically is further subdivided into Early, Middle, and Late periods, which are characterized by changes in material culture, environmental adaptation, subsistence strategies, settlement patterns, technology, and socio-political configurations. Each major time period (**Table 3.1-1**) is discussed below, along with relevant data concerning settlement and subsistence patterns that have been established by previous excavation and study of archaeological sites in the region.

**TABLE 3.1-1 CULTURAL CHRONOLOGY OF NORTHWESTERN FLORIDA**

Culture Period	Subperiod	Phase/Cultures	Approximate Years
Paleoindian	--	--	12,000 – 7,900 B.C.
Archaic	Early Archaic	--	8,000 – 6,000 B.C.
	Middle Archaic	--	6,000 – 3,000 B.C.
	Late Archaic	--	3,000 – 500 B.C.
Woodland	Early Woodland	Deptford	500 B.C. – A.D. 100
	Middle Woodland	Santa Rosa – Swift Creek	A.D. 100 – 300
	Late Woodland	Weeden Island – Wakulla	A.D. 300 – 900/1000
Mississippian	--	Fort Walton – Pensacola	A.D. 1000 – 1500
Historic	Contact	European	A.D. 1500 – 1565
	First Spanish		A.D. 1559 – 1763
	British		A.D. 1763 – 1781
	Second Spanish		A.D. 1781 – 1821
	Territorial		A.D. 1821 – 1845
	American Statehood and Civil War	American	A.D. 1845 – 1865
	Reconstruction and Industrialization		A.D. 1865 – 1940
	Modern		A.D. 1940 – Present

Adapted from Milanich 1994



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**3.1.1 PALEOINDIAN PERIOD (12,000 TO 7,900 B.C.)**

The earliest human occupation in Florida dates to the Paleoindian period. These people were the descendants of populations that had previously crossed the Bering Strait from Asia into the New World during the Late Pleistocene. Although the timing of this migration is subject to considerable debate, by circa (ca.) 12,000 B.C. these early colonists had spread across most of North and South America (Adovasio and Pedler 2005; Milanich 1994; Tyndall AFB 2020).

The earliest human occupants in Florida occupied a landscape different from that which is present today. During the Ice Age at the end of the Pleistocene epoch (ca. 12,000 years ago), sea levels were approximately 60 to 100 m lower than today. As a result, large portions of the continental shelf to the east, west, and south of Florida would have been exposed and the Florida Peninsula was twice as large as it is today (Faught 2004; Milanich 1994; Tyndall AFB 2020). The subsequent inundation of these areas skews the available data on Paleoindian occupations in Florida, as sites that would have been located on the Coastal Plain are now under water (Borremans 1992; Faught 2004; Milanich 1994).

Paleoecological data suggest Florida was cooler and drier during the Paleoindian period compared to modern conditions (Borremans 1992). The now submerged Coastal Plain appears to have been crisscrossed by numerous river drainage systems, while the interior prairies were dotted by lakes and sinkholes created by upland springs. These wetter environments would have provided more hospitable conditions for flora and fauna, as well as the earliest human occupants of interior Florida (Borremans 1992; Milanich 1994).

The majority of information related to the material culture of the Paleoindians of Florida comes from lithic assemblages. Paleoindian assemblages contain a mixture of formal and expedient stone tools (Borremans 1992). Formal tools include large, lanceolate projectile point/knives (PPKs), unifacial scrapers, graters, and bifacial knives. Expedient tool types include flake knives, retouched flakes, and hammerstones used in tool manufacture. The majority of both formal and expedient Paleoindian tools were manufactured from high quality cherts (Borremans 1992; Milanich 1994). Ground stone tools were also manufactured, including adzes and egg-shaped weights interpreted as parts of bolas used in bird hunting (Milanich 1994).

Diagnostic stone tools dated to the first half of the Paleoindian period (i.e., Early and Middle Paleoindian periods [12,000-8,500 B.C.]) include the Suwannee, Simpson, and Clovis PPKs (Borremans 1992; Milanich 1994; Tyndall AFB 2016). Diagnostic stone tools dated to the latter part of the Paleoindian period (Late Paleoindian [8,500-8,000 B.C.]) include Dalton PPKs that represent a transitional form between the earlier Paleoindian and Early Archaic forms (Borremans 1992; Milanich 1994; Tyndall AFB 2020).

Although the Paleoindian occupants of Florida likely used a host of organic materials such as wood, bone, shell, and plant fibers to manufacture tools, shelters, ornaments, and clothing, the acidic soil conditions found across most of the state have resulted in the decomposition of most these organic artifacts (Borremans 1992). A small sample of non-lithic tools have been recovered across the state, including ivory spear foreshafts, bone and antler PPKs, bone needles, and worked fossil shark teeth (Dunbar and Webb 1996; Milanich 1994).

Paleoindians in Florida exploited a wide variety of animals and plants for food. Evidence for megafauna exploitation in Florida include a mammoth vertebra with visible butchering marks on its surface recovered

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from the Santa Fe River in north central Florida and the partial skeleton of an extinct species of bison (*Bison antiquus*) with a stone PPK still lodged in the skull found in the Wacissa River in northwest Florida (Milanich 1994). Faunal remains from the Little Salt Spring and sites on the Aucilla River demonstrate the wide breadth of species consumed by Paleoindian groups, including sloth, tapir, horse, camelids, mammoth, deer, fish, turtles, shellfish, opossum, rabbit, and muskrat. Evidence suggests that Paleoindian groups consumed plant foods as well. At the Little Salt Springs site, located just north of Charlotte Bay on the Gulf Coast, archaeologists recovered botanical remains including berries, roots, seeds, and nuts (Borremans 1992; Milanich 1994).

Throughout the period, Paleoindian sites are interpreted as the remains of small, mobile bands of hunter-gatherer groups. The small size of most Paleoindian sites suggests these bands consisted of nuclear families or extended families, although larger group aggregations may have occurred at quarry sites (Milanich 1994). Sites located near fresh water sources are interpreted as seasonally reoccupied base camps; small lithic scatters are interpreted as short-term camps that represent brief stays for resource procurement (Milanich 1994). The location of high-quality chert for stone tool production also played a significant role in Paleoindian settlement systems. Quarry sites were likely visited on a regular basis to obtain raw materials for tool production and numerous sites have been found in association with chert outcrops. Cores, flakes, and other evidence of initial tool reduction are typically found at these sites (Borremans 1992).

Archaeological research conducted on the now submerged Coastal Plain suggests Paleoindian settlement was focused on riverine environments. Geological studies of inundated riverine, lagoon, and marsh deposits along the Florida coast suggest estuarine resources in these areas were utilized by Paleoindian groups (Borremans 1992). A survey conducted along the drowned channel of the Aucilla River in northwest Florida identified nine submerged Paleoindian sites. Diagnostic Paleoindian PPKs were recovered from these sites, including Suwannee PPKs as well as later Early and Middle Archaic PPKs (Faught 2004). These sites varied in size and artifact diversity suggesting the presence of base camps and short-term, resource procurement camps similar to those found in the interior.

### **3.1.2 ARCHAIC PERIOD (8,000 TO 500 B.C.)**

The Archaic period is typically divided into three subperiods based predominantly on the changes in PPK morphology through time: Early Archaic (8,000–6,000 B.C.); Middle Archaic (6,000–3,000 B.C.); and Late Archaic (3,000–500 B.C.). The general trend was toward increasing sedentism throughout the period, culminating in the appearance of the first, fully sedentary villages during the Late Archaic period. Ceramic technology appeared during the Late Archaic. The end of the Archaic period is marked by the appearance of regional cultures in different parts of the peninsula. These regional cultures are primarily defined based on technological and stylistic differences in ceramic assemblages.

Sea-level rise and increasingly wetter climatic conditions constitute the largest changes to the environment along the Florida Peninsula during the Archaic period. Although the general climatic trend was towards increasingly wetter conditions, there were marked fluctuations in climate (Milanich 1994). The period from 8,000 to 6,000 B.C. was markedly wetter than the preceding Paleoindian period, while the period from 6,000 to 3,000 B.C. was drier than the previous 2,000 years. By 3,000 B.C., the climate of Florida was similar to that of today (Milanich 1994).

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The wetter climate brought about changes in both the hydrology and flora on the Florida Peninsula. Pollen data suggest that during this period, mixed forests gradually replaced the xerophytic oak-pine forest that had dominated the landscape during the Paleoindian period (Pelletier et al. 2004). The moister climate also resulted in an increase in surface water across the state, expanding the number of pond, lake, marsh, and swamp environments across the peninsula.

Sea-level rise, which began during the Paleoindian period as the glaciers associated with the last glacial maximum began to melt, continued during the Archaic period. As a result of rising sea levels, a large number of Archaic period sites have been inundated. The inundation of these sites has created a bias in our understanding of Archaic period lifeways as the majority of the available data are from interior sites in upland settings.

**3.1.2.1 Early Archaic Period (8,000 to 6,000 B.C.)**

Diagnostic PPKs from the Early Archaic consist of a variety of side-notched and stemmed varieties including the Bolen, Dalton, Hamilton, Kirk Serrated, Nuckolls, Santa Fe, Suwannee, and Wacissa types (Milanich 1994; Russo 1992; Tyndall AFB 2020). PPKs with side notches and bifurcated bases, such as the Hamilton and Arredondo types, also date to this period (Milanich 1994; Russo 1992).

Early Archaic settlement and subsistence patterns appear to be similar to the preceding Paleoindian period. Early Archaic components are commonly found at sites with earlier Paleoindian occupations. This is most common at base camp sites (Milanich 1994). Types of Early Archaic sites include base camps, short-term camps, and quarry sites similar to those dated to the Paleoindian period (Russo 1992). The continuity in both site location and site types suggests Paleoindian lifeways generally continued into the Early Archaic period. Although the similarities in settlement pattern between the Early Archaic and Paleoindian periods are numerous, significant changes did occur. Early Archaic occupations are found in a more diverse set of locations and environments compared to early Paleoindian sites. The wetter conditions of the Early Archaic period resulted in an increase in available surface water, and Early Archaic populations appear to have expanded their occupation across the landscape as a result (Milanich 1994).

The second major development associated with Early Archaic populations was the appearance of a new type of site, the cemetery, which are not known for the preceding Paleoindian period. These sites are typically encountered in wet, marshy environments and shallow ponds, although later examples include internments in shell middens (Russo 1992). The practice of burying the dead in cemeteries located in low, wet, marshy environments persisted into the Middle Archaic period at sites such as Little Salt Spring in Sarasota County as well as sites in southern Florida (Milanich 1994; Russo 1992).

**3.1.2.2 Middle Archaic Period (6,000 to 3,000 B.C.)**

Middle Archaic PPKs are typified by the stemmed PPK with a Christmas tree shaped blade such as the Levy, Marion, Newman, and Putnam types (Russo 1992). A hallmark of the Middle Archaic was the appearance and development of a blade industry (Milanich 1994). In addition to the PPKs, the Middle Archaic toolkit included a variety of specialized tools such as burins, microliths, and expedient forms (Tyndall AFB 2020).



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While terrestrial animal and plant food resources continued to be exploited, the proliferation of shell middens in both riverine and coastal settings during the Middle through Late Archaic period demonstrate the importance of both freshwater and saltwater species of shellfish to these populations. At sites along the Gulf and Atlantic coasts, marine shellfish such as quahogs, whelks, conchs, oysters, and scallops were common food items. At riverine sites, mystery and apple snails as well as freshwater mussels were harvested (Milanich 1994; Russo 1992). The focus on riverine and coastal resources helped to establish a more sedentary seasonal round, with increasing population sizes at base camps (Milanich 1994; Russo 1992).

**3.1.2.3 Late Archaic Period (3,000 to 500 B.C.)**

Late Archaic PPKs are typically smaller, stemmed and corner-notched forms that include the Clay, Culbreath, Destin, Lafayette, Marion, Putnam, and Savannah types (Campbell et al. 2012; Morehead et al. 2013; Tyndall AFB 2020). The Late Archaic tool kit also included a variety of temporally nondiagnostic formal and expedient stone tools such as scrapers, graters, adzes, knives, drills, choppers, gouges, and hammerstones (Milanich 1994; Russo 1992).

One of the most significant technological developments of the Late Archaic period was the appearance of ceramic technology. The earliest ceramic ware found in Florida is fiber-tempered Orange ware ceramics, which appeared along the northeast coast of Florida ca. 2,200 B.C. Shortly after the appearance of ceramic technology in northeast Florida, fiber-tempered ceramics appeared at sites in the southern portion of the state, as well as along the Gulf Coast and Florida Panhandle. Along the Gulf Coast, the earliest, fiber-tempered ceramics are defined as the Norwood series (Saunders and Hays 2004). Norwood series ceramics are similar in morphology compared to Orange wares (Russo 1992; Saunders and Hays 2004).

In the Tyndall AFB region, the local manifestation of the Late Archaic period is known as the Elliotts Point complex and is associated with the Poverty Point culture in the Lower Mississippi River Valley (Campbell et al. 2012; Morehead et al. 2013; Tyndall AFB 2020). Elliotts Point is characterized by well-formed, baked clay objects, microliths, and raw materials characteristic of the Poverty Point trade network (Campbell et al. 2012; Morehead et al. 2013; Tyndall AFB 2020). Steatite vessels, ornaments, and boatstones are associated with the Elliotts Point complex (Campbell et al. 2012; Morehead et al. 2013; Tyndall AFB 2020).

The increased exploitation of shellfish and coastal resources during the Late Archaic led to large shell midden sites covering several acres (Milanich 1994; Russo 1992). These shell midden sites consist of large, extensive sheet midden deposits or deep, ring-shaped mounds of shell arranged around open, circular areas. These interior spaces within shell-ring sites may have functioned as central plazas or living areas (Russo 1992; Sassaman 2005). The variety of faunal and botanical remains at Late Archaic sites demonstrates continued reliance on a hunting and gathering subsistence strategy (Milanich 1994). Plant and animal resources available during different seasons have been recovered from sites, suggesting occupation year round. The larger size, increased depth, and evidence of year-round occupation based on faunal and botanical remains recovered from these sites indicates they represent occupations by semi-sedentary, and possibly even fully sedentary, hunter-gatherer groups (Russo 1992).

The larger sites appear to have been surrounded by a network of small, short-term resource procurement sites similar to those encountered during earlier periods. Russo (1992) has interpreted the relationship between large shell midden sites and these smaller, short-term camps as reflecting an integrated settlement

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system of large, centralized villages articulated with outlying habitation areas and resource processing stations.

**3.1.3 WOODLAND PERIOD (500 B.C. TO A.D. 1000)**

The Woodland period in northwestern Florida is divided into three periods: the Early Woodland, represented by the Deptford culture (500 B.C.–A.D. 100); the Middle Woodland, represented by the Santa Rosa and Swift Creek cultures (A.D. 100–300); and the Late Woodland, represented by the Weeden Island culture (A.D. 300–900/1000). Climatic conditions during the Woodland period were similar to those of today across the Southeast. Sea levels continued to rise, but at a slower rate than in earlier periods, with sea levels rising approximately 2 m over the last 2,000 years (Avery 1992).

**3.1.3.1 Early Woodland Deptford Culture (500 B.C. to A.D. 100)**

There are more than 500 Deptford sites recorded in northwest Florida. Deptford culture is known from large coastal shell midden sites, burial mound sites, and small ephemeral inland sites (Avery 1992). Milanich (1973, 1996) suggested a settlement model based on intensive, prolonged seasonal use of coastal villages, with more limited use of the interior for specific resource extraction, and by seasonally fissioned populations. White (1986), however, has argued that some interior sites may represent an equally intensive use of river floodplains, lakes, and swamps. Burial mounds were constructed of piled sand (Milanich 1996). The mounds were typically associated with coastal village sites.

Deptford sites are characterized by the presence of net-impressed, fabric-impressed, and stamped ceramics, shell and bone tools, and a microlith stone tool industry (Avery 1992). Artifacts interpreted as throwing stones have also been found (Avery 1992). The lack of a well-defined stone tool industry has been used to argue that the Deptford culture relied heavily upon wooden tools, as well as those crafted from bone and shell (Avery 1992).

Deptford subsistence appears to have relied entirely on wild food sources with no evidence of horticulture. Near-shore marine resources, including bony fishes and shellfish, along with deer, small mammals and reptiles, were the most commonly exploited animal resources (Milanich 1973). Hickory nuts and acorns were identified at the Hawkshaw site in Santa Rosa County, west of Calhoun County (Bense 1985).

**3.1.3.2 Middle Woodland Santa Rosa and Swift Creek Cultures (A.D. 100 to 300)**

The Middle Woodland period in northwest Florida is represented by the contemporaneous Santa Rosa and Swift Creek cultures (Avery 1992). Few sites have been investigated, and most sites are on the less-investigated coast, which provides an incomplete understanding of the cultures (Avery 1992). The Swift Creek culture was centered in the eastern panhandle, while the closely related Santa Rosa culture was centered farther west (Milanich 1996).

Sites of both cultures are typically coastal shell middens, including small linear middens along beaches and larger middens on estuaries or coastal hammocks; the larger middens have cleared occupation areas and are sometimes associated with burial mounds (Avery 1992). Subsistence systems of both cultures appear similar to those of the Early Woodland Deptford culture (Avery 1992). Botanical specimens have rarely been recovered, and evidence of the use of cultigens has been sparse (Avery 1992).

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Artifacts from Santa Rosa and Swift Creek sites include ceramic vessels in a multitude of styles, stemmed projectile points made from imported cherts, and exotic funerary objects. The exotic artifacts and mound burials suggest a connection to the Hopewell Interaction Sphere in the interior southeast and Midwest (Avery 1992).

**3.1.3.3 Late Woodland Weeden Island Culture (A.D. 300 to 1000)**

The Late Woodland period in northwestern Florida represents the growth and decline of Hopewellian culture in Florida (Late Swift Creek/Weeden Island I) and the subsequent development of ranked, more socially complex groups that would ultimately evolve into the local expressions of Mississippian society in the region (Weeden Island II; Avery 1992).

Weeden Island I sites are typically like those of the preceding Swift Creek culture. They include coastal and inland middens, sometimes accompanied by one or more conical burial mounds (Avery 1992). Artifacts from these sites include incised and punctate decorated ceramics, effigy vessels, stone scrapers, choppers, knives, and hammerstones (Avery 1992).

Large Weeden Island II settlements appear to have shifted away from coastal regions and into the interior. The culture relied more heavily on tropical cultigens, particularly maize, to supplement their marine food resources (Avery 1992; White 1986). Some sites may represent regional centers. For example, the Aspalaga site, located on the Apalachicola River in Gadsden County, consists of three (possibly four) mounds surrounded by a group of houses arranged in a crescent shape (Avery 1992). Weeden Island II sites also include small triangular projectile points, which likely signify the introduction of the bow and arrow to the area.

**3.1.4 MISSISSIPPIAN PERIOD (A.D. 1000 TO 1500)**

The Mississippian culture in northwestern Florida, as well as adjoining areas of southeastern Alabama and southwestern Georgia, is known as Fort Walton. It is a part of the larger South Appalachian Mississippian area, which stretched from northwestern Florida north and northwesterly to Tennessee and parts of North Carolina. The culture was first defined by Willey in 1949, named for his work at the Fort Walton mound side in Fort Walton Beach, though the site is now affiliated with the Pensacola culture (Milanich 1994). The cultural area runs from the Aucilla River on the east to the Choctawhatchee Bay and up the Apalachicola and Chattahoochee Rivers (Marrinan and White 2007).

According to Willey (1949) and White (1982), the key aspects of the culture include large sites with a temple mound (or mounds); plazas along streams, coastal areas, inland lakes, and ponds; and typical Mississippian architecture (Lewis and Stout 1998; Payne 2002). Structural remains include daub, postholes/molds, wall trenches, hearths, and storage and refuse pits. There is little evidence of defensive constructions, such as palisades or embankments, around mound or other sites (Gardner 1971; Tesar 2006). Other features of these sites include cemeteries; an apparently reduced number of ceremonial sites as compared to the preceding Woodland period; and a subsistence regime including evidence of maize agriculture, horticulture, and wild collected plants, as well as a wide range of fauna such as deer, small mammals, turtle, fish, and shellfish.



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The Fort Walton sites have a much reduced assemblage of chipped stone tools than both the preceding Woodland period and contemporary Mississippian cultures in other areas of the Southeast (Bullen 1972; Marrinan and White 2007). Fort Walton ceramics differ from the majority of Mississippian cultures in that they almost always used sand, grit, and grog for temper as opposed to shell. Despite the differences in tempering agents, vessel forms and decorative motifs were quite similar. Fort Walton ceramic types include Lake Jackson Plain and Incised, Cool Branch Incised, and Fort Walton Incised. The Fort Walton temper appears to be a continuation of traditions from the Weeden Island culture, and this is supported by the maintenance of design motifs from Weeden Island such as zone punctation and effigy forms, as well as some check-stamping (White 1982; Willey 1949). During the later Fort Walton, Lamar ceramics began appearing and eventually became the dominant pottery type. This is interpreted by some as evidence of an increase in cultural interaction with the antecedents of the Lower Creek, either before or as a result of the Spanish entradas and missionizing (Marrinan and White 2007). By the early 1700s, around the time of the destruction of the Spanish missions, the Fort Walton culture disappeared (Marrinan and White 2007).

## **3.2 HISTORIC CONTEXT**

The historic period of Florida began with Spanish contact in 1513. The scope of the Tyndall AFB history is distilled here into a series of periods that capture the historical themes and topics that define northwest Florida. These periods are the:

- Contact period (1500-1565),
- First Spanish period (1565-1763),
- British Florida (1763-1781),
- Second Spanish period (1781-1821),
- Territorial period (1821-1845),
- American Statehood and Civil War (1845-1865),
- Reconstruction and Industrialization (1865-1940), and
- Modern period (1940-present).

### **3.2.1 CONTACT PERIOD (A.D. 1500 TO 1565)**

Spain made several attempts to colonize Florida in the early sixteenth century. The North American continent was first sighted by Spanish explorer Juan Ponce de Leon in March of 1513. He claimed the land for the Spanish crown and named it La Florida, meaning “Land of Flowers.” Spain launched multiple expeditions to settle their new discovery between 1513 and 1563, but Native Americans and the inhospitable wilderness prevented permanent settlement (Gannon 1996).

At the time that the first Spanish explorers, Juan Ponce de Leon, Panfilo de Narvaez, and Hernan de Soto, were making the first recorded European forays into Florida in the early 1500s, the northwestern portion of the State was occupied by the Apalachee chiefdoms, agricultural descendants of the Fort Walton Culture (Hann and McEwan 1998). The Apalachee settlements included small farming hamlets, as well as larger villages and ceremonial mound centers. Alvar Nunez Cabeza de Vaca, a member of Narvaez’s party,

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recorded fields of planted maize around the villages (Gannon 1996). Narvaez ventured into the Apalachee region in 1528 in an attempt to find treasure (Gannon 1996). After one month in the area, more than 60 of Narvaez's men were dead, and the party retreated to the Gulf Coast. There, they constructed small craft and set sail for Mexico, but a storm capsized the small boats off the coast of Texas, and all but eight of the men drowned. Of these survivors, only four reached Mexico (Gannon 1996).

A deadly hurricane prevented Tristan de Luna's efforts to establish a colony on Pensacola Bay in 1559 (Burns 2008). Florida became increasingly important to Spain because it was located along the return route followed by Spanish treasure fleets. The crown wanted to prevent foreign countries from establishing a base in Florida that would threaten Spain's communications with the Caribbean and Mexico (Johnson 1982).

The early contact with Spanish explorers, while brief, resulted in significant deleterious effects to the Native Americans. The influx of European trade goods, usually acquired via down-the-line exchange from other indigenous traders, brought about great changes in lifestyle as Native Americans incorporated new technologies and reoriented their economies to participate in the European goods trade networks (Holland Braund 1993). However, European diseases introduced by the explorers and traders decimated the local populations (Ramenofsky 1987). By the time the Spanish Franciscans established missions in northwestern Florida during the mid-seventeenth century, the Apalachee were much reduced in population and social cohesion.

Florida became increasingly important to the European powers because of its location along the return route followed by Spanish treasure fleets. The first attempt to establish a permanent colony was in 1559, when Don Tristan de Luna y Arellano and 900 colonists from Mexico established a settlement in the Pensacola Bay area (Lyon 1996), but the colony was destroyed by a hurricane on September 19, 1559 (Lyon 1996). Later attempts at colonization by the French and Spanish were focused on the St. John's River area, near modern day St. Augustine, on the Atlantic coast (Johnson 1982). Conflicts between the French and Spanish in Florida resulted in the destruction of the French colonies in the 1560s and the establishment of a fixed Spanish foothold centered in the St. John's River area (Burns 2008). While Spain emerged victorious over the French in Florida, conflict with the English continued intermittently for the next 200 years.

### **3.2.2 FIRST SPANISH PERIOD (A.D. 1559 TO 1763)**

The First Spanish period is defined by an era in which Spain first claimed ownership of Florida over the English and the French (Handley et al. 2012). The French presence in Florida threatened Spain's supply of gold and silver, which was carried in galleons along the coastline en route to Spain. King Phillip II named Pedro Menéndez de Avilés, a nobleman with extensive naval experience in Spain and the New World, as governor of Florida and instructed him to explore and further colonize the territory. St. Augustine was established as a permanent Spanish settlement in 1565 by Avilés (Tyndall AFB 2020).

Spanish settlement in northwestern Florida during this period appears to have been sparse. Fort Santa Maria de Galve was established by the Spanish in 1698 in Pensacola Bay in an attempt to thwart France's presence in the area (Tyndall AFB 2020). San Jose was a military outpost established in 1702 at St. Joseph's Bay southeast of Tyndall AFB (Handley et al. 2008). The French established Fort Crevecoeur at St. Joseph's Bay in 1717, which was abandoned by 1718. The Spanish erected their own fort in the same location, but

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it was also eventually abandoned (Tyndall AFB 2020). In 1754, there appears to have been a Spanish settlement located somewhere on St. Andrews Bay, although evidence is anecdotal (Handley et al. 2008).

Spanish colonial rule in Florida had a significant impact on the local Native American populations. The principal instrument of Spanish influence and control was the establishment of the mission system along the Atlantic coast from the St. Augustine north through coastal Georgia (Saunders 1992). Franciscan missions in Florida were established in pre-existing Native American village areas. While Spanish governors held supreme authority, local native officials were allowed to retain a degree of cultural and political influence (Hann 1996). The missions' primary goal was not of economic enterprise, as was the case in missions established in the Western U.S. While native peoples living at missions did work for the Spanish overlords, they often settled in the missions of their own accord for economic reasons (Hann 1996) and possibly to find refuge after their own homelands were devastated by disease and raiding (Ramenofsky 1987).

Missions among the Apalachee were established in the Tallahassee region in the 1630s and 1640s (Hann 1996). The mission on the Apalachicola River was the farthest west of the Franciscan churches in Florida prior to establishment of the Recollect Order's missions in the 1670s (Hann 1996). Groups like the Tama from central Georgia and the Chine and Chacato from northeastern Florida migrated to the Apalachee missions throughout the mid-1600s.

Estimates during the middle of the seventeenth century list 15,000 to 20,000 people living in the Apalachee area (Hann 1996). The local population of mixed Apalachee, Chacato, Chine, Amacano, Pacha, Tama-Yamasee, and others lived in 40 settlements, 11 of which were incorporated into the missions (Hann 1996). By the end of the seventeenth century, disease epidemics reduced local populations, and raids from native groups allied to the British in the Carolinas destroyed the mission settlements. Following the raids, the Spanish abandoned Apalachee in 1704. The remnant native population dispersed to Mobile, Pensacola, and St. Augustine (Hann 1996).

### **3.2.3 BRITISH PERIOD (A.D. 1763 TO 1781)**

The Seven Years' War (1756–1763) broke out between England and France in North America and later spread to Europe. Spain remained neutral until 1762 (Johnson 1982). Spain was allied with France and feared that a British victory in North America would destroy the balance of power. The British captured Havana in 1762, and Spain ceded Florida to England in the Treaty of Paris in 1763 (Johnson 1982).

After England gained control of Florida, the territory was divided into West Florida and East Florida. East Florida included the Florida Peninsula and ended at the Apalachicola River. West Florida included the Florida Panhandle and portions of southern Alabama, Mississippi, and Louisiana. Apart from the capitals at St. Augustine and Pensacola, the province was almost devoid of European settlement (Burns 2008).

To attract European settlers, the governors of West Florida offered small tracts of land in exchange for service in the Seven Years War (Fabel 1996). However, poor soils, lack of the trade that was expected with Mexico, and frequent disease epidemics kept the province poor and largely undeveloped. In 1770, West Florida was home to 3,700 white and 12,000 black settlers, along with approximately 30,000 people belonging to the Chickasaw, Choctaw, and Creek nations (Fabel 1996). Most of the new settlers were



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concentrated in the Natchez Tract in Mississippi and around the towns of Mobile and Pensacola (Coker 1996; Fabel 1996). Small farmsteads were established in the rural areas of the Florida Panhandle, and the forests were harvested for lumber, but the area was mostly occupied by remnant Apalachee and Creek groups (Hudson 1976; Ramsey 1988).

Florida had become Britain's informal fourteenth colony, but the protectorate did not send a delegate to Philadelphia when the Declaration of Independence was signed (Boatner 1992; Burns 2008). Florida was still a garrison colony and was dependent on English arms for protection (Johnson 1982). The majority of the European population consisted of soldiers and officers, officials, and dependents (Wright 1975). The region was also a haven for Loyalist refugees.

When France entered the American Revolutionary War, allied Spain also declared war on Britain. The Spanish Governor of Louisiana, Bernardo de Galvez, defeated the British garrisons at Baton Rouge, Natchez, and Mobile. Then, in 1781, he besieged and eventually occupied Pensacola (Fabel 1996). Florida was returned to Spain at the Second Treaty of Paris in 1783 in thanks for assisting America during the war for independence (Morris et al. 2002). The transfer of flags took place in St. Augustine in July of 1784.

**3.2.4 SECOND SPANISH PERIOD (A.D. 1781 TO 1821)**

Spain retained the division of Florida's eastern and western provinces after formally taking over the territory in 1784 (Coker and Parker 1996). Most British residents departed for other parts of the British Empire or settled in the U.S. following the return of Florida to the Spanish. Those that remained were required to take an oath of allegiance to Spain. The population during the Second Spanish period included British, Minorcans, Italians, Greeks, refugee slaves from the former English colonies, and Spanish residents from the First Spanish period (Johnson 1982).

The poor Spanish colony was not economically vital to Spain, and pieces of the territory were gradually ceded to the U.S. In addition to lumber products, the Panhandle region saw increased trapping of deer for the skin-trade, particularly with British, and later American trading companies (Coker and Parker 1996; Pavao-Zuckerman 2007). The Creek Nation was the ethnic majority group in the northern Panhandle during this period (Coker and Parker 1996). Formerly enslaved Africans who had escaped from Alabama, Georgia, and eastern Florida cohabitated with the Creeks in the Panhandle region (Coker and Parker 1996).

Spanish Florida continually felt pressure from its neighbors to the north. The Spanish territory was considered by President James Madison to be "at all times a source of irritation and ill blood with the U.S." (Cusick 2003, quoted in Burns 2008). It was Madison's hope that it be occupied and absorbed into the U.S. The Spanish government in St. Augustine offered freedom to runaway slaves from nearby states and territories to reinforce their presence in Florida (Burns 2008; Griffin 1983).

Good trade relations did not quench the U.S.' desire to control Florida. The U.S. Army attempted to invade and occupy northeastern Florida between 1812 and 1813 in an effort to dominate the region. The Patriot War, as it is now known, resulted in no new land acquisitions for the U.S. It did leave numerous plantations in ruin and intensified tensions between the U.S. and Spain (Burns 2008). During the War of 1812, the British, who were then allied with Spain, launched attacks on Mobile and New Orleans from Spanish-

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1 occupied Pensacola. After successfully defending both cities, American General Andrew Jackson attacked  
2 the British fortifications in Pensacola (Coker and Parker 1996).

3 The First Seminole War, which began when American troops attacked a Creek village in Georgia, was  
4 fought partly in northwestern Florida, specifically in areas of what is now Calhoun County. On December  
5 13, 1817, a large force of Seminole and Creek attacked the Creek village, Blunts Town, due to the political  
6 affiliation of its leader, Chief John Blount (Calhoun County Chamber of Commerce 2014). Later in  
7 December 1817, the same group attacked American supply boats on the Apalachicola near Ocheese Bluff,  
8 also in what is now northeastern Calhoun County (Missall and Missall 2004).

9 In 1818, Creek and African raiders from Negro Fort near the mouth of the Apalachicola River were  
10 attacking farmsteads in the region and up into southern Georgia and Alabama. General Jackson attacked  
11 the fort and then proceeded to attack Spanish troops in Pensacola on the pretext that they were collaborators  
12 with the Creek Nation (Coker and Parker 1996).

13 President James Monroe supported the acquisition of Florida during his 1821 inauguration speech by stating  
14 “it would provide neighboring states access to the ocean, its Gulf coast harbor could berth warships”  
15 (Waterbury 1983). Spain lost Florida when thousands of Americans settled there and made the country  
16 ungovernable. The U.S. Government seized the opportunity afforded by Spain’s lack of control and  
17 negotiated the purchase of the territory. Spain officially ceded all of Florida to the U.S. with the signing of  
18 the Adams-Onis Treaty in February of 1821 (Franklin and Morris 1996; Morris et al. 2002).

19 The Tyndall AFB area appears to have been sparsely settled during this period. St. Andrews Bay may have  
20 been settled by Spanish fisherman and Smack Bayou may have been used for repairing boats and ships  
21 (Tyndall AFB 2020).

**3.2.5 TERRITORIAL PERIOD (A.D. 1821 TO 1845)**

23 Tallahassee was chosen as the state capital in 1821 because of its central location, granting representatives  
24 from each part of the state equal access to a common meeting place (Schafer 1996). Florida’s economy  
25 grew and diversified under American rule. Growth was spurred by the production of citrus fruit and sugar,  
26 which led to land speculation and the improvement of transportation facilities. Merchant vessel traffic  
27 increased as trade between the U.S. and the Caribbean region flourished. Goods from New York, New  
28 Orleans, and Charleston were imported to St. Augustine, while oak, cedar, timber, pine, cotton, bricks,  
29 oranges, and other items were exported (Burns 2008). American merchant ships, predominantly coastal  
30 schooners, were the key to the commercial expansion and economic viability of the new territory (Morris  
31 et al. 2002).

32 St. Andrews Bay was settled by the late 1820s in the area that is now Panama City. Oak and pine forests  
33 resulted in burgeoning sawmill and turpentine industries in the region during this period; in addition, early  
34 settlers raised cattle, cotton, and honey (Tyndall AFB 2020). Settlements were concentrated along the water  
35 as travel by boat was the most feasible means of travel since there was no road and bridge infrastructure in  
36 this early period. Rail did not take over as the primary means of travel for decades until around 1908 with  
37 the building of the Bay Line Railroad City (Tyndall AFB 2020).

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Conflict between the settlers and Native Americans continued through the 1840s. This period also witnessed the forced relocation of remnant Native American groups from the eastern U.S. to western territories (Missall and Missall 2004). This included the removal of the Seminole Nation from middle Florida. The leaders refused to leave, spurring violent conflicts with settlers. The skirmishes are collectively known as the Second and Third Seminole Wars. Only about 200 Seminole survived the Third Seminole War and were removed to the west (Schafer 1996).

Jose Massalina settled on Tyndall AFB in the 1830s. Massalina was a free black Spanish merchant marine who settled at Red Fish Point (located on Tyndall AFB) and established a thriving community for African Americans (Board of County Commissioners 2010). A cemetery at Redfish Point contains graves from this period (Tyndall AFB 2020).

### **3.2.6 AMERICAN STATEHOOD AND CIVIL WAR PERIOD (A.D. 1845 TO 1865)**

Florida became the twenty-seventh State admitted to the Union in 1845. The northwestern portion of the State held 15 percent of the population, most of it rural. Pensacola was the largest city in the region, with 2,900 inhabitants (Brown 1996). The largely frontier-like conditions of northwestern (and eastern) Florida were the obverse of middle Florida's wealthy cotton and citrus plantations, which contained two-thirds of the State's enslaved population (Brown 1996).

The disparate economies led to internal conflict on the subject of secession. As municipalities voted on slavery and secession, bands of armed regulators representing both sides of the issue rode about intimidating voters (Cox 2008). Despite abolitionist sympathizers in northwestern and parts of eastern Florida, the wealthy and politically connected land-owning class of middle Florida pushed for secession, and Florida became the third State to secede from the Union in 1861 (Brown 1996).

The Civil War began in Florida two days after the shelling of Fort Sumter. Union troop buildup began at Fort Pickens on Santa Rosa Island in Pensacola Bay in early 1861. On April 13, 1861, Confederate troops began shelling the Union position but were quickly defeated by the Union navy (Brown 1996). The Confederate forces under General Braxton Bragg attempted several more times to dislodge the fortified Federal forces, but abandoned Pensacola by March of 1862 (Brown 1996). Port cities like Apalachicola and other southern coastal cities found themselves at the mercy of Union blockades by the spring of 1862 (Burns 2009). Skirmishing continued throughout the state, but no major battles took place. Nevertheless, the Union blockade and forced conscription of a large percentage of able-bodied men left Florida impoverished by 1864 (Brown 1996).

In northwestern Florida, Union sympathizers frequently deserted the Confederate Army and even joined the Union Army. Escaped, formerly enslaved people and approximately 2,000 Confederate deserters formed militia groups like Strickland's Independent Union Rangers, who attacked Confederate sympathizers in the Apalachicola River area (Brown 1996).

Purportedly there were hundreds of saltworks established along St. Andrews Bay during the Civil War that served the Confederacy (Board of County Commissioners 2010; Tyndall AFB 2020). Union forces regularly raided and destroyed the saltworks, maintained a blockade at St. Andrew Bay, and established a prison camp on Redfish Point (Tyndall AFB 2020). Old Town St. Andrew was the location of a March 29,



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1863 skirmish between locals and Union forces and resulted in the deaths of five people (Tyndall AFB 2020).

**3.2.7 RECONSTRUCTION AND INDUSTRIALIZATION (A.D. 1865 TO 1940)**

Much of Florida struggled after the conclusion of the Civil War and the abolition of slavery. Freed Blacks established homesteads or share-cropped much of the former plantation lands, leading to conflicts with former planters (Shofner 1996). On the other hand, migration of the wealthy planter class and northerners to peninsular Florida created a thriving citrus-growing and tourist economy (Burns 2008).

Things remained largely unchanged in northwestern Florida during the late nineteenth century. White yeoman and black farmers continued to grow cotton, corn, vegetables, sugar-cane, and tobacco as sharecroppers and tenant farmers (Proctor 1996). The timber industry also continued to operate.

Naval stores, also referred to as the turpentine industry, were a part of the timber industry in the southeastern United States. Naval stores were produced through the industrial rendering of the sap or gum (oleoresin) gathered from pine trees, most notably the Longleaf Pine (*Pinus palustris*) and Slash Pine (*Pinus elliottii*). The naval stores industry, and its associated settlement patterns, were extractive systems closely linked with lumber and timber (Butler 1998). The naval stores industry supplied needed turpentine and rosin to the world market and provided employment for residents of northwest Florida during the late nineteenth through middle twentieth century. Turpentine and rosin were both used in many American household products including paints, medicines, hair spray, and cosmetics (Butler 1998).

Many of the families involved in the naval stores industry migrated to northwest Florida in the decades following the Civil War from the Carolinas, as war and a long history of timbering negatively affected the industry in those states (Blount 1993). The influx of people from North and South Carolina helped exploit the vast timber resources of Florida. This business opportunity can be seen in contemporary advertisements proclaiming that ready fortunes were available in Florida for a hardy few. For example, in 1889 the New York Times described the timber and turpentine business in Florida as “A business that promises well for hardy men, money to be made in the cypress swamps and pine woods with honest, hard work” (New York Times 1889). The development of improved transportation systems during this period, such as improved roads, railroads, and narrow gauge tram railroads, allowed the naval stores industry to spread and utilize the resources farther from settled areas (Butler 1998). In 1850, Florida accounted for only 1.05 percent of naval stores production in the U.S. By 1900, Florida claimed 31.8 percent of the U.S. production, and became the national leader. Florida held the lead until 1924, when Georgia became the national leader and remained so until the demise of the industry after World War II (Martinkovic 2006).

Towns on the Gulf Coast like St. Andrew (now Panama City) and Pensacola were experiencing growing tourist industries (Proctor 1996). In 1883, Pensacola was connected by rail to Jacksonville (Turner 2012). The Pensacola and Atlantic Railroad passed through the town of River Junction, located immediately south of the Georgia State line on the Apalachicola River, which improved transportation into and out of the central panhandle region (Turner 2012). Pensacola also became an important naval base. A navy yard was first built in Pensacola in 1826 and was improved in 1870 as part of Reconstruction (Turner 2012). In 1913, the Navy’s first Naval Air Station (NAS) was established at Pensacola. NAS Pensacola was greatly

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expanded throughout the 1920s and 1930s and became the primary naval aviation training base for the Navy (Commander, Navy Installations Command 2015).

Panama City became incorporated in 1909, and Bay County was created in 1913 (Board of County Commissioners 2010). A real estate boom in the St. Andrew Bay area began around 1885, with a large influx of settlers from the north. The Tyndall AFB area saw the creation of several communities, which are discussed in detail in the Tyndall AFB ICRMP (Tyndall AFB 2020). Industry flourished during the early twentieth century, with businesses establishing on present-day Tyndall AFB. Among these businesses were commercial fishing operations and factories, hotels, and camps (Tyndall AFB 2020). The turpentine industry became the main industry in the St. Andrew Bay area. In the 1930s Highway 98 was completed, as were several bridges connecting Panama City to the beaches (Tyndall AFB 2020). In 1933, the U.S. Army Corps of Engineers constructed the New Pass between the Gulf of Mexico and St. Andrews Bay as part of a Public Works Association project. The pass was 29 feet deep and 450 feet wide, providing deep water access for ships and spurring economic growth (Tyndall AFB 2020; Womack 2012).

Numerous communities were established along the Bay and on present-day Tyndall AFB during this period. The Tyndall AFB ICRMP details these communities.

### **3.2.8 MODERN PERIOD (A.D. 1940 TO PRESENT)**

World War II brought military-related development to Florida. The state became home to 172 military complexes (Mormino 1996). In addition to being home to military training bases, Florida, more specifically its coasts, saw some of the Second World War's only combat in the Western Hemisphere. German U-Boats operated off Florida's Atlantic and Gulf Coasts throughout the first half of the war. In January 1942 alone, 24 ships were sunk off the Florida coast (Mormino 1996). By 1943, increased air cover, the adoption of armed convoy tactics, and U.S. Coast Guard patrols neutralized the off-shore U-Boat threat (Gannon 2009).

Florida grew rapidly following the end of World War II. Population increased as did economic diversity. Citrus and cattle farming, phosphate mining, and tourism became economic staples. The growth of military bases during the Second World War also established support industries in towns like Pensacola where the bases are located. Tyndall AFB was established during this period (Tyndall AFB 2020).

### **3.2.9 TYNDALL AIR FORCE BASE**

Tyndall AFB was first established in the 1930s as Flexible Gunnery School No. 9. Its location on the East Peninsula was attractive for general year-round favorable weather conditions and space to conduct maneuvers (Tyndall AFB 2020, 2012). Preliminary plans for an airfield had initially considered the Panama City airport as a location, but by 1940, the East Peninsula and gunnery school were chosen for several reasons (Tyndall AFB 2020):

- The federal government desired a space large enough to accommodate future expansion;
- The East Peninsula was sparsely populated and local businesses were amenable to selling their land for the proposed installation;
- The sparse population and location along the Gulf of Mexico reduced the amount of land needed for clear zone buffers;

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- 1     ▪ There was a railroad established on the peninsula;
- 2     ▪ The mild climate provided good conditions for year-round flying; and
- 3     ▪ The peninsula provided an over-water approach to proposed airstrips, which was desirable in case of
- 4       emergency landings.

5     The location on the East Peninsula therefore reduced costs associated with establishing and maintaining an  
6     airfield. The initial tract of land was 28,517.65 acres; over 1,200 parcels were included in the initial land  
7     transfer in early 1941, many of which included local communities and residential properties (Tyndall AFB  
8     2020).

9     On June 13, 1941, the U.S. War Department approved a new name for the base as suggested by  
10    Congressman Bob Sikes – Tyndall Army Airfield. The installation was named after Lieutenant Francis B.  
11    Tyndall, a World War I fighter pilot and native of Florida. Between September and October 1918, Tyndall  
12    shot down four German planes behind enemy lines (Tyndall AFB 2020, 2012). In July 1930, Tyndall was  
13    killed in a plane crash while inspecting Army flying fields in North Carolina (Tyndall AFB 2020, 2012).

14    In June 1941, Lieutenant Colonel Warren A. Maxwell assumed command of Tyndall Army Airfield.  
15    Construction of the installation was completed in 1942; however, the base was officially opened on  
16    December 7, 1941 (Tyndall AFB 2020, 2012). The gunnery school opened in February 1942 and was the  
17    largest of the three aerial gunnery schools operating in the U.S. The initial military complement included  
18    20 officers and 1,450 enlisted personnel; approximately 10,000 personnel were located on the base by 1943  
19    (Tyndall AFB 2020).

20    During World War II, the Women’s Auxiliary Army Corps, Women’s Army Corps, and Women’s Airforce  
21    Service Pilots (WASP) were present on Tyndall AFB, although the WASP program lasted only four months  
22    due to an increase in the number of male pilots (Tyndall AFB 2020).

23    At the end of World War II, gunnery training was stopped (except for training of foreign nationals), and the  
24    base’s population dwindled to 985 (Tyndall AFB 2020). In 1946, the Air Tactical School (ATS) was  
25    transferred from Maxwell Field to Tyndall Army Airfield. By January 1947, the ATS was training personnel  
26    as officers and squadron commanders (Tyndall AFB 2020).

27    A provision of the National Security Act of 1947 resulted in the creation of the U.S. Air Force (USAF) as  
28    a separate branch of the Department of Defense, and Tyndall Army Airfield became known as Tyndall Air  
29    Force Base.

30    During the 1950s and the Korean War, several training schools were established at Tyndall AFB, including  
31    the Aircraft Controllers Course, the Air Police School, and the USAF Interceptor Weapons Instructor  
32    School. In 1964, a Personal Equipment/Survival Training School was established on the Base (Tyndall  
33    AFB 2020).

34    In the late 1960s and into the 1970s, personnel were reduced and operations on the base were ramped down.  
35    However, by 1979, Tyndall AFB was transferred to the USAF Tactical Air Command with the mission of  
36    defending the southeastern U.S.



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On July 1, 1981, a major reorganization of the base occurred with the activation of the 325<sup>th</sup> Fighter Weapons Wing. According to a Tyndall AFB fact sheet, the “wing began its mission at Tyndall with the F-101, F-106, and T-33 aircraft, while at the same time phasing out the F-101 and F-106 and preparing for the arrival of Tyndall's first F-15 aircraft in 1983” (Tyndall AFB 2012). In 1991, the USAF Air Defense Weapons Center was inactivated, and the 325th wing was designated installation host; the wing was redesignated as the 325th Fighter Wing in October 1991 (Tyndall AFB 2014).

On September 26, 2003, the arrival of the F-22 Raptor established Tyndall AFB as the “Home of Air Dominance Training” (Tyndall AFB 2014). On October 1, 2012, the 325th Fighter Wing became part of the Ninth Air Force under Air Combat Command. Today, Tyndall AFB employs 600 to 800 airmen and retains a strong commitment to national defense “through training, detection, and deterrence” (Tyndall AFB 2020:47).

### **3.3 PREVIOUS ARCHAEOLOGICAL INVESTIGATIONS**

In order to aid in the determination of potential cultural resources within the project areas, a query of previous surveys and identified archaeological resources was performed within one-half mile of each of the project APEs. The query was based on Geographic Information System (GIS) information and reports provided by Tyndall AFB and supplemented using information from the Florida Master Site File (FMSF) where available. Cultural surveys identified within one-half mile of the project APEs are summarized on **Table 3.3-1** and documented archaeological sites are summarized on **Table 3.3-2**. Archaeological survey and site information directly intersecting each of the APEs for this report are summarized in the following sections.

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**TABLE 3.3-1 PREVIOUS SURVEYS CONDUCTED WITHIN ONE-HALF MILE OF THE PROJECT SURVEY AREAS**

Survey Number	Associated Site(s)	Title	Publication Info	Year	Authors
138	Not Reported	<i>Partial Cultural Resource Inventory of Tyndall Air Force Base, Florida</i>	Report Submitted to Tyndall Air Force Base, Panama City, by Southeast Conservation Archeology Center, Tallahassee.	1979	Knudsen, Gary D; Stoutamire, James W.
488	8BY138	<i>Archaeological Testing and Evaluation of 8BY138 on Tyndall Air Force Base</i>	Piper Archaeological Research, Inc., St. Petersburg	1981	Chance, Marsha A.; Piper, Harry M.; Piper, Jacquelyn G.
1977	Not Reported	<i>Archaeological Site Recording and Testing at Tyndall Air Force Base, Florida</i>	Report of Investigations No.138, New World Research, Inc. Ft. Walton Beach	1989	Campbell, Janice L.; Mikell, Gregory A.; Thomas, Prentice M., Jr.
3640	Not Reported	<i>Cultural Resources Survey of 300 Acres in the Vicinity of Felix Lake, Tyndall Air Force Base, Bay County, Florida</i>	Prentice Thomas and Associates, Inc., Fort Walton Beach. Submitted to Tyndall Air Force Base, Panama City.	1993	Campbell, L. Janice; Meyer, Joseph P.; Thomas, Prentice M., Jr.
9350	8BY24	<i>Phase I Survey and Evaluation of Archaeological Site 8BY24, Shoal Point Bayou, Tyndall Air Force Base, Bay County, Florida</i>	Brockington & Associates, Inc., Norcross, GA, submitted to US Army Corps of Engineers	2003	Brockington & Associates, Inc.
12805	Not Reported	<i>Tyndall Air Force Base, National Register Eligibility Determinations and Boundary Delineation of Selected Sites on Tyndall Air Force Base, Florida</i>	Geo - Marine, Inc ., Plano, TX . Air Education and Training Command Series Reports of Investigations Number 14 . Prepared for Air Force Center for Environmental Excellence, Tyndall Air Force Base	2006	Dongarra, Vincent; Lintz, Christopher; O'Steen, Lisa; Raymer, Leslie
13469	Not Reported	<i>Archeological Survey of the AFFOR Area Tyndall Air Force Base, Panama City, Florida</i>	National Park Service, Southeast Archeological Center, Tallahassee. Prepared for Tyndall Air Force Base, Tyndall AFB	2006	Yates, Emily M
13499	8BY137	<i>Final Report Archeological Investigation of the Bayview Site ( 8 BY 137 ) A Weeden Island Ring Midden</i>	Southeast Archeological Center, Tallahassee . Submitted to Tyndall Air Force Base, Panama City	2006	Russo, Michael; Schwadron, Margo; Yates, Emily M.
20365	TY-11	<i>Cultural Resources Survey of TY-11 Contract FA4890-04-D-0009-DK13 Cultural Resources Management Support, Tyndall Air Force Base, Bay County, Florida</i>	Prentice Thomas and Associates Report of Investigations N. 1238. Submitted to Tyndall Air Force Base, Florida	2012	Bourgeois, Carrie Williams; Callisto, Christina M.; Campbell, L. Janice
20366	Not Reported	<i>Limited Phase I Archaeological Investigation &amp; Monitoring of Environmental Restoration Site LF 005 , Tyndall Air Force Base, Bay County Florida</i>	Prentice Thomas and Associates Report of Investigations No. 1379. Submitted to Tyndall Air Force Base, Florida	2013	Aubuchon, Benjamin; Morehead, James R.; Zimmerman, Christina

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Survey Number	Associated Site(s)	Title	Publication Info	Year	Authors
20611	TY-6	<i>Cultural Resources Survey of TY-6 (Task Order TY-09-0006) Contract FA4890-04-D-0009-DK13 Cultural Resources Management Support, Tyndall Air Force Base, Bay County, Florida</i>	Prentice Thomas and Associates Report of Investigations No. 1367. Submitted to Tyndall Air Force Base, Florida	2013	Aubuchon, Benjamin; Bourgeois, Carrie Williams; Callisto, Christina M; Morehead, James R.
20784	TY-7	<i>Cultural Resources Survey of TY-7 Task Order T09-0007 Contract FA4890-04-D-0009-DK13 Cultural Resources Management Support, Tyndall Air Force Base, Bay County, Florida</i>	Prentice Thomas and Associates Report of Investigations No. 1240. Submitted to Tyndall Air Force Base, Florida	2012	Bourgeois, Carrie Williams; Callisto, Christina M.; Campbell, L. Janice; Morehead, James R.
20958	TY-100/ TY-101	<i>Cultural Resources Survey Of TY-100 &amp; TY-101 (Task Order TY-13-0002) Contract W9128F-12-2-0002-0006 Cultural Resources Management Support, Tyndall Air Force Base, Bay County, Florida</i>	Prentice Thomas and Associates Report of Investigations No. 1384. Submitted to Tyndall Air Force Base, Florida	2014	Campbell, L. Janice; Kent, Bret; Mathews, James H.; Morehead, James R
21464	Not Reported	<i>Cultural Resource Assessment Survey for the Replacement of the Sandy Hollow Road Bridge (No. 484051) Over Sandy Hollow Creek, Escambia County, Florida</i>	On File at SEARCH, Newberry. FDOT FM # 430470-1. SEARCH project no. 3290-14174	2014	Bartlett, Laurel; Dye, Melissa; Grinnan, Joe; Pokrant, Marie
22457	TY-136	<i>Cultural Resources Survey of TY-136 (Task Order TY-15-0002) Contract W9128F-12-2-0002 Cultural Resources Management Support, Tyndall Air Force Base, Bay County, Florida</i>	Prentice Thomas and Associates Report of Investigations No. 1412. Submitted to Tyndall Air Force Base, Florida	2015	Campbell, L. Janice; Clark, Ryan; Meyer, Erica; Wildt, Jennifer
22532	TY-111	<i>Cultural Resources Survey of TY-111 (Task Order TY-14-0013) Contract W9128F-12-2-0002 Cultural Resources Management Support, Tyndall Air Force Base, Bay County, Florida</i>	Prentice Thomas and Associates Report of Investigations No. 1406. Submitted to Tyndall Air Force Base, Florida	2015	Campbell, L. Janice; Clark, Ryan N.; Morehead, James R.; Wildt, Jennifer
22534	TY-113	<i>Cultural Resources Survey of TY-113 (Task Order TY-14-0015) Contract W9128F-12-2-0002 Cultural Resources Management Support, Tyndall Air Force Base, Bay County, Florida</i>	Prentice Thomas and Associates Report of Investigations No. 1408. Submitted to Tyndall Air Force Base, Florida	2015	Campbell, L. Janice; Clark, Ryan N.; Morehead, James R.; Wildt, Jennifer
22824	TY-114	<i>Cultural Resources Survey of TY-114 (Task Order TY-14-0016) Contract W9128F-12-2-0002 Cultural Resources Management Support, Tyndall Air Force Base, Bay County, Florida</i>	Prentice Thomas and Associates Report of Investigations No. 1409. Submitted to Tyndall Air Force Base, Florida	2015	Stewart, Benjamin; Clark, Ryan N.; Jennifer Wildt; Meyer, Erica
22826	TY-110	<i>Archaeological Survey of TY-110, Tyndall Air Force Base, Bay County, Florida, Task Order TY-14-0012 Contract W9128F-12-2-0002</i>	Prentice Thomas and Associates Report of Investigations No. 1405. Submitted to Tyndall Air Force Base, Florida	2015	Campbell, Jan; Clark, Ryan N.; Stewart, Benjamin; Wildt, Jennifer
23221	TY-0134	<i>Phase I Archaeological Investigation Of Survey Areas TY-0134, Tyndall Air Force Base, Bay County, Florida</i>	URS Group, Inc. Germantown, MD, prepared for General Services Administration of the US Air Force	2016	Benjamin Stewart, BA; Kathleen Furgerson, MA, RPA; Mark



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Survey Number	Associated Site(s)	Title	Publication Info	Year	Authors
					Martinkovic, MA, RPA; Scott Seibel, MSC, RPA
23805	TY-141	<i>Archaeological Survey of TY-141 Tyndall Air Force Base, Bay County, Florida Task Order TY-16-0015 Contract W9128F-12-0002</i>	Prentice Thomas and Associates Report of Investigations No. 1474. Submitted to Tyndall Air Force Base, Florida	2016	Campbell, L. Janice; Clark, Ryan N.; Morehead, James R.; Stewart, Benjamin
23832	TY-0131	<i>Phase I Archaeological Investigation Of Survey Areas TY-0131, Tyndall Air Force Base, Bay County, Florida</i>	URS Group, Inc., Germantown, MD., prepared for General Services Administration of the US Air Force	2016	Furgerson, Kathleen; Martinkovic, Mark; Seibel, Scott; Stewart, Benjamin
24164	TY-142	<i>Archaeological Survey of TY-142 Tyndall Air Force Base, Bay County, Florida Task Order TY-16-0021 Contract W9128F-12-2-002</i>	Prentice Thomas and Associates Report of Investigations No. 1474. Submitted to Tyndall Air Force Base, Florida.	2017	Campbell, L. Janice; Clark, Ryan N.; Cruze, Zackerk; Morehead, James R.
24165	TY-0137	<i>Archaeological Survey Unit TY-0137, 194 Acres, Tyndall Air Force Base, Bay County, Florida Task Order TY-15-0004 Contract W9128F-12-2-002 Survey Unit TY-0137</i>	Amec Foster Wheeler CRM Report # 2015-025.	2015	Bradley, Dawn M.; Darr, Savannah L.; Mocas, Stephen T.; Wampler, Marc E.
24683	TY-0110	<i>Archaeological Survey of 120 Acres in TY-0110 at Tyndall Air Force Base</i>	New South Associates, prepared for Tyndall Air Force Base	2017	Gregory, Danny; Vasquez, J. Javi
24705	TY-155	<i>Archaeological Survey of TY-155 Tyndall Air Force Base, Bay County, Florida Task Order TY-17-0007 Contract W9128F-12-2-002</i>	Prentice Thomas and Associates Report of Investigations No. 1501. Submitted to Tyndall Air Force Base, Florida.	2017	Brannon, Shannon; Campbell, L. Janice; Clark, Ryan N.; Morehead, James R.
25045	TY-156	<i>Phase I Geomorphic and Archaeological Reconnaissance of the 404 acre Raffield Peninsula (TY-0156)</i>	Cardno ENTRIX, prepared for Tyndall Air Force Base	2017	Armondo Anzellini; Duane Simpson; Katie Settle
25442	TY-158/ TY-159	<i>Phase I Archaeological Survey Of TY-158 And TY-159 On Tyndall Air Force Base, Bay County, Florida, Contract: W9128F-12-2-0002, Task Order: TY-17-0014</i>	Mikell, Gregory A. 2017 Phase I Archaeological Survey Of TY-158 And TY-159 On Tyndall Air Force Base, Bay County, Florida, Contract: W9128F-12-2-0002, Task Order: TY-17-0014, Panamerican Consultants Inc. Pensacola, Florida	2017	Mikell, Gregory A.
Not Reported	TY-0117/ TY-0118/ TY-0119/ TY-0120/ TY-0121	<i>Phase I Archaeological Investigation Of Survey Area TY-0117, TY-0118, TY-0119, TY-0120, And TY-0121 Tyndall Air Force Base, Bay County, Florida Tyndall Air Force Base TY-14-0019</i>	Not reported	2016	Mark Martinkovic, MA, RPA; Kathleen Furgerson, MA, RPA; Benjamin

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Survey Number	Associated Site(s)	Title	Publication Info	Year	Authors
					Stewart, BA; Scott Seibel, MSC, RPA
Not Reported	TY-0145	<i>Archaeological Survey of 120 Acres in TY-0145 at Tyndall Air Force Base, Bay County, Florida. Task Order TY-16-0020. Report on file, TAFB CRM.</i>	Not Reported	2017	Gregory, Danny; Vasquez, J. Javi
Not Reported	TY-0147/ TY-0148/ TY-0150/ TY-0151/ TY-0152/ TY-0153	<i>Phase I Archaeological Investigations and NRHP Evaluation Recommendations for Six Survey Areas on Tyndall Air Force Base, Bay County, Florida: TY-0147, TY-0148, TY-0150, TY-0151, TY-0152, and TY-0153</i>	Not Reported	2020	Maldonado, Amanda; Short, Laura; Stark, Richard; Vandagriff, Jamie; Goodmaster, Christopher

Sources: FMSF, 2021; Tyndall AFB GIS Data, 2021.

Notes: "Not Reported" signifies instances where either Tyndall AFB records or the FMSF were incomplete or not available. NRHP = National Register of Historic Places

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**TABLE 3.3-2 PREVIOUSLY REPORTED ARCHAEOLOGICAL SITES WITHIN ONE-HALF MILE OF THE PROJECT SURVEY AREAS**

Site Number	Site Name	Survey Number(s)	Site Type(s)	Cultural/Temporal Association(s)	Survey Recommendation	State Historic Preservation Office (SHPO) Recommendation
8BY02544	Not Reported	Not Reported	Not Reported	Not Reported	Potentially eligible	Not Reported
8BY02547	Not Reported	Not Reported	Not Reported	Not Reported	Potentially eligible	Not Reported
8BY02546	Not Reported	Not Reported	Not Reported	Not Reported	Potentially eligible	Not Reported
8BY02549	Not Reported	Not Reported	Not Reported	Not Reported	Eligible	Not Reported
8BY02279	TY-142-A	24164	Land-terrestrial	American-20th Century Late Archaic	Ineligible	Ineligible for NRHP (Jun 06, 2017)
8BY01780	TY-111-B	22532	Land-terrestrial Collection station	Weeden Island A.D. 450-1000	Ineligible	Ineligible for NRHP (Jan 14, 2016)
8BY01781	TY-111-C	22532	Land-terrestrial Artifact scatter Collection station	American-19th century 1821-1899 American-20th Century Weeden Island A.D. 450-1000	Ineligible	Ineligible for NRHP (Jan 14, 2016)
8BY01784	TY-111-F	22532	Land-terrestrial Prehistoric shell midden Activity station	Prehistoric-Ceramic Possibly Weeden Island	Ineligible	Ineligible for NRHP (Jan 14, 2016)
8BY01786	TY-111-I	22532	Land-terrestrial Collection station(s)	Weeden Island A.D. 450-1000	Potentially eligible	Insufficient Information (Jan 14, 2016)
8BY01785	TY-111-G	22532	Land-terrestrial Artifact scatter	American-20th Century	Ineligible	Ineligible for NRHP (Jan 14, 2016)
8BY01782	TY-111-D/E	22532	Land-terrestrial Prehistoric shell midden Historic single artifact Shellfish processing station	American 1821-present Weeden Island A.D. 450-1000	Ineligible	Ineligible for NRHP (Jan 14, 2016)
8BY01764	Tyndall AFB Jeep Range 1	22534	Land-terrestrial WWII jeep range	American-20th Century World War II military site	Potentially eligible	Insufficient Information (Jan 14, 2016)
8BY01768	TY-113-I/J	22534	Land-terrestrial Collection station	Ft. Walton A.D. 1000-1500 Weeden Island A.D. 450-1000	Potentially eligible	Insufficient Information (Jan 14, 2016)
8BY01770	TY-136-A	22457	Land-terrestrial Collection Station	Weeden Island A.D. 450-1000	Ineligible	Ineligible for NRHP (Nov 05, 2015)
8BY01771	TY-136-D	22457	Land-terrestrial Collection Station	Weeden Island A.D. 450-1000	Ineligible	Ineligible for NRHP (Nov 05, 2015)
8BY01772	TY-136-E	22457	Campsite (prehistoric) Land-terrestrial Activity Station	American-19th century 1821-1899 American-20th Century	Potentially eligible	Eligible for NRHP (Nov 05, 2015)



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Site Number	Site Name	Survey Number(s)	Site Type(s)	Cultural/Temporal Association(s)	Survey Recommendation	State Historic Preservation Office (SHPO) Recommendation
				Swift Creek, 300 B.C.- A.D. 450 Weeden Island A.D. 450- 1000		
8BY01773	TY-136-F	22457	Land-terrestrial	Weeden Island A.D. 450- 1000 Late Woodland	Ineligible	Ineligible for NRHP (Nov 05, 2015)
8BY01774	TY-136-G	22457	Land-terrestrial	American-20th Century Prehistoric-Aceramic Prehistoric-Ceramic Prehistoric-Unspecified Woodland	Ineligible	Ineligible for NRHP (Nov 05, 2015)
8BY01775	TY-136-I	22457	Land-terrestrial Prehistoric midden(s) Activities Station	American-19th century 1821-1899 American-20th Century Middle Woodland Santa Rosa Swift Creek, 300 B.C.- A.D. 450 Weeden Island A.D. 450- 1000	Potentially eligible	Insufficient Information (Nov 05, 2015)
8BY01779	TY-136-K	22457	Land-terrestrial	Swift Creek, 300 B.C.- A.D. 450 Weeden Island A.D. 450- 1000 Woodland	Ineligible	Ineligible for NRHP (Nov 05, 2015)
8BY01776	TY-136-J	22457	Land-terrestrial	American-19th century 1821-1899 American-20th Century Prehistoric-Aceramic	Ineligible	Ineligible for NRHP (Nov 05, 2015)
8BY01521	TY-6-F	20611	Campsite (prehistoric) Land-terrestrial Prehistoric shell midden Subsurface features Artifact scatter Short-term camp	American 1821-present Weeden Island A.D. 450- 1000	Potentially eligible	Insufficient Information (Jan 15, 2014)
8BY01382	TY-11A	20365	Campsite (prehistoric) Land-terrestrial Artifact scatter	Weeden Island A.D. 450- 1000	Ineligible	Insufficient Information (Oct 22, 2013)

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Site Number	Site Name	Survey Number(s)	Site Type(s)	Cultural/Temporal Association(s)	Survey Recommendation	State Historic Preservation Office (SHPO) Recommendation
8BY01391	TY-11B	20365	Land-terrestrial Artifact scatter	American-20th Century Early Weeden Island Middle Woodland	Ineligible	Ineligible for NRHP (Oct 22, 2013)
8BY01478	TY-11C	20365	Land-terrestrial Artifact scatter	Ft. Walton A.D. 1000-1500 Pensacola	Ineligible	Ineligible for NRHP (Oct 22, 2013)
8BY01479	TY-11D	20365	Land-terrestrial Artifact scatter Station camp	Weeden Island A.D. 450-1000	Ineligible	Ineligible for NRHP (Oct 22, 2013)
8BY01480	TY-11F	20365	Building Remains Homestead Land-terrestrial Still for liquor Subsurface features Store	American-20th Century Prehistoric-Unspecified	Potentially eligible	Ineligible for NRHP (Oct 22, 2013)
8BY00137	WHERRY 2	138 / 13499	Artifact scatter-low density Habitation (prehistoric) Land-terrestrial Other Prehistoric midden(s) Prehistoric shell midden Prehistoric shell works Artifact scatter Shoreline site adjoining bay and bayou Village(prehistoric)	American-20th Century Other Prehistoric-Aceramic Prehistoric-Unspecified Santa Rosa-Swift Creek Swift Creek-Late Unknown Weeden Island 1 Weeden Island 2 Weeden Island A.D. 450-1000 Weeden Island I Weeden Island II	Eligible	Potentially Eligible for NRHP (Nov 08, 2006)
8BY01499	TY 7-E	20784	Land-terrestrial Artifact scatter	American-19th century 1821-1899 American-20th Century Late Archaic Late Archaic/Gulf Formational	Potentially eligible	Insufficient Information (Sep 24, 2013)
8BY01500	TY 7-F	20784	Land-terrestrial Lithic scatter	Late Archaic Late Archaic/Gulf Formational	Potentially eligible	Insufficient Information (Sep 24, 2013)
8BY01502	TY 7-I	20784	Land-terrestrial Redeposited, dredge spoil	American 1821-present Prehistoric-Unspecified	Ineligible	Ineligible for NRHP (Sep 24, 2013)

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Site Number	Site Name	Survey Number(s)	Site Type(s)	Cultural/Temporal Association(s)	Survey Recommendation	State Historic Preservation Office (SHPO) Recommendation
8BY01503	TY 7-J	20784	Land-terrestrial Lithic scatter	Late Archaic Late Archaic/Gulf Formational	Potentially eligible	Insufficient Information (Sep 24, 2013)
8BY01504	TY 7-K	20784	Land-terrestrial Lithic scatter	Late Archaic Late Archaic/Gulf Formational	Ineligible	Ineligible for NRHP (Sep 24, 2013)
8BY01505	TY 7-L	20784	Land-terrestrial Lithic scatter	Late Archaic Late Archaic/Gulf Formational	Potentially eligible	Insufficient Information (Sep 24, 2013)
8BY01506	TY 7-M	20784	Land-terrestrial Lithic scatter	Late Archaic Late Archaic/Gulf Formational	Potentially eligible	Insufficient Information (Sep 24, 2013)
8BY01507	TY 7-N	20784	Land-terrestrial Lithic scatter	Late Archaic Late Archaic/Gulf Formational	Potentially eligible	Insufficient Information (Sep 24, 2013)
8BY01508	TY 7-O	20784	Campsite (prehistoric) Land-terrestrial Activity station	Deptford 700 B.C.-300 B.C. Late Archaic Late Archaic/Gulf Formational	Potentially eligible	Insufficient Information (Sep 24, 2013)
8BY01650	Temp A	20366	Land-terrestrial Hunting or short-term camp	Prehistoric-Aceramic	Ineligible	Insufficient Information ( )
8BY00159	WILD GOOSE LAGOON 1	138 / 1977 / 12805	Artifact scatter-low density Land-terrestrial Prehistoric mound(s) Prehistoric shell midden Prehistoric shell works Artifact scatter Shell lens, scatter	American-20th Century Prehistoric-Unspecified Weeden Island A.D. 450-1000	Eligible	Eligible for NRHP (Jul 11, 2006)
8BY00138	MARINA SERVICES FACILITY	488 / 12805	Prehistoric midden(s) Prehistoric mound(s) Sand mound?	Indeterminate	Ineligible	Ineligible for NRHP (May 16, 2006)
8BY00693	NN	1977 / 12805	Artifact scatter-low density Extractive site Prehistoric shell midden	Ft. Walton A.D. 1000-1500	Ineligible	Ineligible for NRHP (Jul 11, 2006)
8BY00186	TAFB ABORIGINAL-HISTORIC 2	25045	Artifact scatter-low density Habitation (prehistoric) Historic refuse Historic road segment	American-20th Century Archaic unspecified Prehistoric-Ceramic Santa Rosa-Swift Creek	Ineligible	Ineligible for NRHP (May 09, 2018)



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Site Number	Site Name	Survey Number(s)	Site Type(s)	Cultural/Temporal Association(s)	Survey Recommendation	State Historic Preservation Office (SHPO) Recommendation
			Homestead Land-terrestrial Prehistoric shell midden Saltwater submerged Tidal-estuarine	Weeden Island A.D. 450-1000		
NWR 1	Not Reported	Not Reported	Not Reported	Not Reported	Ineligible	Not Reported
8BY00188	TAFB ABORIGINAL 5	Not Reported	Artifact scatter-low density Prehistoric shell midden	Santa Rosa-Swift Creek Weeden Island A.D. 450-1000	Potentially eligible	Eligible for NRHP (Nov 15, 1984)
8BY00189	TAFB ABORIGINAL 6	Not Reported	Isolated Find Prehistoric shell midden	Weeden Island A.D. 450-100	Ineligible	Not Evaluated by SHPO
8BY00187	TAFB ABORIGINAL 4	Not Reported	Prehistoric shell midden	Santa Rosa-Swift Creek Weeden Island A.D. 450-1000	Potentially eligible	Not Evaluated by SHPO
8BY00190	TAFB ABORIGINAL 7	Not Reported	Redeposited site	Indeterminate	Ineligible	Not Evaluated by SHPO
8BY00154	CAPEHART 1	138	Land-terrestrial Prehistoric shell midden	Deptford 700 B.C.-300 B.C. Santa Rosa-Swift Creek Swift Creek, 300 B.C.-A.D. 450 Weeden Island A.D. 450-1000	Potentially eligible	Not Evaluated by SHPO
8BY02275	TY-141 I & J	23805	Land-terrestrial	American-20th Century Late Archaic Prehistoric-Unspecified	Potentially eligible	Insufficient Information (Apr 13, 2017)
8BY02269	TY-141 A	23805	Land-terrestrial	Weeden Island A.D. 450-1000 Late Gulf Formational	Potentially eligible	Insufficient Information (Apr 13, 2017)
8BY02271	TY-141 C	23805	Agriculture/farm Land-terrestrial Cattle vat	American-20th Century	Potentially eligible	Insufficient Information (Apr 13, 2017)
8BY02272	TY-141 D	23805	Land-terrestrial	Woodland	Ineligible	Ineligible for NRHP (Apr 13, 2017)
8BY02277	TY-141 M	23805	Land-terrestrial	American-20th Century	Ineligible	Ineligible for NRHP (Apr 13, 2017)
8BY02278	TY-141 N	23805 / 24164	Land-terrestrial	American-20th Century	Potentially eligible	Insufficient Information (Apr 13, 2017)
8BY02303	FLN-6	24683	Campsite (prehistoric) Land-terrestrial	Prehistoric-Aceramic	Ineligible	Ineligible for NRHP (Sep 21, 2017)

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Site Number	Site Name	Survey Number(s)	Site Type(s)	Cultural/Temporal Association(s)	Survey Recommendation	State Historic Preservation Office (SHPO) Recommendation
8BY02378	TY-155 F	24705	Campsite (prehistoric) Habitation (prehistoric) Historic well Land-terrestrial Prehistoric shell midden Hamlet	American-20th Century Ft. Walton A.D. 1000-1500 Mississippian Weeden Island A.D. 450-1000	Potentially eligible	Insufficient Information (Dec 07, 2017)
8BY02379	TY-155 R	24705	Campsite (prehistoric) Land-terrestrial Prehistoric shell midden	Ft. Walton A.D. 1000-1500 Mississippian Santa Rosa-Swift Creek Middle Woodland	Potentially eligible	Insufficient Information (Dec 07, 2017)
8BY02381	TY-155 V	24705	Building Remains Land-terrestrial Skeet Range	American-20th Century World War II era	Potentially eligible	Insufficient Information (Dec 07, 2017)
8BY02380	TY-155 U	24705	Building Remains Land-terrestrial Turret Tower Range No. 2	American-20th Century World War II era	Potentially eligible	Insufficient Information (Dec 07, 2017)
8BY02723	Not Reported	Not Reported	Not Reported	Not Reported	Potentially eligible	Not Reported
8BY02727	Not Reported	Not Reported	Not Reported	Not Reported	Potentially eligible	Not Reported
8BY02722	Not Reported	Not Reported	Not Reported	Not Reported	Potentially eligible	Not Reported
8BY02725	Not Reported	Not Reported	Not Reported	Not Reported	Potentially eligible	Not Reported
8BY02724	Not Reported	Not Reported	Not Reported	Not Reported	Potentially eligible	Not Reported
8BY02897	Not Reported	Not Reported	Not Reported	Not Reported	Potentially eligible	Not Reported

Sources: FMSF, 2021; Tyndall AFB GIS Data, 2021.

Note: "Not Reported" signifies instances where either Tyndall AFB records or the FMSF were incomplete or not available.

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**3.3.1 CONSTRUCT NEW EOD GRAVEL ROAD**

No previous archaeological investigations have been performed within the LOD for the EOD Gravel Road improvements. Two previous investigations on site TY-148 have been performed, (**Figure 3.3-1**) located approximately 415 feet north, northeast, and east of the Proposed Action LOD, but no archaeological sites were identified in these areas with proximity to the planned EOD range improvements. Separately, an isolated archeological resource (8BY02897) has been identified offshore well to the south of the project area. The site is documented in the FMSF with a National Register of Historic Places (NRHP) recommendation of potentially eligible.

**3.3.2 DREDGE WEAPONS EVALUATION GROUP (WEG) SMALL BOATHOUSE AREA**

A majority of the terrestrial LOD for the WEG Small Boathouse project has been previously surveyed for archaeological resources as part of prior investigations at site TY-156 (**Figure 3.3-2**). Although numerous archaeological resources are present in the TY-156 site located approximately 700 feet northeast of spoils site Alternative 2, none are documented within or adjacent to the areas comprising the project LODs.

**3.3.3 REPLACE WEG TOWER 1802**

No previous archaeological investigations have been performed within the LOD for the WEG Tower 1802 replacement project. One previous investigation was performed on site TY-159, approximately 145 feet north of the project LOD, and separated from the project area by Ohio Road (**Figure 3.3-3**). The site was extensively shovel tested in 2017, but no archaeological sites were identified in this area with proximity to the planned WEG Tower 1802 replacement (Mikell 2017).

**3.3.4 IMPROVE EXPEDITIONARY/ENCAMPMENT ROADS**

Portions of the LOD for the Expeditionary/Encampment Roads improvements have been previously surveyed for archaeological resources as part of prior investigations (**Figure 3.3-4**). Specifically, most of Expeditionary Road and the proposed turnaround and ECF areas are included in site TY-111, which was systematically shovel tested in 2015 (Campbell et al. 2015).

Resource 8BY01782 (TY-111-D/E) is located within the project LOD, immediately east of U.S. Highway 98, in the vicinity of the proposed turnaround and ECF facilities. A total of 43 prehistoric ceramics, 7,703.73 grams (g) of shells, and one historic can part were recovered from 8BY01782. The ceramic inventory includes two Swift Creek Complicated Stamped, one Carrabelle Incised and one Carrabelle Punctated, two Keith Incised, eight Wakulla Check Stamped, two Weeden Island Plain, two Weeden Island Punctated, and 25 unidentified plain sherds. A number of sherds display good quality of manufacture. The majority of shell recovered was whelk (6,442 g), with modest quantities of oyster (400 g) and scallop (108.02 g). Most of the whelk were whole specimens harvested for the meat. The prehistoric resources are from the Weeden Island time period (A.D. 450-1000). The single historic artifact collected was a ferrous fragment of a can of an unknown date. Site 8BY01782 was determined ineligible for inclusion to the NRHP.

Resource 8BY01780 (TY-111-B) is located immediately southeast of Expeditionary Road, outside of the LOD for the proposed roadway improvements. Four prehistoric ceramics and three lithic specimens were



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recovered, dating to the Weeden Island time period (A.D. 450-1000). The site was determined ineligible for inclusion to the NRHP.

A total of three prehistoric ceramics and 123 historic artifacts were recovered from Resource 8BY01781 (TY-111-C). This site is located well outside the project area LOD, northwest of Expeditionary Road, and was determined ineligible for listing to the NRHP.

Located within the LOD at the intersection of Expeditionary and Encampment Roads is the isolated Resource 8BY00190 (TAFB ABORIGINAL 7). The site is documented in the FMSF with an indeterminate temporal association and a NRHP recommendation of ineligible.

### **3.3.5 EXPAND FAMCAMP SITE**

A majority of the terrestrial LOD for the FAMCAMP improvements has been previously surveyed for archaeological resources as part of prior investigations at sites TY-136 and TY-09-0011 (**Figure 3.3-5**). Site TY-136 includes two resources identified as 8BY01770 (TY-136A) and 8BY01771 (TY-136 D) in the vicinity of the FAMCAMP LOD, but these resources do not directly intersect the LOD. These two resources have been evaluated for cultural significance and were determined ineligible for listing to the NRHP in November 2015.

Site TY-09-0011 includes two resources identified as 8BY01382 (TY-11A) and 8BY01391 (TY-11B). Resource 8BY01382 is located within the planned LOD for the FAMCAMP improvements, whereas 8BY01391 is adjacent to the LOD to the south. Resource 8BY01391 was evaluated for cultural significance and was determined to be ineligible for listing to the NRHP in October 2013.

Resource 8BY01382, which is located in the LOD, is identified as a prehistoric land terrestrial campsite temporally associated with the Weeden Island A.D. 450-1000 period. The site was subjected to systematic shovel testing in 2012 which uncovered a total of four ceramics, 17 lithics, and 125.6 g of shell. Ceramics include a Wakulla Check Stamped rim fragment, two unidentified plain sherds, and one fired clay fragment. Cooking soot was found on one of the unidentified sherds. At the time of investigation, 8BY01382 was recommended as ineligible for listing to the NRHP as minimal site with no clear patterns (Bourgeois et al. 2012).

### **3.3.6 CONSTRUCT WATER MAIN ALONG NORTH SIDE OF FLIGHTLINE**

No previous archaeological investigations have been performed within the LOD for the Flightline Water Main improvements. Numerous investigations have been performed in the surrounding area; however, only a small portion of site TY-119 intersects the extreme northwest corner of the LOD for the proposed improvements (**Figure 3.3-6**). The site was shovel tested in 2016. No archaeological sites were documented, and no further archaeological work was recommended (Martinkovic et al. 2016).

Approximately 70 feet from the extreme southeast corner of the LOD for the proposed improvements, but separated by an access road, is site TY-137. No additional information is available for this site.

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**3.3.7 CONSTRUCT FISHING/OBSERVATION PIER (HERITAGE CLUB)**

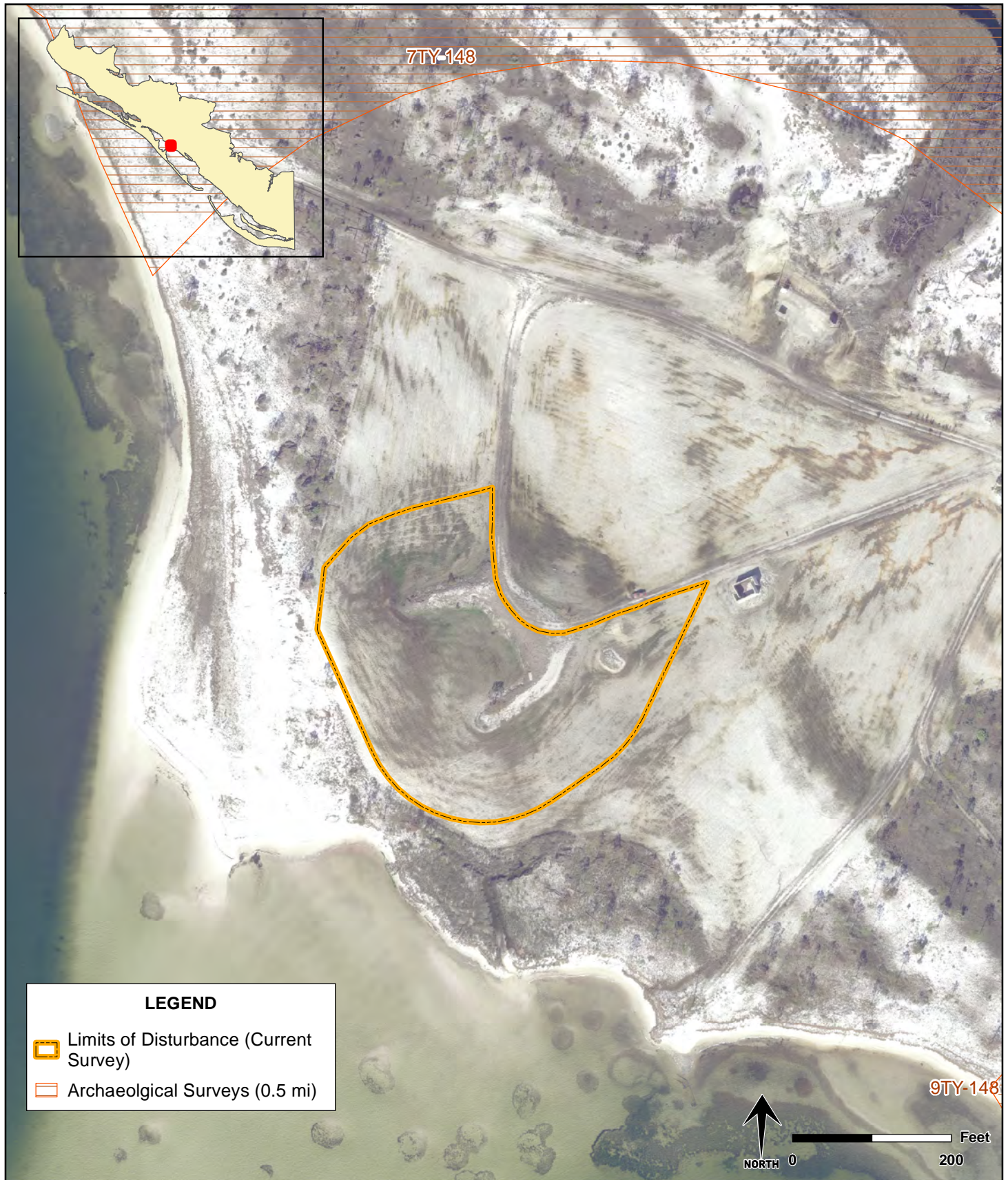
The terrestrial portion of the LOD for the Heritage Club Fishing/Observation Pier project is included within the previously surveyed site TY-155 (TY-17-07/TY-155) (**Figure 3.3-7**). The LOD for the proposed project was shovel tested in 2017, and no archaeological resources were encountered. Two resources were identified in the vicinity of the Heritage Club area, although well outside of the LOD for the proposed improvements. Resource 8BY02378 (TY-155 F) is approximately 650 feet northeast of the LOD and covers a large area north, northeast, and east of the Heritage Club building and parking lot and includes both prehistoric and historic resources. Prehistoric resources include shell middens, lithic debitage, ceramics, sherds, shell tools, bone, coral, and unmodified shell fragments from the Weeden Island (A.D. 450-1000) and Ft. Walton (A.D. 1000-1500) time periods. Historic resources within this area include 20<sup>th</sup> century well remains and remnants of brick and concrete building foundations (Brannon et al. 2017) This resource was recommended as potentially eligible for inclusion to the NRHP; however insufficient information was available to make a final determination.

Resource IF-1089 is an isolated resource located approximately 1,150 feet northwest of the Heritage Club building, and includes a single potsherd recovered from the surface near a shovel test pit (STP) (Brannon et al. 2017). The resource was recommended as ineligible for inclusion to the NRHP.

**3.3.8 RENOVATE UNITE SITE**

Most of the LOD for the Renovate UNITE Site, Alternative 1, was previously surveyed as Site TY-09-0011/TY-11 in 2012 (**Figure 3.3-8**). No archaeological resources were encountered within the proposed project's LOD. Two resources were identified in proximity to the LOD for the proposed renovations. Resource 8BY01480 (TY-11F) is located approximately 180 feet east of the Alternative 1 project area and features well pipes, clear glass bottles, homestead remnants, fence posts, car parts, and other 20<sup>th</sup> century artifacts. Prehistoric resources included a shell, charcoal, and a single piece of lithic debitage (Bourgeoise 2012). 8BY01480 was determined ineligible for listing to the NRHP. Resource 8BY01391 (TY-11B) is located approximately 115 feet north of northeast corner of the Alternative 1 LOD. The site contained one 20<sup>th</sup> century artifact, a clear lip fragment from a storage mason jar. Prehistoric resources in the area included ceramics and a large biface trimming flake associated with the Early Weeden Island and Middle Woodland time periods (Bourgeoise, 2012). 8BY01391 was determined ineligible for inclusion to the NRHP.

The majority of the LOD for the Renovate Unite Site, Alternative 2, was included in a 1993 survey of 300 acres in the vicinity of Felix Lake at Tyndall AFB (**Figure 3.3-9**). No resource sites were reported in the vicinity (Campbell et al. 1993).



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**ENVIRONMENTAL ASSESSMENT  
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**PREVIOUS INVESTIGATIONS:  
CONSTRUCT NEW EOD  
GRAVEL ROAD**

**FIGURE  
3.3-1**



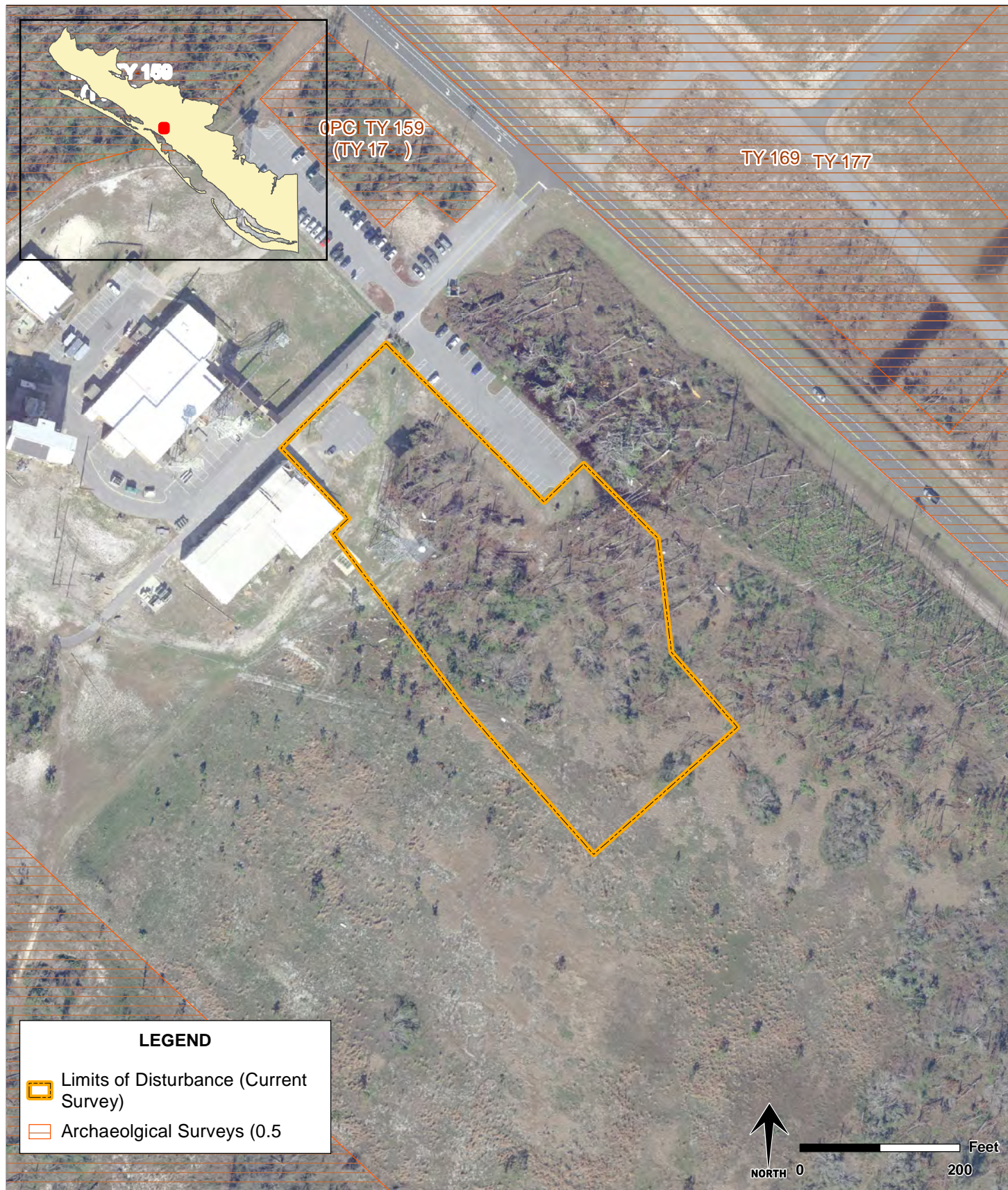


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**ENVIRONMENTAL ASSESSMENT  
FOR 8 CONSTRUCTION SITES**

**PREVIOUS INVESTIGATIONS:  
DREDGE THE WEG  
SMALL BOATHOUSE AREA**

**FIGURE  
3.3-2**



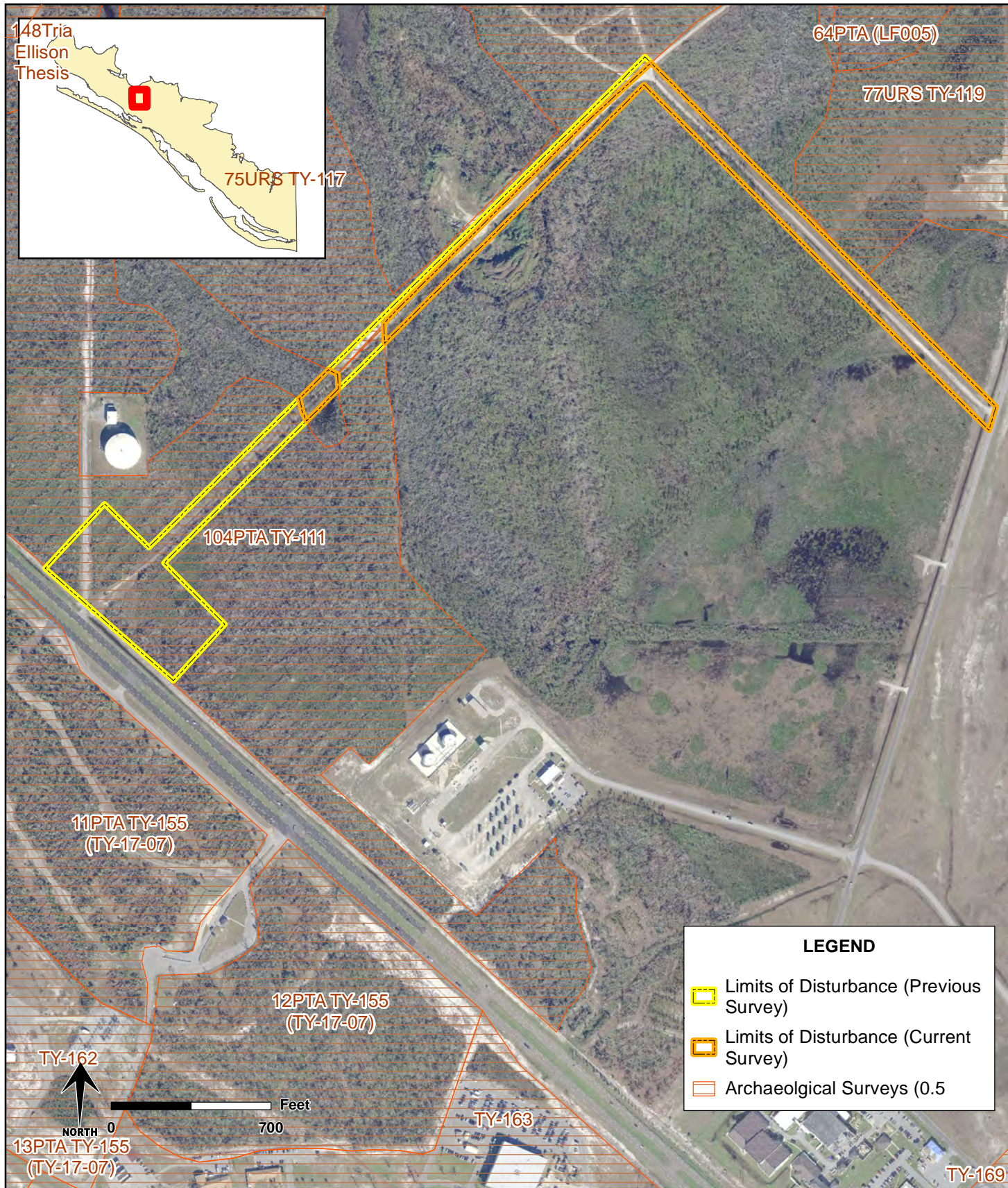


**Tyndall Air Force Base, Panama City, FL**  
**ENVIRONMENTAL ASSESSMENT  
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**PREVIOUS INVESTIGATIONS:  
REPLACE WEG TOWER 1802**

**FIGURE  
3.3-3**





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**PREVIOUS INVESTIGATIONS:  
IMPROVE EXPEDITIONARY/  
ENCAMPMENT ROADS**

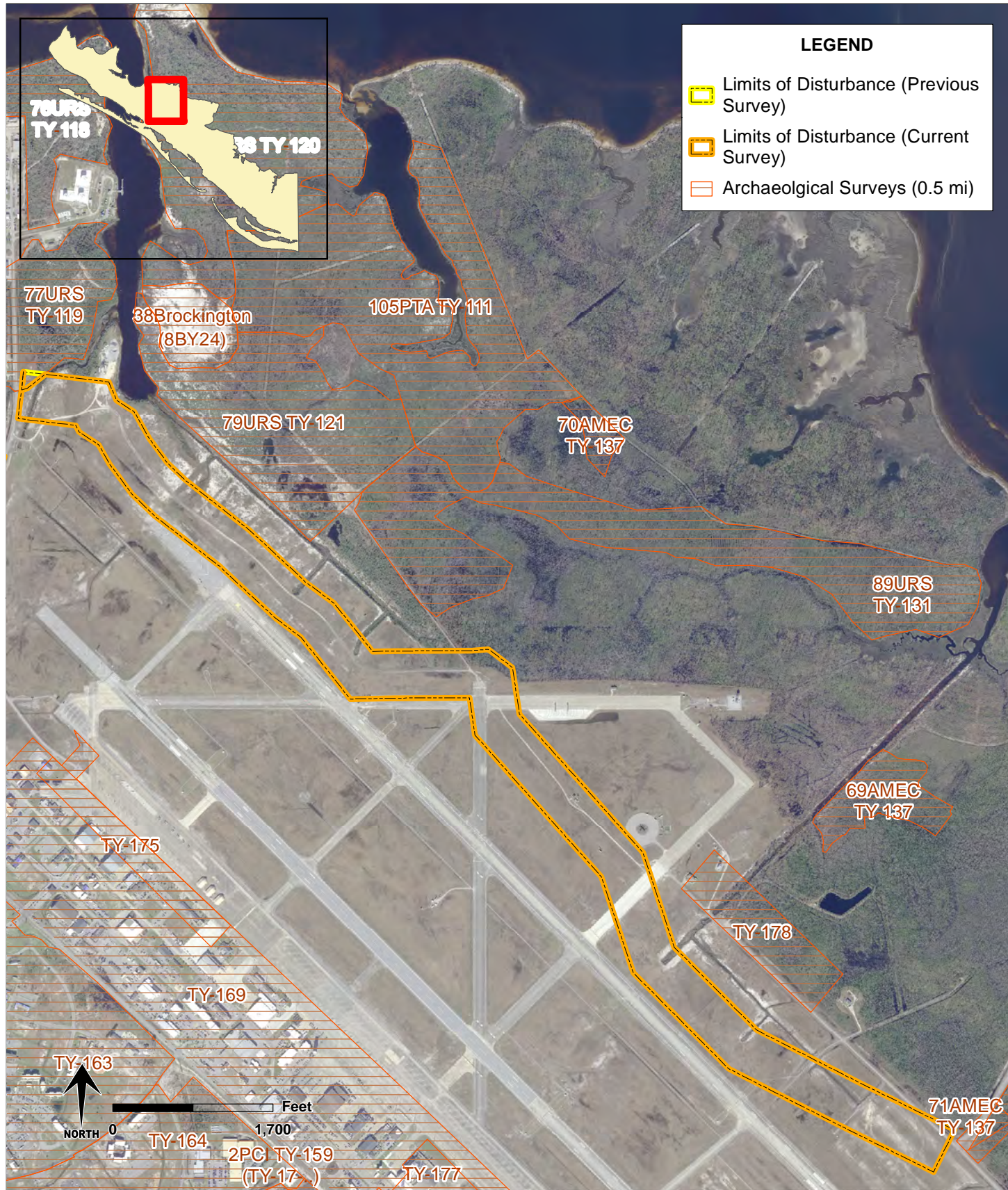
**FIGURE  
3.3-4**

Sources: ESRI, 2017.









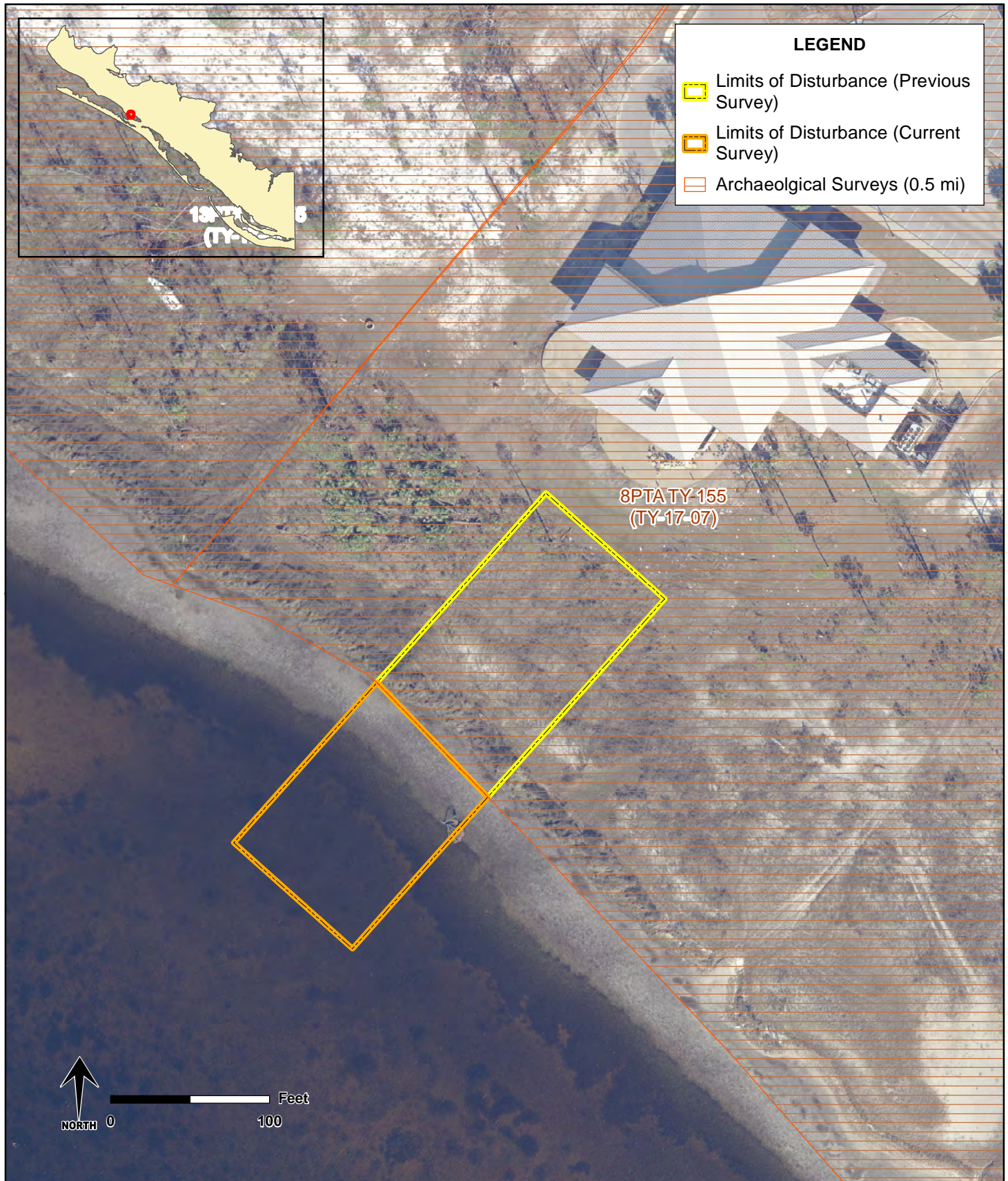
**Tyndall Air Force Base, Panama City, FL**

**ENVIRONMENTAL ASSESSMENT  
FOR 8 CONSTRUCTION SITES**

**PREVIOUS INVESTIGATIONS:  
CONSTRUCT WATER MAIN ON  
NORTH SIDE OF FLIGHTLINE**

**FIGURE  
3.3-6**





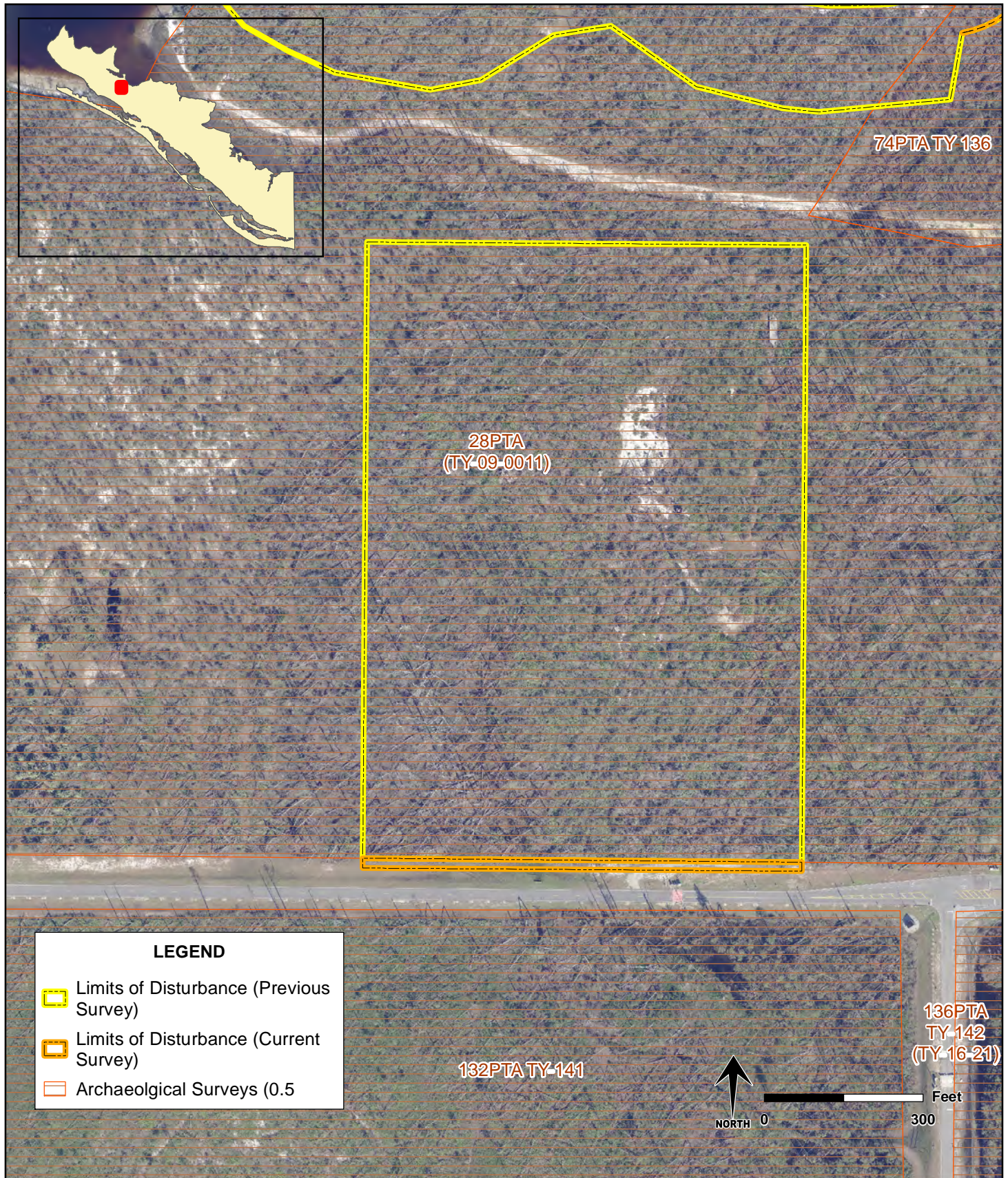
**Tyndall Air Force Base, Panama City, FL**

**ENVIRONMENTAL ASSESSMENT  
FOR 8 CONSTRUCTION SITES**

**PREVIOUS INGESTIGATIONS:  
HERITAGE CLUB PIER  
(BOTH ALTERNATIVES)**

**FIGURE  
3.3-7**



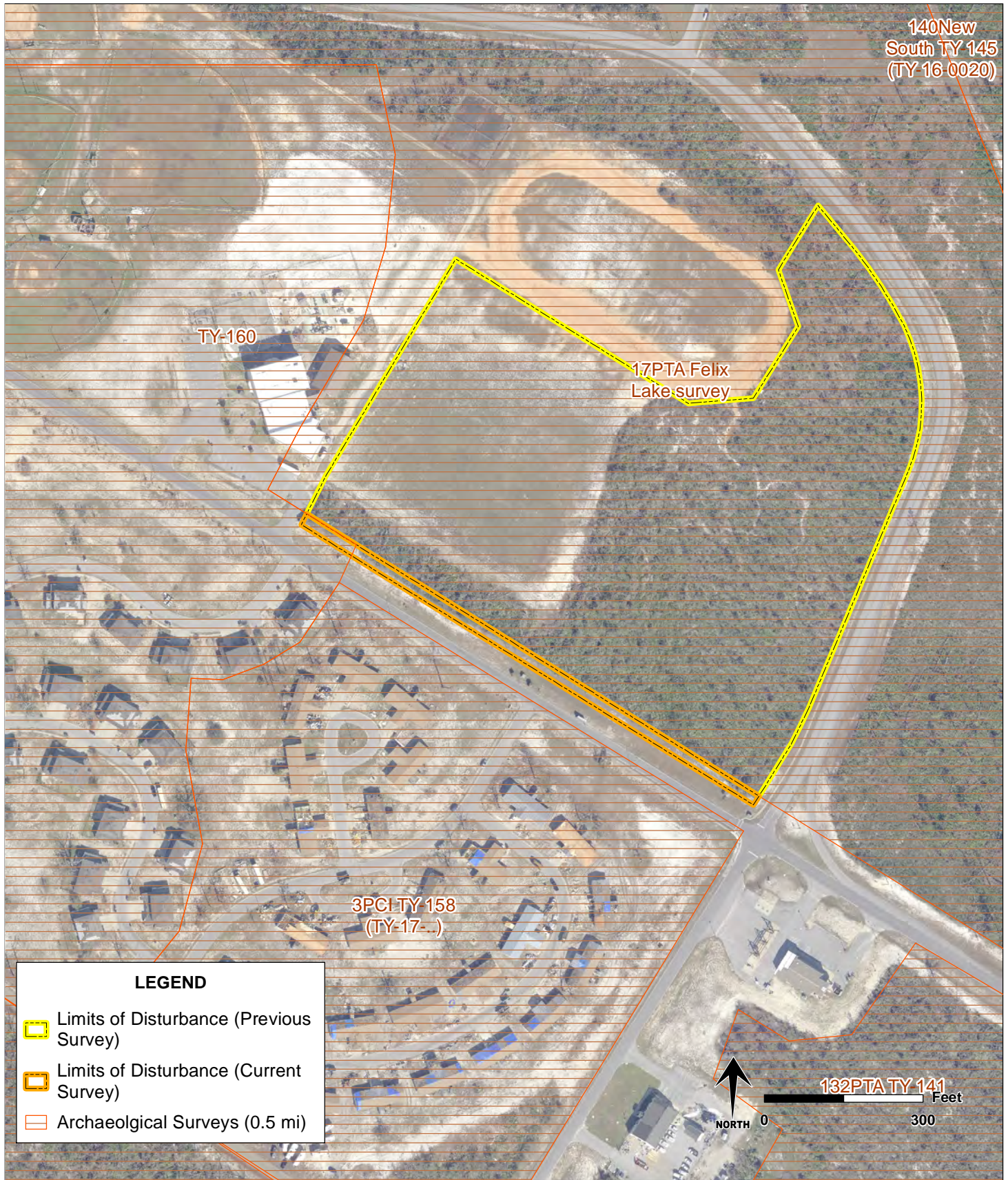


**Tyndall Air Force Base, Panama City, FL**  
**ENVIRONMENTAL ASSESSMENT  
FOR 8 CONSTRUCTION SITES**

**PREVIOUS INVESTIGATIONS:  
RENOVATE UNITE SITE  
(ALTERNATIVE 1)**

**FIGURE  
3.3-8**





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**ENVIRONMENTAL ASSESSMENT  
FOR 8 CONSTRUCTION SITES**

**PREVIOUS INVESTIGATIONS:  
RENOVATE UNITE SITE  
(ALTERNATIVE 2)**

**FIGURE  
3.3-9**

## **4.0 RESEARCH DESIGN AND METHODS**

The objective of the Phase I archaeological survey was to identify archaeological resources in areas not previously surveyed, and if present, and assess them for NRHP significance. The following sections describe the legal framework and methods used to conduct the survey.

### **4.1 APPLICABLE REGULATIONS AND GUIDELINES**

AECOM completed the requested survey in accordance with Florida Chapter 1A-46 Florida Administrative Code Guidelines, the NHPA of 1966 (Public Law [PL] 89-665), as amended, and the Archaeological and Historic Preservation Act of 1974 (PL 93-291) as amended.

Section 110 of the NHPA sets out the broad historic preservation responsibilities of Federal agencies and is intended to ensure that historic preservation is fully integrated into the ongoing programs of all Federal agencies. Historic properties under the jurisdiction or control of the agency are to be managed and maintained in a way that considers the preservation of their historic, archeological, architectural, and cultural values. Section 110 further stipulates that the federal agency is responsible for identifying and protecting historic properties and avoiding unnecessary damage to them.

### **4.2 BACKGROUND RESEARCH**

Prior to the start of the fieldwork, AECOM conducted background research at a variety of institutions to characterize the general history of occupation and land use of the survey areas, and identify previously documented archaeological sites and historic structures, and the potential locations of historic structures and occupations. Resources accessed include:

- FMSF
- Tyndall AFB
- Bay County Courthouse
- Bay County Genealogical Society (<http://www.rootsweb.ancestry.com/~flbcgs/index.html>)
- General Land Office Records of the Bureau of Land Management (<http://www.glorerecords.blm.gov/default.aspx>)
- Land Boundary Information System of the Florida Department of Environmental Protection (<http://www.labins.org/>)
- Historical Map and Chart Collection of the Office of Coast Survey (<http://historicalcharts.noaa.gov/>)
- Aerial Photography: Florida of the University of Florida Digital Collections at the George A. Smathers Libraries (<http://ufdc.ufl.edu/aerials>)
- Map and Imagery Collections of the University of Florida Digital Collections at the George A. Smathers Libraries (<http://ufdcweb1.uflib.ufl.edu/maps>)



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**4.3 TERRESTRIAL ARCHAEOLOGY SURVEY FIELD METHODS**

**4.3.1 PROBABILITY MODEL**

Prior to the field survey, a probability model was developed to aid in determining the shovel testing intensity to be applied within a particular survey area, either 25-m, 50-m or 100-m intervals. The model included six probability levels, High Historic; High Prehistoric; Moderate Historic; Moderate Prehistoric; Low; and Targeted Low, and was reviewed by Tyndall AFB prior to implementation. The Phase I archaeological survey effort was comprised of linear transect surveys involving systematic shovel testing along survey transects spaced a specified distance apart (as defined for each specific probability level). For the purposes of this project, High Historic and High Prehistoric probability levels were assessed through the excavation of STPs along parallel survey transects spaced at 25-m intervals. Moderate Historic; Moderate Prehistoric; and Targeted Low probability were tested at 50-m intervals. Low probability levels were assessed through shovel testing transects spaced at 100-m intervals.

The High Historic and Moderate Historic probability levels were developed using georeferenced historic maps. All historic roads and structures on available historic maps were digitized and buffered 50 m on either side of a road or blocked out with a 50 to 100 m buffer around structures. The High Prehistoric and Moderate Prehistoric probability levels contained areas within 200 m of blue-line streams on U.S. Geologic Survey 7.5-minute topographic quadrangles and the shoreline of either the bays or the Gulf of Mexico that interface between wetlands/very poorly drained/poorly drained soils and moderately well to excessively well drained soils.

The Low probability level consisted of areas not included in the High Historic or High Prehistoric levels. However, the Low probability level was further reviewed to identify higher elevation landforms within Low probability areas that could potentially contain archaeological sites and was used to identify the Targeted Low probability level, which was tested at the High probability level using 25-m STP interval transects.

The Targeted Low probability level was developed using the concept of relative elevation, whereby mean elevations across an area at a set radius around each data point were compared to identify landforms that deviate above or below the mean and thus represent areas of higher or lower elevation relative to the surrounding area. The level used cutoffs of 50 percent gain above the surrounding mean, whereby “gain” is the height of given data point above the average elevation of the surrounding area, or greater than 0.5 m of positive relative elevation above the average elevation of the surrounding area.

An appropriate radius was chosen after a review of data using 10, 30, 60, and 90 m radii in which it was determined which radii would provide sufficient resolution of potential elevated landforms within the Low probability level. The Bay County Digital Elevation Model (DEM) based on Light Detection and Ranging (LiDAR) data was obtained from the Northwest Florida Water Management District server and the county DEM was clipped to the general study area. The DEM was used to create a Neighborhood Focal Mean using the ArcGIS Spatial Analyst Tools. The Neighborhood/Focal Statistics/Circle Option was chosen and set at 90 m mean statistic option, and using Map Algebra, the county LiDAR layer was subtracted from the 90 m layer to determine the relative elevation.

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After the data set was created, each survey area was reviewed to identify contiguous areas of positive relative elevation gain large enough to likely represent actual elevated landforms within the surrounding wetlands or very poorly and poorly drained soils. These Targeted Low probability areas were shovel tested at the same interval as the High Historic and High Prehistoric probability levels.

#### **4.3.2 SURVEY METHODS**

An Arrow 100 Global Positioning System (GPS) with sub-meter accuracy was used to record the corners of each survey area, the beginning and endpoint of survey transects, survey areas, and archaeological site and archaeological occurrence (i.e., isolated find) datum locations (e.g., N1000, E1000) that are encountered during the course of this investigation. The shovel testing transect configurations for the entire project area were laid out on the project maps provided to the field crews, as well as loaded onto the Arrow 100 GPS. This allowed each survey area to be broken down into smaller survey areas, based on their perceived archaeological site potential. In areas where terrace edges, knolls, and ridge tops were observed in the field, but situated off of the identified survey transects, field crews offset their survey transect from the nearest transect/STP location. This ensured that the offset transect and STP locations fell along these landscape features.

#### **4.3.3 SHOVEL TESTING**

STPs were 50 centimeters (cm) in diameter and excavated to subsoil or 100 cm below ground surface (bgs). STPs were excavated at 25-m intervals for high probability areas, 50-m intervals for moderate and targeted low probability areas, and 100-m intervals for low probability areas. STPs were excavated in 10-cm arbitrary levels, and soils were screened through a 0.635-millimeter mesh. On thin upland and/or erosional landforms where compressed stratigraphy is encountered, excavation progressed at shallower intervals and/or follow the natural stratigraphic layers.

STP data was recorded on standardized forms, including information on depth of each individual STP, the number of artifacts, provenience, and soil conditions. Munsell soil charts were used to describe soil color. Standard soils nomenclature were used to describe soil textures. All of the STPs were backfilled; every effort was taken to ensure that a pronounced depression was not present at the conclusion of the backfilling process. Any planned STP location that was not excavated was noted on the standardized STP forms. Photodegradable flagging tape was used for marking STPs.

#### **4.4 UNDERWATER ARCHAEOLOGY SURVEY FIELD METHODS**

The marine archaeological assessment of potential submerged cultural resources in the four proposed shoreline areas occurred on Tyndall AFB property (see **Figures 1.2-2, 1.2-5, 1.2-6, 1.2-8 and 1.2-9**). This study identified the absence or presence of submerged cultural resources potentially eligible to the NRHP within the approximate 1.3 acres within the APE of the proposed waterfront development activities.

Florida State regulations require the use of geophysical instrumentation (sub bottom profiler (SBP), magnetometers, side scan sonar (SSS), single beam echo sounder (SBES), and a GPS to collect data to identify potential archaeological resources within the proposed project APE. All the acoustic based instrumentation (SBP, SSS and SBES) require deeper water depths than is found in the project APE. Marine

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archaeologists therefore designed an approach that used visual inspection coupled with the use of marine metal detectors to identify potential archaeological resources within the APE.

**4.4.1 BACKGROUND RESEARCH**

Background research focused on developing maritime contexts for the project areas, along with a review and synthesis of previous archeological, historical, and geomorphologic investigations. Archival research was undertaken to assess the probability of historic properties such as shipwrecks, inundated pre-contact sites, and shoreline facilities. This included research at the Florida SHPO including consulting the FMSF National Register Database, National Oceanic and Atmospheric Administration's Automated Shipwreck and Obstruction Information System database, historic navigation charts, private shipwreck databases, and select editions of the Report of The Chief Engineer (USACE) to determine the extent and chronology of dredging in and around the proposed project area. A GIS shapefile was constructed that includes any shipwreck losses in the vicinity of the APE as well as shoreline development associated with Tyndall AFB and the surrounding area. Research data were analyzed for development of a sensitivity model for encountering significant submerged cultural resources within the APE.

**4.4.2 SURVEY METHODS**

All four shoreline areas (APE) were assessed for potentially significant submerged resources using a combination of wading (pedestrian) and snorkeling inspection of the bay bottom. A grid was developed using 10-m transect spacing at each location using an Arrow 100 GPS with sub-meter accuracy to record the landward corners of each survey area and the beginning point of survey transects. Underwater archaeological occurrences (i.e., isolated finds) were recorded using the angle and distance from the landward survey corners and later converted to project coordinates. This allowed each survey area to be accurately delineated and surveyed. Marine archaeologists waded or snorkeled along the 10-meter survey transects visually inspecting the bay bottom for exposed archaeological resources such as precontact artifacts (lithics, pottery, or organics) or historic resources (shipwrecks, timbers, piers, pilings, glass, pottery, or metallic objects). Concurrently with the visual survey, marine archaeologists used an underwater metal detector to identify buried metallic objects and record their locations (XYZ) using angle distance from the landward survey corners. Anomalies were exposed by a combination of gentle hand fanning and the use of sand scoops that allowed the marine archaeologists to potentially expose and identify the metallic objects.



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**5.0 SURVEY AREA RESULTS**

The following section presents the results within the established APEs. **Sections 5.1** through **5.8** describe the terrestrial and underwater archaeology results, as appropriate to each study area.

**5.1 CONSTRUCT NEW EOD GRAVEL ROAD**

The project area is located on the north shore of St. Andrew Sound and is comprised primarily of pine flatwoods soils with fairly level topography with the exception of an earthen embankment on the northern edge (**Appendix A, Photo 1**). Current vegetation consists of grasses and the ground surface has been heavily altered from grading and the construction of the earthen embankment (**Appendix A, Photo 2**). The soil integrity of this location has been compromised due to its use in military exercises.

**5.1.1 CURRENT WORK**

The current project area measures 2.64 acres (1.06 hectares) and has not been subjected to any cultural resource studies prior to the current study. During field review, the soil integrity of the entire project area was found to be heavily disturbed with the presence of metallic fragments indicative of active EOD operations. No shovel testing was performed in this area based on observed conditions and review of information on historical use of the site. The project area was subjected to surface inspection and photographic documentation.

**5.1.2 ARTIFACTS**

No artifacts or cultural materials were observed during the pedestrian survey of the project area.

**5.1.3 EVALUATIONS AND RECOMMENDATIONS**

The New EOD Gravel Road area is heavily disturbed based on surface inspection. Based on the results of the current survey, no further archaeological work is recommended for the project area.

**5.2 DREDGE WEAPONS EVALUATION GROUP (WEG) SMALL BOATHOUSE AREA**

**5.2.1 TERRESTRIAL INVESTIGATION**

The project area is located to the west of the Research Road terminus (**Figure 5.2-1**). The parcel is comprised primarily of manicured lawn on the eastern and central portion and contains scrub oak vegetation on the western edge (**Appendix A, Photos 3 and 4**). The entire parcel displays fairly level terrain. The entire project area is located in a heavily disturbed location and damage from Hurricane Michael was apparent at the time of the inspection.

**5.2.1.1 Current Work**

The project area measures a total of 1.14 acres (0.46 hectare), of which 0.25 acre (0.1 hectare) has already been professionally surveyed. The remaining 0.89 acre (0.36 hectare) is the subject of the current study.

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The archaeological survey included the excavation of two STPs (**Figure 5.2-1**) which were negative for the presence of cultural resources. The typical soil profile is displayed in STP B-01 (**Figure 5.2-2**). The first stratum consisted of bands of disturbed fill soil from 0-33 cm bgs. The second stratum displayed gray (10YR 6/1) fine sand (E horizon). The final stratum consisted of gray (10YR 6/1) fine sand with clay (E2 horizon) to a depth of 70 cm bgs. The water table was encountered at 60 cm bgs. See **Appendix A, Photo 5** for a representative photo of soils encountered within the vicinity of the soil testing areas.

**5.2.1.2 Artifacts**

No artifacts or cultural materials were discovered in excavated STPs or observed during the pedestrian survey of the project area.

**5.2.1.3 Evaluations and Recommendations**

Based on the results of the current survey, no further terrestrial archaeological work is recommended for the project area.

**5.2.2 UNDERWATER INVESTIGATION**

The submerged survey area measures approximately 180-feet wide, defined as measured parallel to the shoreline. The longest transects extended approximately 80-feet out from the shoreline toward the bay center. The transects were spaced at 30-foot intervals, for a total of seven transects (**Figure 5.2-3**). The adjacent shoreline is developed for boat pier infrastructure, and extensively damaged from Hurricane Michael (**Appendix A, Photo 6**). The only metal anomalies detected were small debris associated within two m of each pier structure. The block does not contain any archaeological objects.

**5.2.2.1 Artifacts**

No artifacts or cultural materials were observed during the underwater survey within the submerged survey area.

**5.2.2.2 Evaluations and Recommendations**

No archaeological resources were recorded within the submerged survey area, which correlates with expectations. Based on the results of the current survey, no further underwater archaeological work is recommended for the project area.

**5.3 REPLACE WEG TOWER 1802**

The Replace WEG Tower 1802 survey area is comprised of pine flatwoods and wet locations containing standing water (**Figure 5.3-1**). The pine flatwoods are typically vegetated primarily with slash pine, palmetto, wax myrtle, smilax vine, and native grasses. Much of the pine flatwoods are interspersed with lower elevation areas and vegetated with scattered slash pine with various wetland grasses (**Appendix A, Photos 7 and 8**). These lower elevation areas often contained standing water or a water table extremely close to the ground surface at the time of the survey. Parts of the area appear to have been filled for construction.

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**5.3.1 CURRENT WORK**

The current project area measures 3.68 acres (1.06 hectares) and has not been previously researched. Five STP excavations were planned in this area but two were not excavated due to inundated conditions and evidence of ground disturbance (**Figure 5.3-1**). The location was subjected to three STPs, all of which were negative for cultural resources. A typical soil profile is exemplified by STP C-04 (**Figure 5.2-2**). Stratum I consisted of grayish brown (10YR 5/2) fine sand from 0-17 cm bgs (Ap horizon). The second stratum displayed light gray (10YR 7/2) fine sand from 17-52 cm bgs (E horizon). Stratum III was comprised of dark brown (10YR 3/3) compact organic sand (Spodic horizon) from 52-63 cm bgs. Stratum IV was characterized by light brownish gray (10YR 6/2) fine sand (E2 horizon) to a final depth of 73 cm bgs. The water table was encountered at 63 cm bgs.

**5.3.2 ARTIFACTS**

No artifacts or cultural materials were discovered in excavated STPs or observed during the pedestrian survey of the project area.

**5.3.3 EVALUATIONS AND RECOMMENDATIONS**

Based on the results of the current survey, no further archaeological work is recommended for the project area.

**5.4 IMPROVE EXPEDITIONARY/ENCAMPMENT ROADS**

The proposed improvements at Expeditionary and Encampment Roads traverse primarily wetland and pine flatwoods environments (**Figure 5.4-1**). The pine flatwoods vegetation within the LOD consists of pine, palmetto, and various grasses (**Appendix A, Photo 9**). The vegetation within the LOD in the wetland areas consists of various grasses and standing water (**Appendix A, Photo 10**).

**5.4.1 CURRENT WORK**

The project area measures a total of 16.93 acres (6.85 hectares), of which 9.63 acres (3.89 hectares) have already been professionally surveyed. The remaining 7.3 acres (2.95 hectares) are the subject of the current study. The project LOD is located adjacent to the roads under study and often falls within a disturbed utility corridor. The majority of the planned testing in this location fell within inundated areas and was visually inspected but not subjected to shovel tests.

Nineteen STPs were planned in this area based on desktop review. However, as noted above, some locations were not subjected to shovel testing due to inundated conditions or evidence of debris/heavy disturbance at the time of field review. A total of five STPs were excavated in the project area (**Figure 5.4-1**). The typical profile is shown in STP D-08 (**Figure 5.2-2**). The first stratum is characterized by grayish brown (10YR 5/2) fine sand mottled with gray fine sand (10YR 5/1) (Ap horizon) from 0-27 cm bgs. The second stratum consisted of light gray (10YR 7/1) fine sand to a depth of 40 cm bgs. The water table was encountered at a depth of 30 cm bgs. See **Appendix A, Photo 11** for a representative photo of soils encountered within the vicinity of the soil testing areas.



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**5.4.2 ARTIFACTS**

No artifacts or cultural materials were discovered in excavated STPs or observed during the pedestrian survey of the project area.

**5.4.3 EVALUATIONS AND RECOMMENDATIONS**

Based on the results of the current survey, no further archaeological work is recommended for the project area.

**5.5 EXPAND FAMCAMP SITE**

**5.5.1 TERRESTRIAL INVESTIGATION**

The setting of the FAMCAMP consists of excessively well-drained sandhills bordered by a tributary of Pearl Bayou to the west and U.S. 98 to the east (**Figure 5.5-1**). The higher elevation sandhill forests are primarily vegetated with sand pine, slash pine, longleaf pine, dwarf live oak, and turkey oak with an understory of native shrubs, saw palmetto, rosemary and pineland threeawn (wiregrass) (**Appendix A, Photo 12**). The area under study consists of a small strip of land adjacent to U.S. 98 (**Appendix A, Photo 13**).

**5.5.1.1 Current Work**

The project area measures a total of 11.32 acres (4.58 hectares), of which 10.57 acres (4.27 hectares) have already been professionally surveyed. The remaining 0.74 acre (0.29 hectare) is the subject of the current study. There are two alternatives under study, both of which occupy the same footprint with Alternative 1 being slightly larger (0.1 acre [0.04 hectare]). The current study is based on the dimensions of Alternative 1.

The current LOD requiring survey largely consists of a small strip of land bordering U.S. 98. This location is mostly situated within an existing utility corridor. A total of seven STPs were planned based on desktop review, however, the presence of marked utilities including water lines, sewer lines, gas lines, fiber optic cable lines, and cable lines, prevented shovel testing in a majority of the areas. One STP was excavated in a small portion of the APE on the western Bayou that had not previously been tested (**Figure 5.5-1**). STP E-01 (**Figure 5.5-2**) consisted of grayish brown (10YR 5/2) fine sand from 0-15 cm bgs (Ap horizon). The second stratum consisted of light gray (10YR 7/2) fine sand (E horizon) from 15-77 cm bgs. The third stratum was characterized by strong brown (7.5YR 4/6) fine sand (E2 horizon) to a final depth of 115 cm bgs. No cultural materials were observed during pedestrian survey or in STP E-01. See **Appendix A, Photo 14** for a representative photo of soils encountered within the vicinity of the soil testing areas.

**5.5.1.2 Artifacts**

No artifacts or cultural materials were discovered in the excavated STP or observed during the pedestrian survey of the project area.

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**5.5.1.3 Evaluations and Recommendations**

Based on the results of the current survey, no further terrestrial archaeological work is recommended for the project area under either alternative.

**5.5.2 UNDERWATER INVESTIGATION**

**5.5.2.1 Current Work**

This area consisted of two square survey areas, each measuring 120-feet wide, defined as measured parallel to the shoreline. Transects were run from the shore toward the bayou center. The transects were spaced at 30-foot intervals, for a total of five transects in each block (**Figure 5.5-3**). Located adjacent to a camping area, it was expected there may be small metallic objects detected, associated with recreational activity such as lost fishing hooks or food and beverage cans (**Appendix A, Photo 15**). The blocks were clean of any artifacts, with several small metal anomalies detected, measuring less than 10 cm diameter. No archaeological materials were observed in either of the proposed in-water construction locations.

**5.5.2.2 Artifacts**

No archaeological resources were recorded within the submerged survey area, which correlates with the expectations.

**5.5.2.3 Evaluations and Recommendations**

No archaeological resources were recorded within the submerged survey area. The results correlate with expectations. Based on the results of the current survey, no further underwater archaeological work is recommended for the project area under either alternative.

**5.6 CONSTRUCT WATER MAIN ALONG NORTH SIDE OF FLIGHTLINE**

The survey area's natural setting has been severely altered due to the construction of the Flightline and the accompanying runways. The area has been filled extensively and consists of a series of ditches and berms (**Appendix A, Photo 16**). Observed soil profiles which were exposed on the banks of adjacent Fred Bayou revealed layers of dense fill which extends into the Flightline study area (**Appendix A, Photo 17**). The study area is bisected by Airport Road (**Appendix A, Photo 18**). The primary vegetation is manicured lawn.

**5.6.1 CURRENT WORK**

The project area measures a total of 155.28 acres (62.83 hectares), of which 0.58 acre (0.23 hectare) has already been professionally surveyed. The remaining 154.7 acres (62.6 hectares) are the subject of the current study. The majority of the study area contained standing water at the time fieldwork was conducted. A total of seven STPs were excavated and all tests revealed mixed soils, which are indicative of land filling and construction activities. The remainder of the planned STPs (**Figure 5.6-1**) were not able to be excavated due to inundated conditions, presence of impervious surfaces, or evidence of heavy ground disturbance. STP F-16 was chosen as a representative soil profile of the shovel testing efforts (**Figure 5.5-2**) STP F-16 displayed a series of mixed fill soils to a depth of 108 cm bgs. The soils encountered included grayish brown

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(10YR 5/2) fine sand with clay mixed with light brownish gray (10YR 6/2) fine sand and clay. No cultural materials were observed in the study area. See **Appendix A, Photos 19** and **20** for representative photos of soils encountered within the vicinity of the soil testing areas.

**5.6.2 ARTIFACTS**

No cultural or archeological materials were observed in the study area.

**5.6.3 EVALUATIONS AND RECOMMENDATIONS**

Based on the results of the current survey, no further archaeological work is recommended for the Construct Water Main Along North Side of Flightline project area.

**5.7 CONSTRUCT FISHING/OBSERVATION PIER (HERITAGE CLUB)**

**5.7.1 CURRENT WORK**

The environmental setting of the 0.68 acre (0.28 hectare) Heritage Club project area is situated on the edge of a marine terrace/dune remnant with intermittently inundated lowlands. The area has predominantly poorly drained sandy soils situated in a coastal wetland sloping from the Heritage Club facilities southward to the shoreline. The terrestrial component for this project area has previously been subjected to a professional survey and was not re-evaluated at this time. The submerged survey area measures approximately 100-feet wide, defined as measured parallel to the shoreline. The transects extended 140 feet out from the shoreline toward the bay center. The transects were spaced at 33-foot intervals, for a total of four transects (**Figure 5.7-1**). The adjacent shoreline of this area is undeveloped (**Appendix A, Photo 21 and 26**). Several small metal anomalies were detected, measuring less than 10 cm diameter. The anomalies were debris, possibly fishing hooks. The block does not contain any archaeological objects.

**5.7.2 ARTIFACTS**

No cultural or archaeological materials were observed in the study area.

**5.7.3 EVALUATIONS AND RECOMMENDATIONS**

No archaeological resources were recorded within the submerged survey area. The results correlate with expectations. Based on the results of the current survey, no further underwater archaeological work is recommended for the project area under either alternative.

**5.8 RENOVATE UNITE SITE**

**5.8.1 ALTERNATIVE 1**

The environmental conditions within Renovate Unite Alternative 1 generally consist of excessively well-drained sandhills in the center of the property and an unnamed freshwater slough drainage on the two undeveloped borders of the property. The portion of the parcel under study is a small rectangular portion



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located on the southern edge of the parcel. The study area is completely contained within a utility corridor (Appendix A, Photos 22 and 23).

**5.8.1.1 Current Work**

The project area measures a total of 22.55 acres (9.12 hectares), of which 22.21 acres (8.98 hectares) have already been professionally surveyed. The remaining 0.34 acre (0.13 hectare) is the subject of the current study. The entire APE is located within a marked utility corridor, and although STPs were planned (Figure 5.8-1), the excavation of STPs in this location was not feasible due to the disturbed soil and utility risk.

**5.8.1.2 Artifacts**

No cultural or archaeological materials were observed in the study area.

**5.8.1.3 Evaluations and Recommendations**

Based on the results of the current survey, no further archaeological work is recommended for the Renovate Unite Site Alternative 1 project area.

**5.8.2 ALTERNATIVE 2**

The environmental conditions within Renovate Unite Alternative 2 generally consist of excessively well-drained sandhills, with no apparent water sources on the property. The portion of the parcel under study is a small strip of land located on the southeastern edge of the parcel. The entire APE is located within a marked utility corridor (Appendix A, Photos 24 and 25).

**5.8.2.1 Current Work**

The project area measures a total of 16.05 acres (6.49 hectares), of which 15.56 acres (6.29 hectares) have already been professionally surveyed. The remaining 0.49 acre (0.19 hectare) is the subject of the current study. The entire APE is located within a marked utility corridor, and although STPs were planned (Figure 5.8-2) the excavation of STPs in this location was not feasible due to the disturbed soil and utility risk.

**5.8.2.2 Artifacts**

No cultural or archaeological materials were observed in the study area.

**5.8.2.3 Evaluations and Recommendations**

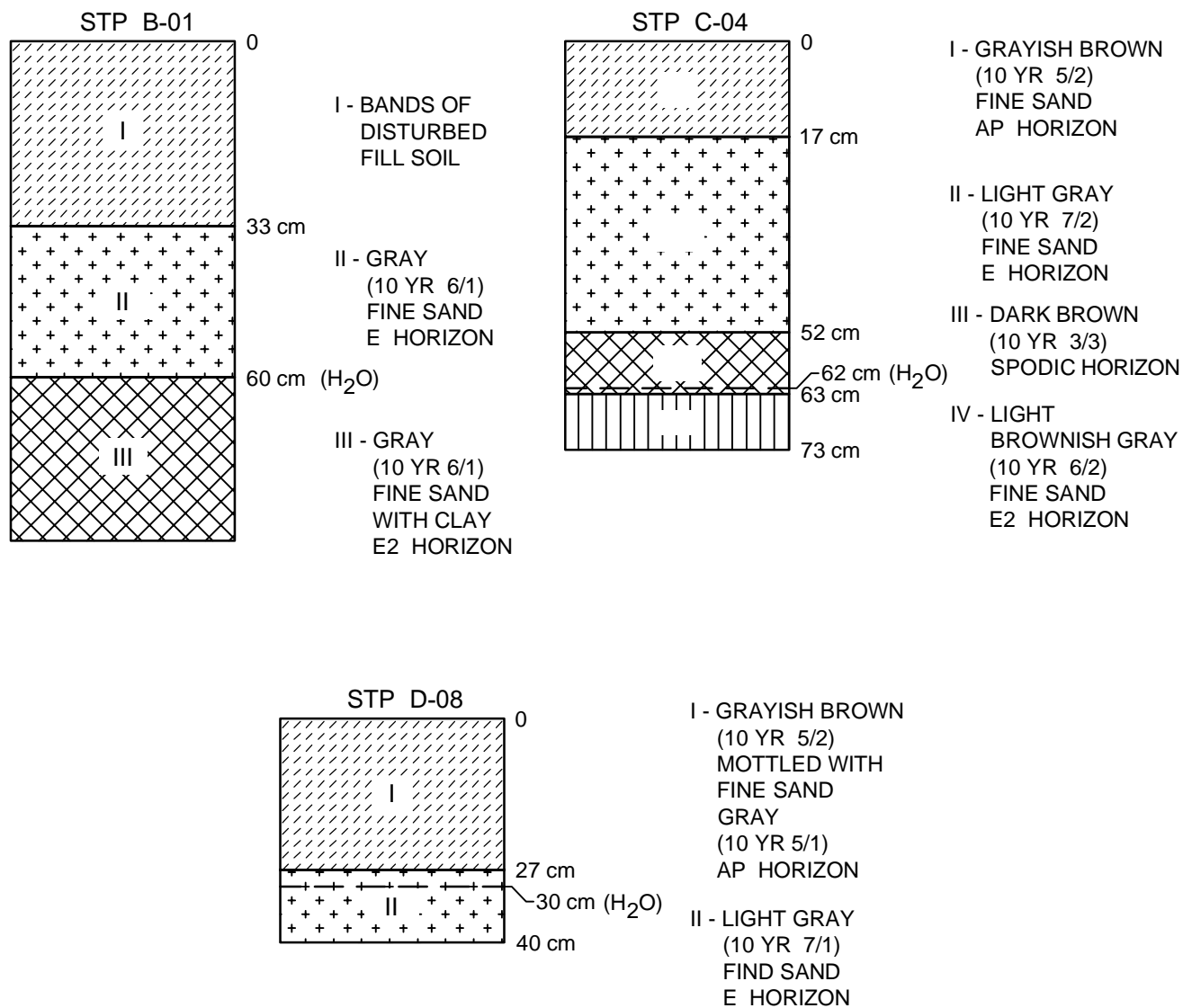
Based on the results of the current survey, no further archaeological work is recommended for the Renovate Unite Site Alternative 2 project area.



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FOR 8 CONSTRUCTION SITES**

**STP MAP:  
DREDGE THE WEG  
SMALL BOATHOUSE AREA**

**FIGURE  
5.2-1**



Tyndall Air Force Base, Panama City FL  
ENVIRONMENTAL ASSESSMENT  
FOR 8 CONSTRUCTION SITES

REPRESENTATIVE  
SOIL PROFILES  
(1 OF 2)

FIGURE  
5.2-2



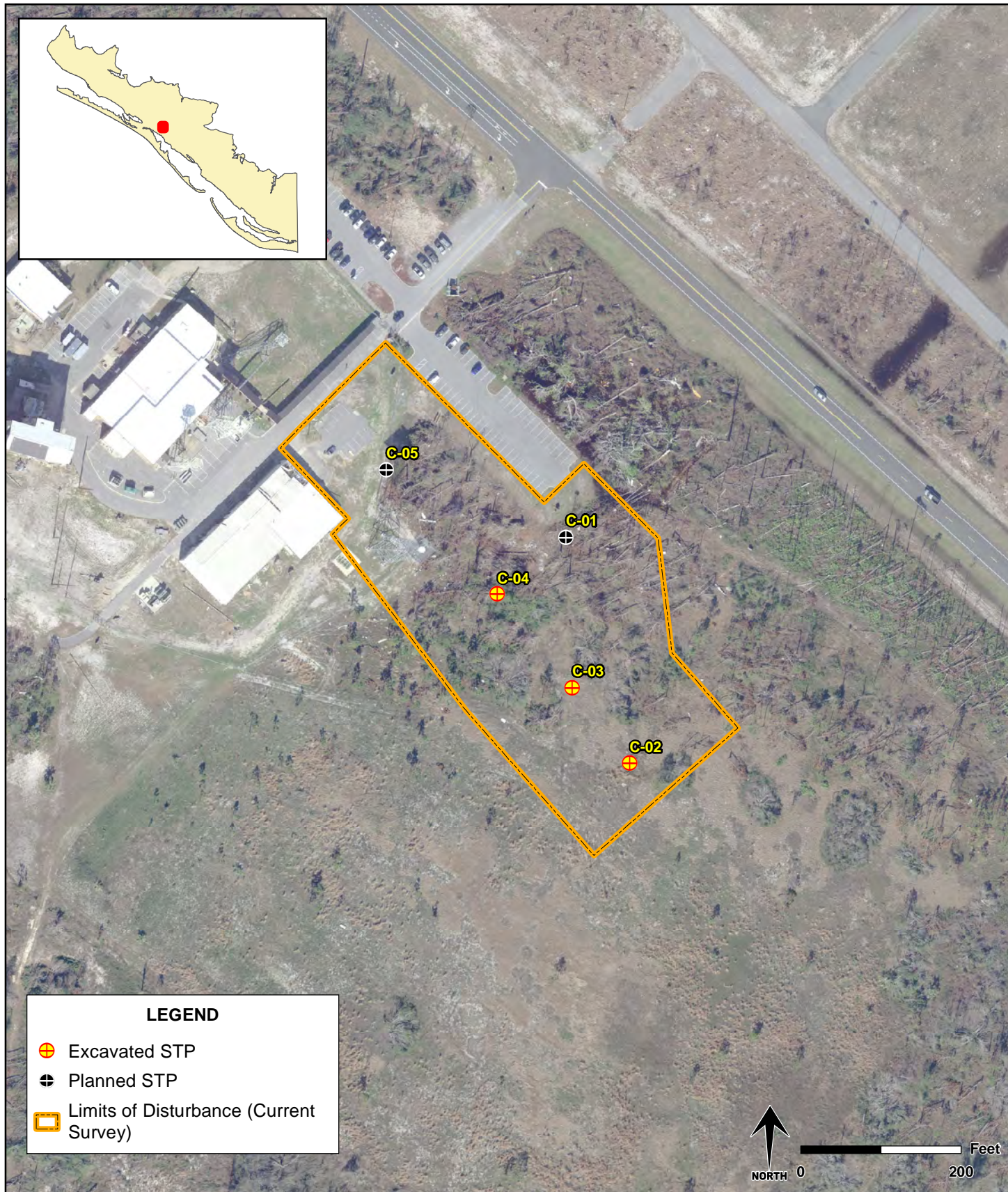


**Tyndall Air Force Base, Panama City, FL**  
**ENVIRONMENTAL ASSESSMENT  
FOR 8 CONSTRUCTION SITES**

**TRANSECT MAP:  
DREDGE THE WEG  
SMALL BOATHOUSE AREA**

**FIGURE  
5.2-3**



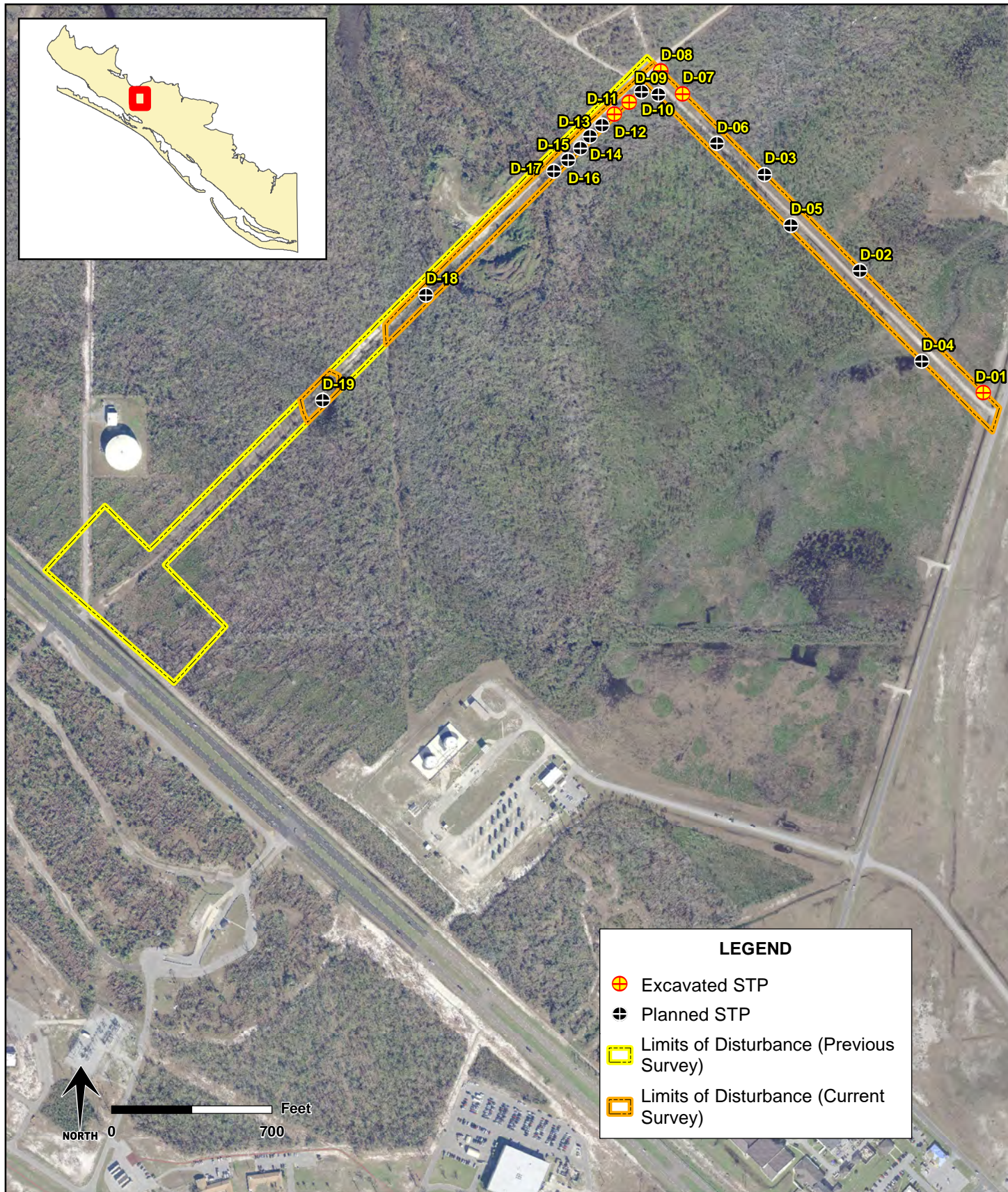


**Tyndall Air Force Base, Panama City, FL**  
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**STP MAP:  
REPLACE WEG TOWER 1802**

**FIGURE  
5.3-1**





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FOR 8 CONSTRUCTION SITES**

**STP MAP:  
IMPROVE EXPEDITIONARY/  
ENCAMPMENT ROADS**

**FIGURE  
5.4-1**

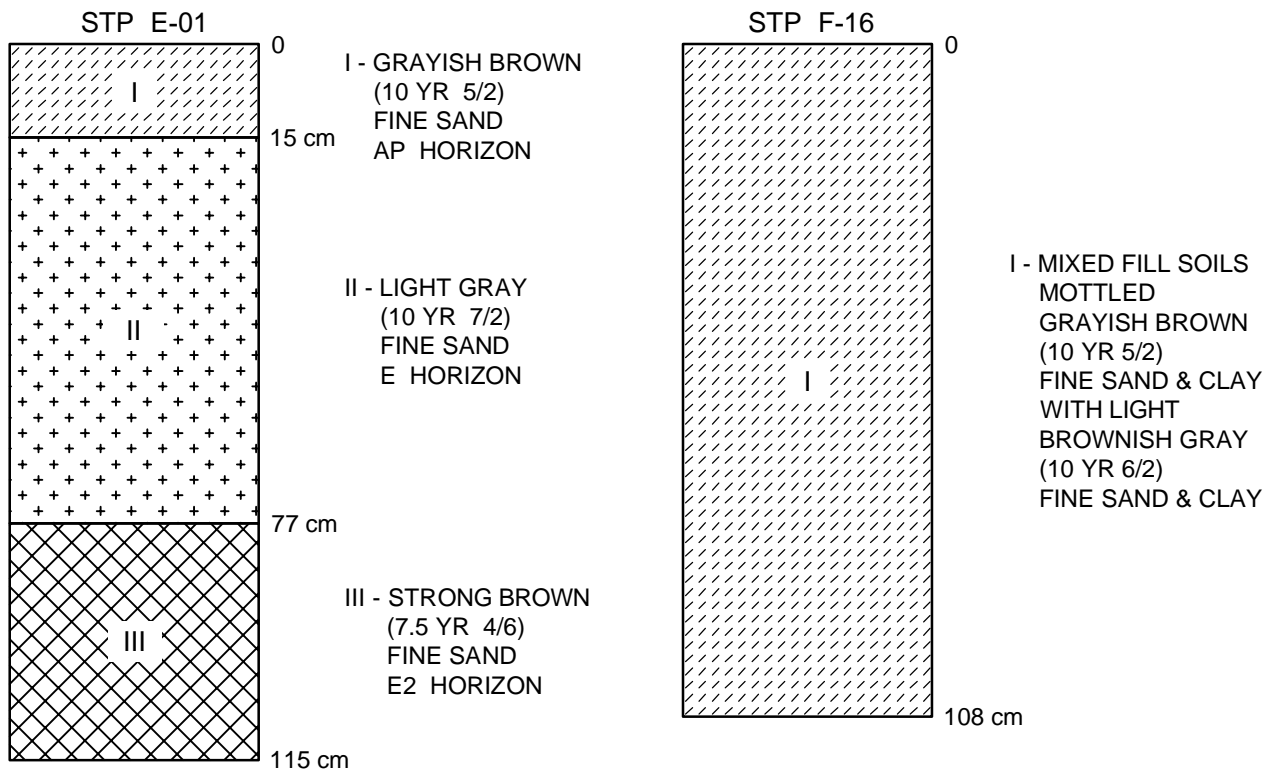




**Tyndall Air Force Base, Panama City, FL**  
**ENVIRONMENTAL ASSESSMENT  
FOR 8 CONSTRUCTION SITES**

**STP MAP:  
EXPAND FAM CAMP SITE  
BOTH ALTERNATIVES**

**FIGURE  
5.5-1**



Tyndall Air Force Base, Panama City FL  
ENVIRONMENTAL ASSESSMENT  
FOR 8 CONSTRUCTION SITES

REPRESENTATIVE  
SOIL PROFILES  
**(2 OF 2)**

FIGURE  
5.5-2





**Tyndall Air Force Base, Panama City, FL**  
**ENVIRONMENTAL ASSESSMENT  
FOR 8 CONSTRUCTION SITES**





**TRANSECT MAP:  
EXPAND FAM CAMP SITE  
BOTH ALTERNATIVES**

**FIGURE  
5.5-3**





**LEGEND**

-  Excavated STP
-  Planned STP
-  Limits of Disturbance (Current Survey)
-  Limits of Disturbance (Previous Survey)



0 1,250 Feet

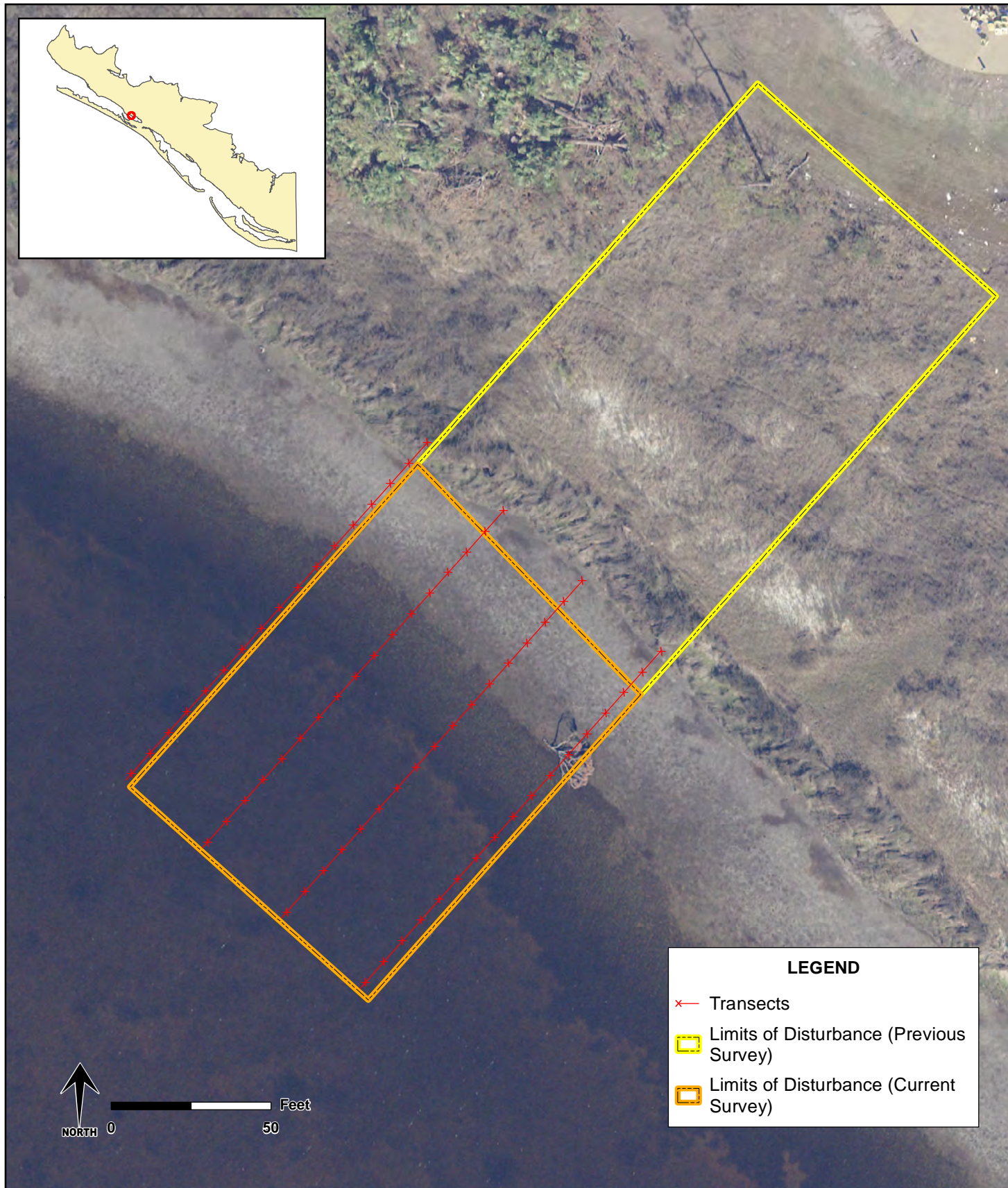


**Tyndall Air Force Base, Bay County, FL**  
**ENVIRONMENTAL ASSESSMENT**  
**FOR 8 CONSTRUCTION SITES**

**STP MAP:**  
**CONSTRUCT WATER MAIN ON NORTH SIDE OF FLIGHTLINE**

**FIGURE**  
**5.6-1**



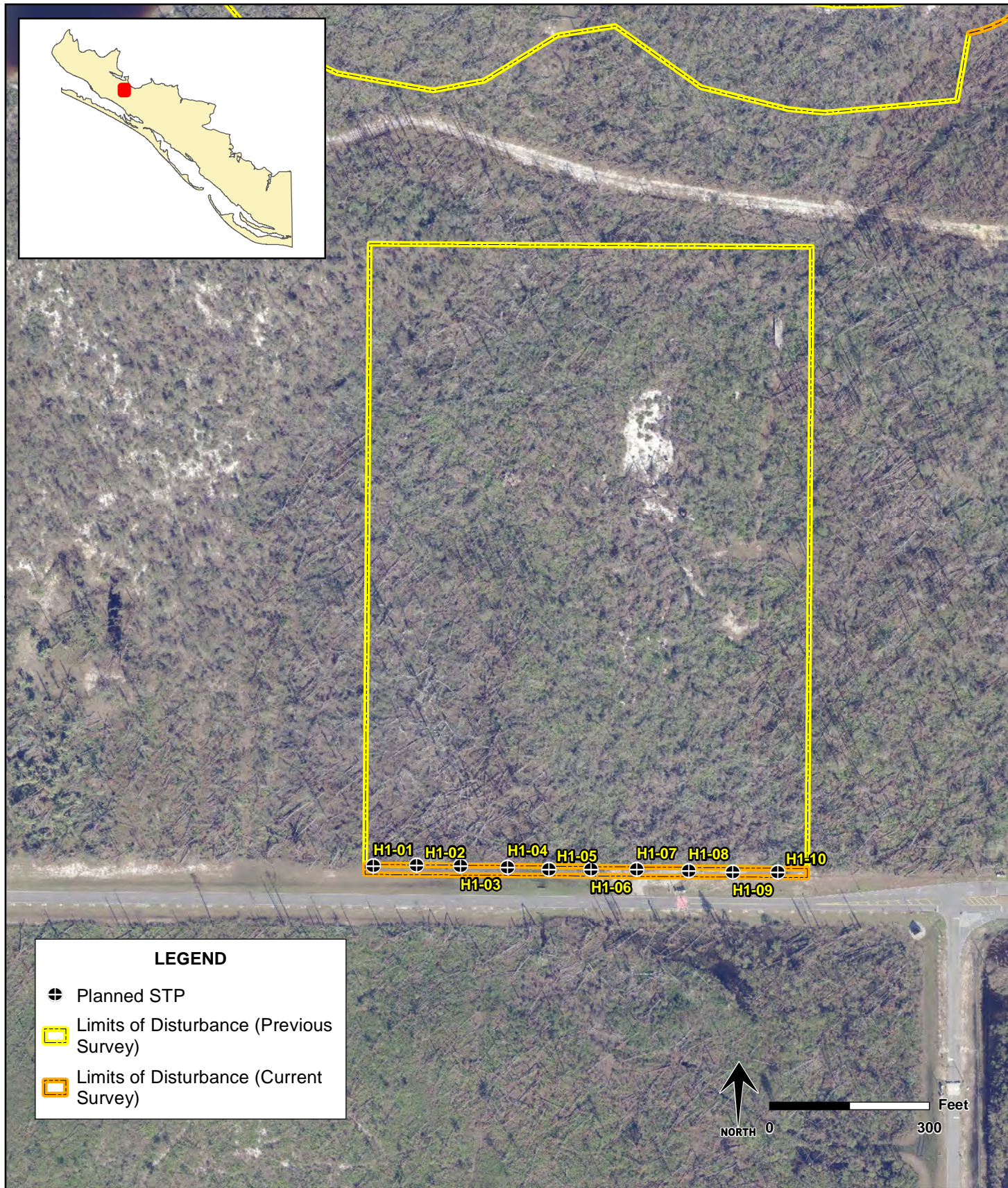


**Tyndall Air Force Base, Panama City, FL**  
**ENVIRONMENTAL ASSESSMENT  
FOR 8 CONSTRUCTION SITES**

**TRANSECT MAP:  
HERITAGE CLUB PIER  
(BOTH ALTERNATIVES)**

**FIGURE  
5.7-1**



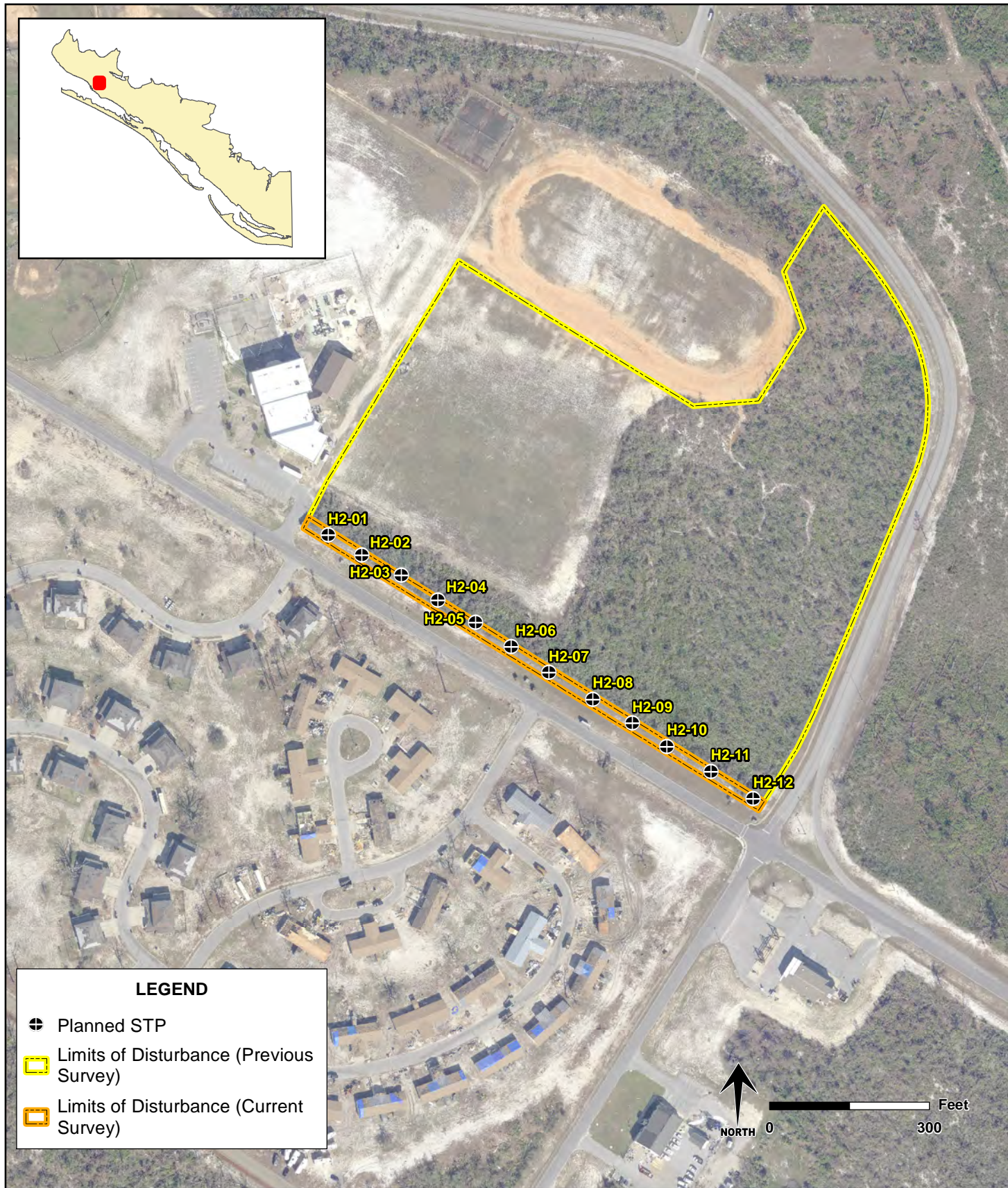


**Tyndall Air Force Base, Panama City, FL**  
**ENVIRONMENTAL ASSESSMENT  
FOR 8 CONSTRUCTION SITES**

**STP MAP:  
RENOVATE UNITE SITE  
(ALTERNATIVE 1)**

**FIGURE  
5.8-1**





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**STP MAP:  
RENOVATE UNITE SITE  
(ALTERNATIVE 2)**

**FIGURE  
5.8-2**

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**6.0 SUMMARY AND RECOMMENDATIONS**

**6.1 SUMMARY OF INVESTIGATIONS AND RESULTS**

AECOM conducted a Phase I Archaeological Survey of proposed development at Tyndall Air Force Base in Bay County, Florida. The survey was conducted to identify archaeological properties within the project APEs and to assess, if possible, the significance of any resources identified for eligibility for listing in the NRHP. No architectural history fieldwork was conducted due to the lack standing structures within the APEs.

Regarding terrestrial archaeology, fieldwork consisting of pedestrian inspection, windshield survey, and shovel testing. A total of 18 STPs were excavated in the study areas and no prehistoric or historic archaeological sites were identified during shovel testing.

Regarding underwater archaeology, no archaeological resources were recorded within any of the submerged survey areas. Given the amount of shoreline change associated with storms, natural shoreline migration, historic shoreline development, and the lack of naturally occurring navigable waterways or channels in the majority of the four marine project APEs, marine archaeologists expected a low potential of encountering in-situ archaeological resources.

Based on the results of the current Phase I Archaeological Survey, no further work is recommended for the project areas. It is recommended that no cultural properties will be affected by the Proposed Actions.

**6.2 UNANTICIPATED FINDS**

Should future construction activities uncover any artifacts or fossils, the discoverer will note the location of the find and cease all activities within a 50-m (164-foot) perimeter of the location. The discoverer will report the find to the CRMP, and the program's coordinator will visit the location and determine which legal mandates are applicable. Activities will not resume within the perimeter until the CRMP clears the location of all concerns.

If human remains or bones are discovered, the discoverer will note the location of the find and cease all activities with a 100-m (238-foot) perimeter of the location. The discoverer will report the find to the CRMP, and the program's coordinator will visit the location and determine which legal mandates are applicable. Activities will not resume within the perimeter until the CRMP clears the location of all concerns.

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- 36 Code of Federal Regulations Part 800 – *Protection of Historic Properties*
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- 16 United States Code 46 – *Historic Sites Act of 1935*
- 16 United States Code 469-469c – *Archaeological and Historic Preservation Act*
- 16 United States Code §§ 470aa-470mm – *Archaeological Resources Protection Act of 1979*
- 25 United States Code Chapter 32 § 3001 et seq – *Native American Graves Protection and Repatriation Act*
- 42 United States Code § 1996 – *American Indian Religious Freedom Act*
- 42 United States Code § 4321 et seq – *National Environmental Policy Act of 1969*
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**Environmental Assessment for 8 Construction Sites Tyndall Air Force Base, Florida**

**Appendix A Photolog**



## Environmental Site Photos



<b>Project Number:</b>	<b>60660787</b>
<b>Project Name/Description:</b>	Environmental Assessment for 8 Construction Sites at Tyndall Air Force Base, Bay County, Florida
<b>Photo 1 of 26</b>	<b>Date of Site Visit:</b> November 16, 2021 <b>County / State:</b> Bay County, FL <b>Photo Direction:</b> <input type="checkbox"/> N <input checked="" type="checkbox"/> SW <input type="checkbox"/> E <input type="checkbox"/> W
<b>Photos Taken by (Name, Company):</b>	AECOM
<b>Description / Comments:</b>  Construct New Explosive Ordnance Disposal (EOD) Gravel Road Setting, Facing Southwest.	
<b>Photo 2 of 26</b>	<b>Date of Site Visit:</b> November 16, 2021 <b>County / State:</b> Bay County, FL <b>Photo Direction:</b> <input type="checkbox"/> N <input checked="" type="checkbox"/> S <input type="checkbox"/> E <input type="checkbox"/> W
<b>Photos Taken by (Name, Company):</b>	AECOM
<b>Description / Comments:</b>  Construct New EOD Gravel Road Setting, Facing South.	

## Environmental Site Photos

<b>Project Number:</b>	<b>60660787</b>
<b>Project Name/Description:</b>	Environmental Assessment for 8 Construction Sites at Tyndall Air Force Base, Bay County, Florida
<b>Photo 3 of 26</b>	<b>Date of Site Visit:</b> September 09, 2021 <b>County / State:</b> Bay County, FL <b>Photo Direction:</b> <input checked="" type="checkbox"/> N <input type="checkbox"/> S <input type="checkbox"/> E <input type="checkbox"/> W
<b>Photos Taken by (Name, Company):</b>	AECOM
<b>Description / Comments:</b>  Dredge Weapons Evaluation Group (WEG) Small Boathouse Area Setting, Facing North.	
<b>Photo 4 of 26</b>	<b>Date of Site Visit:</b> September 09, 2021 <b>County / State:</b> Bay County, FL <b>Photo Direction:</b> <input type="checkbox"/> N <input checked="" type="checkbox"/> S <input type="checkbox"/> E <input type="checkbox"/> W
<b>Photos Taken by (Name, Company):</b>	AECOM
<b>Description / Comments:</b>  Dredge WEG Small Boathouse Area Setting, Facing South.	



## Environmental Site Photos


<b>Project Number:</b>	60660787
<b>Project Name/Description:</b>	Environmental Assessment for 8 Construction Sites at Tyndall Air Force Base, Bay County, Florida
<b>Photo 5 of 26</b>	<b>Date of Site Visit: September 16, 2021</b>
	<b>County / State: Bay County, FL</b>
	<b>Photo Direction:</b> <input type="checkbox"/> N <input type="checkbox"/> S <input type="checkbox"/> E <input type="checkbox"/> W
<b>Photos Taken by (Name, Company):</b>	AECOM
<b>Description / Comments:</b>	
Dredge WEG Small Boathouse Area, Representative Soil Profile	
<b>Photo 6 of 26</b>	<b>Date of Site Visit: September 16, 2021</b>
	<b>County / State: Bay County, FL</b>
	<b>Photo Direction:</b> <input checked="" type="checkbox"/> NE <input type="checkbox"/> S <input type="checkbox"/> E <input type="checkbox"/> W
<b>Photos Taken by (Name, Company):</b>	AECOM
<b>Description / Comments:</b>	
Dredge WEG Small Boathouse Area Submerged Survey Area, Facing Northeast.	



## Environmental Site Photos



<b>Project Number:</b>	<b>60660787</b>
<b>Project Name/Description:</b>	Environmental Assessment for 8 Construction Sites at Tyndall Air Force Base, Bay County, Florida
<b>Photo 7 of 26</b>	<b>Date of Site Visit:</b> September 09, 2021
	<b>County / State:</b> Bay County, FL
	<b>Photo Direction:</b> <input type="checkbox"/> N <input checked="" type="checkbox"/> S <input type="checkbox"/> E <input type="checkbox"/> W
<b>Photos Taken by (Name, Company):</b>	AECOM
<b>Description / Comments:</b>	<p>Replace WEG Tower 1802 Setting, Facing South.</p> 
<b>Photo 8 of 26</b>	<b>Date of Site Visit:</b> September 09, 2021
	<b>County / State:</b> Bay County, FL
	<b>Photo Direction:</b> <input type="checkbox"/> N <input checked="" type="checkbox"/> SE <input type="checkbox"/> E <input type="checkbox"/> W
<b>Photos Taken by (Name, Company):</b>	AECOM
<b>Description / Comments:</b>	<p>Replace WEG Tower 1802 Setting, Facing Southeast.</p> 

## Environmental Site Photos

<b>Project Number:</b>	60660787
<b>Project Name/Description:</b>	Environmental Assessment for 8 Construction Sites at Tyndall Air Force Base, Bay County, Florida
<b>Photo 9 of 26</b>	<b>Date of Site Visit:</b> September 09, 2021
	<b>County / State:</b> Bay County, FL
	<b>Photo Direction:</b> <input checked="" type="checkbox"/> NW <input type="checkbox"/> S <input type="checkbox"/> E <input type="checkbox"/> W
<b>Photos Taken by (Name, Company):</b>	AECOM
<b>Description / Comments:</b>	<p>Improve Expeditionary/Encampment Roads Setting, Facing Northwest.</p> 
<b>Photo 10 of 26</b>	<b>Date of Site Visit:</b> September 10, 2021
	<b>County / State:</b> Bay County, FL
	<b>Photo Direction:</b> <input type="checkbox"/> N <input type="checkbox"/> S <input type="checkbox"/> E <input checked="" type="checkbox"/> W-NW
<b>Photos Taken by (Name, Company):</b>	AECOM
<b>Description / Comments:</b>	<p>Improve Expeditionary/Encampment Roads Setting, Facing West-Northwest.</p> 





## Environmental Site Photos



<b>Project Number:</b>	60660787
<b>Project Name/Description:</b>	Environmental Assessment for 8 Construction Sites at Tyndall Air Force Base, Bay County, Florida
<b>Photo 11 of 26</b>	<b>Date of Site Visit:</b> September 10, 2021
	<b>County / State:</b> Bay County, FL
	<b>Photo Direction:</b> <input type="checkbox"/> N <input type="checkbox"/> S <input type="checkbox"/> E <input type="checkbox"/> W
<b>Photos Taken by (Name, Company):</b>	AECOM
<b>Description / Comments:</b>	<p>Expeditionary/Encampment Roads, Representative Soil Profile</p> 
<b>Photo 12 of 26</b>	
	<b>Date of Site Visit:</b> September 09, 2021
	<b>County / State:</b> Bay County, FL
	<b>Photo Direction:</b> <input checked="" type="checkbox"/> N <input type="checkbox"/> S <input type="checkbox"/> E <input type="checkbox"/> W
<b>Photos Taken by (Name, Company):</b>	AECOM
<b>Description / Comments:</b>	<p>Expand FAMCAMP Site Setting, Facing North</p> 



## Environmental Site Photos

<b>Project Number:</b>	<b>60660787</b>
<b>Project Name/Description:</b>	Environmental Assessment for 8 Construction Sites at Tyndall Air Force Base, Bay County, Florida
<b>Photo 13 of 26</b>	<b>Date of Site Visit:</b> September 09, 2021
	<b>County / State:</b> Bay County, FL
	<b>Photo Direction:</b> <input type="checkbox"/> N <input checked="" type="checkbox"/> SW <input type="checkbox"/> E <input type="checkbox"/> W
<b>Photos Taken by (Name, Company):</b>	AECOM
<b>Description / Comments:</b>  Expand FAMCAMP Site Setting, Facing Southwest	
<b>Photo 14 of 26</b>	<b>Date of Site Visit:</b> September 16, 2021
	<b>County / State:</b> Bay County, FL
	<b>Photo Direction:</b> <input type="checkbox"/> N <input type="checkbox"/> SW <input type="checkbox"/> E <input type="checkbox"/> W
<b>Photos Taken by (Name, Company):</b>	AECOM
<b>Description / Comments:</b>  Expand FAMCAMP Site, Representative Soil Profile	

## Environmental Site Photos

<b>Project Number:</b>	<b>60660787</b>
<b>Project Name/Description:</b>	Environmental Assessment for 8 Construction Sites at Tyndall Air Force Base, Bay County, Florida
<b>Photo 15 of 26</b>	<b>Date of Site Visit:</b> September 16, 2021
	<b>County / State:</b> Bay County, FL
	<b>Photo Direction:</b> <input type="checkbox"/> N <input checked="" type="checkbox"/> SW <input type="checkbox"/> E <input type="checkbox"/> W
<b>Photos Taken by (Name, Company):</b>	AECOM
<b>Description / Comments:</b>  Expand FAMCAMP Site Submerged Survey Area, Facing Southwest	
<b>Photo 16 of 26</b>	<b>Date of Site Visit:</b> September 16, 2021
	<b>County / State:</b> Bay County, FL
	<b>Photo Direction:</b> <input checked="" type="checkbox"/> NW <input type="checkbox"/> S <input type="checkbox"/> E <input type="checkbox"/> W
<b>Photos Taken by (Name, Company):</b>	AECOM
<b>Description / Comments:</b>  Construct Water Main Along North Side of Flightline Setting, Facing Northwest.	 <p>SW W NW N</p> <p>240 270 300 330 0 30</p> <p>309°NW (T) 30°4'39"N, 85°34'45"W ±9ft ▲ 8ft</p> <p>16 Sep 2021, 13:31:14</p>





## Environmental Site Photos



<b>Project Number:</b>	60660787
<b>Project Name/Description:</b>	Environmental Assessment for 8 Construction Sites at Tyndall Air Force Base, Bay County, Florida
<b>Photo 17 of 26</b>	<b>Date of Site Visit:</b> September 13, 2021
	<b>County / State:</b> Bay County, FL
	<b>Photo Direction:</b> <input type="checkbox"/> N <input checked="" type="checkbox"/> SE <input type="checkbox"/> E <input type="checkbox"/> W
<b>Photos Taken by (Name, Company):</b>	AECOM
<b>Description / Comments:</b>  Construct Water Main Along North Side of Flightline Setting, Facing Southeast.	
<b>Photo 18 of 26</b>	<b>Date of Site Visit:</b> September 16, 2021
	<b>County / State:</b> Bay County, FL
	<b>Photo Direction:</b> <input type="checkbox"/> N <input checked="" type="checkbox"/> S-SE <input type="checkbox"/> E <input type="checkbox"/> W
<b>Photos Taken by (Name, Company):</b>	AECOM
<b>Description / Comments:</b>  Construct Water Main Along North Side of Flightline Setting, Facing South-Southeast.	



## Environmental Site Photos


<b>Project Number:</b>	<b>60660787</b>
<b>Project Name/Description:</b>	Environmental Assessment for 8 Construction Sites at Tyndall Air Force Base, Bay County, Florida
<b>Photo 19 of 26</b>	<b>Date of Site Visit:</b> September 16, 2021
	<b>County / State:</b> Bay County, FL
	<b>Photo Direction:</b> <input type="checkbox"/> N <input type="checkbox"/> S <input type="checkbox"/> E <input type="checkbox"/> W
<b>Photos Taken by (Name, Company):</b>	AECOM
<b>Description / Comments:</b>  Construct Water Main Along North Side of Flightline, Representative Soil Profile.	
<b>Photo 20 of 26</b>	<b>Date of Site Visit:</b> September 16, 2021
	<b>County / State:</b> Bay County, FL
	<b>Photo Direction:</b> <input type="checkbox"/> N <input type="checkbox"/> S <input type="checkbox"/> E <input type="checkbox"/> W
<b>Photos Taken by (Name, Company):</b>	AECOM
<b>Description / Comments:</b>  Construct Water Main Along North Side of Flightline, Representative Soil Profile	

## Environmental Site Photos

<b>Project Number:</b>	<b>60660787</b>
<b>Project Name/Description:</b>	Environmental Assessment for 8 Construction Sites at Tyndall Air Force Base, Bay County, Florida
<b>Photo 21 of 26</b>	Date of Site Visit: September 16, 2021
	County / State: Bay County, FL
	Photo Direction: <input type="checkbox"/> N <input checked="" type="checkbox"/> SE <input type="checkbox"/> E <input type="checkbox"/> W
<b>Photos Taken by (Name, Company):</b>	AECOM
<b>Description / Comments:</b>	<p>Construct Fishing/Observation Pier (Heritage Club) Submerged Survey Area, Facing Southeast.</p> 
<b>Photo 22 of 26</b>	Date of Site Visit: September 10, 2021
	County / State: Bay County, FL
	Photo Direction: <input type="checkbox"/> N <input type="checkbox"/> S <input checked="" type="checkbox"/> E <input type="checkbox"/> W
<b>Photos Taken by (Name, Company):</b>	AECOM
<b>Description / Comments:</b>	<p>Renovate Unite Site Setting, Facing East.</p> 





## Environmental Site Photos

<b>Project Number:</b>	<b>60660787</b>
<b>Project Name/Description:</b>	Environmental Assessment for 8 Construction Sites at Tyndall Air Force Base, Bay County, Florida
<b>Photo 23 of 26</b>	<b>Date of Site Visit:</b> September 10, 2021
	<b>County / State:</b> Bay County, FL
	<b>Photo Direction:</b> <input type="checkbox"/> N <input type="checkbox"/> S <input type="checkbox"/> E <input checked="" type="checkbox"/> W
<b>Photos Taken by (Name, Company):</b>	AECOM
<b>Description / Comments:</b>  Renovate Unite Site Setting, Facing West.	
<b>Photo 24 of 26</b>	<b>Date of Site Visit:</b> September 10, 2021
	<b>County / State:</b> Bay County, FL
	<b>Photo Direction:</b> <input checked="" type="checkbox"/> NW <input type="checkbox"/> S <input type="checkbox"/> E <input type="checkbox"/> W
<b>Photos Taken by (Name, Company):</b>	AECOM
<b>Description / Comments:</b>  Renovate Unite Site Setting, Facing Northwest.	



## Environmental Site Photos

<b>Project Number:</b>	60660787
<b>Project Name/Description:</b>	Environmental Assessment for 8 Construction Sites at Tyndall Air Force Base, Bay County, Florida
<b>Photo 25 of 26</b>	<b>Date of Site Visit:</b> September 10, 2021
	<b>County / State:</b> Bay County, FL
	<b>Photo Direction:</b> <input type="checkbox"/> N <input type="checkbox"/> S <input checked="" type="checkbox"/> E <input type="checkbox"/> W
<b>Photos Taken by (Name, Company):</b>	AECOM
<b>Description / Comments:</b>	<p>Renovate Unite Site Setting, Facing East.</p> 
<b>Photo 26 of 26</b>	
	<b>Date of Site Visit:</b> September 27, 2021
	<b>County / State:</b> Bay County, FL
	<b>Photo Direction:</b> <input type="checkbox"/> N <input type="checkbox"/> S <input type="checkbox"/> E <input type="checkbox"/> W
<b>Photos Taken by (Name, Company):</b>	AECOM
<b>Description / Comments:</b>	<p>Representative Submerged Area Survey Transect, Initiated From Shoreline, and Extended to Limit of the Area of Potential Effect</p> 



**Cultural Resources Assessment Survey Report**  
**Environmental Assessment for 8 Construction Sites Tyndall Air Force Base, Florida**

**Appendix B Qualifications of Investigators**

1     Mark Martinkovic, M.A., Principal Investigator: Mark Martinkovic is a Registered Professional  
2     Archaeologist with over 15 years of experience in the Cultural Resource Management (CRM) industry  
3     and exceeds the Secretary of the Interior's Professional Qualification Standards for Archaeology (36  
4     CFR Part 61). Mr. Martinkovic is a Senior Archaeologist based in the AECOM Tallahassee, FL office.  
5     He has experience in the design, management, and technical execution of historic and archaeological  
6     investigations throughout the eastern US, primarily on the Gulf Coast, including Tyndall AFB.

7     Chris Cartellone, Senior Nautical Archaeologist: Chris Cartellone is a Senior Nautical Archeologist  
8     with AECOM with nearly 20 years of experience specializing in nautical/underwater archaeological  
9     investigations. He is certified as a Scientific Diver with the American Academy of Underwater  
10    Sciences. His specialties include geophysical remote sensing via magnetometer and side-scan sonar of  
11    a variety underwater sites ranging from Paleoindian to 19th century European throughout the U.S.,  
12    Canada, the Caribbean, Atlantic and Western Africa.



**Draft**  
**Environmental Assessment for 8 Construction Sites Tyndall Air Force Base, Florida**

**APPENDIX D RECORD OF AIR ANALYSIS**

# AIR CONFORMITY APPLICABILITY MODEL REPORT

## RECORD OF AIR ANALYSIS (ROAA)

**1. General Information:** The Air Force's Air Conformity Applicability Model (ACAM) was used to perform an analysis to assess the potential air quality impact/s associated with the action in accordance with the Air Force Manual 32-7002, Environmental Compliance and Pollution Prevention; the Environmental Impact Analysis Process (EIAP, 32 CFR 989); and the General Conformity Rule (GCR, 40 CFR 93 Subpart B). This report provides a summary of the ACAM analysis.

**a. Action Location:**

**Base:** TYNDALL AFB  
**State:** Florida  
**County(s):** Bay  
**Regulatory Area(s):** NOT IN A REGULATORY AREA

**b. Action Title:** Tyndall Air Force Base 8 Construction Sites EA

**c. Project Number/s (if applicable):** 1. Construct New Explosive Ordnance Disposal (EOD) Gravel Road

**d. Projected Action Start Date:** 3 / 2023

**e. Action Description:**

1. Construct New Explosive Ordnance Disposal (EOD) Gravel Road

**f. Point of Contact:**

**Name:** Paul Sanford  
**Title:** Environmental Planner  
**Organization:** AECOM  
**Email:** paul.sanford@aecom.com  
**Phone Number:** 813-675-6843

**2. Air Impact Analysis:** Based on the attainment status at the action location, the requirements of the General Conformity Rule are:

☐ applicable  
☒ not applicable

Total net direct and indirect emissions associated with the action were estimated through ACAM on a calendar-year basis for the start of the action through achieving "steady state" (i.e., net gain/loss upon action fully implemented) emissions. The ACAM analysis used the latest and most accurate emission estimation techniques available; all algorithms, emission factors, and methodologies used are described in detail in the USAF Air Emissions Guide for Air Force Stationary Sources, the USAF Air Emissions Guide for Air Force Mobile Sources, and the USAF Air Emissions Guide for Air Force Transitory Sources.

"Insignificance Indicators" were used in the analysis to provide an indication of the significance of potential impacts to air quality based on current ambient air quality relative to the National Ambient Air Quality Standards (NAAQSs). These insignificance indicators are the 250 ton/yr Prevention of Significant Deterioration (PSD) major source threshold for actions occurring in areas that are "Clearly Attainment" (i.e., not within 5% of any NAAQS) and the GCR de minimis values (25 ton/yr for lead and 100 ton/yr for all other criteria pollutants) for actions occurring in areas that are "Near Nonattainment" (i.e., within 5% of any NAAQS). These indicators do not define a significant impact; however, they do provide a threshold to identify actions that are insignificant. Any action with net emissions below the insignificance indicators for all criteria pollutant is considered so insignificant that the

# AIR CONFORMITY APPLICABILITY MODEL REPORT

## RECORD OF AIR ANALYSIS (ROAA)

action will not cause or contribute to an exceedance on one or more NAAQSs. For further detail on insignificance indicators see chapter 4 of the Air Force Air Quality Environmental Impact Analysis Process (EIAP) Guide, Volume II - Advanced Assessments.

The action's net emissions for every year through achieving steady state were compared against the Insignificance Indicator and are summarized below.

### Analysis Summary:

#### 2023

Pollutant	Action Emissions (ton/yr)	INSIGNIFICANCE INDICATOR	
		Indicator (ton/yr)	Exceedance (Yes or No)
NOT IN A REGULATORY AREA			
VOC	0.005	250	No
NOx	0.027	250	No
CO	0.031	250	No
SOx	0.000	250	No
PM 10	0.013	250	No
PM 2.5	0.001	250	No
Pb	0.000	25	No
NH3	0.000	250	No
CO2e	8.6		

#### 2024

Pollutant	Action Emissions (ton/yr)	INSIGNIFICANCE INDICATOR	
		Indicator (ton/yr)	Exceedance (Yes or No)
NOT IN A REGULATORY AREA			
VOC	0.000	250	No
NOx	0.000	250	No
CO	0.000	250	No
SOx	0.000	250	No
PM 10	0.000	250	No
PM 2.5	0.000	250	No
Pb	0.000	25	No
NH3	0.000	250	No
CO2e	0.0		

#### 2025 - (Steady State)

Pollutant	Action Emissions (ton/yr)	INSIGNIFICANCE INDICATOR	
		Indicator (ton/yr)	Exceedance (Yes or No)
NOT IN A REGULATORY AREA			
VOC	0.000	250	No
NOx	0.000	250	No
CO	0.000	250	No
SOx	0.000	250	No
PM 10	0.000	250	No
PM 2.5	0.000	250	No
Pb	0.000	25	No
NH3	0.000	250	No
CO2e	0.0		



# **AIR CONFORMITY APPLICABILITY MODEL REPORT RECORD OF AIR ANALYSIS (ROAA)**

None of estimated annual net emissions associated with this action are above the insignificance indicators, indicating no significant impact to air quality. Therefore, the action will not cause or contribute to an exceedance on one or more NAAQSs. No further air assessment is needed.

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Paul Sanford, Environmental Planner

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DATE

# AIR CONFORMITY APPLICABILITY MODEL REPORT

## RECORD OF AIR ANALYSIS (ROAA)

**1. General Information:** The Air Force's Air Conformity Applicability Model (ACAM) was used to perform an analysis to assess the potential air quality impact/s associated with the action in accordance with the Air Force Manual 32-7002, Environmental Compliance and Pollution Prevention; the Environmental Impact Analysis Process (EIAP, 32 CFR 989); and the General Conformity Rule (GCR, 40 CFR 93 Subpart B). This report provides a summary of the ACAM analysis.

**a. Action Location:**

**Base:** TYNDALL AFB  
**State:** Florida  
**County(s):** Bay  
**Regulatory Area(s):** NOT IN A REGULATORY AREA

**b. Action Title:** Tyndall Air Force Base 8 Construction Sites EA

**c. Project Number/s (if applicable):** 2A. Dredge Weapons Evaluation Group (WEG) Small Boathouse Area at Building 9709 (Alternative 1)

**d. Projected Action Start Date:** 4 / 2023

**e. Action Description:**

2. Dredge Weapons Evaluation Group (WEG) Small Boathouse Area at Building 9709

**f. Point of Contact:**

**Name:** Paul Sanford  
**Title:** Environmental Planner  
**Organization:** AECOM  
**Email:** paul.sanford@aecom.com  
**Phone Number:** 813-675-6843

**2. Air Impact Analysis:** Based on the attainment status at the action location, the requirements of the General Conformity Rule are:

☐ applicable  
☒ not applicable

Total net direct and indirect emissions associated with the action were estimated through ACAM on a calendar-year basis for the start of the action through achieving "steady state" (i.e., net gain/loss upon action fully implemented) emissions. The ACAM analysis used the latest and most accurate emission estimation techniques available; all algorithms, emission factors, and methodologies used are described in detail in the USAF Air Emissions Guide for Air Force Stationary Sources, the USAF Air Emissions Guide for Air Force Mobile Sources, and the USAF Air Emissions Guide for Air Force Transitory Sources.

"Insignificance Indicators" were used in the analysis to provide an indication of the significance of potential impacts to air quality based on current ambient air quality relative to the National Ambient Air Quality Standards (NAAQSs). These insignificance indicators are the 250 ton/yr Prevention of Significant Deterioration (PSD) major source threshold for actions occurring in areas that are "Clearly Attainment" (i.e., not within 5% of any NAAQS) and the GCR de minimis values (25 ton/yr for lead and 100 ton/yr for all other criteria pollutants) for actions occurring in areas that are "Near Nonattainment" (i.e., within 5% of any NAAQS). These indicators do not define a significant impact; however, they do provide a threshold to identify actions that are insignificant. Any action with net emissions below the insignificance indicators for all criteria pollutant is considered so insignificant that the

# AIR CONFORMITY APPLICABILITY MODEL REPORT

## RECORD OF AIR ANALYSIS (ROAA)

action will not cause or contribute to an exceedance on one or more NAAQSs. For further detail on insignificance indicators see chapter 4 of the Air Force Air Quality Environmental Impact Analysis Process (EIAP) Guide, Volume II - Advanced Assessments.

The action's net emissions for every year through achieving steady state were compared against the Insignificance Indicator and are summarized below.

### Analysis Summary:

#### 2023

Pollutant	Action Emissions (ton/yr)	INSIGNIFICANCE INDICATOR	
		Indicator (ton/yr)	Exceedance (Yes or No)
NOT IN A REGULATORY AREA			
VOC	0.003	250	No
NOx	0.022	250	No
CO	0.020	250	No
SOx	0.000	250	No
PM 10	0.014	250	No
PM 2.5	0.001	250	No
Pb	0.000	25	No
NH3	0.000	250	No
CO2e	8.1		

#### 2024

Pollutant	Action Emissions (ton/yr)	INSIGNIFICANCE INDICATOR	
		Indicator (ton/yr)	Exceedance (Yes or No)
NOT IN A REGULATORY AREA			
VOC	0.000	250	No
NOx	0.000	250	No
CO	0.000	250	No
SOx	0.000	250	No
PM 10	0.000	250	No
PM 2.5	0.000	250	No
Pb	0.000	25	No
NH3	0.000	250	No
CO2e	0.0		

#### 2025 - (Steady State)

Pollutant	Action Emissions (ton/yr)	INSIGNIFICANCE INDICATOR	
		Indicator (ton/yr)	Exceedance (Yes or No)
NOT IN A REGULATORY AREA			
VOC	0.000	250	No
NOx	0.000	250	No
CO	0.000	250	No
SOx	0.000	250	No
PM 10	0.000	250	No
PM 2.5	0.000	250	No
Pb	0.000	25	No
NH3	0.000	250	No
CO2e	0.0		



# **AIR CONFORMITY APPLICABILITY MODEL REPORT RECORD OF AIR ANALYSIS (ROAA)**

None of estimated annual net emissions associated with this action are above the insignificance indicators, indicating no significant impact to air quality. Therefore, the action will not cause or contribute to an exceedance on one or more NAAQSs. No further air assessment is needed.

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Paul Sanford, Environmental Planner

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DATE

# AIR CONFORMITY APPLICABILITY MODEL REPORT

## RECORD OF AIR ANALYSIS (ROAA)

**1. General Information:** The Air Force's Air Conformity Applicability Model (ACAM) was used to perform an analysis to assess the potential air quality impact/s associated with the action in accordance with the Air Force Manual 32-7002, Environmental Compliance and Pollution Prevention; the Environmental Impact Analysis Process (EIAP, 32 CFR 989); and the General Conformity Rule (GCR, 40 CFR 93 Subpart B). This report provides a summary of the ACAM analysis.

**a. Action Location:**

**Base:** TYNDALL AFB  
**State:** Florida  
**County(s):** Bay  
**Regulatory Area(s):** NOT IN A REGULATORY AREA

**b. Action Title:** Tyndall Air Force Base 8 Construction Sites EA

**c. Project Number/s (if applicable):** 2B. Dredge Weapons Evaluation Group (WEG) Small Boathouse Area at Building 9709 (Alternative 2)

**d. Projected Action Start Date:** 4 / 2023

**e. Action Description:**

2. Dredge Weapons Evaluation Group (WEG) Small Boathouse Area at Building 9709

**f. Point of Contact:**

**Name:** Paul Sanford  
**Title:** Environmental Planner  
**Organization:** AECOM  
**Email:** paul.sanford@aecom.com  
**Phone Number:** 813-675-6843

**2. Air Impact Analysis:** Based on the attainment status at the action location, the requirements of the General Conformity Rule are:

☐ applicable  
☒ not applicable

Total net direct and indirect emissions associated with the action were estimated through ACAM on a calendar-year basis for the start of the action through achieving "steady state" (i.e., net gain/loss upon action fully implemented) emissions. The ACAM analysis used the latest and most accurate emission estimation techniques available; all algorithms, emission factors, and methodologies used are described in detail in the USAF Air Emissions Guide for Air Force Stationary Sources, the USAF Air Emissions Guide for Air Force Mobile Sources, and the USAF Air Emissions Guide for Air Force Transitory Sources.

"Insignificance Indicators" were used in the analysis to provide an indication of the significance of potential impacts to air quality based on current ambient air quality relative to the National Ambient Air Quality Standards (NAAQSs). These insignificance indicators are the 250 ton/yr Prevention of Significant Deterioration (PSD) major source threshold for actions occurring in areas that are "Clearly Attainment" (i.e., not within 5% of any NAAQS) and the GCR de minimis values (25 ton/yr for lead and 100 ton/yr for all other criteria pollutants) for actions occurring in areas that are "Near Nonattainment" (i.e., within 5% of any NAAQS). These indicators do not define a significant impact; however, they do provide a threshold to identify actions that are insignificant. Any action with net emissions below the insignificance indicators for all criteria pollutant is considered so insignificant that the

# AIR CONFORMITY APPLICABILITY MODEL REPORT

## RECORD OF AIR ANALYSIS (ROAA)

action will not cause or contribute to an exceedance on one or more NAAQSs. For further detail on insignificance indicators see chapter 4 of the Air Force Air Quality Environmental Impact Analysis Process (EIAP) Guide, Volume II - Advanced Assessments.

The action's net emissions for every year through achieving steady state were compared against the Insignificance Indicator and are summarized below.

### Analysis Summary:

#### 2023

Pollutant	Action Emissions (ton/yr)	INSIGNIFICANCE INDICATOR	
		Indicator (ton/yr)	Exceedance (Yes or No)
NOT IN A REGULATORY AREA			
VOC	0.003	250	No
NOx	0.022	250	No
CO	0.020	250	No
SOx	0.000	250	No
PM 10	0.014	250	No
PM 2.5	0.001	250	No
Pb	0.000	25	No
NH3	0.000	250	No
CO2e	8.1		

#### 2024

Pollutant	Action Emissions (ton/yr)	INSIGNIFICANCE INDICATOR	
		Indicator (ton/yr)	Exceedance (Yes or No)
NOT IN A REGULATORY AREA			
VOC	0.000	250	No
NOx	0.000	250	No
CO	0.000	250	No
SOx	0.000	250	No
PM 10	0.000	250	No
PM 2.5	0.000	250	No
Pb	0.000	25	No
NH3	0.000	250	No
CO2e	0.0		

#### 2025 - (Steady State)

Pollutant	Action Emissions (ton/yr)	INSIGNIFICANCE INDICATOR	
		Indicator (ton/yr)	Exceedance (Yes or No)
NOT IN A REGULATORY AREA			
VOC	0.000	250	No
NOx	0.000	250	No
CO	0.000	250	No
SOx	0.000	250	No
PM 10	0.000	250	No
PM 2.5	0.000	250	No
Pb	0.000	25	No
NH3	0.000	250	No
CO2e	0.0		



# **AIR CONFORMITY APPLICABILITY MODEL REPORT RECORD OF AIR ANALYSIS (ROAA)**

None of estimated annual net emissions associated with this action are above the insignificance indicators, indicating no significant impact to air quality. Therefore, the action will not cause or contribute to an exceedance on one or more NAAQSs. No further air assessment is needed.

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Paul Sanford, Environmental Planner

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DATE

# AIR CONFORMITY APPLICABILITY MODEL REPORT

## RECORD OF AIR ANALYSIS (ROAA)

**1. General Information:** The Air Force's Air Conformity Applicability Model (ACAM) was used to perform an analysis to assess the potential air quality impact/s associated with the action in accordance with the Air Force Manual 32-7002, Environmental Compliance and Pollution Prevention; the Environmental Impact Analysis Process (EIAP, 32 CFR 989); and the General Conformity Rule (GCR, 40 CFR 93 Subpart B). This report provides a summary of the ACAM analysis.

**a. Action Location:**

**Base:** TYNDALL AFB  
**State:** Florida  
**County(s):** Bay  
**Regulatory Area(s):** NOT IN A REGULATORY AREA

**b. Action Title:** Tyndall Air Force Base 8 Construction Sites EA

**c. Project Number/s (if applicable):** 3. Replace WEG Tower 1802

**d. Projected Action Start Date:** 4 / 2023

**e. Action Description:**

3. Replace WEG Tower 1802

**f. Point of Contact:**

**Name:** Paul Sanford  
**Title:** Environmental Planner  
**Organization:** AECOM  
**Email:** paul.sanford@aecom.com  
**Phone Number:** 813-675-6843

**2. Air Impact Analysis:** Based on the attainment status at the action location, the requirements of the General Conformity Rule are:

\_\_\_\_\_ applicable  
☒ not applicable

Total net direct and indirect emissions associated with the action were estimated through ACAM on a calendar-year basis for the start of the action through achieving "steady state" (i.e., net gain/loss upon action fully implemented) emissions. The ACAM analysis used the latest and most accurate emission estimation techniques available; all algorithms, emission factors, and methodologies used are described in detail in the USAF Air Emissions Guide for Air Force Stationary Sources, the USAF Air Emissions Guide for Air Force Mobile Sources, and the USAF Air Emissions Guide for Air Force Transitory Sources.

"Insignificance Indicators" were used in the analysis to provide an indication of the significance of potential impacts to air quality based on current ambient air quality relative to the National Ambient Air Quality Standards (NAAQSs). These insignificance indicators are the 250 ton/yr Prevention of Significant Deterioration (PSD) major source threshold for actions occurring in areas that are "Clearly Attainment" (i.e., not within 5% of any NAAQS) and the GCR de minimis values (25 ton/yr for lead and 100 ton/yr for all other criteria pollutants) for actions occurring in areas that are "Near Nonattainment" (i.e., within 5% of any NAAQS). These indicators do not define a significant impact; however, they do provide a threshold to identify actions that are insignificant. Any action with net emissions below the insignificance indicators for all criteria pollutant is considered so insignificant that the action will not cause or contribute to an exceedance on one or more NAAQSs. For further detail on insignificance

# AIR CONFORMITY APPLICABILITY MODEL REPORT

## RECORD OF AIR ANALYSIS (ROAA)

indicators see chapter 4 of the Air Force Air Quality Environmental Impact Analysis Process (EIAP) Guide, Volume II - Advanced Assessments.

The action's net emissions for every year through achieving steady state were compared against the Insignificance Indicator and are summarized below.

### Analysis Summary:

#### 2023

Pollutant	Action Emissions (ton/yr)	INSIGNIFICANCE INDICATOR	
		Indicator (ton/yr)	Exceedance (Yes or No)
NOT IN A REGULATORY AREA			
VOC	0.082	250	No
NOx	0.221	250	No
CO	0.319	250	No
SOx	0.001	250	No
PM 10	0.024	250	No
PM 2.5	0.008	250	No
Pb	0.000	25	No
NH3	0.000	250	No
CO2e	76.8		

#### 2024

Pollutant	Action Emissions (ton/yr)	INSIGNIFICANCE INDICATOR	
		Indicator (ton/yr)	Exceedance (Yes or No)
NOT IN A REGULATORY AREA			
VOC	0.007	250	No
NOx	0.055	250	No
CO	0.042	250	No
SOx	0.005	250	No
PM 10	0.007	250	No
PM 2.5	0.007	250	No
Pb	0.000	25	No
NH3	0.000	250	No
CO2e	40.9		

#### 2025 - (Steady State)

Pollutant	Action Emissions (ton/yr)	INSIGNIFICANCE INDICATOR	
		Indicator (ton/yr)	Exceedance (Yes or No)
NOT IN A REGULATORY AREA			
VOC	0.007	250	No
NOx	0.055	250	No
CO	0.042	250	No
SOx	0.005	250	No
PM 10	0.007	250	No
PM 2.5	0.007	250	No
Pb	0.000	25	No
NH3	0.000	250	No
CO2e	40.9		

None of estimated annual net emissions associated with this action are above the insignificance indicators, indicating no significant impact to air quality. Therefore, the action will not cause or contribute to an exceedance on one or more NAAQSs. No further air assessment is needed.



**AIR CONFORMITY APPLICABILITY MODEL REPORT  
RECORD OF AIR ANALYSIS (ROAA)**

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Paul Sanford, Environmental Planner

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DATE

# AIR CONFORMITY APPLICABILITY MODEL REPORT

## RECORD OF AIR ANALYSIS (ROAA)

**1. General Information:** The Air Force's Air Conformity Applicability Model (ACAM) was used to perform an analysis to assess the potential air quality impact/s associated with the action in accordance with the Air Force Manual 32-7002, Environmental Compliance and Pollution Prevention; the Environmental Impact Analysis Process (EIAP, 32 CFR 989); and the General Conformity Rule (GCR, 40 CFR 93 Subpart B). This report provides a summary of the ACAM analysis.

**a. Action Location:**

**Base:** TYNDALL AFB  
**State:** Florida  
**County(s):** Bay  
**Regulatory Area(s):** NOT IN A REGULATORY AREA

**b. Action Title:** Tyndall Air Force Base 8 Construction Sites EA

**c. Project Number/s (if applicable):** 4. Improve Expeditionary/Encampment Roads

**d. Projected Action Start Date:** 4 / 2023

**e. Action Description:**

4. Improve Expeditionary/Encampment Roads

**f. Point of Contact:**

**Name:** Paul Sanford  
**Title:** Environmental Planner  
**Organization:** AECOM  
**Email:** paul.sanford@aecom.com  
**Phone Number:** 813-675-6843

**2. Air Impact Analysis:** Based on the attainment status at the action location, the requirements of the General Conformity Rule are:

☐ applicable  
☒ not applicable

Total net direct and indirect emissions associated with the action were estimated through ACAM on a calendar-year basis for the start of the action through achieving "steady state" (i.e., net gain/loss upon action fully implemented) emissions. The ACAM analysis used the latest and most accurate emission estimation techniques available; all algorithms, emission factors, and methodologies used are described in detail in the USAF Air Emissions Guide for Air Force Stationary Sources, the USAF Air Emissions Guide for Air Force Mobile Sources, and the USAF Air Emissions Guide for Air Force Transitory Sources.

"Insignificance Indicators" were used in the analysis to provide an indication of the significance of potential impacts to air quality based on current ambient air quality relative to the National Ambient Air Quality Standards (NAAQSs). These insignificance indicators are the 250 ton/yr Prevention of Significant Deterioration (PSD) major source threshold for actions occurring in areas that are "Clearly Attainment" (i.e., not within 5% of any NAAQS) and the GCR de minimis values (25 ton/yr for lead and 100 ton/yr for all other criteria pollutants) for actions occurring in areas that are "Near Nonattainment" (i.e., within 5% of any NAAQS). These indicators do not define a significant impact; however, they do provide a threshold to identify actions that are insignificant. Any action with net emissions below the insignificance indicators for all criteria pollutant is considered so insignificant that the

# AIR CONFORMITY APPLICABILITY MODEL REPORT

## RECORD OF AIR ANALYSIS (ROAA)

action will not cause or contribute to an exceedance on one or more NAAQSs. For further detail on insignificance indicators see chapter 4 of the Air Force Air Quality Environmental Impact Analysis Process (EIAP) Guide, Volume II - Advanced Assessments.

The action's net emissions for every year through achieving steady state were compared against the Insignificance Indicator and are summarized below.

### Analysis Summary:

#### 2023

Pollutant	Action Emissions (ton/yr)	INSIGNIFICANCE INDICATOR	
		Indicator (ton/yr)	Exceedance (Yes or No)
NOT IN A REGULATORY AREA			
VOC	0.100	250	No
NOx	0.491	250	No
CO	0.533	250	No
SOx	0.002	250	No
PM 10	1.058	250	No
PM 2.5	0.020	250	No
Pb	0.000	25	No
NH3	0.001	250	No
CO2e	161.2		

#### 2024

Pollutant	Action Emissions (ton/yr)	INSIGNIFICANCE INDICATOR	
		Indicator (ton/yr)	Exceedance (Yes or No)
NOT IN A REGULATORY AREA			
VOC	0.006	250	No
NOx	0.033	250	No
CO	0.021	250	No
SOx	0.005	250	No
PM 10	0.006	250	No
PM 2.5	0.006	250	No
Pb	0.000	25	No
NH3	0.000	250	No
CO2e	12.0		

#### 2025 - (Steady State)

Pollutant	Action Emissions (ton/yr)	INSIGNIFICANCE INDICATOR	
		Indicator (ton/yr)	Exceedance (Yes or No)
NOT IN A REGULATORY AREA			
VOC	0.006	250	No
NOx	0.033	250	No
CO	0.021	250	No
SOx	0.005	250	No
PM 10	0.006	250	No
PM 2.5	0.006	250	No
Pb	0.000	25	No
NH3	0.000	250	No
CO2e	12.0		



# **AIR CONFORMITY APPLICABILITY MODEL REPORT RECORD OF AIR ANALYSIS (ROAA)**

None of estimated annual net emissions associated with this action are above the insignificance indicators, indicating no significant impact to air quality. Therefore, the action will not cause or contribute to an exceedance on one or more NAAQSs. No further air assessment is needed.

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Paul Sanford, Environmental Planner

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DATE

# AIR CONFORMITY APPLICABILITY MODEL REPORT

## RECORD OF AIR ANALYSIS (ROAA)

**1. General Information:** The Air Force's Air Conformity Applicability Model (ACAM) was used to perform an analysis to assess the potential air quality impact/s associated with the action in accordance with the Air Force Manual 32-7002, Environmental Compliance and Pollution Prevention; the Environmental Impact Analysis Process (EIAP, 32 CFR 989); and the General Conformity Rule (GCR, 40 CFR 93 Subpart B). This report provides a summary of the ACAM analysis.

**a. Action Location:**

**Base:** TYNDALL AFB  
**State:** Florida  
**County(s):** Bay  
**Regulatory Area(s):** NOT IN A REGULATORY AREA

**b. Action Title:** Tyndall Air Force Base 8 Construction Sites EA

**c. Project Number/s (if applicable):** 5A. Expand Fam Camp Site (Alternative 1)

**d. Projected Action Start Date:** 3 / 2023

**e. Action Description:**

5A. Expand Fam Camp Site (Alternative 1)

**f. Point of Contact:**

**Name:** Paul Sanford  
**Title:** Environmental Planner  
**Organization:** AECOM  
**Email:** paul.sanford@aecom.com  
**Phone Number:** 813-675-6843

**2. Air Impact Analysis:** Based on the attainment status at the action location, the requirements of the General Conformity Rule are:

\_\_\_\_\_ applicable  
☒ not applicable

Total net direct and indirect emissions associated with the action were estimated through ACAM on a calendar-year basis for the start of the action through achieving "steady state" (i.e., net gain/loss upon action fully implemented) emissions. The ACAM analysis used the latest and most accurate emission estimation techniques available; all algorithms, emission factors, and methodologies used are described in detail in the USAF Air Emissions Guide for Air Force Stationary Sources, the USAF Air Emissions Guide for Air Force Mobile Sources, and the USAF Air Emissions Guide for Air Force Transitory Sources.

"Insignificance Indicators" were used in the analysis to provide an indication of the significance of potential impacts to air quality based on current ambient air quality relative to the National Ambient Air Quality Standards (NAAQSs). These insignificance indicators are the 250 ton/yr Prevention of Significant Deterioration (PSD) major source threshold for actions occurring in areas that are "Clearly Attainment" (i.e., not within 5% of any NAAQS) and the GCR de minimis values (25 ton/yr for lead and 100 ton/yr for all other criteria pollutants) for actions occurring in areas that are "Near Nonattainment" (i.e., within 5% of any NAAQS). These indicators do not define a significant impact; however, they do provide a threshold to identify actions that are insignificant. Any action with net emissions below the insignificance indicators for all criteria pollutant is considered so insignificant that the action will not cause or contribute to an exceedance on one or more NAAQSs. For further detail on insignificance

# AIR CONFORMITY APPLICABILITY MODEL REPORT

## RECORD OF AIR ANALYSIS (ROAA)

indicators see chapter 4 of the Air Force Air Quality Environmental Impact Analysis Process (EIAP) Guide, Volume II - Advanced Assessments.

The action's net emissions for every year through achieving steady state were compared against the Insignificance Indicator and are summarized below.

### Analysis Summary:

#### 2023

Pollutant	Action Emissions (ton/yr)	INSIGNIFICANCE INDICATOR	
		Indicator (ton/yr)	Exceedance (Yes or No)
NOT IN A REGULATORY AREA			
VOC	0.091	250	No
NOx	0.604	250	No
CO	0.591	250	No
SOx	0.002	250	No
PM 10	1.977	250	No
PM 2.5	0.023	250	No
Pb	0.000	25	No
NH3	0.002	250	No
CO2e	202.3		

#### 2024

Pollutant	Action Emissions (ton/yr)	INSIGNIFICANCE INDICATOR	
		Indicator (ton/yr)	Exceedance (Yes or No)
NOT IN A REGULATORY AREA			
VOC	0.006	250	No
NOx	0.024	250	No
CO	0.016	250	No
SOx	0.005	250	No
PM 10	0.005	250	No
PM 2.5	0.005	250	No
Pb	0.000	25	No
NH3	0.000	250	No
CO2e	3.1		

#### 2025 - (Steady State)

Pollutant	Action Emissions (ton/yr)	INSIGNIFICANCE INDICATOR	
		Indicator (ton/yr)	Exceedance (Yes or No)
NOT IN A REGULATORY AREA			
VOC	0.006	250	No
NOx	0.024	250	No
CO	0.016	250	No
SOx	0.005	250	No
PM 10	0.005	250	No
PM 2.5	0.005	250	No
Pb	0.000	25	No
NH3	0.000	250	No
CO2e	3.1		

None of estimated annual net emissions associated with this action are above the insignificance indicators, indicating no significant impact to air quality. Therefore, the action will not cause or contribute to an exceedance on one or more NAAQSs. No further air assessment is needed.



**AIR CONFORMITY APPLICABILITY MODEL REPORT  
RECORD OF AIR ANALYSIS (ROAA)**

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Paul Sanford, Environmental Planner

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DATE

# AIR CONFORMITY APPLICABILITY MODEL REPORT

## RECORD OF AIR ANALYSIS (ROAA)

**1. General Information:** The Air Force's Air Conformity Applicability Model (ACAM) was used to perform an analysis to assess the potential air quality impact/s associated with the action in accordance with the Air Force Manual 32-7002, Environmental Compliance and Pollution Prevention; the Environmental Impact Analysis Process (EIAP, 32 CFR 989); and the General Conformity Rule (GCR, 40 CFR 93 Subpart B). This report provides a summary of the ACAM analysis.

**a. Action Location:**

**Base:** TYNDALL AFB  
**State:** Florida  
**County(s):** Bay  
**Regulatory Area(s):** NOT IN A REGULATORY AREA

**b. Action Title:** Tyndall Air Force Base 8 Construction Sites EA

**c. Project Number/s (if applicable):** 5B. Expand Fam Camp Site (Alternative 2)

**d. Projected Action Start Date:** 3 / 2023

**e. Action Description:**

5B. Expand Fam Camp Site (Alternative 2)

**f. Point of Contact:**

**Name:** Paul Sanford  
**Title:** Environmental Planner  
**Organization:** AECOM  
**Email:** paul.sanford@aecom.com  
**Phone Number:** 813-675-6843

**2. Air Impact Analysis:** Based on the attainment status at the action location, the requirements of the General Conformity Rule are:

\_\_\_\_\_ applicable  
☒ not applicable

Total net direct and indirect emissions associated with the action were estimated through ACAM on a calendar-year basis for the start of the action through achieving "steady state" (i.e., net gain/loss upon action fully implemented) emissions. The ACAM analysis used the latest and most accurate emission estimation techniques available; all algorithms, emission factors, and methodologies used are described in detail in the USAF Air Emissions Guide for Air Force Stationary Sources, the USAF Air Emissions Guide for Air Force Mobile Sources, and the USAF Air Emissions Guide for Air Force Transitory Sources.

"Insignificance Indicators" were used in the analysis to provide an indication of the significance of potential impacts to air quality based on current ambient air quality relative to the National Ambient Air Quality Standards (NAAQSs). These insignificance indicators are the 250 ton/yr Prevention of Significant Deterioration (PSD) major source threshold for actions occurring in areas that are "Clearly Attainment" (i.e., not within 5% of any NAAQS) and the GCR de minimis values (25 ton/yr for lead and 100 ton/yr for all other criteria pollutants) for actions occurring in areas that are "Near Nonattainment" (i.e., within 5% of any NAAQS). These indicators do not define a significant impact; however, they do provide a threshold to identify actions that are insignificant. Any action with net emissions below the insignificance indicators for all criteria pollutant is considered so insignificant that the action will not cause or contribute to an exceedance on one or more NAAQSs. For further detail on insignificance

# AIR CONFORMITY APPLICABILITY MODEL REPORT

## RECORD OF AIR ANALYSIS (ROAA)

indicators see chapter 4 of the Air Force Air Quality Environmental Impact Analysis Process (EIAP) Guide, Volume II - Advanced Assessments.

The action's net emissions for every year through achieving steady state were compared against the Insignificance Indicator and are summarized below.

### Analysis Summary:

#### 2023

Pollutant	Action Emissions (ton/yr)	INSIGNIFICANCE INDICATOR	
		Indicator (ton/yr)	Exceedance (Yes or No)
NOT IN A REGULATORY AREA			
VOC	0.092	250	No
NOx	0.605	250	No
CO	0.592	250	No
SOx	0.002	250	No
PM 10	1.981	250	No
PM 2.5	0.023	250	No
Pb	0.000	25	No
NH3	0.002	250	No
CO2e	202.9		

#### 2024

Pollutant	Action Emissions (ton/yr)	INSIGNIFICANCE INDICATOR	
		Indicator (ton/yr)	Exceedance (Yes or No)
NOT IN A REGULATORY AREA			
VOC	0.006	250	No
NOx	0.024	250	No
CO	0.016	250	No
SOx	0.005	250	No
PM 10	0.005	250	No
PM 2.5	0.005	250	No
Pb	0.000	25	No
NH3	0.000	250	No
CO2e	3.1		

#### 2025 - (Steady State)

Pollutant	Action Emissions (ton/yr)	INSIGNIFICANCE INDICATOR	
		Indicator (ton/yr)	Exceedance (Yes or No)
NOT IN A REGULATORY AREA			
VOC	0.006	250	No
NOx	0.024	250	No
CO	0.016	250	No
SOx	0.005	250	No
PM 10	0.005	250	No
PM 2.5	0.005	250	No
Pb	0.000	25	No
NH3	0.000	250	No
CO2e	3.1		

None of estimated annual net emissions associated with this action are above the insignificance indicators, indicating no significant impact to air quality. Therefore, the action will not cause or contribute to an exceedance on one or more NAAQSs. No further air assessment is needed.



**AIR CONFORMITY APPLICABILITY MODEL REPORT  
RECORD OF AIR ANALYSIS (ROAA)**

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Paul Sanford, Environmental Planner

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DATE

# AIR CONFORMITY APPLICABILITY MODEL REPORT

## RECORD OF AIR ANALYSIS (ROAA)

**1. General Information:** The Air Force's Air Conformity Applicability Model (ACAM) was used to perform an analysis to assess the potential air quality impact/s associated with the action in accordance with the Air Force Manual 32-7002, Environmental Compliance and Pollution Prevention; the Environmental Impact Analysis Process (EIAP, 32 CFR 989); and the General Conformity Rule (GCR, 40 CFR 93 Subpart B). This report provides a summary of the ACAM analysis.

**a. Action Location:**

**Base:** TYNDALL AFB  
**State:** Florida  
**County(s):** Bay  
**Regulatory Area(s):** NOT IN A REGULATORY AREA

**b. Action Title:** Tyndall Air Force Base 8 Construction Sites EA

**c. Project Number/s (if applicable):** 6. Construct Water Main Along North Side of Flightline

**d. Projected Action Start Date:** 5 / 2023

**e. Action Description:**

6. Construct Water Main Along North Side of Flightline

**f. Point of Contact:**

**Name:** Paul Sanford  
**Title:** Environmental Planner  
**Organization:** AECOM  
**Email:** paul.sanford@aecom.com  
**Phone Number:** 813-675-6843

**2. Air Impact Analysis:** Based on the attainment status at the action location, the requirements of the General Conformity Rule are:

☐ applicable  
☒ not applicable

Total net direct and indirect emissions associated with the action were estimated through ACAM on a calendar-year basis for the start of the action through achieving "steady state" (i.e., net gain/loss upon action fully implemented) emissions. The ACAM analysis used the latest and most accurate emission estimation techniques available; all algorithms, emission factors, and methodologies used are described in detail in the USAF Air Emissions Guide for Air Force Stationary Sources, the USAF Air Emissions Guide for Air Force Mobile Sources, and the USAF Air Emissions Guide for Air Force Transitory Sources.

"Insignificance Indicators" were used in the analysis to provide an indication of the significance of potential impacts to air quality based on current ambient air quality relative to the National Ambient Air Quality Standards (NAAQSs). These insignificance indicators are the 250 ton/yr Prevention of Significant Deterioration (PSD) major source threshold for actions occurring in areas that are "Clearly Attainment" (i.e., not within 5% of any NAAQS) and the GCR de minimis values (25 ton/yr for lead and 100 ton/yr for all other criteria pollutants) for actions occurring in areas that are "Near Nonattainment" (i.e., within 5% of any NAAQS). These indicators do not define a significant impact; however, they do provide a threshold to identify actions that are insignificant. Any action with net emissions below the insignificance indicators for all criteria pollutant is considered so insignificant that the

# AIR CONFORMITY APPLICABILITY MODEL REPORT

## RECORD OF AIR ANALYSIS (ROAA)

action will not cause or contribute to an exceedance on one or more NAAQSs. For further detail on insignificance indicators see chapter 4 of the Air Force Air Quality Environmental Impact Analysis Process (EIAP) Guide, Volume II - Advanced Assessments.

The action's net emissions for every year through achieving steady state were compared against the Insignificance Indicator and are summarized below.

### Analysis Summary:

**2023**

Pollutant	Action Emissions (ton/yr)	INSIGNIFICANCE INDICATOR	
		Indicator (ton/yr)	Exceedance (Yes or No)
NOT IN A REGULATORY AREA			
VOC	0.143	250	No
NOx	0.905	250	No
CO	0.808	250	No
SOx	0.003	250	No
PM 10	20.582	250	No
PM 2.5	0.036	250	No
Pb	0.000	25	No
NH3	0.001	250	No
CO2e	262.7		

**2024 - (Steady State)**

Pollutant	Action Emissions (ton/yr)	INSIGNIFICANCE INDICATOR	
		Indicator (ton/yr)	Exceedance (Yes or No)
NOT IN A REGULATORY AREA			
VOC	0.000	250	No
NOx	0.000	250	No
CO	0.000	250	No
SOx	0.000	250	No
PM 10	0.000	250	No
PM 2.5	0.000	250	No
Pb	0.000	25	No
NH3	0.000	250	No
CO2e	0.0		

None of estimated annual net emissions associated with this action are above the insignificance indicators, indicating no significant impact to air quality. Therefore, the action will not cause or contribute to an exceedance on one or more NAAQSs. No further air assessment is needed.

Paul Sanford, Environmental Planner

DATE



# AIR CONFORMITY APPLICABILITY MODEL REPORT

## RECORD OF AIR ANALYSIS (ROAA)

**1. General Information:** The Air Force's Air Conformity Applicability Model (ACAM) was used to perform an analysis to assess the potential air quality impact/s associated with the action in accordance with the Air Force Manual 32-7002, Environmental Compliance and Pollution Prevention; the Environmental Impact Analysis Process (EIAP, 32 CFR 989); and the General Conformity Rule (GCR, 40 CFR 93 Subpart B). This report provides a summary of the ACAM analysis.

**a. Action Location:**

**Base:** TYNDALL AFB  
**State:** Florida  
**County(s):** Bay  
**Regulatory Area(s):** NOT IN A REGULATORY AREA

**b. Action Title:** Tyndall Air Force Base 8 Construction Sites EA

**c. Project Number/s (if applicable):** 7A. Construct Fishing/Observation Pier (Heritage Club) (Alternative 1)

**d. Projected Action Start Date:** 6 / 2023

**e. Action Description:**

7A. Construct Fishing/Observation Pier (Heritage Club) (Alternative 1)

**f. Point of Contact:**

**Name:** Paul Sanford  
**Title:** Environmental Planner  
**Organization:** AECOM  
**Email:** paul.sanford@aecom.com  
**Phone Number:** 813-675-6843

**2. Air Impact Analysis:** Based on the attainment status at the action location, the requirements of the General Conformity Rule are:

☐ applicable  
☒ not applicable

Total net direct and indirect emissions associated with the action were estimated through ACAM on a calendar-year basis for the start of the action through achieving "steady state" (i.e., net gain/loss upon action fully implemented) emissions. The ACAM analysis used the latest and most accurate emission estimation techniques available; all algorithms, emission factors, and methodologies used are described in detail in the USAF Air Emissions Guide for Air Force Stationary Sources, the USAF Air Emissions Guide for Air Force Mobile Sources, and the USAF Air Emissions Guide for Air Force Transitory Sources.

"Insignificance Indicators" were used in the analysis to provide an indication of the significance of potential impacts to air quality based on current ambient air quality relative to the National Ambient Air Quality Standards (NAAQSs). These insignificance indicators are the 250 ton/yr Prevention of Significant Deterioration (PSD) major source threshold for actions occurring in areas that are "Clearly Attainment" (i.e., not within 5% of any NAAQS) and the GCR de minimis values (25 ton/yr for lead and 100 ton/yr for all other criteria pollutants) for actions occurring in areas that are "Near Nonattainment" (i.e., within 5% of any NAAQS). These indicators do not define a significant impact; however, they do provide a threshold to identify actions that are insignificant. Any action with net emissions below the insignificance indicators for all criteria pollutant is considered so insignificant that the

# AIR CONFORMITY APPLICABILITY MODEL REPORT

## RECORD OF AIR ANALYSIS (ROAA)

action will not cause or contribute to an exceedance on one or more NAAQSs. For further detail on insignificance indicators see chapter 4 of the Air Force Air Quality Environmental Impact Analysis Process (EIAP) Guide, Volume II - Advanced Assessments.

The action's net emissions for every year through achieving steady state were compared against the Insignificance Indicator and are summarized below.

### Analysis Summary:

**2023**

Pollutant	Action Emissions (ton/yr)	INSIGNIFICANCE INDICATOR	
		Indicator (ton/yr)	Exceedance (Yes or No)
NOT IN A REGULATORY AREA			
VOC	0.087	250	No
NOx	0.215	250	No
CO	0.316	250	No
SOx	0.001	250	No
PM 10	0.012	250	No
PM 2.5	0.008	250	No
Pb	0.000	25	No
NH3	0.000	250	No
CO2e	74.6		

**2024 - (Steady State)**

Pollutant	Action Emissions (ton/yr)	INSIGNIFICANCE INDICATOR	
		Indicator (ton/yr)	Exceedance (Yes or No)
NOT IN A REGULATORY AREA			
VOC	0.000	250	No
NOx	0.000	250	No
CO	0.000	250	No
SOx	0.000	250	No
PM 10	0.000	250	No
PM 2.5	0.000	250	No
Pb	0.000	25	No
NH3	0.000	250	No
CO2e	0.0		

None of estimated annual net emissions associated with this action are above the insignificance indicators, indicating no significant impact to air quality. Therefore, the action will not cause or contribute to an exceedance on one or more NAAQSs. No further air assessment is needed.

Paul Sanford, Environmental Planner

DATE

# AIR CONFORMITY APPLICABILITY MODEL REPORT

## RECORD OF AIR ANALYSIS (ROAA)

**1. General Information:** The Air Force's Air Conformity Applicability Model (ACAM) was used to perform an analysis to assess the potential air quality impact/s associated with the action in accordance with the Air Force Manual 32-7002, Environmental Compliance and Pollution Prevention; the Environmental Impact Analysis Process (EIAP, 32 CFR 989); and the General Conformity Rule (GCR, 40 CFR 93 Subpart B). This report provides a summary of the ACAM analysis.

**a. Action Location:**

**Base:** TYNDALL AFB  
**State:** Florida  
**County(s):** Bay  
**Regulatory Area(s):** NOT IN A REGULATORY AREA

**b. Action Title:** Tyndall Air Force Base 8 Construction Sites EA

**c. Project Number/s (if applicable):** 7B. Construct Fishing/Observation Pier (Heritage Club) (Alternative 2)

**d. Projected Action Start Date:** 6 / 2023

**e. Action Description:**

7B. Construct Fishing/Observation Pier (Heritage Club) (Alternative 2)

**f. Point of Contact:**

**Name:** Paul Sanford  
**Title:** Environmental Planner  
**Organization:** AECOM  
**Email:** paul.sanford@aecom.com  
**Phone Number:** 813-675-6843

**2. Air Impact Analysis:** Based on the attainment status at the action location, the requirements of the General Conformity Rule are:

☐ applicable  
☒ not applicable

Total net direct and indirect emissions associated with the action were estimated through ACAM on a calendar-year basis for the start of the action through achieving "steady state" (i.e., net gain/loss upon action fully implemented) emissions. The ACAM analysis used the latest and most accurate emission estimation techniques available; all algorithms, emission factors, and methodologies used are described in detail in the USAF Air Emissions Guide for Air Force Stationary Sources, the USAF Air Emissions Guide for Air Force Mobile Sources, and the USAF Air Emissions Guide for Air Force Transitory Sources.

"Insignificance Indicators" were used in the analysis to provide an indication of the significance of potential impacts to air quality based on current ambient air quality relative to the National Ambient Air Quality Standards (NAAQSs). These insignificance indicators are the 250 ton/yr Prevention of Significant Deterioration (PSD) major source threshold for actions occurring in areas that are "Clearly Attainment" (i.e., not within 5% of any NAAQS) and the GCR de minimis values (25 ton/yr for lead and 100 ton/yr for all other criteria pollutants) for actions occurring in areas that are "Near Nonattainment" (i.e., within 5% of any NAAQS). These indicators do not define a significant impact; however, they do provide a threshold to identify actions that are insignificant. Any action with net emissions below the insignificance indicators for all criteria pollutant is considered so insignificant that the action will not cause or contribute to an exceedance on one or more NAAQSs. For further detail on insignificance



# AIR CONFORMITY APPLICABILITY MODEL REPORT

## RECORD OF AIR ANALYSIS (ROAA)

indicators see chapter 4 of the Air Force Air Quality Environmental Impact Analysis Process (EIAP) Guide, Volume II - Advanced Assessments.

The action's net emissions for every year through achieving steady state were compared against the Insignificance Indicator and are summarized below.

### Analysis Summary:

#### 2023

Pollutant	Action Emissions (ton/yr)	INSIGNIFICANCE INDICATOR	
		Indicator (ton/yr)	Exceedance (Yes or No)
NOT IN A REGULATORY AREA			
VOC	0.104	250	No
NOx	0.217	250	No
CO	0.319	250	No
SOx	0.001	250	No
PM 10	0.014	250	No
PM 2.5	0.008	250	No
Pb	0.000	25	No
NH3	0.000	250	No
CO2e	75.7		

#### 2024 - (Steady State)

Pollutant	Action Emissions (ton/yr)	INSIGNIFICANCE INDICATOR	
		Indicator (ton/yr)	Exceedance (Yes or No)
NOT IN A REGULATORY AREA			
VOC	0.000	250	No
NOx	0.000	250	No
CO	0.000	250	No
SOx	0.000	250	No
PM 10	0.000	250	No
PM 2.5	0.000	250	No
Pb	0.000	25	No
NH3	0.000	250	No
CO2e	0.0		

None of estimated annual net emissions associated with this action are above the insignificance indicators, indicating no significant impact to air quality. Therefore, the action will not cause or contribute to an exceedance on one or more NAAQSs. No further air assessment is needed.

\_\_\_\_\_  
Paul Sanford, Environmental Planner

\_\_\_\_\_  
DATE

# AIR CONFORMITY APPLICABILITY MODEL REPORT

## RECORD OF AIR ANALYSIS (ROAA)

**1. General Information:** The Air Force's Air Conformity Applicability Model (ACAM) was used to perform an analysis to assess the potential air quality impact/s associated with the action in accordance with the Air Force Manual 32-7002, Environmental Compliance and Pollution Prevention; the Environmental Impact Analysis Process (EIAP, 32 CFR 989); and the General Conformity Rule (GCR, 40 CFR 93 Subpart B). This report provides a summary of the ACAM analysis.

**a. Action Location:**

**Base:** TYNDALL AFB  
**State:** Florida  
**County(s):** Bay  
**Regulatory Area(s):** NOT IN A REGULATORY AREA

**b. Action Title:** Tyndall Air Force Base 8 Construction Sites EA

**c. Project Number/s (if applicable):** 8A. Renovate Unite Site (Alternative 1)

**d. Projected Action Start Date:** 3 / 2023

**e. Action Description:**

8A. Renovate Unite Site (Alternative 1)

**f. Point of Contact:**

**Name:** Paul Sanford  
**Title:** Environmental Planner  
**Organization:** AECOM  
**Email:** paul.sanford@aecom.com  
**Phone Number:** 813-675-6843

**2. Air Impact Analysis:** Based on the attainment status at the action location, the requirements of the General Conformity Rule are:

\_\_\_\_\_ applicable  
☒ not applicable

Total net direct and indirect emissions associated with the action were estimated through ACAM on a calendar-year basis for the start of the action through achieving "steady state" (i.e., net gain/loss upon action fully implemented) emissions. The ACAM analysis used the latest and most accurate emission estimation techniques available; all algorithms, emission factors, and methodologies used are described in detail in the USAF Air Emissions Guide for Air Force Stationary Sources, the USAF Air Emissions Guide for Air Force Mobile Sources, and the USAF Air Emissions Guide for Air Force Transitory Sources.

"Insignificance Indicators" were used in the analysis to provide an indication of the significance of potential impacts to air quality based on current ambient air quality relative to the National Ambient Air Quality Standards (NAAQSs). These insignificance indicators are the 250 ton/yr Prevention of Significant Deterioration (PSD) major source threshold for actions occurring in areas that are "Clearly Attainment" (i.e., not within 5% of any NAAQS) and the GCR de minimis values (25 ton/yr for lead and 100 ton/yr for all other criteria pollutants) for actions occurring in areas that are "Near Nonattainment" (i.e., within 5% of any NAAQS). These indicators do not define a significant impact; however, they do provide a threshold to identify actions that are insignificant. Any action with net emissions below the insignificance indicators for all criteria pollutant is considered so insignificant that the action will not cause or contribute to an exceedance on one or more NAAQSs. For further detail on insignificance

# AIR CONFORMITY APPLICABILITY MODEL REPORT

## RECORD OF AIR ANALYSIS (ROAA)

indicators see chapter 4 of the Air Force Air Quality Environmental Impact Analysis Process (EIAP) Guide, Volume II - Advanced Assessments.

The action's net emissions for every year through achieving steady state were compared against the Insignificance Indicator and are summarized below.

### Analysis Summary:

#### 2023

Pollutant	Action Emissions (ton/yr)	INSIGNIFICANCE INDICATOR	
		Indicator (ton/yr)	Exceedance (Yes or No)
NOT IN A REGULATORY AREA			
VOC	0.350	250	No
NOx	1.314	250	No
CO	1.025	250	No
SOx	0.004	250	No
PM 10	6.223	250	No
PM 2.5	0.051	250	No
Pb	0.000	25	No
NH3	0.005	250	No
CO2e	446.7		

#### 2024

Pollutant	Action Emissions (ton/yr)	INSIGNIFICANCE INDICATOR	
		Indicator (ton/yr)	Exceedance (Yes or No)
NOT IN A REGULATORY AREA			
VOC	0.008	250	No
NOx	0.063	250	No
CO	0.049	250	No
SOx	0.005	250	No
PM 10	0.008	250	No
PM 2.5	0.008	250	No
Pb	0.000	25	No
NH3	0.000	250	No
CO2e	50.6		

#### 2025 - (Steady State)

Pollutant	Action Emissions (ton/yr)	INSIGNIFICANCE INDICATOR	
		Indicator (ton/yr)	Exceedance (Yes or No)
NOT IN A REGULATORY AREA			
VOC	0.008	250	No
NOx	0.063	250	No
CO	0.049	250	No
SOx	0.005	250	No
PM 10	0.008	250	No
PM 2.5	0.008	250	No
Pb	0.000	25	No
NH3	0.000	250	No
CO2e	50.6		

None of estimated annual net emissions associated with this action are above the insignificance indicators, indicating no significant impact to air quality. Therefore, the action will not cause or contribute to an exceedance on one or more NAAQSs. No further air assessment is needed.



**AIR CONFORMITY APPLICABILITY MODEL REPORT  
RECORD OF AIR ANALYSIS (ROAA)**

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Paul Sanford, Environmental Planner

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DATE

# AIR CONFORMITY APPLICABILITY MODEL REPORT

## RECORD OF AIR ANALYSIS (ROAA)

**1. General Information:** The Air Force's Air Conformity Applicability Model (ACAM) was used to perform an analysis to assess the potential air quality impact/s associated with the action in accordance with the Air Force Manual 32-7002, Environmental Compliance and Pollution Prevention; the Environmental Impact Analysis Process (EIAP, 32 CFR 989); and the General Conformity Rule (GCR, 40 CFR 93 Subpart B). This report provides a summary of the ACAM analysis.

**a. Action Location:**

**Base:** TYNDALL AFB  
**State:** Florida  
**County(s):** Bay  
**Regulatory Area(s):** NOT IN A REGULATORY AREA

**b. Action Title:** Tyndall Air Force Base 8 Construction Sites EA

**c. Project Number/s (if applicable):** 8B. Renovate Unite Site (Alternative 2)

**d. Projected Action Start Date:** 3 / 2023

**e. Action Description:**

8B. Renovate Unite Site (Alternative 2)

**f. Point of Contact:**

**Name:** Paul Sanford  
**Title:** Environmental Planner  
**Organization:** AECOM  
**Email:** paul.sanford@aecom.com  
**Phone Number:** 813-675-6843

**2. Air Impact Analysis:** Based on the attainment status at the action location, the requirements of the General Conformity Rule are:

☐ applicable  
☒ not applicable

Total net direct and indirect emissions associated with the action were estimated through ACAM on a calendar-year basis for the start of the action through achieving "steady state" (i.e., net gain/loss upon action fully implemented) emissions. The ACAM analysis used the latest and most accurate emission estimation techniques available; all algorithms, emission factors, and methodologies used are described in detail in the USAF Air Emissions Guide for Air Force Stationary Sources, the USAF Air Emissions Guide for Air Force Mobile Sources, and the USAF Air Emissions Guide for Air Force Transitory Sources.

"Insignificance Indicators" were used in the analysis to provide an indication of the significance of potential impacts to air quality based on current ambient air quality relative to the National Ambient Air Quality Standards (NAAQSs). These insignificance indicators are the 250 ton/yr Prevention of Significant Deterioration (PSD) major source threshold for actions occurring in areas that are "Clearly Attainment" (i.e., not within 5% of any NAAQS) and the GCR de minimis values (25 ton/yr for lead and 100 ton/yr for all other criteria pollutants) for actions occurring in areas that are "Near Nonattainment" (i.e., within 5% of any NAAQS). These indicators do not define a significant impact; however, they do provide a threshold to identify actions that are insignificant. Any action with net emissions below the insignificance indicators for all criteria pollutant is considered so insignificant that the

# AIR CONFORMITY APPLICABILITY MODEL REPORT

## RECORD OF AIR ANALYSIS (ROAA)

action will not cause or contribute to an exceedance on one or more NAAQSs. For further detail on insignificance indicators see chapter 4 of the Air Force Air Quality Environmental Impact Analysis Process (EIAP) Guide, Volume II - Advanced Assessments.

The action's net emissions for every year through achieving steady state were compared against the Insignificance Indicator and are summarized below.

### Analysis Summary:

#### 2023

Pollutant	Action Emissions (ton/yr)	INSIGNIFICANCE INDICATOR	
		Indicator (ton/yr)	Exceedance (Yes or No)
NOT IN A REGULATORY AREA			
VOC	0.313	250	No
NOx	0.948	250	No
CO	0.880	250	No
SOx	0.003	250	No
PM 10	3.841	250	No
PM 2.5	0.036	250	No
Pb	0.000	25	No
NH3	0.002	250	No
CO2e	310.2		

#### 2024

Pollutant	Action Emissions (ton/yr)	INSIGNIFICANCE INDICATOR	
		Indicator (ton/yr)	Exceedance (Yes or No)
NOT IN A REGULATORY AREA			
VOC	0.008	250	No
NOx	0.063	250	No
CO	0.049	250	No
SOx	0.005	250	No
PM 10	0.008	250	No
PM 2.5	0.008	250	No
Pb	0.000	25	No
NH3	0.000	250	No
CO2e	50.6		

#### 2025 - (Steady State)

Pollutant	Action Emissions (ton/yr)	INSIGNIFICANCE INDICATOR	
		Indicator (ton/yr)	Exceedance (Yes or No)
NOT IN A REGULATORY AREA			
VOC	0.008	250	No
NOx	0.063	250	No
CO	0.049	250	No
SOx	0.005	250	No
PM 10	0.008	250	No
PM 2.5	0.008	250	No
Pb	0.000	25	No
NH3	0.000	250	No
CO2e	50.6		



# **AIR CONFORMITY APPLICABILITY MODEL REPORT RECORD OF AIR ANALYSIS (ROAA)**

None of estimated annual net emissions associated with this action are above the insignificance indicators, indicating no significant impact to air quality. Therefore, the action will not cause or contribute to an exceedance on one or more NAAQSs. No further air assessment is needed.

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Paul Sanford, Environmental Planner

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DATE

**Draft**  
**Environmental Assessment for 8 Construction Sites Tyndall Air Force Base, Florida**

**APPENDIX E UMAM ANALYSIS**

**UNIFORM WETLAND MITIGATION ASSESSMENT WORKSHEET - PART I - IMPACT**  
**Form 62-345.900(2), F.A.C. (See Sections 62-345.400 F.A.C.)**

Site/Project Name <b>State and Federal Waters Evaluation and Delineation at Tyndall Air Force Base, Florida</b>		Application Number		Assessment Area Name or Number <b>WL005 (Expeditionary/Encampment Rds)</b>	
FLUCCs code <b>615 - Stream and lake swamps</b>		Further classification (optional) <b>PFO4 (Palustrine, forested, needle-leaved evergreen)</b>		Impact Type <b>Direct Impact</b>	
Assessment Area Size <b>0.10 Acres</b>		Basin/Watershed Name/Number <b>HUC Basin 03140101 / St. Andrew-St. Joseph Bays</b>		Affected Waterbody (Class) <b>Class III</b>	
Special Classification (i.e.OFW, AP, other local/state/federal designation of importance) <b>None</b>		Geographic relationship to and hydrologic connection with wetlands, other surface water, uplands <b>AA is along gravel road in area of cleared pine plantation. Water storage tank to the west; pine plantation and wetland habitat to the east; US 98 to the south. Pine plantation and upland habitat to the north. Fencing occurs along US 98. Portions of AA may have been within planted pine area. AA is bisected by roadway and is connected via a culvert. AA is part of natural drainage that connects to East Bay.</b>			
Assessment area description <b>Deeper area of wetland occurs on east side. AA was ponded to several inches on the east side. Water lillies (Nymphaea odorata) and swamp tupelo (Nyssa biflora) were observed in this deeper part of AA. Other species observed included titi (Cyrilla racemiflora), southern umbrella sedge (Fuirena scirpoidea), sparse slash pine (Pinus elliottii), sweet bay (Magnolia virginiana), swamp bay (Persea palustris), gallberry (ilex glabra). AA on west side is largely comprised of bay species. AA receives drainage from gravel roadway.</b>					
Significant Nearby Features <b>access road, water storage tank, US 98</b>				Uniqueness (considering the relative rarity in relation to the regional landscape.) <b>not unique</b>	
Functions <b>Water quality improvement, groundwater recharge, plant habitat, and wildlife habitat for breeding, nesting and denning.</b>				Mitigation for previous permit/other historic use <b>None known</b>	
Anticipated Wildlife Utilization Based on Literature Review (List of species that are representative of the assessment area and reasonably expected to be found ) <b>Various amphibians and reptiles including salamanders, frogs, snakes and turtles, turkeys, birds of prey, such as hawks, owls and kites, songbird species (i.e., cardinals, mockingbirds, warblers, blue jays), woodpeckers, and mammals such as rodents, grey squirrels, deer, opossum, raccoons, black bears, and bobcats..</b>				Anticipated Utilization by Listed Species (List species, their legal classification (E, T, SSC), type of use, and intensity of use of the assessment area) <b>Wood stork (T), and various state listed wading birds</b>	
Observed Evidence of Wildlife Utilization (List species directly observed, or other signs such as tracks, droppings, casings, nests, etc.): <b>none</b>					
Additional relevant factors: <b>none</b>					
Assessment conducted by: <b>RM/CR (AECOM)</b>				Assessment date(s): <b>10/6/2020 - 10/10/2020</b>	



UNIFORM WETLAND MITIGATION ASSESSMENT WORKSHEET - PART II - IMPACT  
Form 62-345.900(2), F.A.C. (See Sections 62-345.500 and .600, F.A.C.)

Site/Project Name: <b>State and Federal Waters Evaluation and Delineation at Tyndall Air Force Base, Florida</b>		Application Number: -		Assessment Area Name or Number: <b>WL005</b> <b>(Expeditionary/Encampment Rds)</b>	
Impact or Mitigation: <b>Impact</b>		Assessment Conducted by: <b>RM/CR (AECOM)</b>		Assessment Date: <b>10/6/2020 - 10/10/2020</b>	
Scoring Guidance		Optimal (10)		Moderate(7)	
Minimal (4)		Not Present (0)			
The scoring of each indicator is based on what would be suitable for the type of wetland or surface water assessed		Condition is optimal and fully supports wetland/surface water functions		Condition is less than optimal, but sufficient to maintain most wetland/surface water functions	
Minimal level of support of wetland/surface water functions		Condition is insufficient to provide wetland/surface water functions			
Enter Notes below (do NOT score each subcategory individually)					
.500(6)(a) Location and Landscape Support		a. Quality and quantity of <b>habitat support</b> outside of AA.		Adjacent to developed and undeveloped habitat	
		b. <b>Invasive plant species</b> in proximity to AA.		Minimal	
		c. <b>Wildlife access</b> to and from AA (proximity and barriers).		Barriers include clearing, fencing, development, roadways	
		d. <b>Downstream benefits</b> provided to fish and wildlife.		Minimal	
		e. Adverse impacts to wildlife in AA from <b>land uses</b> outside of AA.		Developed lands surround the AA	
		f. <b>Hydrologic impediments and flow restrictions.</b>		Minimal impacts to hydrologic flow	
		g. <b>Dependency</b> of downstream habitats on quantity or quality of discharges.		Minimal benefits from discharges	
		h. Protection of wetland functions provided by uplands ( <b>upland</b> AAs only).		N/A	
Additional Notes:		Habitats outside AA include developed and undeveloped habitats. Habitats represent some of the habitats needed to fulfill life history of wildlife. Water storage tank near AA. Wildlife habitat limited by clearing of habitat, development, and fencing along US 98. Minimal invasive exotic or other invasive plant species observed around AA. Some land uses outside of the AA have only minor or moderate adverse impacts to wildlife. AA bisected by roadway.			
Current		With Impact			
6		0			
.500(6)(b) Water Environment (n/a for uplands)		a. Appropriateness of <b>water levels and flows.</b>		Appropriate	
		b. Reliability of <b>water level indicators.</b>		Not distinct	
		c. Appropriateness of <b>soil moisture.</b>		Soils saturated to surface	
		d. <b>Flow rates</b> /points of discharge.		Restricted	
		e. <b>Fire history</b> (frequency/severity).		N/A	
		f. <b>Appropriate vegetative and/or benthic zonation.</b>		Appropriate	
		g. <b>Hydrologic stress</b> on vegetation.		Minimal	
		h. <b>Use by animals</b> with hydrologic requirements.		Less than expected	
		i. <b>Plant community composition</b> associated with water quality (i.e., plants tolerant of poor WQ).		Average	
		j. <b>Water quality of standing water by observation</b> (I.e., discoloration, turbidity).		Good	
		k. <b>Water quality data</b> for the type of community.		N/A	
		l. <b>Water depth, wave energy, and currents.</b>		N/A	
Additional Notes:		Water levels appear appropriate on east side of AA and lower than expected on west side of AA. Culvert restricts flow. Drainage patterns have been affected by past activities related to silviculture. Water level indicators are not distinct in areas. Wetland species throughout. No evidence of fire history and normal fire regime likely suppressed due to pine plantation. No evidence of use by animal species with specific hydrological requirements.			
Current		With Impact			
7		0			
.500(6)(c) Community Structure  X Vegetation  Benthic  Both		I. Appropriate/desirable species		Appropriate species	
		II. Invasive/exotic plant species		Minimal amount of invasive/exotic species	
		III. Regeneration/recruitment		Normal	
		IV. Age, size distribution.		Typical	
		V. Snags, dens, cavity, etc.		None	
		VI. Plants' condition.		Good	
		VII. Land management practices.		Fair	
		VIII. Topographic features (refugia, channels, hummocks).		Not optimal	
		IX. Submerged vegetation (only score if present).		N/A	
		X. Upland assessment area		N/A	
Additional Notes:		Most plant species cover is appropriate and desirable. Torpedo grass (Panicum repens) was observed throughout. Small amount of Japanese climbing fern (Lygodium japonicum) observed on west side. Normal regenreation and recruitment affected by past hurricane and clearing for pine plantation. Plants generally in good condition. Land management activites generally appropriate but fire suppression has affected plant community. Woody debris higher than expected in AA although largely due to hurricane. Topographic features slightly less than optimal for system.			
Current		With Impact			
6		0			

Raw Score = Sum of above scores/30 (if uplands, divide by 20)	
Current	With Impact
0.6333333	0

Impact Acres =	0.10
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Functional Loss (FL) [For Impact Assessment Areas]:	
FL = ID x Impact Acres =	0.063

Impact Delta (ID)	
Current - w/Impact	0.63333333

NOTE: If impact is proposed to be mitigated at a mitigation bank that was assessed using UMAM, then the credits required for mitigation is equal to Functional Loss (FL). If impact mitigation is proposed at a mitigation bank that was not assessed using UMAM, then UMAM cannot be used to assess impacts; use the assessment method of the mitigation bank.

Additional Notes:

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**UNIFORM WETLAND MITIGATION ASSESSMENT WORKSHEET - PART I - IMPACT**  
**Form 62-345.900(2), F.A.C. (See Sections 62-345.400 F.A.C.)**

Site/Project Name <b>State and Federal Waters Evaluation and Delineation at Tyndall Air Force Base, Florida</b>		Application Number		Assessment Area Name or Number <b>WL006 (Expeditionary/Encampment Rds)</b>	
FLUCCs code <b>615 - Stream and lake swamps</b>		Further classification (optional) <b>PFO4 (Palustrine, forested, needle-leaved evergreen)</b>		Impact Type <b>Direct Impact</b>	
Assessment Area Size <b>0.04 Acres</b>					
Basin/Watershed Name/Number <b>HUC Basin 03140101 / St. Andrew-St. Joseph Bays</b>		Affected Waterbody (Class) <b>Class III</b>		Special Classification (i.e.OFW, AP, other local/state/federal designation of importance) <b>None</b>	
Geographic relationship to and hydrologic connection with wetlands, other surface water, uplands					
<p><b>AA is along gravel road in area of cleared pine plantation. Water storage tank to the west; pine plantation and wetland habitat to the east; US 98 to the south. Pine plantation and upland habitat to the north. Fencing occurs along US 98. Portions of AA may have been within planted pine area. AA is bisected by roadway and is connected via a culvert. AA is part of natural drainage that connects to East Bay.</b></p>					
Assessment area description					
<p><b>Deeper area of wetland occurs on east side. AA was ponded to several inches on the east side. Water lillies (Nymphaea odorata) and swamp tupelo (Nyssa biflora) were observed in this deeper part of AA. Other species observed included titi (Cyrilla racemiflora), southern umbrella sedge (Fuirena scirpoidea), sparse slash pine (Pinus elliottii), sweet bay (Magnolia virginiana), swamp bay (Persea palustris), gallberry (ilex glabra). AA on west side is largely comprised of bay species. AA receives drainage from gravel roadway.</b></p>					
Significant Nearby Features  <b>access road, water storage tank, US 98</b>				Uniqueness (considering the relative rarity in relation to the regional landscape.)  <b>not unique</b>	
Functions  <b>Water quality improvement, groundwater recharge, plant habitat, and wildlife habitat for breeding, nesting and denning.</b>				Mitigation for previous permit/other historic use  <b>None known</b>	
Anticipated Wildlife Utilization Based on Literature Review (List of species that are representative of the assessment area and reasonably expected to be found )  <b>Various amphibians and reptiles including salamanders, frogs, snakes and turtles, turkeys, birds of prey, such as hawks, owls and kites, songbird species (i.e., cardinals, mockingbirds, warblers, blue jays), woodpeckers, and mammals such as rodents, grey squirrels, deer, opossum, raccoons, black bears, and bobcats..</b>				Anticipated Utilization by Listed Species (List species, their legal classification (E, T, SSC), type of use, and intensity of use of the assessment area)  <b>Wood stork (T), and various state listed wading birds</b>	
Observed Evidence of Wildlife Utilization (List species directly observed, or other signs such as tracks, droppings, casings, nests, etc.):  <b>none</b>					
Additional relevant factors:  <b>none</b>					
Assessment conducted by: <b>RM/CR (AECOM)</b>				Assessment date(s): <b>10/6/2020 - 10/10/2020</b>	

UNIFORM WETLAND MITIGATION ASSESSMENT WORKSHEET - PART II - IMPACT  
Form 62-345.900(2), F.A.C. (See Sections 62-345.500 and .600, F.A.C.)

Site/Project Name: <b>State and Federal Waters Evaluation and Delineation at Tyndall Air Force Base, Florida</b>		Application Number: -		Assessment Area Name or Number: <b>WL006</b> <b>(Expeditionary/Encampment Rds)</b>	
Impact or Mitigation: <b>Impact</b>		Assessment Conducted by: <b>RM/CR (AECOM)</b>		Assessment Date: <b>10/6/2020 - 10/10/2020</b>	
Scoring Guidance		Optimal (10)		Moderate(7)	
Minimal (4)		Not Present (0)			
The scoring of each indicator is based on what would be suitable for the type of wetland or surface water assessed		Condition is optimal and fully supports wetland/surface water functions		Condition is less than optimal, but sufficient to maintain most wetland/surface water functions	
Minimal level of support of wetland/surface water functions		Condition is insufficient to provide wetland/surface water functions			
Enter Notes below (do NOT score each subcategory individually)					
.500(6)(a) Location and Landscape Support		a. Quality and quantity of <b>habitat support</b> outside of AA.		Adjacent to developed and undeveloped habitat	
		b. <b>Invasive plant species</b> in proximity to AA.		Minimal	
		c. <b>Wildlife access</b> to and from AA (proximity and barriers).		Barriers include clearing, fencing, development, roadways	
		d. <b>Downstream benefits</b> provided to fish and wildlife.		Minimal	
		e. Adverse impacts to wildlife in AA from <b>land uses</b> outside of AA.		Developed lands surround the AA	
		f. <b>Hydrologic impediments and flow restrictions.</b>		Minimal impacts to hydrologic flow	
		g. <b>Dependency</b> of downstream habitats on quantity or quality of discharges.		Minimal benefits from discharges	
		h. Protection of wetland functions provided by uplands ( <b>upland</b> AAs only).		N/A	
Additional Notes:		Habitats outside AA include developed and undeveloped habitats. Habitats represent some of the habitats needed to fulfill life history of wildlife. Water storage tank near AA. Wildlife habitat limited by clearing of habitat, development, and fencing along US 98. Minimal invasive exotic or other invasive plant species observed around AA. Some land uses outside of the AA have only minor or moderate adverse impacts to wildlife. AA bisected by roadway.			
Current		With Impact			
6		0			
.500(6)(b) Water Environment (n/a for uplands)		a. Appropriateness of <b>water levels and flows.</b>		Appropriate	
		b. Reliability of <b>water level indicators.</b>		Not distinct	
		c. Appropriateness of <b>soil moisture.</b>		Soils saturated to surface	
		d. <b>Flow rates</b> /points of discharge.		Restricted	
		e. <b>Fire history</b> (frequency/severity).		N/A	
		f. <b>Appropriate vegetative and/or benthic zonation.</b>		Appropriate	
		g. <b>Hydrologic stress</b> on vegetation.		Minimal	
		h. <b>Use by animals</b> with hydrologic requirements.		Less than expected	
		i. <b>Plant community composition</b> associated with water quality (i.e., plants tolerant of poor WQ).		Average	
		j. <b>Water quality of standing water by observation</b> (I.e., discoloration, turbidity).		Good	
		k. <b>Water quality data</b> for the type of community.		N/A	
		l. <b>Water depth, wave energy, and currents.</b>		N/A	
Additional Notes:		Water levels appear appropriate on east side of AA and lower than expected on west side of AA. Culvert restricts flow. Drainage patterns have been affected by past activities related to silviculture. Water level indicators are not distinct in areas. Wetland species throughout. No evidence of fire history and normal fire regime likely suppressed due to pine plantation. No evidence of use by animal species with specific hydrological requirements.			
Current		With Impact			
7		0			
.500(6)(c) Community Structure  X Vegetation  Benthic  Both		I. Appropriate/desirable species		Appropriate species	
		II. Invasive/exotic plant species		Minimal amount of invasive/exotic species	
		III. Regeneration/recruitment		Normal	
		IV. Age, size distribution.		Typical	
		V. Snags, dens, cavity, etc.		None	
		VI. Plants' condition.		Good	
		VII. Land management practices.		Fair	
		VIII. Topographic features (refugia, channels, hummocks).		Not optimal	
		IX. Submerged vegetation (only score if present).		N/A	
		X. Upland assessment area		N/A	
Additional Notes:		Most plant species cover is appropriate and desirable. Torpedo grass (Panicum repens) was observed throughout. Small amount of Japanese climbing fern (Lygodium japonicum) observed on west side. Normal regenreation and recruitment affected by past hurricane and clearing for pine plantation. Plants generally in good condition. Land management activites generally appropriate but fire suppression has affected plant community. Woody debris higher than expected in AA although largely due to hurricane. Topographic features slightly less than optimal for system.			
Current		With Impact			
6		0			

Raw Score = Sum of above scores/30 (if uplands, divide by 20)	
Current	With Impact
0.6333333	0

Impact Acres =	0.04
----------------	------

Functional Loss (FL) [For Impact Assessment Areas]:	
FL = ID x Impact Acres =	0.025

Impact Delta (ID)	
Current - w/Impact	0.63333333

NOTE: If impact is proposed to be mitigated at a mitigation bank that was assessed using UMAM, then the credits required for mitigation is equal to Functional Loss (FL). If impact mitigation is proposed at a mitigation bank that was not assessed using UMAM, then UMAM cannot be used to assess impacts; use the assessment method of the mitigation bank.

Additional Notes:

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**UNIFORM WETLAND MITIGATION ASSESSMENT WORKSHEET - PART I - IMPACT**  
**Form 62-345.900(2), F.A.C. (See Sections 62-345.400 F.A.C.)**

Site/Project Name <b>State and Federal Waters Evaluation and Delineation at Tyndall Air Force Base, Florida</b>		Application Number		Assessment Area Name or Number <b>WL007 (Expeditionary/Encampment Rds)</b>	
FLUCCs code <b>615 - Stream and lake swamps</b>		Further classification (optional) <b>PFO4 (Palustrine, forested, broad-leaved evergreen)</b>		Impact Type <b>Direct Impact</b>	
Assessment Area Size <b>0.19 Acres</b>					
Basin/Watershed Name/Number <b>HUC Basin 03140101 / St. Andrew-St. Joseph Bays</b>		Affected Waterbody (Class) <b>Class III</b>		Special Classification (i.e.OFW, AP, other local/state/federal designation of importance) <b>None</b>	
Geographic relationship to and hydrologic connection with wetlands, other surface water, uplands					
<p><b>AA is along gravel road in area of cleared pine plantation. Water storage tank to the west; pine plantation and wetland habitat to the east; US 98 to the south. Pine plantation and upland habitat to the north. Fencing occurs along US 98. Portions of AA may have been within planted pine area. AA is bisected by roadway and is connected via a culvert. AA is part of natural drainage that connects to East Bay.</b></p>					
Assessment area description					
<p><b>Deeper area of wetland occurs on east side. AA was ponded to several inches on the east side. Cattails (Typha latifolia ) were observed in this deeper part of AA. Other species observed included titi (Cyrilla racemiflora), southern umbrella sedge (Fuirena scirpoidea), sparse slash pine (Pinus elliottii), sweet bay (Magnolia virginiana), swamp bay (Persea palustris), gallberry (ilex glabra), and St. John's wort (Hypericum fasciculatum). AA on west side is largely comprised of bay species. AA receives drainage from gravel roadway.</b></p>					
Significant Nearby Features  <b>access road, water storage tank, US 98</b>				Uniqueness (considering the relative rarity in relation to the regional landscape.)  <b>not unique</b>	
Functions  <b>Water quality improvement, groundwater recharge, plant habitat, and wildlife habitat for breeding, nesting and denning.</b>				Mitigation for previous permit/other historic use  <b>None known</b>	
Anticipated Wildlife Utilization Based on Literature Review (List of species that are representative of the assessment area and reasonably expected to be found )  <b>Various amphibians and reptiles including salamanders, frogs, snakes and turtles, turkeys, birds of prey, such as hawks, owls and kites, songbird species (i.e., cardinals, mockingbirds, warblers, blue jays), woodpeckers, and mammals such as rodents, grey squirrels, deer, opossum, raccoons, black bears, and bobcats..</b>				Anticipated Utilization by Listed Species (List species, their legal classification (E, T, SSC), type of use, and intensity of use of the assessment area)  <b>Wood stork (T), and various state listed wading birds</b>	
Observed Evidence of Wildlife Utilization (List species directly observed, or other signs such as tracks, droppings, casings, nests, etc.):  <b>none</b>					
Additional relevant factors:  <b>none</b>					
Assessment conducted by: <b>RM/CR (AECOM)</b>				Assessment date(s): <b>10/6/2020 - 10/10/2020</b>	

UNIFORM WETLAND MITIGATION ASSESSMENT WORKSHEET - PART II - IMPACT  
Form 62-345.900(2), F.A.C. (See Sections 62-345.500 and .600, F.A.C.)

Site/Project Name: <b>State and Federal Waters Evaluation and Delineation at Tyndall Air Force Base, Florida</b>		Application Number: -		Assessment Area Name or Number: <b>WL007 (Expeditionary/Encampment Rds)</b>	
Impact or Mitigation: <b>Impact</b>		Assessment Conducted by: <b>RM/CR (AECOM)</b>		Assessment Date: <b>10/6/2020 - 10/10/2020</b>	
Scoring Guidance		Optimal (10)		Moderate(7)	
Minimal (4)		Not Present (0)			
The scoring of each indicator is based on what would be suitable for the type of wetland or surface water assessed		Condition is optimal and fully supports wetland/surface water functions		Condition is less than optimal, but sufficient to maintain most wetland/surface water functions	
Minimal level of support of wetland/surface water functions		Condition is insufficient to provide wetland/surface water functions			
Enter Notes below (do NOT score each subcategory individually)					
.500(6)(a) Location and Landscape Support		a. Quality and quantity of <b>habitat support</b> outside of AA.		Adjacent to developed and undeveloped habitat	
		b. <b>Invasive plant species</b> in proximity to AA.		Minimal	
		c. <b>Wildlife access</b> to and from AA (proximity and barriers).		Barriers include clearing, fencing, development, roadways	
		d. <b>Downstream benefits</b> provided to fish and wildlife.		Minimal	
		e. Adverse impacts to wildlife in AA from <b>land uses</b> outside of AA.		Developed lands surround the AA	
		f. <b>Hydrologic impediments and flow restrictions.</b>		Minimal impacts to hydrologic flow	
		g. <b>Dependency</b> of downstream habitats on quantity or quality of discharges.		Minimal benefits from discharges	
		h. Protection of wetland functions provided by uplands ( <b>upland</b> AAs only).		N/A	
Additional Notes:		Habitats outside AA include developed and undeveloped habitats. Habitats represent some of the habitats needed to fulfill life history of wildlife. Water storage tank near AA. Wildlife habitat limited by clearing of habitat, development, and fencing along US 98. Minimal invasive exotic or other invasive plant species observed around AA. Some land uses outside of the AA have only minor or moderate adverse impacts to wildlife. AA bisected by roadway.			
Current		With Impact			
6		0			
.500(6)(b) Water Environment (n/a for uplands)		a. Appropriateness of <b>water levels and flows.</b>		Appropriate	
		b. Reliability of <b>water level indicators.</b>		Not distinct	
		c. Appropriateness of <b>soil moisture.</b>		Soils saturated to surface	
		d. <b>Flow rates</b> /points of discharge.		Restricted	
		e. <b>Fire history</b> (frequency/severity).		N/A	
		f. <b>Appropriate vegetative and/or benthic zonation.</b>		Appropriate	
		g. <b>Hydrologic stress</b> on vegetation.		Minimal	
		h. <b>Use by animals</b> with hydrologic requirements.		Less than expected	
		i. <b>Plant community composition</b> associated with water quality (i.e., plants tolerant of poor WQ).		Average	
		j. <b>Water quality of standing water by observation</b> (I.e., discoloration, turbidity).		Slight degradation in quality	
		k. <b>Water quality data</b> for the type of community.		N/A	
		l. <b>Water depth, wave energy, and currents.</b>		N/A	
Additional Notes:		Water levels appear appropriate on east side of AA and lower than expected on west side of AA. Culvert restricts flow. Drainage patterns have been affected by past activities related to silviculture. Water level indicators are not distinct in areas. Wetland species throughout. No evidence of fire history and normal fire regime likely suppressed due to pine plantation. No evidence of use by animal species with specific hydrological requirements. Plant community composition is characterized by species tolerant of and associated with water quality degradation (cattails).			
Current		With Impact			
6		0			
.500(6)(c) Community Structure		I. Appropriate/desirable species		Appropriate species	
		II. Invasive/exotic plant species		Minimal amount of invasive/exotic species	
		III. Regeneration/recruitment		Normal	
		IV. Age, size distribution.		Typical	
		V. Snags, dens, cavity, etc.		None	
		VI. Plants' condition.		Good	
		VII. Land management practices.		Fair	
		VIII. Topographic features (refugia, channels, hummocks).		Not optimal	
		IX. Submerged vegetation (only score if present).		N/A	
		X. Upland assessment area		N/A	
Additional Notes:		Most plant species cover is appropriate and desirable. Cattails dominant on east side of wetland .Normal regenreation and recruitment affected by past hurricane and clearing for pine plantation. Plants generally in good condition. Land management activites generally appropriate but fire suppression has affected plant community. Woody debris higher than expected in AA although largely due to hurricane. Topographic features slightly less than optimal for system.			
Current		With Impact			
6		0			

Raw Score = Sum of above scores/30 (if uplands, divide by 20)	
Current	With Impact
0.6	0

Impact Delta (ID)	
Current - w/Impact	0.6

Impact Acres =	0.19
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Functional Loss (FL) [For Impact Assessment Areas]:	
FL = ID x Impact Acres =	0.114

NOTE: If impact is proposed to be mitigated at a mitigation bank that was assessed using UMAM, then the credits required for mitigation is equal to Functional Loss (FL). If impact mitigation is proposed at a mitigation bank that was not assessed using UMAM, then UMAM cannot be used to assess impacts; use the assessment method of the mitigation bank.

Additional Notes:

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**UNIFORM WETLAND MITIGATION ASSESSMENT WORKSHEET - PART I - IMPACT**  
**Form 62-345.900(2), F.A.C. (See Sections 62-345.400 F.A.C.)**

Site/Project Name <b>State and Federal Waters Evaluation and Delineation at Tyndall Air Force Base, Florida</b>		Application Number		Assessment Area Name or Number <b>WL008 (Expeditionary/Encampment Rds)</b>	
FLUCCs code <b>615 - Stream and lake swamps</b>		Further classification (optional) <b>PFO4 (Palustrine, forested, broad-leaved evergreen)</b>		Impact Type <b>Direct Impact</b>	
Assessment Area Size <b>0.13 Acres</b>					
Basin/Watershed Name/Number <b>HUC Basin 03140101 / St. Andrew-St. Joseph Bays</b>		Affected Waterbody (Class) <b>Class III</b>		Special Classification (i.e.OFW, AP, other local/state/federal designation of importance) <b>None</b>	
Geographic relationship to and hydrologic connection with wetlands, other surface water, uplands					
<p><b>AA is along gravel road in area of cleared pine plantation. Water storage tank to the west; pine plantation and wetland habitat to the east; US 98 to the south. Pine plantation and upland habitat to the north. Fencing occurs along US 98. Portions of AA may have been within planted pine area. AA is bisected by roadway and is connected via a culvert. AA is part of natural drainage that connects to East Bay.</b></p>					
Assessment area description					
<p><b>Deeper area of wetland occurs on east side. AA was ponded to several inches on the east side. Cattails (Typha latifolia ) were observed in this deeper part of AA. Other species observed included titi (Cyrilla racemiflora), southern umbrella sedge (Fuirena scirpoidea), sparse slash pine (Pinus elliottii), sweet bay (Magnolia virginiana), swamp bay (Persea palustris), gallberry (ilex glabra), and St. John's wort (Hypericum fasciculatum). AA on west side is largely comprised of bay species. AA receives drainage from gravel roadway.</b></p>					
Significant Nearby Features  <b>access road, water storage tank, US 98</b>				Uniqueness (considering the relative rarity in relation to the regional landscape.)  <b>not unique</b>	
Functions  <b>Water quality improvement, groundwater recharge, plant habitat, and wildlife habitat for breeding, nesting and denning.</b>				Mitigation for previous permit/other historic use  <b>None known</b>	
Anticipated Wildlife Utilization Based on Literature Review (List of species that are representative of the assessment area and reasonably expected to be found )  <b>Various amphibians and reptiles including salamanders, frogs, snakes and turtles, turkeys, birds of prey, such as hawks, owls and kites, songbird species (i.e., cardinals, mockingbirds, warblers, blue jays), woodpeckers, and mammals such as rodents, grey squirrels, deer, opossum, raccoons, black bears, and bobcats..</b>				Anticipated Utilization by Listed Species (List species, their legal classification (E, T, SSC), type of use, and intensity of use of the assessment area)  <b>Wood stork (T), and various state listed wading birds</b>	
Observed Evidence of Wildlife Utilization (List species directly observed, or other signs such as tracks, droppings, casings, nests, etc.):  <b>none</b>					
Additional relevant factors:  <b>none</b>					
Assessment conducted by: <b>RM/CR (AECOM)</b>				Assessment date(s): <b>10/6/2020 - 10/10/2020</b>	



UNIFORM WETLAND MITIGATION ASSESSMENT WORKSHEET - PART II - IMPACT  
Form 62-345.900(2), F.A.C. (See Sections 62-345.500 and .600, F.A.C.)

Site/Project Name: <b>State and Federal Waters Evaluation and Delineation at Tyndall Air Force Base, Florida</b>		Application Number: -		Assessment Area Name or Number: <b>WL008</b> <b>(Expeditionary/Encampment Rds)</b>	
Impact or Mitigation: <b>Impact</b>		Assessment Conducted by: <b>RM/CR (AECOM)</b>		Assessment Date: <b>10/6/2020 - 10/10/2020</b>	
Scoring Guidance		Optimal (10)		Moderate(7)	
Minimal (4)		Not Present (0)			
The scoring of each indicator is based on what would be suitable for the type of wetland or surface water assessed		Condition is optimal and fully supports wetland/surface water functions		Condition is less than optimal, but sufficient to maintain most wetland/surface water functions	
Minimal level of support of wetland/surface water functions		Condition is insufficient to provide wetland/surface water functions			
Enter Notes below (do NOT score each subcategory individually)					
.500(6)(a) Location and Landscape Support		a. Quality and quantity of <b>habitat support</b> outside of AA.		Adjacent to developed and undeveloped habitat	
		b. <b>Invasive plant species</b> in proximity to AA.		Minimal	
		c. <b>Wildlife access</b> to and from AA (proximity and barriers).		Barriers include clearing, fencing, development, roadways	
		d. <b>Downstream benefits</b> provided to fish and wildlife.		Minimal	
		e. Adverse impacts to wildlife in AA from <b>land uses</b> outside of AA.		Developed lands surround the AA	
		f. <b>Hydrologic impediments and flow restrictions.</b>		Minimal impacts to hydrologic flow	
		g. <b>Dependency</b> of downstream habitats on quantity or quality of discharges.		Minimal benefits from discharges	
		h. Protection of wetland functions provided by uplands ( <b>upland</b> AAs only).		N/A	
Additional Notes:		Habitats outside AA include developed and undeveloped habitats. Habitats represent some of the habitats needed to fulfill life history of wildlife. Water storage tank near AA. Wildlife habitat limited by clearing of habitat, development, and fencing along US 98. Minimal invasive exotic or other invasive plant species observed around AA. Some land uses outside of the AA have only minor or moderate adverse impacts to wildlife. AA bisected by roadway.			
Current		With Impact			
6		0			
.500(6)(b) Water Environment (n/a for uplands)		a. Appropriateness of <b>water levels and flows.</b>		Appropriate	
		b. Reliability of <b>water level indicators.</b>		Not distinct	
		c. Appropriateness of <b>soil moisture.</b>		Soils saturated to surface	
		d. <b>Flow rates</b> /points of discharge.		Restricted	
		e. <b>Fire history</b> (frequency/severity).		N/A	
		f. <b>Appropriate vegetative and/or benthic zonation.</b>		Appropriate	
		g. <b>Hydrologic stress</b> on vegetation.		Minimal	
		h. <b>Use by animals</b> with hydrologic requirements.		Less than expected	
		i. <b>Plant community composition</b> associated with water quality (i.e., plants tolerant of poor WQ).		Average	
		j. <b>Water quality of standing water by observation</b> (I.e., discoloration, turbidity).		Slight degradation in quality	
		k. <b>Water quality data</b> for the type of community.		N/A	
		l. <b>Water depth, wave energy, and currents.</b>		N/A	
Additional Notes:		Water levels appear appropriate on east side of AA and lower than expected on west side of AA. Culvert restricts flow. Drainage patterns have been affected by past activities related to silviculture. Water level indicators are not distinct in areas. Wetland species throughout. No evidence of fire history and normal fire regime likely suppressed due to pine plantation. No evidence of use by animal species with specific hydrological requirements. Plant community composition is characterized by species tolerant of and associated with water quality degradation (cattails).			
Current		With Impact			
6		0			
.500(6)(c) Community Structure		I. Appropriate/desirable species		Appropriate species	
		II. Invasive/exotic plant species		Minimal amount of invasive/exotic species	
		III. Regeneration/recruitment		Normal	
		IV. Age, size distribution.		Typical	
		V. Snags, dens, cavity, etc.		None	
		VI. Plants' condition.		Good	
		VII. Land management practices.		Fair	
		VIII. Topographic features (refugia, channels, hummocks).		Not optimal	
		IX. Submerged vegetation (only score if present).		N/A	
		X. Upland assessment area		N/A	
Additional Notes:		Most plant species cover is appropriate and desirable. Cattails dominant on east side of wetland .Normal regenreation and recruitment affected by past hurricane and clearing for pine plantation. Plants generally in good condition. Land management activites generally appropriate but fire suppression has affected plant community. Woody debris higher than expected in AA although largely due to hurricane. Topographic features slightly less than optimal for system.			
Current		With Impact			
6		0			

Raw Score = Sum of above scores/30 (if uplands, divide by 20)	
Current	With Impact
0.6	0

Impact Delta (ID)	
Current - w/Impact	0.6

Impact Acres =	0.13
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Functional Loss (FL) [For Impact Assessment Areas]:	
FL = ID x Impact Acres =	0.078

NOTE: If impact is proposed to be mitigated at a mitigation bank that was assessed using UMAM, then the credits required for mitigation is equal to Functional Loss (FL). If impact mitigation is proposed at a mitigation bank that was not assessed using UMAM, then UMAM cannot be used to assess impacts; use the assessment method of the mitigation bank.

Additional Notes:

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**UNIFORM WETLAND MITIGATION ASSESSMENT WORKSHEET - PART I - IMPACT**  
**Form 62-345.900(2), F.A.C. (See Sections 62-345.400 F.A.C.)**

Site/Project Name <b>State and Federal Waters Evaluation and Delineation at Tyndall Air Force Base, Florida</b>		Application Number		Assessment Area Name or Number <b>WL011 (Flightline Water Main)</b>	
FLUCCs code <b>643 - Wet prairie</b>		Further classification (optional) <b>PEM1E (Palustrine, Emergent, Persistent, Seasonally Flooded/Saturated)</b>		Impact Type <b>Direct Impact</b>	
Assessment Area Size <b>1.63 Acres</b>					
Basin/Watershed Name/Number <b>HUC Basin 03140101 / St. Andrew-St. Joseph Bays</b>		Affected Waterbody (Class) <b>Class III</b>		Special Classification (i.e.OFW, AP, other local/state/federal designation of importance) <b>None</b>	
Geographic relationship to and hydrologic connection with wetlands, other surface water, uplands					
<p><b>AA is located on north end of airfield (airfield to the south). Harvested planted pine habitat occurs to the east, west, and north. East Bay is to the north. There are no landscape or manmade barriers to the bay. AA is hydrologically connected, via ditching, to other wetlands and to East Bay.</b></p>					
Assessment area description					
<p><b>AA is a freshwater system with direct connection to East bay through ditching. Portions of AA were planted pine habitat. Pines have been harvested and area appears to have been roller chopped. Pine slash observed throughout AA and two debris piles observed adjacent to AA. Flow in drainage ditch has been restricted by clearing and grading activites liekly casuing area to be wetter than normal. Species observed red root (Lachnanthes caroliniana), titi (Cyrilla racemiflora), southern umbrella sedge (Fuirena scirpoidea), warty panicum (Panicum verrucosa), saw palmetto (Serenoa repens), and gallberry (ilex glabra).</b></p>					
Significant Nearby Features				Uniqueness (considering the relative rarity in relation to the regional landscape.)	
<b>Cleared pine plantation, AF building, and access road.</b>				<b>Not unique</b>	
Functions				Mitigation for previous permit/other historic use	
<b>Water quality improvement, groundwater recharge, plant habitat, and wildlife habitat for breeding, nesting and denning.</b>				<b>None known</b>	
Anticipated Wildlife Utilization Based on Literature Review (List of species that are representative of the assessment area and reasonably expected to be found )				Anticipated Utilization by Listed Species (List species, their legal classification (E, T, SSC), type of use, and intensity of use of the assessment area)	
<b>Various amphibians and reptiles including salamanders, frogs, snakes and turtles, turkeys, birds of prey, such as hawks, owls and kites, songbird species (i.e., cardinals, mockingbirds, warblers, blue jays), woodpeckers, and mammals such as rodents, grey squirrels, deer, opossum, raccoons, black bears, and bobcats..</b>				<b>Wood stork (T), and various state listed wading birds</b>	
Observed Evidence of Wildlife Utilization (List species directly observed, or other signs such as tracks, droppings, casings, nests, etc.):					
<b>None observed</b>					
Additional relevant factors:					
<b>None</b>					
Assessment conducted by:				Assessment date(s):	
<b>RM/CR (AECOM)</b>				<b>10/6/2020 - 10/10/2020</b>	

UNIFORM WETLAND MITIGATION ASSESSMENT WORKSHEET - PART II - IMPACT  
Form 62-345.900(2), F.A.C. (See Sections 62-345.500 and .600, F.A.C.)

Site/Project Name: <b>State and Federal Waters Evaluation and Delineation at Tyndall Air Force Base, Florida</b>		Application Number: -		Assessment Area Name or Number: <b>WL011 (Flightline Water Main)</b>	
Impact or Mitigation: <b>Impact</b>		Assessment Conducted by: <b>RM/CR (AECOM)</b>		Assessment Date: <b>10/6/2020 - 10/10/2020</b>	
Scoring Guidance		Optimal (10)		Moderate(7)	
The scoring of each indicator is based on what would be suitable for the type of wetland or surface water assessed		Condition is optimal and fully supports wetland/surface water functions		Condition is less than optimal, but sufficient to maintain most wetland/surface water functions	
		Minimal (4)		Not Present (0)	
		Minimal level of support of wetland/surface water functions		Condition is insufficient to provide wetland/surface water functions	
Enter Notes below (do NOT score each subcategory individually)					
.500(6)(a) Location and Landscape Support		a. Quality and quantity of <b>habitat support</b> outside of AA.		Adjacent to planted pine	
		b. <b>Invasive plant species</b> in proximity to AA.		Minimal	
		c. <b>Wildlife access</b> to and from AA (proximity and barriers).		Barriers include clearing and airfield	
		d. <b>Downstream benefits</b> provided to fish and wildlife.		Minimal	
		e. Adverse impacts to wildlife in AA from <b>land uses</b> outside of AA.		Developed lands surround the AA	
		f. <b>Hydrologic impediments and flow restrictions.</b>		Minimal impacts to hydrologic flow	
		g. <b>Dependency</b> of downstream habitats on quantity or quality of discharges.		Minimal benefits from discharges	
Current		With Impact		h. Protection of wetland functions provided by uplands ( <b>upland</b> AAs only).	
7		0		Additional Notes: Habitats outside AA largely comprised of undeveloped planted pine (cleared) habitats and represent most of the habitats needed to fulfill life history of wildlife. Adjacent pine plantations have been harvested and area appears to have been roller chopped. Wildlife habitat limited by clearing of habitat. Wildlife access is limited to the south by airfield. Minimal invasive exotic or other invasive plant species observed around AA. Most land uses outside of the AA have only minor or moderate adverse impacts to wildlife.	
.500(6)(b) Water Environment (n/a for uplands)		a. Appropriateness of <b>water levels and flows.</b>		Higher than expected	
		b. Reliability of <b>water level indicators.</b>		Distinct	
		c. Appropriateness of <b>soil moisture.</b>		Soils saturated to surface	
		d. <b>Flow rates</b> /points of discharge.		Restricted	
		e. <b>Fire history</b> (frequency/severity).		N/A	
		f. <b>Appropriate vegetative and/or benthic zonation.</b>		Appropriate	
		g. <b>Hydrologic stress</b> on vegetation.		Minimal	
		h. <b>Use by animals</b> with hydrologic requirements.		Less than expected	
		i. <b>Plant community composition</b> associated with water quality (i.e., plants tolerant of poor WQ).		Average	
		j. <b>Water quality of standing water by observation</b> (i.e., discoloration, turbidity).		Normal	
		k. <b>Water quality data</b> for the type of community.		N/A	
Current		With Impact		l. <b>Water depth, wave energy, and currents.</b>	
7		0		Additional Notes: Water levels appear higher than expected due to restriction of drainage ditch. Drainage patterns have been affected by past activities related to pine plantation. Water level indicators are distinct in areas. Wetland species throughout. No evidence of fire history and normal fire regime likely suppressed due to planted pine. No evidence of use by animal species with specific hydrological requirements.	
.500(6)(c) Community Structure  X Vegetation  Benthic  Both		I. Appropriate/desirable species		Appropriate species	
		II. Invasive/exotic plant species		Minimal amount of invasive/exotic species	
		III. Regeneration/recruitment		Normal	
		IV. Age, size distribution.		Typical	
		V. Snags, dens, cavity, etc.		None	
		VI. Plants' condition.		Good	
		VII. Land management practices.		Appropriate	
		VIII. Topographic features (refugia, channels, hummocks).		Less than optimal	
		IX. Submerged vegetation (only score if present).		N/A	
		X. Upland assessment area		N/A	
Current		With Impact		Additional Notes:	
8		0		Vegetation is minimal but largely comprised of native wetland vegetation. Plant species appear to have recently established in AA given past silviculture activities. AA contains some topographic features. AA provides some structural habitat.	

Raw Score = Sum of above scores/30 (if uplands, divide by 20)		Impact Acres =		1.63	
Current		With Impact			
0.7333333		0			
		Functional Loss (FL) [For Impact Assessment Areas]:			
		FL = ID x Impact Acres =		1.195	
Impact Delta (ID)					
Current - w/Impact		0.73333333			
		NOTE: If impact is proposed to be mitigated at a mitigation bank that was assessed using UMAM, then the credits required for mitigation is equal to Functional Loss (FL). If impact mitigation is proposed at a mitigation bank that was not assessed using UMAM, then UMAM cannot be used to assess impacts; use the assessment method of the mitigation bank.			
		Additional Notes:			



**UNIFORM WETLAND MITIGATION ASSESSMENT WORKSHEET - PART I - IMPACT**  
**Form 62-345.900(2), F.A.C. (See Sections 62-345.400 F.A.C.)**

Site/Project Name <b>State and Federal Waters Evaluation and Delineation at Tyndall Air Force Base, Florida</b>		Application Number		Assessment Area Name or Number <b>WL012 (Flightline Water Main)</b>	
FLUCCs code <b>643 - Wet Prairies</b>		Further classification (optional) <b>PEM1E - Palustrine, Emergent, Persistent, Seasonally Flooded / Saturated</b>		Impact Type <b>Direct Impact</b>	
Assessment Area Size <b>0.97 Acres</b>					
Basin/Watershed Name/Number <b>HUC Basin 03140101 / St. Andrew-St. Joseph Bays</b>		Affected Waterbody (Class) <b>Class III</b>		Special Classification (i.e.OFW, AP, other local/state/federal designation of importance) <b>None</b>	
Geographic relationship to and hydrologic connection with wetlands, other surface water, uplands					
<p>The assessment area (AA) is an isolated wetland system primarily surrounded by airport development, including runways and taxiways, Highway 98, and mowed and maintained airfield. Wet prairies that have historically been forested wetlands, but have been impacted from Hurricane Michael and logging activities, are located to the east of the AA, opposite the road along the eastern boundary of the AA. Mowed wet prairies are located on the air field within 0.5 mile of the AA to the west, southwest, and south.</p>					
Assessment area description					
<p>The AA has been mowed in the past and currently contains the following herbaceous vegetation: swamp titi (<i>Cyrilla racemiflora</i>), southern beaksedge (<i>Rhynchospora microcarpa</i>), broomsedge bluestem (<i>Andropogon virginicus</i>), Carolina redroot (<i>Lachnanthes caroliniana</i>), velvet panicum (<i>Dichanthelium scoparium</i>), nutrush (<i>Scleria</i> sp.), gallberry (<i>Ilex glabra</i>), and slash pine (<i>Pinus elliottii</i>). A minor amount of exotic torpedo grass (<i>Panicum repens</i>) was also observed within the AA. Soils within the AA were dark and sandy. At the wetland boundary, a high water table was observed at 12" inches below the surface and soils were saturated to the surface. Surface water 1" deep was observed within lower areas in the AA. Sources of hydrology include groundwater and collection of surface water from surrounding uplands and development.</p>					
Significant Nearby Features		Uniqueness (considering the relative rarity in relation to the regional landscape.)			
<p>Saint Andrew Bay is located approximately 1.64 miles southwest of the AA and Fred Bayou is located approximately 1.09 miles northwest of the AA.</p>		<p>The AA is not unique compared to the surrounding landscape, which contains similar wetlands east and northeast of the air field.</p>			
Functions		Mitigation for previous permit/other historic use			
<p>Water quality improvement, groundwater recharge, plant habitat, and wildlife habitat for breeding.</p>		<p>None known</p>			
Anticipated Wildlife Utilization Based on Literature Review (List of species that are representative of the assessment area and reasonably expected to be found )		Anticipated Utilization by Listed Species (List species, their legal classification (E, T, SSC), type of use, and intensity of use of the assessment area)			
<p>Various amphibians and reptiles including frogs and snakes, turkeys, birds of prey, such as hawks, owls and kites, songbird species (i.e., cardinals, mockingbirds, warblers, blue jays), woodpeckers, and mammals such as rodents, grey squirrels, deer, opossum, and raccoons.</p>		<p>Limited foraging potential for various wading birds (FL SSC).</p>			
Observed Evidence of Wildlife Utilization (List species directly observed, or other signs such as tracks, droppings, casings, nests, etc.):					
<p>None observed.</p>					
Additional relevant factors:					
<p>N/A</p>					
Assessment conducted by:		Assessment date(s):			
<p>Brooke Bayer and Ramon Mendieta (AECOM)</p>		<p>02/10/21</p>			

UNIFORM WETLAND MITIGATION ASSESSMENT WORKSHEET - PART II - IMPACT  
Form 62-345.900(2), F.A.C. (See Sections 62-345.500 and .600, F.A.C.)

Site/Project Name: <b>State and Federal Waters Evaluation and Delineation at Tyndall Air Force Base, Florida</b>		Application Number: -		Assessment Area Name or Number: <b>WL012 (Flightline Water Main)</b>	
Impact or Mitigation: <b>Impact</b>		Assessment Conducted by: <b>Brooke Bayer and Ramon Mendieta (AECOM)</b>		Assessment Date: <b>02/10/21</b>	
Scoring Guidance		Optimal (10)		Moderate(7)	
Minimal (4)		Not Present (0)			
The scoring of each indicator is based on what would be suitable for the type of wetland or surface water assessed		Condition is optimal and fully supports wetland/surface water functions		Condition is less than optimal, but sufficient to maintain most wetland/surface water functions	
Minimal level of support of wetland/surface water functions		Condition is insufficient to provide wetland/surface water functions			
Enter Notes below (do NOT score each subcategory individually)					
.500(6)(a) Location and Landscape Support		a. Quality and quantity of <b>habitat support</b> outside of AA.		Minimal close proximity to roadway and taxiways of airport	
		b. <b>Invasive plant species</b> in proximity to AA.		Moderate/ torpedo grass	
		c. <b>Wildlife access</b> to and from AA (proximity and barriers).		Limited by surrounding development and activities	
		d. <b>Downstream benefits</b> provided to fish and wildlife.		None	
		e. Adverse impacts to wildlife in AA from <b>land uses</b> outside of AA.		Loud noise and fast moving aircrafts and support vehicles	
		f. <b>Hydrologic impediments and flow restrictions.</b>		AA receives stormwater runoff from surrounding uplands	
		g. <b>Dependency</b> of downstream habitats on quantity or quality of discharges.		None	
h. Protection of wetland functions provided by uplands ( <b>upland</b> AAs only).		N/A			
Additional Notes:		The AA is an isolated wetland system that is primarily surrounded by airport development. US Highway 98, development, and planted pine habitat nearby. Habitats immediately surrounding AA have been affected by development.			
Current		With Impact			
6		0			
.500(6)(b) Water Environment (n/a for uplands)		a. Appropriateness of <b>water levels and flows.</b>		Generally appropriate	
		b. Reliability of <b>water level indicators.</b>		Surface water 1" deep	
		c. Appropriateness of <b>soil moisture.</b>		Soils saturated to surface	
		d. <b>Flow rates</b> /points of discharge.		AA fills following rain events	
		e. <b>Fire history</b> (frequency/severity).		N/A	
		f. <b>Appropriate vegetative and/or benthic zonation.</b>		Minor amount of torpedo grass	
		g. <b>Hydrologic stress</b> on vegetation.		Minimal	
		h. <b>Use by animals</b> with hydrologic requirements.		Minimal	
		i. <b>Plant community composition</b> associated with water quality (i.e., plants tolerant of poor WQ).		Torpedo grass present	
		j. <b>Water quality of standing water by observation</b> (I.e., discoloration, turbidity).		Average	
		k. <b>Water quality data</b> for the type of community.		N/A	
l. <b>Water depth, wave energy, and currents.</b>		Sufficient to support community			
Additional Notes:		The source of hydrology in the AA is groundwater and collection of stormwater runoff from surrounding uplands and developed areas. The AA retains water following rain events and is isolated from other wetlands and surface waters. Surface water 1" deep was observed within lower areas in the AA. Water levels generally sufficient to support the community type.			
Current		With Impact			
5		0			
.500(6)(c) Community Structure  X Vegetation  Benthic  Both		I. Appropriate/desirable species		Most of plant cover is appropriate	
		II. Invasive/exotic plant species		Minor amount of torpedo grass	
		III. Regeneration/recruitment		Moderate	
		IV. Age, size distribution.		Moderate amount of species almost progressing to shrub stratum	
		V. Snags, dens, cavity, etc.		None	
		VI. Plants' condition.		Generally healthy	
		VII. Land management practices.		Mowed in the past	
		VIII. Topographic features (refugia, channels, hummocks).		No topographic features observed	
		IX. Submerged vegetation (only score if present).		N/A	
		X. Upland assessment area		N/A	
Additional Notes:		The AA has been mowed in the past but not recently, which is evident based on the taller vegetation present. Vegetative species included swamp titi (Cyrilla racemiflora), southern beaksedge (Rhynchospora microcarpa), broomsedge bluestem (Andropogon virginicus), Carolina redroot (Lachnanthes caroliniana), velvet panicum (Dichanthelium scoparium), nutrush (Scleria sp.), gallberry (Ilex glabra), and slash pine (Pinus elliottii). A minor amount of the exotic torpedo grass (Panicum repens) was also observed within the AA.			
Current		With Impact			
7		0			

Raw Score = Sum of above scores/30 (if uplands, divide by 20)	
Current	With Impact
0.6	0

Impact Delta (ID)	
Current - w/Impact	0.6

Impact Acres =	0.97
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Functional Loss (FL) [For Impact Assessment Areas]:	
FL = ID x Impact Acres =	0.582

NOTE: If impact is proposed to be mitigated at a mitigation bank that was assessed using UMAM, then the credits required for mitigation is equal to Functional Loss (FL). If impact mitigation is proposed at a mitigation bank that was not assessed using UMAM, then UMAM cannot be used to assess impacts; use the assessment method of the mitigation bank.

Additional Notes:

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**UNIFORM WETLAND MITIGATION ASSESSMENT WORKSHEET - PART I - IMPACT**  
**Form 62-345.900(2), F.A.C. (See Sections 62-345.400 F.A.C.)**

Site/Project Name <b>State and Federal Waters Evaluation and Delineation at Tyndall Air Force Base, Florida</b>		Application Number		Assessment Area Name or Number <b>WL023 (Expeditionary/Encampment Rds)</b>	
FLUCCs code <b>641 - Freshwater marsh</b>		Further classification (optional) <b>PEM1 (Palustrine, emergent, persistent)</b>		Impact Type <b>Direct Impact</b>	
Assessment Area Size <b>0.13 Acres</b>					
Basin/Watershed Name/Number <b>HUC Basin 03140101 / St. Andrew-St. Joseph Bays</b>		Affected Waterbody (Class) <b>Class III</b>		Special Classification (i.e.OFW, AP, other local/state/federal designation of importance) <b>None</b>	
Geographic relationship to and hydrologic connection with wetlands, other surface water, uplands					
<p><b>AA is along gravel road in area of cleared pine plantation. Water storage tank to the west; pine plantation and wetland habitat to the east; US 98 to the south. Pine plantation and upland habitat to the north. Fencing occurs along US 98. Portions of AA may have been within planted pine area.</b></p>					
Assessment area description					
<p><b>AA may be remanent of large wetland system that drains to East Bay. Species observed included titi (Cyrilla racemiflora), southern umbrella sedge (Fuirena scirpoidea), gallberry (ilex glabra). AA receives drainage from gravel roadway.</b></p>					
Significant Nearby Features  <b>access road, water storage tank, US 98</b>				Uniqueness (considering the relative rarity in relation to the regional landscape.)  <b>not unique</b>	
Functions  <b>Water quality improvement, groundwater recharge, plant habitat, and wildlife habitat for breeding, nesting and denning.</b>				Mitigation for previous permit/other historic use  <b>None known</b>	
Anticipated Wildlife Utilization Based on Literature Review (List of species that are representative of the assessment area and reasonably expected to be found )  <b>Various amphibians and reptiles including salamanders, frogs, snakes and turtles, turkeys, birds of prey, such as hawks, owls and kites, songbird species (i.e., cardinals, mockingbirds, warblers, blue jays), woodpeckers, and mammals such as rodents, grey squirrels, deer, opossum, raccoons, black bears, and bobcats.</b>				Anticipated Utilization by Listed Species (List species, their legal classification (E, T, SSC), type of use, and intensity of use of the assessment area)  <b>Wood stork (T), and various state listed wading birds</b>	
Observed Evidence of Wildlife Utilization (List species directly observed, or other signs such as tracks, droppings, casings, nests, etc.):  <b>none</b>					
Additional relevant factors:  <b>none</b>					
Assessment conducted by: <b>RM/CR (AECOM)</b>				Assessment date(s): <b>10/6/2020 - 10/10/2020</b>	



UNIFORM WETLAND MITIGATION ASSESSMENT WORKSHEET - PART II - IMPACT  
Form 62-345.900(2), F.A.C. (See Sections 62-345.500 and .600, F.A.C.)

Site/Project Name: <b>State and Federal Waters Evaluation and Delineation at Tyndall Air Force Base, Florida</b>		Application Number: -		Assessment Area Name or Number: <b>WL023</b> <b>(Expeditionary/Encampment Rds)</b>	
Impact or Mitigation: <b>Impact</b>		Assessment Conducted by: <b>RM/CR (AECOM)</b>		Assessment Date: <b>10/6/2020 - 10/10/2020</b>	
Scoring Guidance		Optimal (10)		Moderate(7)	
Minimal (4)		Not Present (0)			
The scoring of each indicator is based on what would be suitable for the type of wetland or surface water assessed		Condition is optimal and fully supports wetland/surface water functions		Condition is less than optimal, but sufficient to maintain most wetland/surface water functions	
Minimal level of support of wetland/surface water functions		Condition is insufficient to provide wetland/surface water functions			
Enter Notes below (do NOT score each subcategory individually)					
.500(6)(a) Location and Landscape Support		a. Quality and quantity of habitat support outside of AA.		Adjacent to developed and undeveloped habitat	
		b. Invasive plant species in proximity to AA.		Minimal	
		c. Wildlife access to and from AA (proximity and barriers).		Development and fencing that surround the AA act as a barrier	
		d. Downstream benefits provided to fish and wildlife.		Minor to moderate	
		e. Adverse impacts to wildlife in AA from land uses outside of AA.		Developed lands surround the AA	
		f. Hydrologic impediments and flow restrictions.		Minimal impacts to hydrologic flow	
		g. Dependency of downstream habitats on quantity or quality of discharges.		Minimal benefits from discharges	
		h. Protection of wetland functions provided by uplands (upland AAs only).		N/A	
Additional Notes:		Habitats outside AA include developed and undeveloped habitats. Habitats represent some of the habitats needed to fulfill life history of wildlife. Water storage tank near AA. Wildlife habitat limited by clearing of habitat, development, and fencing along US 98. Minimal invasive exotic or other invasive plant species observed around AA. Some land uses outside of the AA have only minor or moderate adverse impacts to wildlife.			
Current		With Impact			
6		0			
.500(6)(b) Water Environment (n/a for uplands)		a. Appropriateness of water levels and flows.		Generally appropriate	
		b. Reliability of water level indicators.		Indicators distinct	
		c. Appropriateness of soil moisture.		Appropriate	
		d. Flow rates/points of discharge.		N/A	
		e. Fire history (frequency/severity).		N/A	
		f. Appropriate vegetative and/or benthic zonation.		Some strata inappropriate	
		g. Hydrologic stress on vegetation.		Minimal	
		h. Use by animals with hydrologic requirements.		Less than expected	
		i. Plant community composition associated with water quality (i.e., plants tolerant of poor WQ).		Average	
		j. Water quality of standing water by observation (I.e., discoloration, turbidity).		Good	
		k. Water quality data for the type of community.		N/A	
		l. Water depth, wave energy, and currents.		4 inches	
Additional Notes:		Water levels appear appropriate for AA. Along the perimeter of AA (near roadway) water levels appear normal. AA part of roadway drainage. Drainage patterns have been affected by past activities related to silviculture. Water level indicators are not distinct in areas. Wetland species throughout. No evidence of fire history and normal fire regime likely suppressed due to pine plantation. No evidence of use by animal species with specific hydrological requirements.			
Current		With Impact			
7		0			
.500(6)(c) Community Structure  X Vegetation  Benthic  Both		I. Appropriate/desirable species		Appropriate species	
		II. Invasive/exotic plant species		Minimal amount of invasive/exotic species	
		III. Regeneration/recruitment		Average	
		IV. Age, size distribution.		Good	
		V. Snags, dens, cavity, etc.		None	
		VI. Plants' condition.		Generally healthy	
		VII. Land management practices.		Appropriate	
		VIII. Topographic features (refugia, channels, hummocks).		Slightly less than optimal	
		IX. Submerged vegetation (only score if present).		N/A	
		X. Upland assessment area		N/A	
Additional Notes:		Most plant species cover is appropriate and desirable. Torpedo grass (Panicum repens) within wetland and adjacent uplands. Normal regenreation and recruitment affected by past hurricane and clearing for pine plantation. Plants generally in good condition. Land management activites generally appropriate but fire suppression has affected plant community. Woody debris higher than expected in although largely due to hurricane. Topographic features slightly less than optimal for system.			
Current		With Impact			
7		0			

Raw Score = Sum of above scores/30 (if uplands, divide by 20)	
Current	With Impact
0.6666667	0

Impact Delta (ID)	
Current - w/Impact	0.666666667

Impact Acres =	0.13
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Functional Loss (FL) [For Impact Assessment Areas]:	
FL = ID x Impact Acres =	0.087

NOTE: If impact is proposed to be mitigated at a mitigation bank that was assessed using UMAM, then the credits required for mitigation is equal to Functional Loss (FL). If impact mitigation is proposed at a mitigation bank that was not assessed using UMAM, then UMAM cannot be used to assess impacts; use the assessment method of the mitigation bank.

Additional Notes:

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**UNIFORM WETLAND MITIGATION ASSESSMENT WORKSHEET - PART I - IMPACT**  
**Form 62-345.900(2), F.A.C. (See Sections 62-345.400 F.A.C.)**

Site/Project Name <b>State and Federal Waters Evaluation and Delineation at Tyndall Air Force Base, Florida</b>		Application Number		Assessment Area Name or Number <b>WL024 (Expeditionary/Encampment Rds)</b>	
FLUCCs code <b>631 - Wetland Scrub</b>		Further classification (optional) <b>PSS3C-Palustrine, Scrub-Shrub, Broad-Leaved Evergreen, SeasonallyFlooded</b>		Impact Type <b>Direct Impact</b>	Assessment Area Size <b>1.18 Acres</b>
Basin/Watershed Name/Number <b>HUC Basin 03140101 / St. Andrew-St. Joseph Bays</b>	Affected Waterbody (Class) <b>Class III</b>		Special Classification (i.e.OFW, AP, other local/state/federal designation of importance) <b>None</b>		
Geographic relationship to and hydrologic connection with wetlands, other surface water, uplands					
<p>The assessment area (AA) is part of a larger wetland system that is located to the east of the AA. Surrounding uplands and wetlands that have been logged in the past and currently contain no canopy species but have revegetated with scrub-shrub vegetation. US Highway 98 is located approximately 150 feet to the southwest.</p>					
<p>Assessment area description</p> <p>The AA is a depressional shrub-scrub wetland that is located within cleared silviculture lands. Dominant vegetation includes sweetbay (<i>Magnolia virginiana</i>), southern magnolia (<i>M. grandiflora</i>), cabbage palm (<i>Sabal palmetto</i>), inkberry (<i>Ilex glabra</i>), Carolina redroot (<i>Lachnanthes caroliniana</i>), southern umbrellasedge (<i>Fuirena scirpoidea</i>), warty panicgrass (<i>Kellochloa verrucosa</i>), meadowbeauty (<i>Rhexia</i> sp.), bushy bluestem (<i>Andropogon glomeratus</i>), Virginia chain fern (<i>Woodwardia virginica</i>), American beautyberry (<i>Callicarpa americana</i>), and muscadine (<i>Vitis rotundifolia</i>). Well defined logging ruts and mounds are present within the AA.</p>					
Significant Nearby Features <b>US Highway 98</b>			<p>Uniqueness (considering the relative rarity in relation to the regional landscape.)  <b>The AA is not unique compared to the surrounding landscape, as the surrounding area includes wetlands of similar quality that are adjacent to logged areas.</b></p>		
Functions <b>Water quality improvement, groundwater recharge, plant habitat, and wildlife habitat for breeding, nesting and denning.</b>			<p>Mitigation for previous permit/other historic use  <b>None known</b></p>		
<p>Anticipated Wildlife Utilization Based on Literature Review (List of species that are representative of the assessment area and reasonably expected to be found )</p> <p><b>Various amphibians and reptiles including frogs, snakes and turtles, turkeys, birds of prey, such as hawks, owls and kites, songbird species (i.e., cardinals, mockingbirds, warblers, blue jays), woodpeckers, and mammals such as rodents, grey squirrels, deer, opossum, raccoons, black bears, and bobcats.</b></p>			<p>Anticipated Utilization by Listed Species (List species, their legal classification (E, T, SSC), type of use, and intensity of use of the assessment area)</p> <p><b>Limited foraging potential for various wading birds (FL SSC).</b></p>		
<p>Observed Evidence of Wildlife Utilization (List species directly observed, or other signs such as tracks, droppings, casings, nests, etc.):</p> <p><b>White-tailed deer (<i>Odocoileus virginianus</i>) tracks</b></p>					
<p>Additional relevant factors:</p> <p><b>N/A</b></p>					
Assessment conducted by: <b>Kelley Samuels and Brooke Bayer (AECOM)</b>			Assessment date(s): <b>10/6/2020 - 10/10/2020</b>		

UNIFORM WETLAND MITIGATION ASSESSMENT WORKSHEET - PART II - IMPACT  
Form 62-345.900(2), F.A.C. (See Sections 62-345.500 and .600, F.A.C.)

Site/Project Name: <b>State and Federal Waters Evaluation and Delineation at Tyndall Air Force Base, Florida</b>		Application Number: -		Assessment Area Name or Number: <b>WL024</b> <b>(Expeditionary/Encampment Rds)</b>			
Impact or Mitigation: <b>Impact</b>		Assessment Conducted by: <b>Kelley Samuels and Brooke Bayer (AECOM)</b>		Assessment Date: <b>10/6/2020 - 10/10/2020</b>			
Scoring Guidance		Optimal (10)	Moderate(7)	Minimal (4)	Not Present (0)		
The scoring of each indicator is based on what would be suitable for the type of wetland or surface water assessed		Condition is optimal and fully supports wetland/surface water functions	Condition is less than optimal, but sufficient to maintain most wetland/surface water functions	Minimal level of support of wetland/surface water functions	Condition is insufficient to provide wetland/surface water functions		
Enter Notes below (do NOT score each subcategory individually)							
<b>.500(6)(a) Location and Landscape Support</b>		a. Quality and quantity of <b>habitat support</b> outside of AA.		Optimal for most wildlife			
		b. <b>Invasive plant species</b> in proximity to AA.		Minimal			
		c. <b>Wildlife access</b> to and from AA (proximity and barriers).		Limited by US Highway 98			
		d. <b>Downstream benefits</b> provided to fish and wildlife.		Minimal			
		e. Adverse impacts to wildlife in AA from <b>land uses</b> outside of AA.		Logging activities; debris			
		f. <b>Hydrologic impediments and flow restrictions.</b>		Ruts and mounds associated with logging activities			
		g. <b>Dependency</b> of downstream habitats on quantity or quality of discharges.		Minimal			
		h. Protection of wetland functions provided by uplands ( <b>upland</b> AAs only).		N/A			
<b>Current</b>	<b>With Impact</b>	Additional Notes: The AA is adjacent to upland and wetland areas that have been disturbed from logging activities but have recruited with scrub-shrub species. Deep ruts and large mounds are located throughout. US Highway 98 limits wildlife access from the southwest.					
<b>6</b>	<b>0</b>						
<b>.500(6)(b) Water Environment (n/a for uplands)</b>		a. Appropriateness of <b>water levels and flows.</b>		Appropriate			
		b. Reliability of <b>water level indicators.</b>		Average			
		c. Appropriateness of <b>soil moisture.</b>		Soil saturated through most of the AA			
		d. <b>Flow rates</b> /points of discharge.		Alteration from logging activities			
		e. <b>Fire history</b> (frequency/severity).		N/A			
		f. <b>Appropriate vegetative and/or benthic zonation.</b>		Generally appropriate for community type			
		g. <b>Hydrologic stress</b> on vegetation.		Minimal			
		h. <b>Use by animals</b> with hydrologic requirements.		Less than expected			
		i. <b>Plant community composition</b> associated with water quality (i.e., plants tolerant of poor WQ).		Average			
		j. <b>Water quality of standing water by observation</b> (i.e., discoloration, turbidity).		Minimal water quality degradation			
		<b>Current</b>	<b>With Impact</b>	k. <b>Water quality data</b> for the type of community.		N/A	
				l. <b>Water depth, wave energy, and currents.</b>		N/A	
<b>5</b>	<b>0</b>	Additional Notes: The AA contains moderate amount of water. Surface water pools in logging ruts adjacent to mounds with saturated soils. Muck was observed in logging ruts at the time of assessment. The AA is connected to a larger wetland system to the east but segregated from undeveloped lands to the southwest by US Highway 98 and developed lands of Tyndall Air Force Base.					
<b>.500(6)(c) Community Structure</b>  X Vegetation  Benthic  Both		I. Appropriate/desirable species		Majority observed in stratum			
		II. Invasive/exotic plant species		Minimal			
		III. Regeneration/recruitment		Average			
		IV. Age, size distribution.		Early successional species			
		V. Snags, dens, cavity, etc.		Minimal			
		VI. Plants' condition.		Generally healthy			
		VII. Land management practices.		None			
		VIII. Topographic features (refugia, channels, hummocks).		Ruts/mounds from logging activities			
		IX. Submerged vegetation (only score if present).		N/A			
		X. Upland assessment area		N/A			
<b>Current</b>	<b>With Impact</b>	Additional Notes: The AA has been logged and contains logging debris. Sapling/shrub species present includes sweetbay (Magnolia virginiana), southern magnolia (M. grandiflora), cabbage palm (Sabal palmetto), and inkberry (Ilex glabra). Vegetation in the herbaceous stratum includes Carolina redroot (Lachnanthes caroliniana), southern umbrellasedge (Fuirena scirpoidea), warty panicgrass (Kellochloa verrucosa), meadowbeauty (Rhexia sp.), bushy bluestem (Andropogon glomeratus), Virginia chain fern (Woodwardia virginica), American beautyberry (Callicarpa americana), and muscadine (Vitis rotundifolia).					
<b>6</b>	<b>0</b>						

Raw Score = Sum of above scores/30 (if uplands, divide by 20)	
Current	With Impact
0.5666667	0

Impact Delta (ID)	
Current - w/Impact	0.566666667

Impact Acres =	1.18
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Functional Loss (FL) [For Impact Assessment Areas]:	
FL = ID x Impact Acres =	0.669

NOTE: If impact is proposed to be mitigated at a mitigation bank that was assessed using UMAM, then the credits required for mitigation is equal to Functional Loss (FL). If impact mitigation is proposed at a mitigation bank that was not assessed using UMAM, then UMAM cannot be used to assess impacts; use the assessment method of the mitigation bank.

Additional Notes:



**UNIFORM WETLAND MITIGATION ASSESSMENT WORKSHEET - PART I - IMPACT**  
**Form 62-345.900(2), F.A.C. (See Sections 62-345.400 F.A.C.)**

Site/Project Name <b>State and Federal Waters Evaluation and Delineation at Tyndall Air Force Base, Florida</b>		Application Number		Assessment Area Name or Number <b>WL033 (Flightline Water Main)</b>	
FLUCCs code <b>643 - Wet Prairies</b>		Further classification (optional) <b>PEM1E - Palustrine, Emergent, Persistent, Seasonally Flooded / Saturated</b>		Impact Type <b>Direct Impact</b>	
Assessment Area Size <b>0.44 Acres</b>					
Basin/Watershed Name/Number <b>HUC Basin 03140101 / St. Andrew-St. Joseph Bays</b>		Affected Waterbody (Class) <b>Class III</b>		Special Classification (i.e.OFW, AP, other local/state/federal designation of importance) <b>None</b>	
Geographic relationship to and hydrologic connection with wetlands, other surface water, uplands					
<p>The assessment area (AA) is an isolated wetland system primarily surrounded by airport development, including runways and taxiways, Highway 98, and mowed and maintained airfield. Multiple mowed wet prairies are located in proximity to the AA. The AA is also located in proximity to a ditch that is part of the air force base stormwater management system.</p>					
Assessment area description					
<p>The AA is regularly mowed and contains the following herbaceous vegetation: Baldwin's spikerush (<i>Eleocharis baldwinii</i>), erect centella (<i>Centella erecta</i>), tenangle pipewort (<i>Eriocaulon decangulare</i>), pink sundew (<i>Drosera capillaris</i>), and bog white violet (<i>Viola lanceolata</i>). The exotic torpedo grass (<i>Panicum repens</i>) was also observed within the AA. Torpedo grass is dominant in portions of the AA. Soils within the AA were dark and sandy. Soils were saturated to surface and rafted vegetative debris (drift deposits) and standing water were observed within the AA. Sources of hydrology include groundwater and collection of surface water from surrounding uplands and development.</p>					
Significant Nearby Features		Uniqueness (considering the relative rarity in relation to the regional landscape.)			
<p>Saint Andrew Bay is located approximately 1.31 miles southwest of the AA and East Bay is located approximately 1.33 miles northeast.</p>		<p>The AA is not unique compared to the surrounding landscape, which contains mowed uplands and wet prairies.</p>			
Functions		Mitigation for previous permit/other historic use			
<p>Water quality improvement, groundwater recharge, plant habitat, and wildlife habitat for breeding.</p>		<p>None known</p>			
Anticipated Wildlife Utilization Based on Literature Review (List of species that are representative of the assessment area and reasonably expected to be found )		Anticipated Utilization by Listed Species (List species, their legal classification (E, T, SSC), type of use, and intensity of use of the assessment area)			
<p>Various amphibians and reptiles including frogs and snakes, turkeys, birds of prey, such as hawks, owls and kites, songbird species (i.e., cardinals, mockingbirds, warblers, blue jays), woodpeckers, and mammals such as rodents, grey squirrels, deer, opossum, and raccoons.</p>		<p>Limited foraging potential for various wading birds (FL SSC).</p>			
Observed Evidence of Wildlife Utilization (List species directly observed, or other signs such as tracks, droppings, casings, nests, etc.):					
<p>None observed.</p>					
Additional relevant factors:					
<p>N/A</p>					
Assessment conducted by:		Assessment date(s):			
<p>Kelley Samuels and Craig Raffenberg (AECOM)</p>		<p>02/06/21</p>			

UNIFORM WETLAND MITIGATION ASSESSMENT WORKSHEET - PART II - IMPACT  
Form 62-345.900(2), F.A.C. (See Sections 62-345.500 and .600, F.A.C.)

Site/Project Name: <b>State and Federal Waters Evaluation and Delineation at Tyndall Air Force Base, Florida</b>		Application Number: -		Assessment Area Name or Number: <b>WL033 (Flightline Water Main)</b>	
Impact or Mitigation: <b>Impact</b>		Assessment Conducted by: <b>Kelley Samuels and Craig Raffenberg (AECOM)</b>		Assessment Date: <b>02/06/21</b>	
Scoring Guidance		Optimal (10)		Moderate(7)	
Minimal (4)		Not Present (0)			
The scoring of each indicator is based on what would be suitable for the type of wetland or surface water assessed		Condition is optimal and fully supports wetland/surface water functions		Condition is less than optimal, but sufficient to maintain most wetland/surface water functions	
Minimal level of support of wetland/surface water functions		Condition is insufficient to provide wetland/surface water functions			
Enter Notes below (do NOT score each subcategory individually)					
.500(6)(a) Location and Landscape Support		a. Quality and quantity of habitat support outside of AA.		Minimal close proximity to roadway and taxiways of airport	
		b. Invasive plant species in proximity to AA.		Moderate/ torpedo grass	
		c. Wildlife access to and from AA (proximity and barriers).		Limited by surrounding development and activities	
		d. Downstream benefits provided to fish and wildlife.		None	
		e. Adverse impacts to wildlife in AA from land uses outside of AA.		Loud noise and fast moving aircrafts and support vehicles	
		f. Hydrologic impediments and flow restrictions.		AA receives stormwater runoff from surrounding uplands	
		g. Dependency of downstream habitats on quantity or quality of discharges.		None	
h. Protection of wetland functions provided by uplands (upland AAs only).		N/A			
Additional Notes:		The AA is an isolated wetland system that is primarily surrounded by airport development. US Highway 98, development, and planted pine habitat nearby. Habitats immediately surrounding AA have been affected by development.			
Current		With Impact			
4		0			
.500(6)(b) Water Environment (n/a for uplands)		a. Appropriateness of water levels and flows.		Generally appropriate	
		b. Reliability of water level indicators.		Standing water and rafted debris	
		c. Appropriateness of soil moisture.		Soils saturated to surface	
		d. Flow rates/points of discharge.		AA fills following rain events	
		e. Fire history (frequency/severity).		N/A	
		f. Appropriate vegetative and/or benthic zonation.		Torpedo grass in AA with localized dominance	
		g. Hydrologic stress on vegetation.		Minimal	
		h. Use by animals with hydrologic requirements.		Minimal	
		i. Plant community composition associated with water quality (i.e., plants tolerant of poor WQ).		Torpedo grass present	
		j. Water quality of standing water by observation (I.e., discoloration, turbidity).		Average	
		k. Water quality data for the type of community.		N/A	
Current		With Impact			
5		0			
.500(6)(c) Community Structure  X Vegetation  Benthic  Both		I. Appropriate/desirable species		Most of plant cover is appropriate	
		II. Invasive/exotic plant species		Moderate amount of torpedo grass	
		III. Regeneration/recruitment		Minimal due to mowing	
		IV. Age, size distribution.		Only groundcover	
		V. Snags, dens, cavity, etc.		None	
		VI. Plants' condition.		Generally healthy	
		VII. Land management practices.		Regularly mowed	
		VIII. Topographic features (refugia, channels, hummocks).		No topographic features observed	
		IX. Submerged vegetation (only score if present).		N/A	
		X. Upland assessment area		N/A	
Current		With Impact			
4		0			
Additional Notes:		The AA is regularly mowed and contains the following herbaceous vegetation: Baldwin's spikerush (Eleocharis baldwinii), erect centella (Centella erecta), tenangle pipewort (Eriocaulon decangulare), pink sundew (Drosera capillaris), and bog white violet (Viola lanceolata). The exotic torpedo grass (Panicum repens) was also observed within the AA. Torpedo grass is dominant in portions of the AA.			

Raw Score = Sum of above scores/30 (if uplands, divide by 20)	
Current	With Impact
0.4333333	0

Impact Delta (ID)	
Current - w/Impact	0.43333333

Impact Acres =	0.44
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Functional Loss (FL) [For Impact Assessment Areas]:	
FL = ID x Impact Acres =	0.191

NOTE: If impact is proposed to be mitigated at a mitigation bank that was assessed using UMAM, then the credits required for mitigation is equal to Functional Loss (FL). If impact mitigation is proposed at a mitigation bank that was not assessed using UMAM, then UMAM cannot be used to assess impacts; use the assessment method of the mitigation bank.

Additional Notes:

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**UNIFORM WETLAND MITIGATION ASSESSMENT WORKSHEET - PART I - IMPACT**  
**Form 62-345.900(2), F.A.C. (See Sections 62-345.400 F.A.C.)**

Site/Project Name <b>State and Federal Waters Evaluation and Delineation at Tyndall Air Force Base, Florida</b>		Application Number		Assessment Area Name or Number <b>WL060 (Expeditionary/Encampment Rds)</b>	
FLUCCs code <b>630 - Mixed Forested Wetland</b>		Further classification (optional) <b>PFO1/4E</b>		Impact Type <b>Direct Impact</b>	
Assessment Area Size <b>0.03 Acres</b>					
Basin/Watershed Name/Number <b>HUC Basin 03140101/St. Andrew Bay</b>		Affected Waterbody (Class) <b>Class III</b>		Special Classification (i.e.OFW, AP, other local/state/federal designation of importance) <b>None</b>	
Geographic relationship to and hydrologic connection with wetlands, other surface water, uplands					
<p>The Assessment Area (AA) is within a historically harvested mixed forested wetland located adjacent to a mechanically harvested upland. The wetland has also been impacted from the adjacent construction activities. The AA is connected to surface waters and the northern portion of the AA is connected to a saltwater marsh that is along East Bayou.</p>					
<p>Assessment area description</p> <p>The AA is a disturbed wetland that has been impacted by Hurricane Michael, mechanical harvesting, and adjacent construction activities. An access road bisects the wetland and a large spoil pile is located on either side of the access road. The wetland flows underneath the access road via a culvert. Large rocks and debris from the adjacent construction are present in the southeastern portion of the AA. Sweetbay (<i>Magnolia virginiana</i>), loblolly pine (<i>Pinus taeda</i>), and Chinese tallow (<i>Triadica sebifera</i>) were observed within the canopy stratum. Vegetation observed within the shrub stratum included saltbush (<i>Baccharis halimifolia</i>), wax myrtle (<i>Morella cerifera</i>), Carolina willow (<i>Salix caroliniana</i>), American beautyberry (<i>Callicarpa americana</i>), Chinese tallow, sweetbay, and winged sumac (<i>Rhus copallinum</i>). Vegetation observed within the herbaceous stratum included sweetbay, sawtooth blackberry (<i>Rubus pensilvanicus</i>), saltbush, cinnamon fern (<i>Osmundastrum cinnamomeum</i>), southern umbrellasedge (<i>Fuirena scirpoidea</i>), inkberry (<i>Ilex glabra</i>), saw palmetto (<i>Serenoa repens</i>), bushy bluestem (<i>Andropogon glomeratus</i>), fetterbush (<i>Lyonia lucida</i>), giant goldenrod (<i>Solidago gigantea</i>), and largleaf pennywort (<i>Hydrocotyle bonariensis</i>).</p>					
Significant Nearby Features		Uniqueness (considering the relative rarity in relation to the regional landscape.)			
Tyndall AFB operations take place in proximity to the AA.		The area is not unique compared to the surrounding landscape.			
Functions		Mitigation for previous permit/other historic use			
Water quality improvements, groundwater recharge, plant habitat, and wildlife habitat for breeding.		None known			
Anticipated Wildlife Utilization Based on Literature Review (List of species that are representative of the assessment area and reasonably expected to be found )		Anticipated Utilization by Listed Species (List species, their legal classification (E, T, SSC), type of use, and intensity of use of the assessment area)			
Various amphibians and reptiles including frogs and snakes, turkeys, hawks, owls, kites, cardinals, mockingbirds, warblers, blue jays, woodpeckers, and mammals such as rodents, grey squirrels, deer, opossums, and raccoons.		Eastern indigo snake (FT) - all habitats - medium; Various wading birds (ST/FT) - wetlands - high.			
Observed Evidence of Wildlife Utilization (List species directly observed, or other signs such as tracks, droppings, casings, nests, etc.):					
Gulf coast box turtle ( <i>Terrapene carolina major</i> ); little brown skink ( <i>Scincella lateralis</i> ).					
Additional relevant factors:					
None					
Assessment conducted by:		Assessment date(s):			
JCB/JSJ		11/03/21			



UNIFORM WETLAND MITIGATION ASSESSMENT WORKSHEET - PART II - IMPACT  
Form 62-345.900(2), F.A.C. (See Sections 62-345.500 and .600, F.A.C.)

Site/Project Name: <b>State and Federal Waters Evaluation and Delineation at Tyndall Air Force Base, Florida</b>		Application Number: <b>-</b>		Assessment Area Name or Number: <b>WL060</b> <b>(Expeditionary/Encampment Rds)</b>	
Impact or Mitigation: <b>Impact</b>		Assessment Conducted by: <b>JCB/JSJ</b>		Assessment Date: <b>11/03/21</b>	
Scoring Guidance		Optimal (10)		Moderate(7)	
Minimal (4)		Not Present (0)			
The scoring of each indicator is based on what would be suitable for the type of wetland or surface water assessed		Condition is optimal and fully supports wetland/surface water functions		Condition is less than optimal, but sufficient to maintain most wetland/surface water functions	
Minimal level of support of wetland/surface water functions		Condition is insufficient to provide wetland/surface water functions			
Enter Notes below (do NOT score each subcategory individually)					
.500(6)(a) Location and Landscape Support		a. Quality and quantity of <b>habitat support</b> outside of AA.		Moderate - historical logging evident	
		b. <b>Invasive plant species</b> in proximity to AA.		Moderate	
		c. <b>Wildlife access</b> to and from AA (proximity and barriers).		Moderate - the access road is a barrier	
		d. <b>Downstream benefits</b> provided to fish and wildlife.		High - AA connected to salt marsh and East Bay	
		e. Adverse impacts to wildlife in AA from <b>land uses</b> outside of AA.		Historical logging	
		f. <b>Hydrologic impediments and flow restrictions.</b>		The access road through the wetland	
		g. <b>Dependency</b> of downstream habitats on quantity or quality of discharges.		High - flow to saltmarsh	
		h. Protection of wetland functions provided by uplands ( <b>upland</b> AAs only).		N/A	
Additional Notes:		The AA is a recently logged wetland located adjacent to a recently logged upland, an access road for Tyndall Air Force Base, and a salt marsh. The access road limits wildlife movement from the south and recent logging both within and adjacent to the wetland, altered habitat for species utilization. Minimal wildlife usage is expected due to the location and logging activities.			
Current		With Impact			
7		0			
.500(6)(b) Water Environment (n/a for uplands)		a. Appropriateness of <b>water levels and flows.</b>		Generally appropriate	
		b. Reliability of <b>water level indicators.</b>		Very reliable	
		c. Appropriateness of <b>soil moisture.</b>		Generally appropriate	
		d. <b>Flow rates</b> /points of discharge.		Hydrologically connected to adjacent salt marsh	
		e. <b>Fire history</b> (frequency/severity).		No evidence of natural fire regime	
		f. <b>Appropriate vegetative and/or benthic zonation.</b>		Generally appropriate for community type	
		g. <b>Hydrologic stress</b> on vegetation.		Minimal	
		h. <b>Use by animals</b> with hydrologic requirements.		Moderate	
		i. <b>Plant community composition</b> associated with water quality (i.e., plants tolerant of poor WQ).		Average	
		j. <b>Water quality of standing water by observation</b> (I.e., discoloration, turbidity).		Average	
		k. <b>Water quality data</b> for the type of community.		N/A	
		l. <b>Water depth, wave energy, and currents.</b>		0-4 inches	
Additional Notes:		Hydrologic indicators observed within and adjacent to the AA during the field review included high water table, saturation, hydrogen sulfide odor, and algal mats. Water levels were generally appropriate for the community type. Sources of hydrology included groundwater and stormwater runoff from the surrounding uplands. The AA is connected to two surface waters and a saltwater marsh that is along East Bayou. Soils within the AA were hydric and consisted of stripped matrix, dark surfaces, and sandy mucky mineral soil types.			
Current		With Impact			
8		0			
.500(6)(c) Community Structure  X Vegetation  Benthic  Both		I. Appropriate/desirable species		Moderate	
		II. Invasive/exotic plant species		Moderate - Chinese tallow throughout various stratum	
		III. Regeneration/recruitment		Average	
		IV. Age, size distribution.		Average	
		V. Snags, dens, cavity, etc.		Moderate	
		VI. Plants' condition.		Generally healthy	
		VII. Land management practices.		None - construction debris in SE portion of the AA	
		VIII. Topographic features (refugia, channels, hummocks).		Moderate	
		IX. Submerged vegetation (only score if present).		N/A	
		X. Upland assessment area		N/A	
Additional Notes:		Dominate vegetation observed within the canopy stratum included sweetbay, loblolly pine, and Chinese tallow. Vegetation observed within the shrub stratum included saltbush, wax myrtle, Carolina willow, American beautyberry, Chinese tallow, sweetbay, and winged sumac. Vegetation observed within the herbaceous stratum included sweetbay, sawtooth blackberry, saltbush, cinnamon fern, southern umbrellasedge, inkberry, saw palmetto, bushy bluestem, fetterbush, giant goldenrod, and largleaf pennywort. Large rocks and debris from the adjacent construction are present in the southeastern portion of the AA.			
Current		With Impact			
6		0			

Raw Score = Sum of above scores/30 (if uplands, divide by 20)	
Current	With Impact
0.7	0

Impact Delta (ID)	
Current - w/Impact	0.7

Impact Acres =	0.03
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Functional Loss (FL) [For Impact Assessment Areas]:	
FL = ID x Impact Acres =	0.021

NOTE: If impact is proposed to be mitigated at a mitigation bank that was assessed using UMAM, then the credits required for mitigation is equal to Functional Loss (FL). If impact mitigation is proposed at a mitigation bank that was not assessed using UMAM, then UMAM cannot be used to assess impacts; use the assessment method of the mitigation bank.

Additional Notes:

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**UNIFORM WETLAND MITIGATION ASSESSMENT WORKSHEET - PART I - IMPACT**  
**Form 62-345.900(2), F.A.C. (See Sections 62-345.400 F.A.C.)**

Site/Project Name <b>State and Federal Waters Evaluation and Delineation at Tyndall Air Force Base, Florida</b>		Application Number		Assessment Area Name or Number <b>WL060 (Expeditionary/Encampment Rds)</b>	
FLUCCs code <b>642 - Salt Marsh</b>		Further classification (optional) <b>E2EM1</b>		Impact Type <b>Direct Impact</b>	
Assessment Area Size <b>0.06 Acres</b>					
Basin/Watershed Name/Number <b>HUC Basin 03140101/St. Andrew Bay</b>		Affected Waterbody (Class) <b>Class III</b>		Special Classification (i.e.OFW, AP, other local/state/federal designation of importance) <b>None</b>	
Geographic relationship to and hydrologic connection with wetlands, other surface water, uplands					
<p>The Assessment Area (AA) is a salt marsh located adjacent to a recently logged upland, a mechanically harvested mixed forested wetland, and East Bay. The salt marsh drains into East Bay.</p>					
Assessment area description					
<p>The AA is a salt marsh connected to East Bay. Vegetative species within the shrub stratum were present along the edge of the salt marsh, including youpon (<i>Ilex vomitoria</i>), red cedar (<i>Juniperus virginiana</i>), and wax myrtle (<i>Morella cerifera</i>). Herbaceous species observed in the marsh included primarily needle rush (<i>Juncus roemerianus</i>) with some swamp sawgrass (<i>Cladium mariscus</i>). Fetterbush (<i>Lyonia lucida</i>) and pinebarren goldenrod (<i>Solidago fistulosa</i>) were present along the margins.</p>					
Significant Nearby Features				Uniqueness (considering the relative rarity in relation to the regional landscape.)	
Tyndall AFB operations take place in proximity to the AA.				The salt marsh is unique with regards to the surrounding wetland and upland.	
Functions				Mitigation for previous permit/other historic use	
Water quality improvements, groundwater recharge, plant habitat, and wildlife habitat for nesting and breeding.				None known	
Anticipated Wildlife Utilization Based on Literature Review (List of species that are representative of the assessment area and reasonably expected to be found )				Anticipated Utilization by Listed Species (List species, their legal classification (E, T, SSC), type of use, and intensity of use of the assessment area)	
Various amphibians and reptiles including frogs and snakes, turkeys, hawks, owls, kites, cardinals, mockingbirds, warblers, blue jays, woodpeckers, and mammals such as rodents, grey squirrels, deer, opossums, and raccoons.				Eastern indigo snake (FT) - all habitats - medium; Various wading birds (ST/FT) - wetlands - high.	
Observed Evidence of Wildlife Utilization (List species directly observed, or other signs such as tracks, droppings, casings, nests, etc.):					
None observed.					
Additional relevant factors:					
None					
Assessment conducted by:				Assessment date(s):	
JCB/JSJ				11/03/21	

UNIFORM WETLAND MITIGATION ASSESSMENT WORKSHEET - PART II - IMPACT  
Form 62-345.900(2), F.A.C. (See Sections 62-345.500 and .600, F.A.C.)

Site/Project Name: <b>State and Federal Waters Evaluation and Delineation at Tyndall Air Force Base, Florida</b>		Application Number: -		Assessment Area Name or Number: <b>WL060</b> <b>(Expeditionary/Encampment Rds)</b>	
Impact or Mitigation: <b>Impact</b>		Assessment Conducted by: <b>JCB/JSJ</b>		Assessment Date: <b>11/03/21</b>	
Scoring Guidance		Optimal (10)		Moderate(7)	
Minimal (4)		Not Present (0)			
The scoring of each indicator is based on what would be suitable for the type of wetland or surface water assessed		Condition is optimal and fully supports wetland/surface water functions		Condition is less than optimal, but sufficient to maintain most wetland/surface water functions	
Minimal level of support of wetland/surface water functions		Condition is insufficient to provide wetland/surface water functions			
Enter Notes below (do NOT score each subcategory individually)					
.500(6)(a) Location and Landscape Support		a. Quality and quantity of <b>habitat support</b> outside of AA.		Moderate - historical logging evident	
		b. <b>Invasive plant species</b> in proximity to AA.		Minimal	
		c. <b>Wildlife access</b> to and from AA (proximity and barriers).		Good	
		d. <b>Downstream benefits</b> provided to fish and wildlife.		High - adjacent wetlands flow into the salt marsh which flows to East Bay	
		e. Adverse impacts to wildlife in AA from <b>land uses</b> outside of AA.		Minimal - Historical logging	
		f. <b>Hydrologic impediments and flow restrictions</b> .		None	
		g. <b>Dependency</b> of downstream habitats on quantity or quality of discharges.		High - this salt marsh flows into Easy Bay	
Current	With Impact	h. Protection of wetland functions provided by uplands ( <b>upland</b> AAs only).		N/A	
		Additional Notes: The AA is salt marsh located adjacent to East Bay and a mechanically harvested upland. Wildlife movement is not limited by the surrounding landscape. Harvested uplands and wetlands alter habitat for species utilization.			
8	0				
.500(6)(b) Water Environment (n/a for uplands)		a. Appropriateness of <b>water levels and flows</b> .		Generally appropriate	
		b. Reliability of <b>water level indicators</b> .		Very reliable	
		c. Appropriateness of <b>soil moisture</b> .		Generally appropriate	
		d. <b>Flow rates</b> /points of discharge.		Flows into East Bay	
		e. <b>Fire history</b> (frequency/severity).		No evidence of natural fire regime	
		f. <b>Appropriate vegetative and/or benthic zonation</b> .		Generally appropriate for community type	
		g. <b>Hydrologic stress</b> on vegetation.		Minimal	
		h. <b>Use by animals</b> with hydrologic requirements.		High	
		i. <b>Plant community composition</b> associated with water quality (i.e., plants tolerant of poor WQ).		Good	
		j. <b>Water quality of standing water by observation</b> (I.e., discoloration, turbidity).		Average	
		k. <b>Water quality data</b> for the type of community.		N/A	
Current	With Impact	l. <b>Water depth, wave energy, and currents</b> .		Greater than 12 inches	
		Additional Notes: Hydrologic indicators observed within and adjacent to the AA during the field review included saturation and drift deposits. Water levels were generally high for the community type at the time of the field review. Sources of hydrology included groundwater and stormwater runoff from the surrounding wetland and upland. Wildlife usage is expected due to the location. Soils within the AA were hydric and consisted of sandy muchly mineral and dark surface soil types.			
8	0				
.500(6)(c) Community Structure  X Vegetation  Benthic  Both		I. Appropriate/desirable species		Mostly appropriate	
		II. Invasive/exotic plant species		None	
		III. Regeneration/recruitment		Good	
		IV. Age, size distribution.		Average	
		V. Snags, dens, cavity, etc.		Minimal	
		VI. Plants' condition.		Generally healthy	
		VII. Land management practices.		None	
		VIII. Topographic features (refugia, channels, hummocks).		Channel to East Bay	
		IX. Submerged vegetation (only score if present).		N/A	
		X. Upland assessment area		N/A	
Current	With Impact	Additional Notes: Vegetative species within the shrub stratum were present along the edge of the salt marsh, including youpon, red cedar, and wax myrtle. Herbaceous species observed in the marsh included primarily needle rush with some swamp sawgrass. Fetterbush and pinebarren goldenrod were present along the margins.			
8	0				

Raw Score = Sum of above scores/30 (if uplands, divide by 20)	
Current	With Impact
0.8	0

Impact Delta (ID)	
Current - w/Impact	0.8

Impact Acres =	0.06
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Functional Loss (FL) [For Impact Assessment Areas]:	
FL = ID x Impact Acres =	0.048

NOTE: If impact is proposed to be mitigated at a mitigation bank that was assessed using UMAM, then the credits required for mitigation is equal to Functional Loss (FL). If impact mitigation is proposed at a mitigation bank that was not assessed using UMAM, then UMAM cannot be used to assess impacts; use the assessment method of the mitigation bank.

Additional Notes:

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**UNIFORM WETLAND MITIGATION ASSESSMENT WORKSHEET - PART I - IMPACT**  
**Form 62-345.900(2), F.A.C. (See Sections 62-345.400 F.A.C.)**

Site/Project Name <b>Environmental Assessment for 8 Construction Sites at Tyndall Air Force Base, Bay County, Florida</b>		Application Number		Assessment Area Name or Number <b>WL082 (EOD Gravel Road)</b>	
FLUCCs code <b>642 - Saltwater Marshes</b>		Further classification (optional) <b>E2EM1</b>		Impact Type <b>Direct Impact</b>	
Assessment Area Size <b>2.31 Acres</b>					
Basin/Watershed Name/Number <b>HUC Basin 03140101/St. Andrew Bay</b>		Affected Waterbody (Class) <b>Class III</b>		Special Classification (i.e.OFW, AP, other local/state/federal designation of importance) <b>None</b>	
Geographic relationship to and hydrologic connection with wetlands, other surface water, uplands					
<p>The Assessment Area (AA) is a salt marsh that is hydrologically connected to Saint Andrew Sound via saline groundwater. Dunes and berms surround the AA to the north, west, and south. An unpaved road is located immediately to the east of the AA, which is used to access the AA from U.S. Highway 98 for explosive ordnance disposal. Forest that has been disturbed from hurricane damage and mechanical harvesting is located between the AA and U.S. Highway 98.</p>					
Assessment area description					
<p>The AA is a disturbed salt marsh that has been created from excavation and explosive ordnance disposal. The AA is surrounded by dunes and berms but is hydrologically connected to Saint Andrew Sound via saline groundwater. The AA contains sparse vegetative cover, including minimal saltwater faslewillow (<i>Baccharis angustifolia</i>) in the shrub stratum and the following species in the herbaceous stratum: torpedograss (<i>Panicum repens</i>), umbrellasedge (<i>Fuirena</i> sp.), knotgrass (<i>Paspalum distichum</i>), beaksedge (<i>Rhynchospora</i> spp.), and goldenrod (<i>Solidago</i> sp.). Low areas contained saturated soils and algal mats.</p>					
Significant Nearby Features		Uniqueness (considering the relative rarity in relation to the regional landscape.)			
Tyndall AFB operations take place in proximity to the AA.		This excavated salt marsh is unique in regards to the surrounding wetland and upland.			
Functions		Mitigation for previous permit/other historic use			
Water quality improvements, groundwater recharge, plant habitat, and wildlife habitat for nesting and breeding.		None known			
Anticipated Wildlife Utilization Based on Literature Review (List of species that are representative of the assessment area and reasonably expected to be found )		Anticipated Utilization by Listed Species (List species, their legal classification (E, T, SSC), type of use, and intensity of use of the assessment area)			
Various amphibians and reptiles including frogs and snakes, turkeys, hawks, owls, kites, cardinals, mockingbirds, warblers, blue jays, woodpeckers, and mammals such as rodents, grey squirrels, deer, opossums, and raccoons.		Eastern indigo snake (FT) - all habitats - medium; Various wading birds (ST/FT) - wetlands - high.			
Observed Evidence of Wildlife Utilization (List species directly observed, or other signs such as tracks, droppings, casings, nests, etc.):					
Fiddler crab ( <i>Uca</i> sp.)					
Additional relevant factors:					
None					
Assessment conducted by:		Assessment date(s):			
Ramon Mendieta		11/16/21			

UNIFORM WETLAND MITIGATION ASSESSMENT WORKSHEET - PART II - IMPACT  
Form 62-345.900(2), F.A.C. (See Sections 62-345.500 and .600, F.A.C.)

Site/Project Name: <b>Environmental Assessment for 8 Construction Sites at Tyndall Air Force Base, Bay County, Florida</b>		Application Number: <b>-</b>		Assessment Area Name or Number: <b>WL082 (EOD Gravel Road)</b>	
Impact or Mitigation: <b>Impact</b>		Assessment Conducted by: <b>Ramon Mendieta</b>		Assessment Date: <b>11/16/21</b>	
Scoring Guidance		Optimal (10)		Moderate(7)	
Minimal (4)		Not Present (0)			
The scoring of each indicator is based on what would be suitable for the type of wetland or surface water assessed		Condition is optimal and fully supports wetland/surface water functions		Condition is less than optimal, but sufficient to maintain most wetland/surface water functions	
Minimal level of support of wetland/surface water functions		Condition is insufficient to provide wetland/surface water functions			
Enter Notes below (do NOT score each subcategory individually)					
.500(6)(a) Location and Landscape Support		a. Quality and quantity of habitat support outside of AA.		Moderate - hurricane damage and mechanical harvesting	
		b. Invasive plant species in proximity to AA.		Moderate - torpedograss	
		c. Wildlife access to and from AA (proximity and barriers).		Good	
		d. Downstream benefits provided to fish and wildlife.		Minimal - AA isolated by dunes and berms	
		e. Adverse impacts to wildlife in AA from land uses outside of AA.		Minimal - mechanical harvesting	
		f. Hydrologic impediments and flow restrictions.		AA isolated by dunes and berms	
		g. Dependency of downstream habitats on quantity or quality of discharges.		Minimal - AA isolated by dunes and berms	
h. Protection of wetland functions provided by uplands (upland AAs only).		N/A			
Additional Notes:		The AA is a salt marsh that is hydrologically connected to Saint Andrew Sound via saline groundwater. Dunes and berms surround the AA to the north, west, and south. An unpaved road is located immediately to the east of the AA, which is used to access the AA from U.S. Highway 98 for explosive ordnance disposal. Forest that has been disturbed from hurricane damage and mechanical harvesting is located between the AA and U.S. Highway 98. Wildlife movement is not limited by the surrounding landscape. Harvested uplands and wetlands alter habitat for species utilization.			
Current		With Impact			
7		0			
.500(6)(b) Water Environment (n/a for uplands)		a. Appropriateness of water levels and flows.		Generally very low	
		b. Reliability of water level indicators.		Average	
		c. Appropriateness of soil moisture.		Saturated in low areas	
		d. Flow rates/points of discharge.		No flow	
		e. Fire history (frequency/severity).		No evidence of natural fire regime	
		f. Appropriate vegetative and/or benthic zonation.		Generally appropriate for community type	
		g. Hydrologic stress on vegetation.		Minimal	
		h. Use by animals with hydrologic requirements.		Minimal	
		i. Plant community composition associated with water quality (i.e., plants tolerant of poor WQ).		Average	
		j. Water quality of standing water by observation (I.e., discoloration, turbidity).		N/A	
		k. Water quality data for the type of community.		N/A	
l. Water depth, wave energy, and currents.		N/A			
Additional Notes:		The AA is surrounded by dunes and berms but is hydrologically connected to Saint Andrew Sound via saline groundwater. Hydrologic indicators observed within the AA during the field review included soil saturation and algal mats within low areas. Water levels were generally very low for the community type. Sources of hydrology included groundwater and stormwater runoff from the surrounding uplands. Wildlife usage is expected due to the location.			
Current		With Impact			
4		0			
.500(6)(c) Community Structure  X Vegetation  Benthic  Both		I. Appropriate/desirable species		Moderate amount of inappropriate species	
		II. Invasive/exotic plant species		Torpedograss	
		III. Regeneration/recruitment		Moderate/minimal herbaceous species present	
		IV. Age, size distribution.		Herbaceous species present	
		V. Snags, dens, cavity, etc.		None	
		VI. Plants' condition.		Sparse but generally healthy	
		VII. Land management practices.		None. Explosive ordnance disposal area.	
		VIII. Topographic features (refugia, channels, hummocks).		Dunes and berms surround the AA	
		IX. Submerged vegetation (only score if present).		N/A	
		X. Upland assessment area		N/A	
Additional Notes:		The AA contains sparse vegetative cover, including minimal saltwater faslewillow (Baccharis angustifolia) in the shrub stratum and the following species in the herbaceous stratum: torpedograss (Panicum repens), umbrellasedge (Fuirena sp.), knotgrass (Paspalum distichum), beaksedge (Rhynchospora spp.), and goldenrod (Solidago sp.).			
Current		With Impact			
4		0			

Raw Score = Sum of above scores/30 (if uplands, divide by 20)	
Current	With Impact
0.5	0

Impact Delta (ID)	
Current - w/Impact	0.5

Impact Acres =	2.31
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Functional Loss (FL) [For Impact Assessment Areas]:	
FL = ID x Impact Acres =	1.155

NOTE: If impact is proposed to be mitigated at a mitigation bank that was assessed using UMAM, then the credits required for mitigation is equal to Functional Loss (FL). If impact mitigation is proposed at a mitigation bank that was not assessed using UMAM, then UMAM cannot be used to assess impacts; use the assessment method of the mitigation bank.

Additional Notes:

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**UNIFORM WETLAND MITIGATION ASSESSMENT WORKSHEET - PART I - IMPACT**  
**Form 62-345.900(2), F.A.C. (See Sections 62-345.400 F.A.C.)**

Site/Project Name <b>Environmental Assessment for 8 Construction Sites at Tyndall Air Force Base, Bay County, Florida</b>		Application Number		Assessment Area Name or Number <b>WL084 (Dredge WEG Boathouse Alt 1)</b>	
FLUCCs code <b>642 - Salt Marsh</b>		Further classification (optional) <b>E2EM1</b>		Impact Type <b>Direct Impact</b>	
Assessment Area Size <b>0.08 Acres</b>					
Basin/Watershed Name/Number <b>HUC Basin 03140101/St. Andrew Bay</b>		Affected Waterbody (Class) <b>Class III</b>		Special Classification (i.e.OFW, AP, other local/state/federal designation of importance) <b>None</b>	
Geographic relationship to and hydrologic connection with wetlands, other surface water, uplands					
<p>The Assessment Area (AA) is a salt marsh that is directly connected to Saint Andrew Sound. AA is located at Civil Engineering Center. Man made structures near AA including Research Road, dock, and support structures. AA is on peninsula. Nearby planted pine plantation has been disturbed from hurricane damage and mechanical harvesting is located between the AA and U.S. Highway 98.</p>					
Assessment area description					
<p>The AA is a tidally influenced salt marsh portions of which are comprised of a sandy shoreline. The AA contains groundcover of marshhay cordgrass (<i>Spartina patens</i>), sand cordgrass (<i>Spartina bakeri</i>), southern umbrella sedge (<i>Fuirena scirpoidea</i>). Additional vegetation observed included cabbage palm (<i>Sabal palmetto</i>), wax myrtle (<i>Morella cerifera</i>), and Yaupon holly (<i>Ilex vomitoria</i>). Marshhay cordgrass is the dominant vegetation. Man-made debris was observed in the AA.</p>					
Significant Nearby Features <b>Tyndall AFB operations take place in proximity to the AA.</b>				Uniqueness (considering the relative rarity in relation to the regional landscape.) <b>Coastal shoreline and saltmarsh habitat is not unique</b>	
Functions <b>Water quality improvements, groundwater recharge, plant habitat, and wildlife habitat for nesting and breeding.</b>				Mitigation for previous permit/other historic use <b>None known</b>	
Anticipated Wildlife Utilization Based on Literature Review (List of species that are representative of the assessment area and reasonably expected to be found )  <b>Various amphibians and reptiles including frogs and snakes, turkeys, hawks, owls, kites, cardinals, mockingbirds, warblers, blue jays, woodpeckers, and mammals such as rodents, grey squirrels, deer, opossums, and raccoons.</b>				Anticipated Utilization by Listed Species (List species, their legal classification (E, T, SSC), type of use, and intensity of use of the assessment area)  <b>Eastern indigo snake (FT) - all habitats - medium; Various wading birds (ST/FT) - wetlands - high.</b>	
Observed Evidence of Wildlife Utilization (List species directly observed, or other signs such as tracks, droppings, casings, nests, etc.):  <b>None.</b>					
Additional relevant factors:  <b>None</b>					
Assessment conducted by: <b>Ramon Mendieta</b>				Assessment date(s): <b>09/06/21</b>	



UNIFORM WETLAND MITIGATION ASSESSMENT WORKSHEET - PART II - IMPACT  
Form 62-345.900(2), F.A.C. (See Sections 62-345.500 and .600, F.A.C.)

Site/Project Name: <b>Environmental Assessment for 8 Construction Sites at Tyndall Air Force Base, Bay County, Florida</b>		Application Number: -		Assessment Area Name or Number: <b>WL084 (Dredge WEG Boathouse Alt 1)</b>	
Impact or Mitigation: <b>Impact</b>		Assessment Conducted by: <b>Ramon Mendieta</b>		Assessment Date: <b>09/06/21</b>	
Scoring Guidance		Optimal (10)		Moderate(7)	
Minimal (4)		Not Present (0)			
The scoring of each indicator is based on what would be suitable for the type of wetland or surface water assessed		Condition is optimal and fully supports wetland/surface water functions		Condition is less than optimal, but sufficient to maintain most wetland/surface water functions	
Minimal level of support of wetland/surface water functions		Condition is insufficient to provide wetland/surface water functions			
Enter Notes below (do NOT score each subcategory individually)					
.500(6)(a) Location and Landscape Support		a. Quality and quantity of <b>habitat support</b> outside of AA.		Moderate - hurricane damage and mechanical harvesting	
		b. <b>Invasive plant species</b> in proximity to AA.		none	
		c. <b>Wildlife access</b> to and from AA (proximity and barriers).		limited by adjacent development	
		d. <b>Downstream benefits</b> provided to fish and wildlife.		not limited by distance or barriers as AA is shoreline with direct access	
		e. Adverse impacts to wildlife in AA from <b>land uses</b> outside of AA.		Minimal - mechanical harvesting and development	
		f. <b>Hydrologic impediments and flow restrictions.</b>		none. AA is tidally influenced	
Current	With Impact	g. <b>Dependency</b> of downstream habitats on quantity or quality of discharges.		None- tidally influenced system	
		h. Protection of wetland functions provided by uplands ( <b>upland</b> AAs only).		N/A	
7	0	Additional Notes: he Assessment Area (AA) is a salt marsh that is directly connected to Saint Andrew Sound. AA is located at Civil Engineering Center. Man made structures near AA including Research Road, dock, and support structures. Nearby planted pine plantation has been disturbed from hurricane damage and mechanical harvesting is located between the AA and U.S. Highway 98.			
.500(6)(b) Water Environment (n/a for uplands)		a. Appropriateness of <b>water levels and flows.</b>		appear normal	
		b. Reliability of <b>water level indicators.</b>		high- wrack line	
		c. Appropriateness of <b>soil moisture.</b>		appropriate	
		d. <b>Flow rates</b> /points of discharge.		No flow	
		e. <b>Fire history</b> (frequency/severity).		No evidence of natural fire regime	
		f. <b>Appropriate vegetative and/or benthic zonation.</b>		Generally appropriate for community type	
		g. <b>Hydrologic stress</b> on vegetation.		none	
		h. <b>Use by animals</b> with hydrologic requirements.		none	
		i. <b>Plant community composition</b> associated with water quality (i.e., plants tolerant of poor WQ).		appropriate	
		j. <b>Water quality of standing water by observation</b> (i.e., discoloration, turbidity).		N/A	
		Current	With Impact	k. <b>Water quality data</b> for the type of community.	
l. <b>Water depth, wave energy, and currents.</b>				N/A	
8	0	Additional Notes: The AA is a tidally influenced salt marsh portions of which are comprised of a sandy shoreline.			
.500(6)(c) Community Structure  X Vegetation  Benthic  Both		I. Appropriate/desirable species		Appropriate	
		II. Invasive/exotic plant species		None	
		III. Regeneration/recruitment		Appears normal for ttype of system	
		IV. Age, size distribution.		Herbaceous species present	
		V. Snags, dens, cavity, etc.		None	
		VI. Plants' condition.		Generally healthy	
		VII. Land management practices.		None.	
		VIII. Topographic features (refugia, channels, hummocks).		None observe nor expected given type of system	
		IX. Submerged vegetation (only score if present).		N/A	
		X. Upland assessment area		N/A	
Current	With Impact	Additional Notes:			
		The AA contains groundcover of marshhay cordgrass (Spartina patens), sand cordgrass (Spartina bakeri), southern umbrella sedge (Fuirena scirpoidea). Additional vegetation observed included cabbage palm (Sabal palmetto), wax myrtle (Morella cerifera), and Yaupon holly (Ilex vomitoria). Marshhay cordgrass is the dominant vegetation. Man-made debris was observed in the AA.			

Raw Score = Sum of above scores/30 (if uplands, divide by 20)		Impact Acres = 0.08		Additional Notes:
Current	With Impact	Functional Loss (FL) [For Impact Assessment Areas]:		
0.7666667	0	FL = ID x Impact Acres = 0.061		
Impact Delta (ID)		NOTE: If impact is proposed to be mitigated at a mitigation bank that was assessed using UMAM, then the credits required for mitigation is equal to Functional Loss (FL). If impact mitigation is proposed at a mitigation bank that was not assessed using UMAM, then UMAM cannot be used to assess impacts; use the assessment method of the mitigation bank.		
Current - w/Impact		0.76666667		

**UNIFORM WETLAND MITIGATION ASSESSMENT WORKSHEET - PART I - IMPACT**  
**Form 62-345.900(2), F.A.C. (See Sections 62-345.400 F.A.C.)**

Site/Project Name <b>Environmental Assessment for 8 Construction Sites at Tyndall Air Force Base, Bay County, Florida</b>		Application Number		Assessment Area Name or Number <b>WL085 (Dredge WEG Boathouse Alt 2)</b>	
FLUCCs code <b>641 - Freshwater Marsh</b>		Further classification (optional) <b>PEM1F</b>		Impact Type <b>Direct Impact</b>	
Basin/Watershed Name/Number <b>HUC Basin 03140101/St. Andrew Bay</b>		Affected Waterbody (Class) <b>Class III</b>		Special Classification (i.e.OFW, AP, other local/state/federal designation of importance) <b>None</b>	
Geographic relationship to and hydrologic connection with wetlands, other surface water, uplands  <b>The Assessment Area (AA) is located along the northwestern corner of the Civil Engineering Center. Native coastal scrub habitat occurs north of AA. Development occurs south of AA. Open sandy field borders AA to the south. AA is on peninsula. Forest that has been disturbed from hurricane damage and mechanical harvesting is located between the AA and U.S. Highway 98.</b>					
Assessment area description  <b>The AA appears to be man-made linear wetland, although a review of historic aerials was not definitive. At the time of survey vegetation observed included: southern umbrella sedge (Fuirena scirpoidea), arrowhead (Sagittaria lancifolia), cattail (Typha sp.), St. John's wort (Hypericum fasciculatum), smartweed (Persicaria punctata), and sweetbay (Magnolia virginiana). Water was observed at the time of survey within AA. Water levels appeared appropriate, and the vegetation did not show signs of stress.</b>					
Significant Nearby Features  <b>Tyndall AFB operations take place in proximity to the AA.</b>				Uniqueness (considering the relative rarity in relation to the regional landscape.)  <b>freshwater habitat is not unique.</b>	
Functions  <b>Water quality improvements, groundwater recharge, plant habitat, and wildlife habitat for nesting and breeding.</b>				Mitigation for previous permit/other historic use  <b>None known</b>	
Anticipated Wildlife Utilization Based on Literature Review (List of species that are representative of the assessment area and reasonably expected to be found )  <b>Various amphibians and reptiles including frogs and snakes, turkeys, hawks, owls, kites, cardinals, mockingbirds, warblers, blue jays, woodpeckers, and mammals such as rodents, grey squirrels, deer, opossums, and raccoons.</b>				Anticipated Utilization by Listed Species (List species, their legal classification (E, T, SSC), type of use, and intensity of use of the assessment area)  <b>Eastern indigo snake (FT) - all habitats - medium; Various wading birds (ST/FT) - wetlands - high.</b>	
Observed Evidence of Wildlife Utilization (List species directly observed, or other signs such as tracks, droppings, casings, nests, etc.):  <b>None observed.</b>					
Additional relevant factors:  <b>None</b>					
Assessment conducted by: <b>Ramon Mendieta</b>				Assessment date(s): <b>09/08/21</b>	

UNIFORM WETLAND MITIGATION ASSESSMENT WORKSHEET - PART II - IMPACT  
Form 62-345.900(2), F.A.C. (See Sections 62-345.500 and .600, F.A.C.)

Site/Project Name: <b>Environmental Assessment for 8 Construction Sites at Tyndall Air Force Base, Bay County, Florida</b>		Application Number: -		Assessment Area Name or Number: <b>WL085 (Dredge WEG Boathouse Alt 2)</b>	
Impact or Mitigation: <b>Impact</b>		Assessment Conducted by: <b>Ramon Mendieta</b>		Assessment Date: <b>09/08/21</b>	
Scoring Guidance		Optimal (10)		Moderate(7)	
Minimal (4)		Not Present (0)			
The scoring of each indicator is based on what would be suitable for the type of wetland or surface water assessed		Condition is optimal and fully supports wetland/surface water functions		Condition is less than optimal, but sufficient to maintain most wetland/surface water functions	
Minimal level of support of wetland/surface water functions		Condition is insufficient to provide wetland/surface water functions			
Enter Notes below (do NOT score each subcategory individually)					
.500(6)(a) Location and Landscape Support		a. Quality and quantity of <b>habitat support</b> outside of AA.		Development to the south. Native habitat to the north.	
		b. <b>Invasive plant species</b> in proximity to AA.		low - torpedograss	
		c. <b>Wildlife access</b> to and from AA (proximity and barriers).		Limited by adjacent development	
		d. <b>Downstream benefits</b> provided to fish and wildlife.		AA appears to be connected to man-made reservoirs	
		e. Adverse impacts to wildlife in AA from <b>land uses</b> outside of AA.		Minimal - mechanical harvesting	
		f. <b>Hydrologic impediments and flow restrictions.</b>		None observed. AA is connected via culvert to additional area	
		g. <b>Dependency</b> of downstream habitats on quantity or quality of discharges.		None observed. AA is connected via culvert to additional area	
Current		With Impact		h. Protection of wetland functions provided by uplands ( <b>upland</b> AAs only).	
				N/A	
Additional Notes:		The Assessment Area (AA) is located along the northwestern corner of the Civil Engineering Center. Native coastal scrub habitat occurs north of AA. Development occurs south of AA. Open sandy field borders AA to the south. AA is on peninsula. Forest that has been disturbed from hurricane damage and mechanical harvesting is located between the AA and U.S. Highway 98.			
7		0			
.500(6)(b) Water Environment (n/a for uplands)		a. Appropriateness of <b>water levels and flows.</b>		appear normal	
		b. Reliability of <b>water level indicators.</b>		high- wrack line	
		c. Appropriateness of <b>soil moisture.</b>		appropriate	
		d. <b>Flow rates</b> /points of discharge.		No flow	
		e. <b>Fire history</b> (frequency/severity).		No evidence of natural fire regime	
		f. <b>Appropriate vegetative and/or benthic zonation.</b>		Generally appropriate for community type	
		g. <b>Hydrologic stress</b> on vegetation.		none	
		h. <b>Use by animals</b> with hydrologic requirements.		none	
		i. <b>Plant community composition</b> associated with water quality (i.e., plants tolerant of poor WQ).		appropriate	
		j. <b>Water quality of standing water by observation</b> (i.e., discoloration, turbidity).		N/A	
		k. <b>Water quality data</b> for the type of community.		N/A	
Current		With Impact		l. <b>Water depth, wave energy, and currents.</b>	
				N/A	
Additional Notes:		The AA appears to be man-made linear wetland, although a review of historic aerials was not definitive. Water levels appeared appropriate.			
8		0			
.500(6)(c) Community Structure  X Vegetation  Benthic  Both		I. Appropriate/desirable species		Appropriate	
		II. Invasive/exotic plant species		None	
		III. Regeneration/recruitment		Appears normal for ttype of system	
		IV. Age, size distribution.		Herbaceous species present	
		V. Snags, dens, cavity, etc.		None	
		VI. Plants' condition.		Generally healthy	
		VII. Land management practices.		None.	
		VIII. Topographic features (refugia, channels, hummocks).		None observe nor expected given type of system	
		IX. Submerged vegetation (only score if present).		N/A	
		X. Upland assessment area		N/A	
Current		With Impact		Additional Notes:	
				At the time of survey vegetation observed included: southern umbrella sedge (Fuirena scirpoidea), arrowhead (Sagittaria lancifolia), cattail (Typha sp.), St. John's wort (Hypericum fasciculatum), smartweed (Persicaria punctata), and sweetbay (Magnolia virginiana). Water was observed at the time of survey within AA. Water levels appeared appropriate, and the vegetation did not show signs of stress.	
8		0			

Raw Score = Sum of above scores/30 (if uplands, divide by 20)		Impact Acres =		0.31	
Current		With Impact			
0.7666667		0			
Functional Loss (FL) [For Impact Assessment Areas]:		FL = ID x Impact Acres =		0.238	
Impact Delta (ID)		NOTE: If impact is proposed to be mitigated at a mitigation bank that was assessed using UMAM, then the credits required for mitigation is equal to Functional Loss (FL). If impact mitigation is proposed at a mitigation bank that was not assessed using UMAM, then UMAM cannot be used to assess impacts; use the assessment method of the mitigation bank.			
Current - w/Impact		0.766666667			
Additional Notes:					



**UNIFORM WETLAND MITIGATION ASSESSMENT WORKSHEET - PART I - IMPACT**  
**Form 62-345.900(2), F.A.C. (See Sections 62-345.400 F.A.C.)**

Site/Project Name <b>Environmental Assessment for 8 Construction Sites at Tyndall Air Force Base, Bay County, Florida</b>		Application Number		Assessment Area Name or Number <b>WL086</b> <b>(Dredge WEG Boathouse Alt 2)</b>	
FLUCCs code <b>641 - Freshwater Marsh</b>		Further classification (optional) <b>PEM1F</b>		Impact Type <b>Direct Impact</b>	
Basin/Watershed Name/Number <b>HUC Basin 03140101/St. Andrew Bay</b>		Affected Waterbody (Class) <b>Class III</b>		Special Classification (i.e.OFW, AP, other local/state/federal designation of importance) <b>None</b>	
Geographic relationship to and hydrologic connection with wetlands, other surface water, uplands <p>The Assessment Area (AA) is located along the northwestern corner of the Civil Engineering Center. Native coastal scrub habitat occurs north of AA. Development occurs south of AA. Open sandy field borders AA to the south. AA is on peninsula. Forest that has been disturbed from hurricane damage and mechanical harvesting is located between the AA and U.S. Highway 98. WL085 is located east of the AA.</p>					
Assessment area description <p>The AA appears to be western portion of man-made linear wetland, although a review of historic aerials was not definitive. At the time of survey vegetation observed included: southern umbrella sedge (<i>Fuirena scirpoidea</i>), arrowhead (<i>Sagittaria lancifolia</i>), cattail (<i>Typha</i> sp.), St. John's wort (<i>Hypericum fasciculatum</i>), starrush whitetop (<i>Rhynchospora colorata</i>), and gallberry (<i>Ilex glabra</i>). Water was observed at the time of survey within AA. Water levels appeared appropriate, and the vegetation did not show signs of stress. During wet season and periods of inundation AA is likely hydrologically connected to WL085.</p>					
Significant Nearby Features <b>Tyndall AFB operations take place in proximity to the AA.</b>				Uniqueness (considering the relative rarity in relation to the regional landscape.) <b>freshwater habitat is not unique.</b>	
Functions <b>Water quality improvements, groundwater recharge, plant habitat, and wildlife habitat for nesting and breeding.</b>				Mitigation for previous permit/other historic use <b>None known</b>	
Anticipated Wildlife Utilization Based on Literature Review (List of species that are representative of the assessment area and reasonably expected to be found ) <b>Various amphibians and reptiles including frogs and snakes, turkeys, hawks, owls, kites, cardinals, mockingbirds, warblers, blue jays, woodpeckers, and mammals such as rodents, grey squirrels, deer, opossums, and raccoons.</b>				Anticipated Utilization by Listed Species (List species, their legal classification (E, T, SSC), type of use, and intensity of use of the assessment area) <b>Eastern indigo snake (FT) - all habitats - medium; Various wading birds (ST/FT) - wetlands - high.</b>	
Observed Evidence of Wildlife Utilization (List species directly observed, or other signs such as tracks, droppings, casings, nests, etc.):					
Additional relevant factors: <b>None</b>					
Assessment conducted by: <b>Ramon Mendieta</b>				Assessment date(s): <b>09/07/21</b>	

UNIFORM WETLAND MITIGATION ASSESSMENT WORKSHEET - PART II - IMPACT  
Form 62-345.900(2), F.A.C. (See Sections 62-345.500 and .600, F.A.C.)

Site/Project Name: <b>Environmental Assessment for 8 Construction Sites at Tyndall Air Force Base, Bay County, Florida</b>		Application Number: -		Assessment Area Name or Number: <b>WL086 (Dredge WEG Boathouse Alt 2)</b>	
Impact or Mitigation: <b>Impact</b>		Assessment Conducted by: <b>Ramon Mendieta</b>		Assessment Date: <b>09/07/21</b>	
Scoring Guidance		Optimal (10)		Moderate(7)	
Minimal (4)		Not Present (0)			
The scoring of each indicator is based on what would be suitable for the type of wetland or surface water assessed		Condition is optimal and fully supports wetland/surface water functions		Condition is less than optimal, but sufficient to maintain most wetland/surface water functions	
Minimal level of support of wetland/surface water functions		Condition is insufficient to provide wetland/surface water functions			
Enter Notes below (do NOT score each subcategory individually)					
.500(6)(a) Location and Landscape Support		a. Quality and quantity of <b>habitat support</b> outside of AA.		Moderate - hurricane damage and mechanical harvesting	
		b. <b>Invasive plant species</b> in proximity to AA.		Moderate - torpedograss	
		c. <b>Wildlife access</b> to and from AA (proximity and barriers).		Good	
		d. <b>Downstream benefits</b> provided to fish and wildlife.		Minimal - AA isolated by dunes and berms	
		e. Adverse impacts to wildlife in AA from <b>land uses</b> outside of AA.		Minimal - mechanical harvesting	
		f. <b>Hydrologic impediments and flow restrictions.</b>		AA isolated by dunes and berms	
		g. <b>Dependency</b> of downstream habitats on quantity or quality of discharges.		Minimal - AA isolated by dunes and berms	
h. Protection of wetland functions provided by uplands ( <b>upland</b> AAs only).		N/A			
Additional Notes:		The Assessment Area (AA) is located along the northwestern corner of the Civil Engineering Center. Native coastal scrub habitat occurs north of AA. Development occurs south of AA. Open sandy field borders AA to the south. AA is on peninsula. Forest that has been disturbed from hurricane damage and mechanical harvesting is located between the AA and U.S. Highway 98. WL085 is located east of the AA.			
Current		With Impact			
7		0			
.500(6)(b) Water Environment (n/a for uplands)		a. Appropriateness of <b>water levels and flows.</b>		appear normal	
		b. Reliability of <b>water level indicators.</b>		high- wrack line	
		c. Appropriateness of <b>soil moisture.</b>		appropriate	
		d. <b>Flow rates</b> /points of discharge.		No flow	
		e. <b>Fire history</b> (frequency/severity).		No evidence of natural fire regime	
		f. <b>Appropriate vegetative and/or benthic zonation.</b>		Generally appropriate for community type	
		g. <b>Hydrologic stress</b> on vegetation.		none	
		h. <b>Use by animals</b> with hydrologic requirements.		none	
		i. <b>Plant community composition</b> associated with water quality (i.e., plants tolerant of poor WQ).		appropriate	
		j. <b>Water quality of standing water by observation</b> (i.e., discoloration, turbidity).		N/A	
		k. <b>Water quality data</b> for the type of community.		N/A	
l. <b>Water depth, wave energy, and currents.</b>		N/A			
Additional Notes:		The AA appears to be western portion of man-made linear wetland, although a review of historic aerials was not definitive. Water was observed at the time of survey within AA. Water levels appeared appropriate, and the vegetation did not show signs of stress. During wet season and periods of inundation AA is likely hydrologically connected to WL085.			
Current		With Impact			
8		0			
.500(6)(c) Community Structure  X Vegetation  Benthic  Both		I. Appropriate/desirable species		Appropriate	
		II. Invasive/exotic plant species		None	
		III. Regeneration/recruitment		Appears normal for ttype of system	
		IV. Age, size distribution.		Herbaceous species present	
		V. Snags, dens, cavity, etc.		None	
		VI. Plants' condition.		Generally healthy	
		VII. Land management practices.		None.	
		VIII. Topographic features (refugia, channels, hummocks).		None observe nor expected given type of system	
		IX. Submerged vegetation (only score if present).		N/A	
		X. Upland assessment area		N/A	
Additional Notes:		At the time of survey vegetation observed included: southern umbrella sedge (Fuirena scirpoidea), arrowhead (Sagittaria lancifolia), cattail (Typha sp.), St. John's wort (Hypericum fasciculatum), starrush whitetop (Rhynchospora colorata), and gallberry (Ilex glabra).			
Current		With Impact			
8		0			

Raw Score = Sum of above scores/30 (if uplands, divide by 20)		Impact Acres =		0.02	
Current		With Impact			
0.7666667		0			
Functional Loss (FL) [For Impact Assessment Areas]:		FL = ID x Impact Acres =		0.015	
Impact Delta (ID)		NOTE: If impact is proposed to be mitigated at a mitigation bank that was assessed using UMAM, then the credits required for mitigation is equal to Functional Loss (FL). If impact mitigation is proposed at a mitigation bank that was not assessed using UMAM, then UMAM cannot be used to assess impacts; use the assessment method of the mitigation bank.			
Current - w/Impact		0.76666667			
Additional Notes:					

**UNIFORM WETLAND MITIGATION ASSESSMENT WORKSHEET - PART I - IMPACT**  
**Form 62-345.900(2), F.A.C. (See Sections 62-345.400 F.A.C.)**

Site/Project Name <b>Environmental Assessment for 8 Construction Sites at Tyndall Air Force Base, Bay County, Florida</b>		Application Number		Assessment Area Name or Number <b>WL087 (WEG Tower 1802)</b>	
FLUCCs code <b>641 - Freshwater Marsh</b>		Further classification (optional) <b>PEM</b>		Impact Type <b>Direct Impact</b>	
Assessment Area Size <b>0.60 Acres</b>		Basin/Watershed Name/Number <b>HUC Basin 03140101/St. Andrew Bay</b>		Affected Waterbody (Class) <b>Class III</b>	
Special Classification (i.e.OFW, AP, other local/state/federal designation of importance) <b>None</b>		Geographic relationship to and hydrologic connection with wetlands, other surface water, uplands <p>The Assessment Area (AA) is a freshwater marsh located east of the WEG Tower. The WEG tower facility and a parking lot are adjacent to the AA. Open land occurs to the south. Planted pine plantation that has been disturbed from hurricane damage and mechanical harvesting is located between the AA and U.S. Highway 98.</p>			
Assessment area description <p>The AA is a disturbed freshwater marsh that appears to be hydrologically isolated. Low areas contained saturated soils, standing water, and algal mats. Historically the AA appeared to be canopied upland. Formation of depression may have occurred during debris removal of hurricane debris. Vegetation observed included: torpedo grass (<i>Panicum repens</i>), green flatsedge (<i>Cyperus virens</i>), creeping primrosewillow (<i>Ludwigia repens</i>), maidencane (<i>Panicum hemitomon</i>), and bahia grass (<i>Paspalum notatum</i>).</p>					
Significant Nearby Features <b>Tyndall AFB operations take place in proximity to the AA.</b>			Uniqueness (considering the relative rarity in relation to the regional landscape.) <b>freshwater marsh habitat is not unique</b>		
Functions <b>Water quality improvements, groundwater recharge, plant habitat, and wildlife habitat for nesting and breeding.</b>			Mitigation for previous permit/other historic use <b>None known</b>		
Anticipated Wildlife Utilization Based on Literature Review (List of species that are representative of the assessment area and reasonably expected to be found ) <b>Various amphibians and reptiles including frogs and snakes, turkeys, hawks, owls, kites, cardinals, mockingbirds, warblers, blue jays, woodpeckers, and mammals such as rodents, grey squirrels, deer, opossums, and raccoons.</b>			Anticipated Utilization by Listed Species (List species, their legal classification (E, T, SSC), type of use, and intensity of use of the assessment area) <b>Eastern indigo snake (FT) - all habitats - medium; Various wading birds (ST/FT) - wetlands - high.</b>		
Observed Evidence of Wildlife Utilization (List species directly observed, or other signs such as tracks, droppings, casings, nests, etc.):					
Additional relevant factors: <b>None</b>					
Assessment conducted by: <b>Kelley Samuels</b>			Assessment date(s): <b>09/01/21</b>		



UNIFORM WETLAND MITIGATION ASSESSMENT WORKSHEET - PART II - IMPACT  
Form 62-345.900(2), F.A.C. (See Sections 62-345.500 and .600, F.A.C.)

Site/Project Name: <b>Environmental Assessment for 8 Construction Sites at Tyndall Air Force Base, Bay County, Florida</b>		Application Number: -		Assessment Area Name or Number: <b>WL087 (WEG Tower 1802)</b>	
Impact or Mitigation: <b>Impact</b>		Assessment Conducted by: <b>Kelley Samuels</b>		Assessment Date: <b>09/01/21</b>	
Scoring Guidance		Optimal (10)		Moderate(7)	
Minimal (4)		Not Present (0)			
The scoring of each indicator is based on what would be suitable for the type of wetland or surface water assessed		Condition is optimal and fully supports wetland/surface water functions		Condition is less than optimal, but sufficient to maintain most wetland/surface water functions	
Minimal level of support of wetland/surface water functions		Condition is insufficient to provide wetland/surface water functions			
Enter Notes below (do NOT score each subcategory individually)					
.500(6)(a) Location and Landscape Support		a. Quality and quantity of <b>habitat support</b> outside of AA.		Poor. Development to the west. US 98 and airfield to north.	
		b. <b>Invasive plant species</b> in proximity to AA.		High - torpedograss	
		c. <b>Wildlife access</b> to and from AA (proximity and barriers).		Partially limited by development and US98	
		d. <b>Downstream benefits</b> provided to fish and wildlife.		None AA appears to be isolated	
		e. Adverse impacts to wildlife in AA from <b>land uses</b> outside of AA.		Development and harvesting of pine	
		f. <b>Hydrologic impediments and flow restrictions.</b>		AA appears to be isolated	
		g. <b>Dependency</b> of downstream habitats on quantity or quality of discharges.		Minimal - AA isolated by dunes and berms	
h. Protection of wetland functions provided by uplands ( <b>upland</b> AAs only).		N/A			
Additional Notes:		The Assessment Area (AA) is a freshwater marsh located east of the WEG Tower. The WEG tower facility and a parking lot are adjacent to the AA. Open land occurs to the south. Planted pine plantation that has been disturbed from hurricane damage and mechanical harvesting is located between the AA and U.S. Highway 98			
Current		With Impact			
6		0			
.500(6)(b) Water Environment (n/a for uplands)		a. Appropriateness of <b>water levels and flows.</b>		higher than expected	
		b. Reliability of <b>water level indicators.</b>		Not distinct	
		c. Appropriateness of <b>soil moisture.</b>		Appropriate	
		d. <b>Flow rates</b> /points of discharge.		No flow	
		e. <b>Fire history</b> (frequency/severity).		No evidence of natural fire regime	
		f. <b>Appropriate vegetative and/or benthic zonation.</b>		AA dominated by nuisance/exotic species	
		g. <b>Hydrologic stress</b> on vegetation.		None	
		h. <b>Use by animals</b> with hydrologic requirements.		None	
		i. <b>Plant community composition</b> associated with water quality (i.e., plants tolerant of poor WQ).		High percentage of nuisance/exotic	
		j. <b>Water quality of standing water by observation</b> (i.e., discoloration, turbidity).		N/A	
		k. <b>Water quality data</b> for the type of community.		N/A	
l. <b>Water depth, wave energy, and currents.</b>		N/A			
Additional Notes:		The AA is a disturbed freshwater marsh that appears to be hydrologically isolated. Low areas contained saturated soils, standing water, and algal mats. Historically the AA appeared to be canopied upland. Formation of depression may have occurred during debris removal of hurricane debris.			
Current		With Impact			
4		0			
.500(6)(c) Community Structure  X Vegetation  Benthic  Both		I. Appropriate/desirable species		High amount of inappropriate species	
		II. Invasive/exotic plant species		Torpedo grass	
		III. Regeneration/recruitment		Moderate/minimal herbaceous species present	
		IV. Age, size distribution.		Herbaceous species present	
		V. Snags, dens, cavity, etc.		None	
		VI. Plants' condition.		Generally healthy	
		VII. Land management practices.		None.	
		VIII. Topographic features (refugia, channels, hummocks).		Artificial areas due to vegetation removal	
		IX. Submerged vegetation (only score if present).		N/A	
		X. Upland assessment area		N/A	
Additional Notes:		Vegetation observed included: torpedo grass (Panicum repens), green flatsedge (Cyperus virens), creeping primrosewillow (Ludwigia repens), maidencane (Panicum hemitomom), and bahia grass (Paspalum notatum).			
Current		With Impact			
4		0			

Raw Score = Sum of above scores/30 (if uplands, divide by 20)		Impact Acres =		0.60	
Current		With Impact			
0.4666667		0			
Functional Loss (FL) [For Impact Assessment Areas]:		FL = ID x Impact Acres =		0.280	
Impact Delta (ID)		NOTE: If impact is proposed to be mitigated at a mitigation bank that was assessed using UMAM, then the credits required for mitigation is equal to Functional Loss (FL). If impact mitigation is proposed at a mitigation bank that was not assessed using UMAM, then UMAM cannot be used to assess impacts; use the assessment method of the mitigation bank.			
Current - w/Impact		0.46666667			
Additional Notes:					

**UNIFORM WETLAND MITIGATION ASSESSMENT WORKSHEET - PART I - IMPACT**  
**Form 62-345.900(2), F.A.C. (See Sections 62-345.400 F.A.C.)**

Site/Project Name <b>Environmental Assessment for 8 Construction Sites at Tyndall Air Force Base, Bay County, Florida</b>		Application Number		Assessment Area Name or Number <b>WL088</b> <b>(Expand FAMCAMP Both Alts)</b>	
FLUCCs code <b>641 - Freshwater Marshes</b>		Further classification (optional) <b>PEM1C</b>		Impact Type <b>Direct Impact</b>	
Assessment Area Size <b>0.46 Acres</b>		Basin/Watershed Name/Number <b>HUC Basin 03140101/St. Andrew Bay</b>		Affected Waterbody (Class) <b>Class III</b>	
Special Classification (i.e.OFW, AP, other local/state/federal designation of importance) <b>None</b>		Geographic relationship to and hydrologic connection with wetlands, other surface water, uplands <p>The Assessment Area (AA) is freshwater marsh that is adjacent to U.S. Highway 98 and connected to a roadside swale along U.S. Highway 98. The Fam Camp campgrounds are located the north of the AA and upland scrub, pine and hardwoods with walking trails are located to the east of the AA. Harvested uplands and wetlands are located south of the AA. Pearl Bayou is located approximately 0.25 mile to the west of the AA.</p>			
Assessment area description <p>The AA is a freshwater marsh that is hydrologically connected to a roadside swale along U.S. Highway 98. Vegetation observed within the herbaceous stratum included bighead rush (<i>Juncus megacephalus</i>), witchgrass (<i>Dichanthelium</i> spp.), bushy bluestem (<i>Andropogon glomeratus</i>), dogfennel (<i>Eupatorium capillifolium</i>), yelloweyed grass (<i>Xyris</i> spp.), spadeleaf (<i>Centella asiatica</i>), yellow nutgrass (<i>Cyperus esculentus</i>), black-bracted pipewort (<i>Eriocaulon nigrobacteatum</i>), manyflower marshpennywort (<i>Hydrocotyle umbellata</i>), fourpetal St. John's-wort (<i>Hypericum tetrapetalum</i>) and saw palmetto (<i>Serenoa repens</i>).</p>					
Significant Nearby Features <b>Tyndall AFB operations take place in proximity to the AA.</b>			Uniqueness (considering the relative rarity in relation to the regional landscape.) <b>The area is not unique compared to the surrounding landscape.</b>		
Functions <b>Water quality improvements, groundwater recharge, plant habitat, and wildlife habitat for breeding.</b>			Mitigation for previous permit/other historic use <b>None known</b>		
Anticipated Wildlife Utilization Based on Literature Review (List of species that are representative of the assessment area and reasonably expected to be found ) <b>Various amphibians and reptiles including frogs and snakes, turkeys, hawks, owls, kites, cardinals, mockingbirds, warblers, blue jays, woodpeckers, and mammals such as rodents, grey squirrels, deer, opossums, and raccoons.</b>			Anticipated Utilization by Listed Species (List species, their legal classification (E, T, SSC), type of use, and intensity of use of the assessment area) <b>Eastern indigo snake (FT) - all habitats - medium; Various wading birds (ST/FT) - wetlands - high.</b>		
Observed Evidence of Wildlife Utilization (List species directly observed, or other signs such as tracks, droppings, casings, nests, etc.): <b>Northern mockingbird (<i>Mimus polyglottos</i>), mourning dove (<i>Zenaida macroura</i>)</b>					
Additional relevant factors: <b>None</b>					
Assessment conducted by: <b>BKB and JCB</b>			Assessment date(s): <b>09/28/21</b>		

UNIFORM WETLAND MITIGATION ASSESSMENT WORKSHEET - PART II - IMPACT  
Form 62-345.900(2), F.A.C. (See Sections 62-345.500 and .600, F.A.C.)

Site/Project Name: <b>Environmental Assessment for 8 Construction Sites at Tyndall Air Force Base, Bay County, Florida</b>		Application Number: <b>-</b>		Assessment Area Name or Number: <b>WL088 (Expand FAMCAMP Both Alts)</b>	
Impact or Mitigation: <b>Impact</b>		Assessment Conducted by: <b>BKB and JCB</b>		Assessment Date: <b>09/28/21</b>	
Scoring Guidance		Optimal (10)		Moderate(7)	
Minimal (4)		Not Present (0)			
The scoring of each indicator is based on what would be suitable for the type of wetland or surface water assessed		Condition is optimal and fully supports wetland/surface water functions		Condition is less than optimal, but sufficient to maintain most wetland/surface water functions	
Minimal level of support of wetland/surface water functions		Condition is insufficient to provide wetland/surface water functions			
Enter Notes below (do NOT score each subcategory individually)					
<div>.500(6)(a) Location and Landscape Support</div> <div>CurrentWith Impact</div> <div>70</div>		a. Quality and quantity of <b>habitat support</b> outside of AA.		Fair - logging and transportation are located adjacent to AA	
		b. <b>Invasive plant species</b> in proximity to AA.		Minimal	
		c. <b>Wildlife access</b> to and from AA (proximity and barriers).		Limited by U.S. Highway 98	
		d. <b>Downstream benefits</b> provided to fish and wildlife.		Wetland hydrologically connected to swale	
		e. Adverse impacts to wildlife in AA from <b>land uses</b> outside of AA.		Logging, adjacent roads, Fam Camp campgrounds	
		f. <b>Hydrologic impediments and flow restrictions.</b>		U.S. Highway 98	
		g. <b>Dependency</b> of downstream habitats on quantity or quality of discharges.		Minimal	
		h. Protection of wetland functions provided by uplands ( <b>upland</b> AAs only).		N/A	
Additional Notes:		The Assessment Area (AA) is freshwater marsh that is adjacent to U.S. Highway 98 and connected to a roadside swale along U.S. Highway 98. The Fam Camp campgrounds are located the north of the AA and upland scrub, pine and hardwoods with walking trails are located to the east of the AA. Harvested uplands and wetlands are located south of the AA. Pearl Bayou is located approximately 0.25 mile to the west of the AA.			
<div>.500(6)(b) Water Environment (n/a for uplands)</div> <div>CurrentWith Impact</div> <div>70</div>		a. Appropriateness of <b>water levels and flows.</b>		Generally appropriate	
		b. Reliability of <b>water level indicators.</b>		Very reliable	
		c. Appropriateness of <b>soil moisture.</b>		Generally appropriate	
		d. <b>Flow rates</b> /points of discharge.		Water flows to swale	
		e. <b>Fire history</b> (frequency/severity).		No evidence of natural fire regime	
		f. <b>Appropriate vegetative and/or benthic zonation.</b>		Generally appropriate for community type	
		g. <b>Hydrologic stress</b> on vegetation.		Minimal	
		h. <b>Use by animals</b> with hydrologic requirements.		Minimal	
		i. <b>Plant community composition</b> associated with water quality (i.e., plants tolerant of poor WQ).		Average	
		j. <b>Water quality of standing water by observation</b> (I.e., discoloration, turbidity).		Average	
		k. <b>Water quality data</b> for the type of community.		N/A	
		l. <b>Water depth, wave energy, and currents.</b>		0-12 inches	
Additional Notes:		Hydrologic indicators observed within and adjacent to the AA during the field review included surface water, high water table, saturation, and algal mats. Water level in the center of the freshwater marsh was greater than 12 inches deep during the field review. Water levels were generally appropriate for the community type. Sources of hydrology included groundwater and stormwater runoff from the surrounding uplands and the roadside swale.			
<div>.500(6)(c) Community Structure</div> <div><div>X</div>Vegetation</div> <div><div></div>Benthic</div> <div><div></div>Both</div> <div>CurrentWith Impact</div> <div>70</div>		I. Appropriate/desirable species		Mostly appropriate	
		II. Invasive/exotic plant species		Minimal	
		III. Regeneration/recruitment		Average	
		IV. Age, size distribution.		Average	
		V. Snags, dens, cavity, etc.		Minimal	
		VI. Plants' condition.		Generally healthy	
		VII. Land management practices.		None	
		VIII. Topographic features (refugia, channels, hummocks).		Minimal	
		IX. Submerged vegetation (only score if present).		N/A	
		X. Upland assessment area		N/A	
Additional Notes:		Dominate vegetation observed within the herbaceous stratum included bighead rush (Juncus megacephalus), witchgrass (Dichanthelium spp.), bushy bluestem (Andropogon glomeratus), dogfennel (Eupatorium capillifolium), yelloweyed grass (Xyris spp.), spadeleaf (Centella asiatica), yellow nutgrass (Cyperus esculentus), black-bracted pipewort (Eriocaulon nigrobracteatum), manyflower marshpennywort (Hydrocotyle umbellata), fourpetal St. John's-wort (Hypericum tetrapetalum) and saw palmetto (Serenoa repens).			

Raw Score = Sum of above scores/30 (if uplands, divide by 20)	
Current	With Impact
0.7	0

Impact Delta (ID)	
Current - w/Impact	0.7

Impact Acres =	0.46
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Functional Loss (FL) [For Impact Assessment Areas]:	
FL = ID x Impact Acres =	0.322

NOTE: If impact is proposed to be mitigated at a mitigation bank that was assessed using UMAM, then the credits required for mitigation is equal to Functional Loss (FL). If impact mitigation is proposed at a mitigation bank that was not assessed using UMAM, then UMAM cannot be used to assess impacts; use the assessment method of the mitigation bank.

Additional Notes:

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**UNIFORM WETLAND MITIGATION ASSESSMENT WORKSHEET - PART I - IMPACT**  
**Form 62-345.900(2), F.A.C. (See Sections 62-345.400 F.A.C.)**

Site/Project Name <b>Environmental Assessment for 8 Construction Sites at Tyndall Air Force Base, Bay County, Florida</b>		Application Number		Assessment Area Name or Number <b>WL089 (Expand FAMCAMP Alt 1)</b>	
FLUCCs code <b>642 - Salt Marsh</b>		Further classification (optional) <b>E2EM1</b>		Impact Type <b>Direct Impact</b>	
Assessment Area Size <b>0.19 Acres</b>					
Basin/Watershed Name/Number <b>HUC Basin 03140101/St. Andrew Bay</b>		Affected Waterbody (Class) <b>Class III</b>		Special Classification (i.e.OFW, AP, other local/state/federal designation of importance) <b>None</b>	
Geographic relationship to and hydrologic connection with wetlands, other surface water, uplands					
<p>The Assessment Area (AA) is a salt marsh that is directly connected to Pearl Bayou AA is located at Fam Camp. Man made structures near AA including Fam Camp support structures, US 98, and marine facility to the north. Nearby (west and south of AA) planted pine plantation has been disturbed from hurricane damage and mechanical harvesting.</p>					
Assessment area description					
<p>The AA is a tidally influenced salt marsh comprised of a sandy shoreline. The AA contains vegetative cover of needlerush (<i>Juncus roemerianus</i>), marshhay cordgrass (<i>Spartina patens</i>), softstem bulrush (<i>Schoenoplectus tabernaemontani</i>), and salt bush (<i>Baccharis halimifolia</i>). Needlerush is dominant vegetation. Wrack line visible along shoreline. Man-made debris observed in AA.</p>					
Significant Nearby Features <b>Tyndall AFB operations take place in proximity to the AA.</b>				Uniqueness (considering the relative rarity in relation to the regional landscape.) <b>saltwater marsh habitat is not unique</b>	
Functions <b>Water quality improvements, groundwater recharge, plant habitat, and wildlife habitat for nesting and breeding.</b>				Mitigation for previous permit/other historic use <b>None known</b>	
Anticipated Wildlife Utilization Based on Literature Review (List of species that are representative of the assessment area and reasonably expected to be found )  <b>Various amphibians and reptiles including frogs and snakes, turkeys, hawks, owls, kites, cardinals, mockingbirds, warblers, blue jays, woodpeckers, and mammals such as rodents, grey squirrels, deer, opossums, and raccoons.</b>				Anticipated Utilization by Listed Species (List species, their legal classification (E, T, SSC), type of use, and intensity of use of the assessment area)  <b>Various wading birds (ST/FT) - wetlands - high.</b>	
Observed Evidence of Wildlife Utilization (List species directly observed, or other signs such as tracks, droppings, casings, nests, etc.):  <b>None observed.</b>					
Additional relevant factors:  <b>None</b>					
Assessment conducted by: <b>Ramon Mendieta and Brooke Bayer</b>				Assessment date(s): <b>09/01/21</b>	

UNIFORM WETLAND MITIGATION ASSESSMENT WORKSHEET - PART II - IMPACT  
Form 62-345.900(2), F.A.C. (See Sections 62-345.500 and .600, F.A.C.)

Site/Project Name: <b>Environmental Assessment for 8 Construction Sites at Tyndall Air Force Base, Bay County, Florida</b>		Application Number: -		Assessment Area Name or Number: <b>WL089 (Expand FAMCAMP Alt 1)</b>	
Impact or Mitigation: <b>Impact</b>		Assessment Conducted by: <b>Ramon Mendieta and Brooke Bayer</b>		Assessment Date: <b>09/01/21</b>	

Scoring Guidance		Optimal (10)	Moderate(7)	Minimal (4)	Not Present (0)
The scoring of each indicator is based on what would be suitable for the type of wetland or surface water assessed		Condition is optimal and fully supports wetland/surface water functions	Condition is less than optimal, but sufficient to maintain most wetland/surface water functions	Minimal level of support of wetland/surface water functions	Condition is insufficient to provide wetland/surface water functions

Enter Notes below (do NOT score each subcategory individually)

.500(6)(a) Location and Landscape Support		a. Quality and quantity of <b>habitat support</b> outside of AA.		Moderate - hurricane damage and mechanical harvesting	
		b. <b>Invasive plant species</b> in proximity to AA.		none	
		c. <b>Wildlife access</b> to and from AA (proximity and barriers).		limited by adjacent development	
		d. <b>Downstream benefits</b> provided to fish and wildlife.		not limited by distance or barriers as AA is shoreline with direct access	
		e. Adverse impacts to wildlife in AA from <b>land uses</b> outside of AA.		Minimal - mechanical harvesting and development	
		f. <b>Hydrologic impediments and flow restrictions.</b>		none. AA is tidally influenced	
		Current	With Impact	g. <b>Dependency</b> of downstream habitats on quantity or quality of discharges.	
h. Protection of wetland functions provided by uplands ( <b>upland</b> AAs only).				N/A	
Additional Notes: The Assessment Area (AA) is a salt marsh that is directly connected to Pearl Bayou AA is located at Fam Camp. Man made structures near AA including Fam Camp support structures, US 98, and marine facility to the north. Nearby, west of AA, planted pine plantation has been disturbed from hurricane damage and mechanical harvesting.					
7	0				

.500(6)(b) Water Environment (n/a for uplands)		a. Appropriateness of <b>water levels and flows.</b>		appear normal	
		b. Reliability of <b>water level indicators.</b>		high- wrack line	
		c. Appropriateness of <b>soil moisture.</b>		appropriate	
		d. <b>Flow rates</b> /points of discharge.		No flow	
		e. <b>Fire history</b> (frequency/severity).		No evidence of natural fire regime	
		f. <b>Appropriate vegetative and/or benthic zonation.</b>		Generally appropriate for community type	
		g. <b>Hydrologic stress</b> on vegetation.		none	
		h. <b>Use by animals</b> with hydrologic requirements.		none	
		i. <b>Plant community composition</b> associated with water quality (i.e., plants tolerant of poor WQ).		appropriate	
		j. <b>Water quality of standing water by observation</b> (i.e., discoloration, turbidity).		N/A	
		Current	With Impact	k. <b>Water quality data</b> for the type of community.	
l. <b>Water depth, wave energy, and currents.</b>				N/A	
Additional Notes: The AA is a tidally influenced salt marsh comprised of a sandy shoreline. Wrack line visible along shoreline. Man-made debris observed in AA.					
9	0				

.500(6)(c) Community Structure  X Vegetation  Benthic  Both		I. Appropriate/desirable species		Appropriate	
		II. Invasive/exotic plant species		None	
		III. Regeneration/recruitment		Appears normal for ttype of system	
		IV. Age, size distribution.		Herbaceous species present	
		V. Snags, dens, cavity, etc.		None	
		VI. Plants' condition.		Generally healthy	
		VII. Land management practices.		None.	
		VIII. Topographic features (refugia, channels, hummocks).		None observe nor expected given type of system	
		IX. Submerged vegetation (only score if present).		N/A	
		X. Upland assessment area		N/A	
Current	With Impact	Additional Notes:			
		The AA contains vegetative cover of needlerush (Juncus roemerianus), marshhay cordgrass (Spartina patens), softstem bulrush (Schoenoplectus tabernaemontani), and salt bush (Baccharis halimifolia). Needlerush is dominant vegetation.			
8	0				

Raw Score = Sum of above scores/30 (if uplands, divide by 20)	
Current	With Impact
0.8	0

Impact Delta (ID)	
Current - w/Impact	0.8

Impact Acres =	0.19
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Functional Loss (FL) [For Impact Assessment Areas]:	
FL = ID x Impact Acres =	0.152

NOTE: If impact is proposed to be mitigated at a mitigation bank that was assessed using UMAM, then the credits required for mitigation is equal to Functional Loss (FL). If impact mitigation is proposed at a mitigation bank that was not assessed using UMAM, then UMAM cannot be used to assess impacts; use the assessment method of the mitigation bank.

Additional Notes:

**UNIFORM WETLAND MITIGATION ASSESSMENT WORKSHEET - PART I - IMPACT**  
**Form 62-345.900(2), F.A.C. (See Sections 62-345.400 F.A.C.)**

Site/Project Name <b>Environmental Assessment for 8 Construction Sites at Tyndall Air Force Base, Bay County, Florida</b>		Application Number		Assessment Area Name or Number <b>WL089 (Expand FAMCAMP Alt 2)</b>	
FLUCCs code <b>642 - Salt Marsh</b>		Further classification (optional) <b>E2EM1</b>		Impact Type <b>Direct Impact</b>	
Assessment Area Size <b>0.13 Acres</b>		Basin/Watershed Name/Number <b>HUC Basin 03140101/St. Andrew Bay</b>		Affected Waterbody (Class) <b>Class III</b>	
Special Classification (i.e.OFW, AP, other local/state/federal designation of importance) <b>None</b>		Geographic relationship to and hydrologic connection with wetlands, other surface water, uplands <p>The Assessment Area (AA) is a salt marsh that is directly connected to Pearl Bayou AA is located at Fam Camp. Man made structures near AA including Fam Camp support structures, US 98, and marine facility to the north. Nearby (west and south of AA) planted pine plantation has been disturbed from hurricane damage and mechanical harvesting.</p>			
Assessment area description <p>The AA is a tidally influenced salt marsh comprised of a sandy shoreline. The AA contains vegetative cover of needlerush (<i>Juncus roemerianus</i>), marshhay cordgrass (<i>Spartina patens</i>), softstem bulrush (<i>Schoenoplectus tabernaemontani</i>), and salt bush (<i>Baccharis halimifolia</i>). Needlerush is dominant vegetation. Wrack line visible along shoreline. Man-made debris observed in AA.</p>					
Significant Nearby Features <b>Tyndall AFB operations take place in proximity to the AA.</b>				Uniqueness (considering the relative rarity in relation to the regional landscape.) <b>saltwater marsh habitat is not unique</b>	
Functions <b>Water quality improvements, groundwater recharge, plant habitat, and wildlife habitat for nesting and breeding.</b>				Mitigation for previous permit/other historic use <b>None known</b>	
Anticipated Wildlife Utilization Based on Literature Review (List of species that are representative of the assessment area and reasonably expected to be found ) <b>Various amphibians and reptiles including frogs and snakes, turkeys, hawks, owls, kites, cardinals, mockingbirds, warblers, blue jays, woodpeckers, and mammals such as rodents, grey squirrels, deer, opossums, and raccoons.</b>				Anticipated Utilization by Listed Species (List species, their legal classification (E, T, SSC), type of use, and intensity of use of the assessment area) <b>Various wading birds (ST/FT) - wetlands - high.</b>	
Observed Evidence of Wildlife Utilization (List species directly observed, or other signs such as tracks, droppings, casings, nests, etc.): <b>None observed.</b>					
Additional relevant factors: <b>None</b>					
Assessment conducted by: <b>Ramon Mendieta and Brooke Bayer</b>				Assessment date(s): <b>09/01/21</b>	



UNIFORM WETLAND MITIGATION ASSESSMENT WORKSHEET - PART II - IMPACT  
Form 62-345.900(2), F.A.C. (See Sections 62-345.500 and .600, F.A.C.)

Site/Project Name: <b>Environmental Assessment for 8 Construction Sites at Tyndall Air Force Base, Bay County, Florida</b>		Application Number: -		Assessment Area Name or Number: <b>WL089 (Expand FAMCAMP Alt 2)</b>	
Impact or Mitigation: <b>Impact</b>		Assessment Conducted by: <b>Ramon Mendieta and Brooke Bayer</b>		Assessment Date: <b>09/01/21</b>	

Scoring Guidance		Optimal (10)	Moderate(7)	Minimal (4)	Not Present (0)
The scoring of each indicator is based on what would be suitable for the type of wetland or surface water assessed		Condition is optimal and fully supports wetland/surface water functions	Condition is less than optimal, but sufficient to maintain most wetland/surface water functions	Minimal level of support of wetland/surface water functions	Condition is insufficient to provide wetland/surface water functions

Enter Notes below (do NOT score each subcategory individually)

.500(6)(a) Location and Landscape Support		a. Quality and quantity of <b>habitat support</b> outside of AA.		Moderate - hurricane damage and mechanical harvesting	
		b. <b>Invasive plant species</b> in proximity to AA.		none	
		c. <b>Wildlife access</b> to and from AA (proximity and barriers).		limited by adjacent development	
		d. <b>Downstream benefits</b> provided to fish and wildlife.		not limited by distance or barriers as AA is shoreline with direct access	
		e. Adverse impacts to wildlife in AA from <b>land uses</b> outside of AA.		Minimal - mechanical harvesting and development	
		f. <b>Hydrologic impediments and flow restrictions.</b>		none. AA is tidally influenced	
		Current	With Impact	g. <b>Dependency</b> of downstream habitats on quantity or quality of discharges.	
h. Protection of wetland functions provided by uplands ( <b>upland</b> AAs only).				N/A	
Additional Notes: The Assessment Area (AA) is a salt marsh that is directly connected to Pearl Bayou AA is located at Fam Camp. Man made structures near AA including Fam Camp support structures, US 98, and marine facility to the north. Nearby, west of AA, planted pine plantation has been disturbed from hurricane damage and mechanical harvesting.					
7	0				

.500(6)(b) Water Environment (n/a for uplands)		a. Appropriateness of <b>water levels and flows.</b>		appear normal	
		b. Reliability of <b>water level indicators.</b>		high- wrack line	
		c. Appropriateness of <b>soil moisture.</b>		appropriate	
		d. <b>Flow rates</b> /points of discharge.		No flow	
		e. <b>Fire history</b> (frequency/severity).		No evidence of natural fire regime	
		f. <b>Appropriate vegetative and/or benthic zonation.</b>		Generally appropriate for community type	
		g. <b>Hydrologic stress</b> on vegetation.		none	
		h. <b>Use by animals</b> with hydrologic requirements.		none	
		i. <b>Plant community composition</b> associated with water quality (i.e., plants tolerant of poor WQ).		appropriate	
		j. <b>Water quality of standing water by observation</b> (i.e., discoloration, turbidity).		N/A	
		Current	With Impact	k. <b>Water quality data</b> for the type of community.	
l. <b>Water depth, wave energy, and currents.</b>				N/A	
Additional Notes: The AA is a tidally influenced salt marsh comprised of a sandy shoreline. Wrack line visible along shoreline. Man-made debris observed in AA.					
9	0				

.500(6)(c) Community Structure  X Vegetation  Benthic  Both		I. Appropriate/desirable species		Appropriate	
		II. Invasive/exotic plant species		None	
		III. Regeneration/recruitment		Appears normal for ttype of system	
		IV. Age, size distribution.		Herbaceous species present	
		V. Snags, dens, cavity, etc.		None	
		VI. Plants' condition.		Generally healthy	
		VII. Land management practices.		None.	
		VIII. Topographic features (refugia, channels, hummocks).		None observe nor expected given type of system	
		IX. Submerged vegetation (only score if present).		N/A	
		X. Upland assessment area		N/A	
Current	With Impact	Additional Notes:			
		The AA contains vegetative cover of needlerush (Juncus roemerianus), marshhay cordgrass (Spartina patens), softstem bulrush (Schoenoplectus tabernaemontani), and salt bush (Baccharis halimifolia). Needlerush is dominant vegetation.			
8	0				

Raw Score = Sum of above scores/30 (if uplands, divide by 20)		Impact Acres = 0.13		Additional Notes:
Current	With Impact	Functional Loss (FL) [For Impact Assessment Areas]:		
0.8	0	FL = ID x Impact Acres = 0.104		

Impact Delta (ID)	
Current - w/Impact	0.8

NOTE: If impact is proposed to be mitigated at a mitigation bank that was assessed using UMAM, then the credits required for mitigation is equal to Functional Loss (FL). If impact mitigation is proposed at a mitigation bank that was not assessed using UMAM, then UMAM cannot be used to assess impacts; use the assessment method of the mitigation bank.

**UNIFORM WETLAND MITIGATION ASSESSMENT WORKSHEET - PART I - IMPACT**  
**Form 62-345.900(2), F.A.C. (See Sections 62-345.400 F.A.C.)**

Site/Project Name <b>Environmental Assessment for 8 Construction Sites at Tyndall Air Force Base, Bay County, Florida</b>		Application Number		Assessment Area Name or Number <b>WL090 (Heritage Club Pier Both Alts)</b>	
FLUCCs code <b>642 - Saltwater Marshes</b>		Further classification (optional) <b>E2EM1</b>		Impact Type <b>Direct Impact</b>	
Assessment Area Size <b>0.29 Acres</b>					
Basin/Watershed Name/Number <b>HUC Basin 03140101/St. Andrew Bay</b>		Affected Waterbody (Class) <b>Class III</b>		Special Classification (i.e.OFW, AP, other local/state/federal designation of importance) <b>None</b>	
Geographic relationship to and hydrologic connection with wetlands, other surface water, uplands					
<p>The AA is a saltwater marsh that is connected to a routinely mowed wet prairie to the northeast. Tyndall Air Force Base operations are located beyond the wet prairie to the northeast. The AA is part of a large saltwater marsh located along Saint Andrew Bay, which is located to the southwest of the AA.</p>					
Assessment area description					
<p>The AA is a saltwater marsh connected to Saint Andrew Bay that is predominated by needle rush (<i>Juncus roemerianus</i>) with some shoreline seapurslane (<i>Sesuvium portulacastrum</i>) and saltwater falsewillow (<i>Baccharis angustifolia</i>).</p>					
Significant Nearby Features				Uniqueness (considering the relative rarity in relation to the regional landscape.)	
Tyndall AFB operations take place in proximity to the AA.				The salt marsh is unique with regards to the surrounding wetland and upland.	
Functions				Mitigation for previous permit/other historic use	
Water quality improvements, groundwater recharge, plant habitat, and wildlife habitat for nesting and breeding.				None known	
Anticipated Wildlife Utilization Based on Literature Review (List of species that are representative of the assessment area and reasonably expected to be found )				Anticipated Utilization by Listed Species (List species, their legal classification (E, T, SSC), type of use, and intensity of use of the assessment area)	
Various crustaceans, fish, birds, and small mammals.				Various wading birds (ST/FT) - wetlands - high.	
Observed Evidence of Wildlife Utilization (List species directly observed, or other signs such as tracks, droppings, casings, nests, etc.):					
Great egret ( <i>Ardea alba</i> ), osprey ( <i>Pandion haliaetus</i> ), brown pelican ( <i>Pelecanus occidentalis</i> ), black skimmer ( <i>Rynchops niger</i> ), mourning dove ( <i>Zenaida macroura</i> )					
Additional relevant factors:					
None					
Assessment conducted by:				Assessment date(s):	
BKB and RFM				09/01/21	

UNIFORM WETLAND MITIGATION ASSESSMENT WORKSHEET - PART II - IMPACT  
Form 62-345.900(2), F.A.C. (See Sections 62-345.500 and .600, F.A.C.)

Site/Project Name: <b>Environmental Assessment for 8 Construction Sites at Tyndall Air Force Base, Bay County, Florida</b>		Application Number: -		Assessment Area Name or Number: <b>WL090 (Heritage Club Pier Both Alts)</b>	
Impact or Mitigation: <b>Impact</b>		Assessment Conducted by: <b>BKB and RFM</b>		Assessment Date: <b>09/01/21</b>	
Scoring Guidance		Optimal (10)		Moderate(7)	
Minimal (4)		Not Present (0)			
The scoring of each indicator is based on what would be suitable for the type of wetland or surface water assessed		Condition is optimal and fully supports wetland/surface water functions		Condition is less than optimal, but sufficient to maintain most wetland/surface water functions	
Minimal level of support of wetland/surface water functions		Condition is insufficient to provide wetland/surface water functions			
Enter Notes below (do NOT score each subcategory individually)					
<div>.500(6)(a) Location and Landscape Support</div> <div>CurrentWith Impact</div> <div>80</div>		a. Quality and quantity of <b>habitat support</b> outside of AA.		Good	
		b. <b>Invasive plant species</b> in proximity to AA.		Minimal	
		c. <b>Wildlife access</b> to and from AA (proximity and barriers).		Good	
		d. <b>Downstream benefits</b> provided to fish and wildlife.		High - tidally influenced by Saint Andrew Bay	
		e. Adverse impacts to wildlife in AA from <b>land uses</b> outside of AA.		Minimal - mowing adjacent to AA	
		f. <b>Hydrologic impediments and flow restrictions</b> .		None	
		g. <b>Dependency</b> of downstream habitats on quantity or quality of discharges.		High	
		h. Protection of wetland functions provided by uplands ( <b>upland</b> AAs only).		N/A	
Additional Notes:		The AA is a saltwater marsh that is connected to a routinely mowed wet prairie to the northeast. Tyndall Air Force Base operations are located beyond the wet prairie to the northeast. The AA is part of a large saltwater marsh located along Saint Andrew Bay, which is located to the southwest of the AA. Wildlife movement is slightly limited by Tyndall Air Force Operations to the northeast, but is not limited in other directions.			
<div>.500(6)(b) Water Environment (n/a for uplands)</div> <div>CurrentWith Impact</div> <div>80</div>		a. Appropriateness of <b>water levels and flows</b> .		Generally appropriate	
		b. Reliability of <b>water level indicators</b> .		Very reliable	
		c. Appropriateness of <b>soil moisture</b> .		Generally appropriate	
		d. <b>Flow rates</b> /points of discharge.		Tidally influenced from Saint Andrew Bay	
		e. <b>Fire history</b> (frequency/severity).		No evidence of natural fire regime	
		f. <b>Appropriate vegetative and/or benthic zonation</b> .		Generally appropriate for community type	
		g. <b>Hydrologic stress</b> on vegetation.		Minimal	
		h. <b>Use by animals</b> with hydrologic requirements.		High	
		i. <b>Plant community composition</b> associated with water quality (i.e., plants tolerant of poor WQ).		Good	
		j. <b>Water quality of standing water by observation</b> (I.e., discoloration, turbidity).		Average	
		k. <b>Water quality data</b> for the type of community.		N/A	
		l. <b>Water depth, wave energy, and currents</b> .		0-12 inches	
Additional Notes:		The AA is a tidally influenced saltwater marsh that is connected to Saint Andrew Bay to the southwest and a mowed wet prairie to the northeast. The AA contained standing water at a depth of 0 - 12 inches at the time of assessment.			
<div>.500(6)(c) Community Structure</div> <div><div>X</div>Vegetation</div> <div><div></div>Benthic</div> <div><div></div>Both</div> <div>CurrentWith Impact</div> <div>80</div>		I. Appropriate/desirable species		Appropriate	
		II. Invasive/exotic plant species		None	
		III. Regeneration/recruitment		Good	
		IV. Age, size distribution.		Average	
		V. Snags, dens, cavity, etc.		Minimal	
		VI. Plants' condition.		Generally healthy	
		VII. Land management practices.		None	
		VIII. Topographic features (refugia, channels, hummocks).		Minimal	
		IX. Submerged vegetation (only score if present).		N/A	
		X. Upland assessment area		N/A	
Additional Notes:		The AA is a saltwater marsh connected to Saint Andrew Bay that is predominated by needle rush (Juncus roemerianus) with some shoreline seapurslane (Sesuvium portulacastrum) and saltwater falsewillow (Baccharis angustifolia).			

Raw Score = Sum of above scores/30 (if uplands, divide by 20)	
Current	With Impact
0.8	0

Impact Delta (ID)	
Current - w/Impact	0.8

Impact Acres =	0.29
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Functional Loss (FL) [For Impact Assessment Areas]:	
FL = ID x Impact Acres =	0.232

NOTE: If impact is proposed to be mitigated at a mitigation bank that was assessed using UMAM, then the credits required for mitigation is equal to Functional Loss (FL). If impact mitigation is proposed at a mitigation bank that was not assessed using UMAM, then UMAM cannot be used to assess impacts; use the assessment method of the mitigation bank.

Additional Notes:



**UNIFORM WETLAND MITIGATION ASSESSMENT WORKSHEET - PART I - IMPACT**  
**Form 62-345.900(2), F.A.C. (See Sections 62-345.400 F.A.C.)**

Site/Project Name <b>Environmental Assessment for 8 Construction Sites at Tyndall Air Force Base, Bay County, Florida</b>		Application Number		Assessment Area Name or Number <b>WL090</b> <b>(Heritage Club Pier Both Alts)</b>	
FLUCCs code <b>643 - Wet Prairies</b>		Further classification (optional) <b>PEM1</b>		Impact Type <b>Direct Impact</b>	
Assessment Area Size <b>0.07 Acres</b>					
Basin/Watershed Name/Number <b>HUC Basin 03140101/St. Andrew Bay</b>		Affected Waterbody (Class) <b>Class III</b>		Special Classification (i.e.OFW, AP, other local/state/federal designation of importance) <b>None</b>	
Geographic relationship to and hydrologic connection with wetlands, other surface water, uplands					
<p>The Assessment Area (AA) is wet prairie that is adjacent to the Heritage Club restaurant to the north and saltwater marsh and Saint Andrew Bay to the east, south, and west.</p>					
Assessment area description					
<p>The AA is a routinely mowed wet prairie. Vegetation observed within the herbaceous stratum included manyflower marshpennywort (<i>Hydrocotyle umbellata</i>), Baldwin's spikerush (<i>Eleocharis baldwinii</i>), herb-of-grace (<i>Bacopa monnieri</i>), flatsedge (<i>Cyperus</i> spp.), southern umbrellasedge (<i>Fuirena scirpoidea</i>), turkey tangle frogfruit (<i>Phyla nodiflora</i>), and St. Augustinegrass (<i>Stenotaphrum secundatum</i>). Algal mats were present and soils saturated during the field review.</p>					
Significant Nearby Features  <b>Tyndall AFB operations take place in proximity to the AA.</b>				Uniqueness (considering the relative rarity in relation to the regional landscape.)  <b>The area is not unique compared to the surrounding landscape.</b>	
Functions  <b>Water quality improvements, groundwater recharge, plant habitat, and wildlife habitat for breeding.</b>				Mitigation for previous permit/other historic use  <b>None known</b>	
Anticipated Wildlife Utilization Based on Literature Review (List of species that are representative of the assessment area and reasonably expected to be found )  <b>Various amphibians and reptiles including frogs and snakes, turkeys, hawks, owls, kites, cardinals, mockingbirds, warblers, blue jays, woodpeckers, and mammals such as rodents, grey squirrels, deer, opossums, and raccoons.</b>				Anticipated Utilization by Listed Species (List species, their legal classification (E, T, SSC), type of use, and intensity of use of the assessment area)  <b>Eastern indigo snake (FT) - all habitats - medium; Various wading birds (ST/FT) - wetlands - low.</b>	
Observed Evidence of Wildlife Utilization (List species directly observed, or other signs such as tracks, droppings, casings, nests, etc.):  <b>None</b>					
Additional relevant factors:  <b>None</b>					
Assessment conducted by: <b>BKB and RFM</b>				Assessment date(s): <b>09/01/21</b>	

UNIFORM WETLAND MITIGATION ASSESSMENT WORKSHEET - PART II - IMPACT  
Form 62-345.900(2), F.A.C. (See Sections 62-345.500 and .600, F.A.C.)

Site/Project Name: <b>Environmental Assessment for 8 Construction Sites at Tyndall Air Force Base, Bay County, Florida</b>		Application Number: <b>-</b>		Assessment Area Name or Number: <b>WL090 (Heritage Club Pier Both Alts)</b>	
Impact or Mitigation: <b>Impact</b>		Assessment Conducted by: <b>BKB and RFM</b>		Assessment Date: <b>09/01/21</b>	
Scoring Guidance		Optimal (10)		Moderate(7)	
Minimal (4)		Not Present (0)			
The scoring of each indicator is based on what would be suitable for the type of wetland or surface water assessed		Condition is optimal and fully supports wetland/surface water functions		Condition is less than optimal, but sufficient to maintain most wetland/surface water functions	
Minimal level of support of wetland/surface water functions		Condition is insufficient to provide wetland/surface water functions			
Enter Notes below (do NOT score each subcategory individually)					
.500(6)(a) Location and Landscape Support		a. Quality and quantity of habitat support outside of AA.		Good - natural areas to the east, south, and west	
		b. Invasive plant species in proximity to AA.		Minimal	
		c. Wildlife access to and from AA (proximity and barriers).		Limited by Heritage Club and TAFB operations to the northeast	
		d. Downstream benefits provided to fish and wildlife.		Wetland hydrologically connected to saltwater marsh and bay	
		e. Adverse impacts to wildlife in AA from land uses outside of AA.		Development associated with TAFB	
		f. Hydrologic impediments and flow restrictions.		Minimal	
		g. Dependency of downstream habitats on quantity or quality of discharges.		Minimal	
h. Protection of wetland functions provided by uplands (upland AAs only).		N/A			
Additional Notes:		The Assessment Area (AA) is a wet prairie that is adjacent to the Heritage Club restaurant to the north and Tyndall Air Force Base operations to the northeast. Saltwater marsh and Saint Andrew Bay is located to the east, south, and west of the AA.			
Current		With Impact			
8		0			
.500(6)(b) Water Environment (n/a for uplands)		a. Appropriateness of water levels and flows.		Generally appropriate	
		b. Reliability of water level indicators.		Average	
		c. Appropriateness of soil moisture.		Generally appropriate	
		d. Flow rates/points of discharge.		Water flows from AA to saltwater marsh	
		e. Fire history (frequency/severity).		No evidence of natural fire regime	
		f. Appropriate vegetative and/or benthic zonation.		Generally appropriate for community type	
		g. Hydrologic stress on vegetation.		Minimal	
		h. Use by animals with hydrologic requirements.		Minimal	
		i. Plant community composition associated with water quality (i.e., plants tolerant of poor WQ).		Average	
		j. Water quality of standing water by observation (I.e., discoloration, turbidity).		N/A	
		k. Water quality data for the type of community.		N/A	
l. Water depth, wave energy, and currents.		N/A			
Additional Notes:		Hydrologic indicators observed within and adjacent to the AA during the field review included high water table, saturation, and algal mats. Water levels were generally appropriate for the community type. Sources of hydrology included groundwater and stormwater runoff from the surrounding uplands.			
Current		With Impact			
7		0			
.500(6)(c) Community Structure  X Vegetation  Benthic  Both		I. Appropriate/desirable species		Mostly appropriate	
		II. Invasive/exotic plant species		Minimal	
		III. Regeneration/recruitment		Average	
		IV. Age, size distribution.		Average	
		V. Snags, dens, cavity, etc.		Minimal	
		VI. Plants' condition.		Generally healthy	
		VII. Land management practices.		Routine mowing	
		VIII. Topographic features (refugia, channels, hummocks).		None	
		IX. Submerged vegetation (only score if present).		N/A	
		X. Upland assessment area		N/A	
Additional Notes:		Routinely mowed vegetation observed within the AA included manyflower marshpennywort (Hydrocotyle umbellata), Baldwin's spikerush (Eleocharis baldwinii), herb-of-grace (Bacopa monnieri), flatsedge (Cyperus spp.), southern umbrellasedge (Fuirena scirpoidea), turkey tangle frogfruit (Phyla nodiflora), and St. Augustinegrass (Stenotaphrum secundatum). Algal mats were present and soils saturated during the field review.			
Current		With Impact			
7		0			

Raw Score = Sum of above scores/30 (if uplands, divide by 20)	
Current	With Impact
0.7333333	0

Impact Delta (ID)	
Current - w/Impact	0.73333333

Impact Acres =	0.07
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Functional Loss (FL) [For Impact Assessment Areas]:	
FL = ID x Impact Acres =	0.051

NOTE: If impact is proposed to be mitigated at a mitigation bank that was assessed using UMAM, then the credits required for mitigation is equal to Functional Loss (FL). If impact mitigation is proposed at a mitigation bank that was not assessed using UMAM, then UMAM cannot be used to assess impacts; use the assessment method of the mitigation bank.

Additional Notes:

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**UNIFORM WETLAND MITIGATION ASSESSMENT WORKSHEET - PART I - IMPACT**  
**Form 62-345.900(2), F.A.C. (See Sections 62-345.400 F.A.C.)**

Site/Project Name <b>Environmental Assessment for 8 Construction Sites at Tyndall Air Force Base, Bay County, Florida</b>		Application Number		Assessment Area Name or Number <b>WL091 (Renovate UNITE Site Alt 1)</b>	
FLUCCs code <b>643 - Wet Prairies</b>		Further classification (optional) <b>PEM</b>		Impact Type <b>Direct Impact</b>	
Assessment Area Size <b>0.14 Acres</b>					
Basin/Watershed Name/Number <b>HUC Basin 03140101/St. Andrew Bay</b>		Affected Waterbody (Class) <b>Class III</b>		Special Classification (i.e.OFW, AP, other local/state/federal designation of importance) <b>None</b>	
Geographic relationship to and hydrologic connection with wetlands, other surface water, uplands					
<p>The Assessment Area (AA) is wet prairie that is surrounded by recently harvested uplands. The AA is located within 500 feet of U.S. Highway 98 to the east and within 500 feet of Sabre Drive to the south. Recently harvested wetlands are located to the west of the AA. Fam Camp campgrounds are located to the north of the AA.</p>					
Assessment area description					
<p>The AA is a wet prairie that appears to be created as a result of logging activities and heavy machinery use in the area. The AA receives stormwater runoff from the surrounding uplands. Vegetation observed within the herbaceous stratum included torpedograss (<i>Panicum repens</i>), sandweed (<i>Hypericum fasciculatum</i>), tall nutgrass (<i>Scleria triglomerata</i>), erectleaf witchgrass (<i>Dichanthelium erectifolium</i>), fetterbush (<i>Lyonia lucida</i>), and Baldwin's yelloweyed grass (<i>Xyris baldwiniana</i>).</p>					
Significant Nearby Features				Uniqueness (considering the relative rarity in relation to the regional landscape.)	
Tyndall AFB operations take place in proximity to the AA.				The area is not unique compared to the surrounding landscape.	
Functions				Mitigation for previous permit/other historic use	
Water quality improvements, groundwater recharge, plant habitat, and wildlife habitat for breeding.				None known	
Anticipated Wildlife Utilization Based on Literature Review (List of species that are representative of the assessment area and reasonably expected to be found )				Anticipated Utilization by Listed Species (List species, their legal classification (E, T, SSC), type of use, and intensity of use of the assessment area)	
Various amphibians and reptiles including frogs and snakes, turkeys, hawks, owls, kites, cardinals, mockingbirds, warblers, blue jays, woodpeckers, and mammals such as rodents, grey squirrels, deer, opossums, and raccoons.				Eastern indigo snake (FT) - all habitats - medium; Various wading birds (ST/FT) - wetlands - medium.	
Observed Evidence of Wildlife Utilization (List species directly observed, or other signs such as tracks, droppings, casings, nests, etc.):					
None					
Additional relevant factors:					
None					
Assessment conducted by:				Assessment date(s):	
KJS and EJW				09/01/21	



UNIFORM WETLAND MITIGATION ASSESSMENT WORKSHEET - PART II - IMPACT  
Form 62-345.900(2), F.A.C. (See Sections 62-345.500 and .600, F.A.C.)

Site/Project Name: <b>Environmental Assessment for 8 Construction Sites at Tyndall Air Force Base, Bay County, Florida</b>		Application Number: <b>-</b>		Assessment Area Name or Number: <b>WL091 (Renovate UNITE Site Alt 1)</b>	
Impact or Mitigation: <b>Impact</b>		Assessment Conducted by: <b>KJS and EJW</b>		Assessment Date: <b>09/01/21</b>	
Scoring Guidance		Optimal (10)		Moderate(7)	
Minimal (4)		Not Present (0)			
The scoring of each indicator is based on what would be suitable for the type of wetland or surface water assessed		Condition is optimal and fully supports wetland/surface water functions		Condition is less than optimal, but sufficient to maintain most wetland/surface water functions	
Minimal level of support of wetland/surface water functions		Condition is insufficient to provide wetland/surface water functions			
Enter Notes below (do NOT score each subcategory individually)					
.500(6)(a) Location and Landscape Support		a. Quality and quantity of habitat support outside of AA.		Fair - logging and transportation are located adjacent to AA	
		b. Invasive plant species in proximity to AA.		Minimal	
		c. Wildlife access to and from AA (proximity and barriers).		Limited by U.S. Highway 98 and Sabre Drive	
		d. Downstream benefits provided to fish and wildlife.		None	
		e. Adverse impacts to wildlife in AA from land uses outside of AA.		Logging, adjacent roads, Fam Camp campgrounds	
		f. Hydrologic impediments and flow restrictions.		U.S. Highway 98 and Sabre Drive	
		g. Dependency of downstream habitats on quantity or quality of discharges.		None	
h. Protection of wetland functions provided by uplands (upland AAs only).		N/A			
Additional Notes:		The Assessment Area (AA) is a wet prairie that is surrounded by recently harvested uplands. The AA is located within 500 feet of U.S. Highway 98 to the east and within 500 feet of Sabre Drive to the south. Recently harvested wetlands are located to the west of the AA. Fam Camp campgrounds are located to the north of the AA. Pearl Bayou is located approximately 0.3 mile northwest of the AA.			
Current		With Impact			
7		0			
.500(6)(b) Water Environment (n/a for uplands)		a. Appropriateness of water levels and flows.		Generally low	
		b. Reliability of water level indicators.		Average	
		c. Appropriateness of soil moisture.		Generally appropriate	
		d. Flow rates/points of discharge.		None	
		e. Fire history (frequency/severity).		None	
		f. Appropriate vegetative and/or benthic zonation.		Recently logged	
		g. Hydrologic stress on vegetation.		Minimal	
		h. Use by animals with hydrologic requirements.		Minimal	
		i. Plant community composition associated with water quality (i.e., plants tolerant of poor WQ).		Average	
		j. Water quality of standing water by observation (I.e., discoloration, turbidity).		Average	
		k. Water quality data for the type of community.		N/A	
l. Water depth, wave energy, and currents.		0-4 inches			
Additional Notes:		A relatively small area in the center of the AA is at a lower elevation than the majority of the AA and contained 4 inches of standing water at the time of the field review. Water levels were generally low for the community type. The source of hydrology is stormwater runoff from the surrounding uplands.			
Current		With Impact			
5		0			
.500(6)(c) Community Structure  X Vegetation  Benthic  Both		I. Appropriate/desirable species		Mostly appropriate	
		II. Invasive/exotic plant species		Moderate - torpedograss	
		III. Regeneration/recruitment		Recently logged, moderate amount of bare ground	
		IV. Age, size distribution.		Herbaceous species	
		V. Snags, dens, cavity, etc.		None	
		VI. Plants' condition.		Generally healthy	
		VII. Land management practices.		Recently logged	
		VIII. Topographic features (refugia, channels, hummocks).		Minimal	
		IX. Submerged vegetation (only score if present).		N/A	
		X. Upland assessment area		N/A	
Additional Notes:		The AA is a wet prairie that appears to be created as a result of logging activities and heavy machinery use in the area. Vegetation observed within the herbaceous stratum included torpedograss (Panicum repens), sandweed (Hypericum fasciculatum), tall nutgrass (Scleria triglomerata), erectleaf witchgrass (Dichanthelium erectifolium), fetterbush (Lyonia lucida), and Baldwin's yelloweyed grass (Xyris baldwiniana). The AA contains a moderate amount of bare ground.			
Current		With Impact			
5		0			

Raw Score = Sum of above scores/30 (if uplands, divide by 20)	
Current	With Impact
0.5666667	0

Impact Acres =	0.14
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Functional Loss (FL) [For Impact Assessment Areas]:	
FL = ID x Impact Acres =	0.079

Impact Delta (ID)	
Current - w/Impact	0.56666667

NOTE: If impact is proposed to be mitigated at a mitigation bank that was assessed using UMAM, then the credits required for mitigation is equal to Functional Loss (FL). If impact mitigation is proposed at a mitigation bank that was not assessed using UMAM, then UMAM cannot be used to assess impacts; use the assessment method of the mitigation bank.

Additional Notes:

**UNIFORM WETLAND MITIGATION ASSESSMENT WORKSHEET - PART I - IMPACT**  
**Form 62-345.900(2), F.A.C. (See Sections 62-345.400 F.A.C.)**

Site/Project Name <b>Environmental Assessment for 8 Construction Sites at Tyndall Air Force Base, Bay County, Florida</b>		Application Number		Assessment Area Name or Number <b>WL092 (Renovate UNITE Site Alt 1)</b>	
FLUCCs code <b>631 - Wetland Scrub</b>		Further classification (optional) <b>PSS</b>		Impact Type <b>Direct Impact</b>	
Assessment Area Size <b>6.81 Acres</b>		Basin/Watershed Name/Number <b>HUC Basin 03140101/St. Andrew Bay</b>		Affected Waterbody (Class) <b>Class III</b>	
Special Classification (i.e.OFW, AP, other local/state/federal designation of importance) <b>None</b>		Geographic relationship to and hydrologic connection with wetlands, other surface water, uplands <p>The Assessment Area (AA) is a recently harvested wetland that is adjacent to recently harvested uplands to the east. The AA is located within 1000 feet of U.S. Highway 98 to the east and adjacent to Sabre Drive to the south. The AA is connected wetlands south of Sabre Drive via a culvert under the road. Wetlands and uplands disturbed from hurricane damage are located to the west of the AA. Fam Camp campgrounds are located to the north of the AA. Pearl Bayou is located approximately 0.25 mile northwest of the AA.</p>			
Assessment area description <p>The majority of the AA has been recently harvested and contains no canopy species. The western portion of the AA has undergone damage from Hurricane Michael and contains minimal sweetbay (<i>Magnolia virginiana</i>) in the canopy. Species in the shrub stratum included fetterbush (<i>Lyonia lucida</i>), sweetbay, and large gallberry (<i>Ilex coriacea</i>). Vegetation observed within the herbaceous stratum included fetterbush, titi (<i>Cyrilla racemiflora</i>), sandweed (<i>Hypericum fasciculatum</i>), tall nutgrass (<i>Scleria triglomerata</i>), erectleaf witchgrass (<i>Dichanthelium erectifolium</i>), broomsedge bluestem (<i>Andropogon virginicus</i>), and muscadine (<i>Vitis rotundifolia</i>). Mounds and ruts from harvesting activities are located throughout the majority of the AA.</p>					
Significant Nearby Features <b>Tyndall AFB operations take place in proximity to the AA.</b>				Uniqueness (considering the relative rarity in relation to the regional landscape.) <b>The area is not unique compared to the surrounding landscape.</b>	
Functions <b>Water quality improvements, groundwater recharge, plant habitat, and wildlife habitat for breeding.</b>				Mitigation for previous permit/other historic use <b>None known</b>	
Anticipated Wildlife Utilization Based on Literature Review (List of species that are representative of the assessment area and reasonably expected to be found ) <b>Various amphibians and reptiles including frogs and snakes, turkeys, hawks, owls, kites, cardinals, mockingbirds, warblers, blue jays, woodpeckers, and mammals such as rodents, grey squirrels, deer, opossums, and raccoons.</b>				Anticipated Utilization by Listed Species (List species, their legal classification (E, T, SSC), type of use, and intensity of use of the assessment area) <b>Eastern indigo snake (FT) - all habitats - medium; Various wading birds (ST/FT) - wetlands - high.</b>	
Observed Evidence of Wildlife Utilization (List species directly observed, or other signs such as tracks, droppings, casings, nests, etc.): <b>Mourning dove (<i>Zenaida macroura</i>)</b>					
Additional relevant factors: <b>None</b>					
Assessment conducted by: <b>BKB and JCB</b>				Assessment date(s): <b>09/27/21</b>	

UNIFORM WETLAND MITIGATION ASSESSMENT WORKSHEET - PART II - IMPACT  
Form 62-345.900(2), F.A.C. (See Sections 62-345.500 and .600, F.A.C.)

Site/Project Name: <b>Environmental Assessment for 8 Construction Sites at Tyndall Air Force Base, Bay County, Florida</b>		Application Number: <b>-</b>		Assessment Area Name or Number: <b>WL092 (Renovate UNITE Site Alt 1)</b>	
Impact or Mitigation: <b>Impact</b>		Assessment Conducted by: <b>BKB and JCB</b>		Assessment Date: <b>09/27/21</b>	
Scoring Guidance		Optimal (10)		Moderate(7)	
Minimal (4)		Not Present (0)			
The scoring of each indicator is based on what would be suitable for the type of wetland or surface water assessed		Condition is optimal and fully supports wetland/surface water functions		Condition is less than optimal, but sufficient to maintain most wetland/surface water functions	
Minimal level of support of wetland/surface water functions		Condition is insufficient to provide wetland/surface water functions			
Enter Notes below (do NOT score each subcategory individually)					
.500(6)(a) Location and Landscape Support		a. Quality and quantity of habitat support outside of AA.		Fair - logging and transportation are located adjacent to AA	
		b. Invasive plant species in proximity to AA.		Minimal	
		c. Wildlife access to and from AA (proximity and barriers).		Limited by U.S. Highway 98 and Sabre Drive	
		d. Downstream benefits provided to fish and wildlife.		Minimal	
		e. Adverse impacts to wildlife in AA from land uses outside of AA.		Logging, adjacent roads, Fam Camp campgrounds	
		f. Hydrologic impediments and flow restrictions.		U.S. Highway 98 and Sabre Drive	
		g. Dependency of downstream habitats on quantity or quality of discharges.		Minimal	
h. Protection of wetland functions provided by uplands (upland AAs only).		N/A			
Additional Notes:		The Assessment Area (AA) is a recently harvested wetland that is adjacent to recently harvested uplands to the east. The AA is located within 1000 feet of U.S. Highway 98 to the east and adjacent to Sabre Drive to the south. The AA is connected wetlands south of Sabre Drive via a culvert under the road. Wetlands and uplands disturbed from hurricane damage are located to the west of the AA. Fam Camp campgrounds are located to the north of the AA. Pearl Bayou is located approximately 0.25 mile northwest of the AA.			
Current		With Impact			
7		0			
.500(6)(b) Water Environment (n/a for uplands)		a. Appropriateness of water levels and flows.		Mounds/ruts from harvesting restrict sheetflow	
		b. Reliability of water level indicators.		Average	
		c. Appropriateness of soil moisture.		Generally appropriate	
		d. Flow rates/points of discharge.		Flows under Sabre Drive	
		e. Fire history (frequency/severity).		None	
		f. Appropriate vegetative and/or benthic zonation.		Recently logged	
		g. Hydrologic stress on vegetation.		Minimal	
		h. Use by animals with hydrologic requirements.		Minimal	
		i. Plant community composition associated with water quality (i.e., plants tolerant of poor WQ).		Average	
		j. Water quality of standing water by observation (I.e., discoloration, turbidity).		Average	
		k. Water quality data for the type of community.		N/A	
l. Water depth, wave energy, and currents.		0-3 inches			
Additional Notes:		Mounds and ruts from harvesting activities are located throughout the majority of the AA and prevent sheetflow. 0-1 inch of water pools within deeper ruts. Water levels are deeper in the southwestern portion of the AA where water travels to the culvert under Sabre Drive. The source of hydrology includes groundwater, stormwater runoff from the surrounding uplands, and water from adjacent wetlands.			
Current		With Impact			
6		0			
.500(6)(c) Community Structure  X Vegetation  Benthic  Both		I. Appropriate/desirable species		Mostly appropriate	
		II. Invasive/exotic plant species		Minimal	
		III. Regeneration/recruitment		Recently logged	
		IV. Age, size distribution.		Average	
		V. Snags, dens, cavity, etc.		Minimal	
		VI. Plants' condition.		Generally healthy	
		VII. Land management practices.		Recently logged	
		VIII. Topographic features (refugia, channels, hummocks).		Mounds and ruts from logging activities	
		IX. Submerged vegetation (only score if present).		N/A	
		X. Upland assessment area		N/A	
Additional Notes:		The majority of the AA has been recently harvested and contains no canopy species. The western portion of the AA has undergone damage from Hurricane Michael and contains minimal sweetbay (Magnolia virginiana) in the canopy. Species in the shrub stratum included fetterbush (Lyonia lucida), sweetbay, and large gallberry (Ilex coriacea). Vegetation observed within the herbaceous stratum included fetterbush, titi (Cyrilla racemiflora), sandweed (Hypericum fasciculatum), tall nutgrass (Scleria triglomerata), erectleaf witchgrass (Dichanthelium erectifolium), broomsedge bluestem (Andropogon virginicus), and muscadine (Vitis rotundifolia). Mounds and ruts from harvesting activities are located throughout the majority of the AA.			
Current		With Impact			
7		0			

Raw Score = Sum of above scores/30 (if uplands, divide by 20)	
Current	With Impact
0.6666667	0

Impact Acres =	6.81
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Functional Loss (FL) [For Impact Assessment Areas]:	
FL = ID x Impact Acres =	4.540

Impact Delta (ID)	
Current - w/Impact	0.66666667

NOTE: If impact is proposed to be mitigated at a mitigation bank that was assessed using UMAM, then the credits required for mitigation is equal to Functional Loss (FL). If impact mitigation is proposed at a mitigation bank that was not assessed using UMAM, then UMAM cannot be used to assess impacts; use the assessment method of the mitigation bank.

Additional Notes:

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**Draft**  
**Environmental Assessment for 8 Construction Sites Tyndall Air Force Base, Florida**

**APPENDIX F COASTAL CONSISTENCY EVALUATION**

Florida Statute	Legal Scope	Consistency Evaluation
Chapter 161 <i>Beach and Shore Preservation</i>	Authorizes the Bureau of Beaches and Coastal Systems within FDEP jurisdiction to regulate construction on or seaward of the state's beaches.	The Proposed Actions would not adversely affect beach and shore management, specifically as it pertains to the Coastal Construction Permit Program, the Coastal Construction Control Line (CCCL) Program, and the Coastal Zone Protection Program. The CCCL adjacent to Tyndall AFB is generally aligned along the seaward spits and barrier islands that comprise the terrestrial boundaries of Saint Andrew Bay and Saint Andrew Sound. The Proposed Actions would occur within Tyndall AFB and would not occur seaward of the CCCL. Therefore, Coastal Construction Permits would not be required.
Chapter 163, Part II <i>Growth Policy; County and Municipal Planning; Land Development Regulation</i>	Requires local governments to prepare, adopt, and implement comprehensive plans that encourage the most appropriate use of land and natural resources in a manner consistent with the public interest.	The Proposed Actions would occur within Tyndall AFB and therefore would not affect municipal or county government comprehensive plans.
Chapter 186 <i>State and Regional Planning</i>	Details state level planning requirements. Requires the development of special statewide plans governing water use, land development, and transportation.	As part of the NEPA process, the Proposed Actions have been coordinated with Federal, state, and local governments and agencies, including the FDEP State Clearinghouse, for compatibility with state and regional planning.
Chapter 252 <i>Emergency Management</i>	Provides for planning and implementation of the state's response to, efforts to recover from, and the mitigation of natural and man-made disasters.	The Proposed Actions would not have an effect on the ability of the state to respond to or recover from natural or manmade disasters. Improvements to Expeditionary and Encampment Roads would provide an additional ingress/egress route for emergency vehicles or for evacuation if needed.
Chapter 253 <i>State Lands</i>	Addresses the state's administration of public lands and property of this state and provides direction regarding the acquisition, disposal, and management of all state lands.	The Proposed Actions would occur entirely within Tyndall AFB. No state lands would be disturbed during the construction, dredging, renovations, or infrastructure construction and therefore, would not be affected.
Chapter 258 <i>State Parks and Preserves</i>	Addresses administration and management of state parks and preserves.	The Proposed Actions would not directly impact state parks, recreational areas or preserves. Secondary or indirect impacts to environmental or social resources related to these facilities are not anticipated. Opportunity for recreation on state lands would not be affected.
Chapter 259 <i>Land Acquisition for Conservation or Recreation</i>	Authorizes acquisition of environmentally endangered lands and outdoor recreation lands.	The Proposed Actions would occur within Tyndall AFB and would not have an effect on the acquisition of environmentally endangered and outdoor recreation lands.
Chapter 260 <i>Recreational Trails System</i>	Authorizes acquisition of land to create a recreational trails system and to facilitate management of the system.	The Proposed Actions would occur within Tyndall AFB and would not have an impact on the acquisition of land to create a recreational trails system.
Chapter 267 <i>Historical Resources</i>	Addresses management and preservation of the state's archaeological and historical resources.	The Proposed Actions are not expected to adversely affect historical or cultural resources of the State of Florida. Section 106 of the NHPA consultation with the Florida SHPO is ongoing. The Cultural Resources Survey Report completed for the Proposed Action Proposed Actions has been submitted to the SHPO. Because no effects to cultural properties have been identified, no mitigation is proposed. SHPO consultation findings will be included in the Final EA.
Chapter 288 <i>Commercial Development and Capital Improvements</i>	Provides the framework for promoting and developing the general business, trade, and tourism components of the state economy.	The Proposed Actions would occur on an active military installation with limited access to the public and limited or no implications for or effect on general business, trade, and tourism components of the state economy.
Chapter 334 <i>Transportation Administration</i>	Addresses the state's policy concerning transportation administration.	The Proposed Actions would not have an impact on the state's transportation administration policies.

Florida Statute	Legal Scope	Consistency Evaluation
Chapter 339 <i>Transportation Finance and Planning</i>	Addresses the finance and planning needs of the state's transportation system.	The Proposed Actions would not have an effect on the finance and planning needs of the state's transportation system.
Chapter 373 <i>Water Resources</i>	Addresses the state's policy concerning water resources.	<p>The Proposed Actions could have negligible to minor impacts on surface water and groundwater. Temporary, indirect, negligible adverse impacts from soil disturbance could create non-point source water pollution; however, BMPs would be utilized to reduce the chance of impacts on surface water resources.</p> <p>The Proposed Actions could impact up to 19.74 acres of floodplains and could decrease the beneficial values that floodplains provide; however, all effects would occur on Tyndall AFB and would result in negligible to minor impacts on floodplains. Design measures would be implemented to avoid/minimize impacts to floodplains. Mitigation would be provided for unavoidable floodplain impacts as described in <b>Section 4.6.3</b> of the EA.</p> <p>The Proposed Actions could impact up to 16.10 acres of wetlands and up to 26.65 acres of other surface waters. Design measures would be implemented to avoid/minimize impacts to wetlands and other surface waters. The Air Force, USACE and FDEP will identify the appropriate mitigation efforts to offset these impacts, as described in <b>Section 4.6.3</b> of the EA. Overall, there would be no significant impacts on water resources as a result of the Proposed Action.</p>
Chapter 375 <i>Outdoor Recreation and Conservation Lands</i>	Develops comprehensive multipurpose outdoor recreation plans to document recreational supply and demand, describe current recreational opportunities, estimate need for additional recreational opportunities, and propose means to meet the identified needs.	The Proposed Actions would not impact the state's development or evaluation of multipurpose outdoor recreation plans.
Chapter 376 <i>Pollutant Discharge Prevention and Removal</i>	Regulates transfer, storage, and transportation of pollutants, and cleanup of pollutant discharges.	<p>During construction, the contractor would be required to prepare a project-specific SPCC documenting measures to prevent accidental releases to the environment and, should they occur, the corrective action to minimize environmental impacts.</p> <p>Project-specific BMPs would be implemented for the operation of the Proposed Actions in accordance with existing or modified stormwater discharge permit conditions.</p> <p>The Proposed Actions would not alter the types of hazardous and other regulated materials used at Tyndall AFB (e.g., cleaning solvents, lubricants). No involvement and impact associated with hazardous materials or wastes is anticipated.</p> <p>The Proposed Actions would not involve the transfer of pollutants between vessels; between onshore facilities and vessels; between offshore facilities and vessels; or between terminal facilities within jurisdiction of the state and state waters.</p>
Chapter 377 <i>Energy Resources</i>	Addresses regulation, planning, and development of energy resources of the state.	Implementation of the Proposed Action would not cause unsupportable demands on available natural resources or energy supplies, and construction and operation of the Proposed Action would not require significant consumable natural resources. Construction of the Water Main Along the North Side of Flightline would provide a more reliable water source for facilities within the area.



Florida Statute	Legal Scope	Consistency Evaluation
<p>Chapter 379 <i>Fish and Wildlife Conservation</i></p>	<p>Addresses management and protection of fish and wildlife in the state.</p>	<p>The Proposed Actions would have permanent, adverse effects on vegetation potentially utilized by wildlife. Disturbances to wildlife within these habitats could include mortality due to construction activities; degradation and loss of habitat causing loss of burrow or nests, cover, or forage habitat; and noise disturbance from construction activities disrupting wildlife activity and behavior. However, the small number of individuals expected to be lost would not appreciably reduce the overall population of wildlife species known to occur within the area surrounding Tyndall AFB.</p> <p>The Air Force has determined that the Proposed Actions may affect but are not likely to adversely affect threatened and endangered species known to occur on Tyndall AFB. These include the federally-listed West Indian manatee, American alligator, loggerhead sea turtle, green sea turtle, leatherback sea turtle, eastern indigo snake, red knot, piping plover, wood stork, gulf sturgeon, telephus spurge, Harper's beauty, white birds-in-a-nest, Godfrey's butterwort, and Florida skullcap. State-listed/protected species include the Florida black bear, gopher tortoise, snowy plover, little blue heron, tri-colored heron, American oystercatcher, black skimmer, least tern, small spreading pogonia, dew thread sundew, spoon-leafed sundew, Apalachicola aster, wiregrass gentian, thick-leaved water willow, gulf coast lupine, giant water dropwort, Apalachicola dragonhead, yellow-flowered butterwort, Chapman's butterwort, snakemouth orchid, nightflowering wild petunia, parrot pitcher plant, purple pitcher plant, Chapman's crownbeard, quillwort yellow-eyed grass, and karst pond yellow-eyed grass. Prior to an Air Force decision on the EA, Section 7 Consultation under the Endangered Species Act is ongoing and will be fully completed to identify and confirm conservation measures necessary to offset these impacts.</p> <p>Submerged aquatic vegetation is likely to be impacted by in-water work associated with each alternative for the WEG boathouse dredging, FAMCAMP expansion, and Observation/Fishing Pier at Heritage Club projects; however, the potential impacts are not expected to be significant. Direct impacts can likely be avoided for the WEG boathouse and FAMCAMP projects, where submerged aquatic vegetation is patchy, covering approximately 5 to 15 percent of the conceptual work areas. However, dredging and disturbance activities may induce increased turbidity in the surrounding waters which could cause indirect impacts. Submerged aquatic vegetation covers approximately 95 percent of the Observation/Fishing Pier project in-water work areas. Some impacts are likely unavoidable due to the placement of support piles for the pier. Direct impacts will be avoided to the extent possible through project planning and design.</p>
<p>Chapter 380 <i>Land and Water Management</i></p>	<p>Establishes land and water management policies to guide and coordinate local decisions relating to growth and development.</p>	<p>The Proposed Actions would be developed consistent with local land and water management plans. The Proposed Actions are subject to local permit, stormwater, and environmental requirements and review. The Proposed Actions will require coordination with and authorization from the USACE and the FDEP.</p>
<p>Chapter 381 <i>Public Health, General Provisions</i></p>	<p>Establishes public policy concerning the state's public health system.</p>	<p>The Proposed Actions do not involve the construction of an onsite sewage treatment and disposal system. Construction activities associated with the Proposed Actions are governed</p>

Florida Statute	Legal Scope	Consistency Evaluation
		by regulations established by the AFOSH Program and the OSHA. No appreciable change in the type, quantity, or disposal of solid wastes is expected. The Proposed Actions would not impact public policy or management in regard to sanitation, communicable diseases, or public health.
Chapter 388 <i>Mosquito Control</i>	Addresses mosquito control efforts in the state.	The Proposed Actions would not affect local mosquito control efforts or contribute to increased propagation of mosquitos.
Chapter 403 <i>Environmental Control</i>	Establishes public policy concerning environmental control in the state.	<p>The construction and operations of the Proposed Actions would include project-specific BMPs and pollution prevention measures. The Proposed Actions are not expected to exceed applicable state water quality standards or have substantial and longer-term water quality impacts.</p> <p>Air pollutant emissions associated with construction of the Proposed Actions would not exceed Air Force significance thresholds or cause exceedances of air quality standards. Long-term air emissions increases resulting from the Proposed Actions are expected to be negligible.</p> <p>Construction wastes and operational wastes would be collected, transported, recycled, and disposed of in compliance with applicable state and local regulations. The Air Force would obtain and comply with all applicable permits as required by law.</p>
Chapter 553 <i>Building Construction Standards</i>	Provides a mechanism for the uniform adoption, updating, amendment, interpretation, and enforcement of a single, unified state building code, to be called the Florida Building Code. Obtain a permit from the appropriate enforcing agency.	The Proposed Actions would not affect the Building Construction Standards of the State of Florida. The Air Force would obtain and comply with all applicable permits as required by law.
Chapter 582 <i>Soil and Water Conservation</i>	Provides for the control and prevention of soil erosion.	A SWPPP would be developed and followed, and BMPs addressing erosion and sediment controls would be implemented to minimize impact to soils and water quality. The Proposed Actions would be consistent with the current characteristic features of the area and landscape and would not result in any changes to land use. The Proposed Actions would not affect soils or farmland within a Soil and Water Conservation District and would not convert prime farmland.
Chapter 597 <i>Aquaculture</i>	Establishes public policy concerning the cultivation of aquatic organisms.	The Proposed Actions do not include activities related to the cultivation of marine species in the Study Area. The Proposed Actions would not affect aquaculture.

Source: Florida Statutes, as identified in table.

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**APPENDIX G REGIONAL PROJECTS CONSIDERED IN CUMULATIVE EFFECTS ANALYSIS**



**APPENDIX G REGIONAL PROJECTS CONSIDERED FOR CUMULATIVE IMPACTS ANALYSIS**

Proponent/Location	Action	Description	Timeframe
Tyndall AFB/Tyndall East	Construct Independent Duty Medical Technician Clinic at Silver Flag Site	As indicated by title.	Past
Tyndall AFB/Support District	Renovate Clinic	As indicated by title.	Past
Tyndall AFB/Flightline	Replace/Expand Building 400 for New LRS PN	As indicated by title.	Past
Tyndall AFB/Support District	Construct Veterinary Clinic	As indicated by title.	Past
Tyndall AFB/Flightline	Construct Fire Station	As indicated by title.	Past
Tyndall AFB/Flightline	Construct Passenger Terminal/Mobility Processing Center	As indicated by title.	Past
Tyndall AFB/Support District	Construct Phase 1 VQ	As indicated by title.	Past
Tyndall AFB/Flightline	Pave Expeditionary/ Encampment Roads	As indicated by title.	Present
Tyndall AFB/Tyndall East	Reconstruct WEG Small Boat Dock	As indicated by title.	Present
Tyndall AFB/Flightline	Construct Hot Pit Refueling Apron	As indicated by title.	Future
Tyndall AFB/Support District	Extend Water to Subscale Areas	As indicated by title.	Present
Tyndall AFB/Flightline	Construct 6000 and 7000 Areas Information Transfer Nodes (ITNs)	As indicated by title.	Future
Tyndall AFB/Tyndall West	Construct ITN at Fire Station in Privatized Housing	As indicated by title.	Future
Tyndall AFB/Flightline	Relocate Radar Approach Control	As indicated by title.	Future
Tyndall AFB/Support District	Construct AFCEC Network Operations and Security Center	As indicated by title.	Future
Tyndall AFB/Flightline	Construct Combat Ramp	As indicated by title.	Future
Tyndall AFB/Support District	Construct LRS Warehouse	As indicated by title.	Future
Tyndall AFB/Support District	Construct Vehicle and Cargo Inspection Station	As indicated by title.	Future
Tyndall AFB/Flightline	Install 9MW On-Site Generator	As indicated by title.	Future
Tyndall AFB/Support District	Construct Phase II VQ	As indicated by title.	Future
Tyndall AFB/Tyndall East	Install Water Main, Silver Flag Site	As indicated by title.	Present
Tyndall AFB/Support District	Construct Indoor Firing Range	As indicated by title.	Future
Tyndall AFB/Tyndall West	Acquire Seclusion Bay/Long Point Cove Land	As indicated by title.	Future
Tyndall AFB/Location Unknown	F-35A Wing Beddown	Establish new base missions for beddown of F-35A wing (72 aircraft and six backup aircraft). Includes construction of needed facilities, mission HQ buildings, and operation of aircraft.	Present, Future

Proponent/Location	Action	Description	Timeframe
Tyndall AFB/ Multiple Locations	Hurricane Michael Recovery Projects	28 individual structure and infrastructure construction and renovation projects throughout Tyndall AFB, and three additional projects spanning multiple planning areas, including demolition of 268 hurricane-damaged buildings throughout the Installation.	Past, Present, Future
Bay County Planning and Zoning/ 6822 Highway 22	Callaway Storage	Construct 60,315-square foot mini-storage facility	Past
Bay County Planning and Zoning/ 2540 Jenks Avenue	Fat and Weird Cookie Company Headquarters	Construct 10,000-square foot storefront, kitchen, and warehouse	Past
Bay County Planning and Zoning/ Southwest Corner of County Road 2321 and Deer Haven Road	Hodges Bayou Phase 2	Construct 101 residential lots on 32.5 acres	Past, Present
Bay County Planning and Zoning/ 2801 Forester Trail	Busby Depot Cedar Grove Commerce Park	Construct 12,492-square foot warehouse facility	Past
Bay County Planning and Zoning/ 3824 Hatteras Lane	Bay Point Marina Reconstruction	Reconstruct marina on 2.8 acres	Past
Bay County Planning and Zoning/ 2005 Industrial Drive	Lewis Construction Office	Construct 5,000-square foot office and warehouse space on 14.5 acres	Past
Bay County Planning and Zoning/ 2743 Forester Trail	Jet Boat Pilot	Construct 25,800-square foot manufacturing facility	Past, Present
Bay County Planning and Zoning/ 2235 East 15 <sup>th</sup> Street	Pancare Complex on 15 <sup>th</sup> Street	Construct 46,810-square foot medical facility	Past, Present
Bay County Planning and Zoning/ 3605 Thomas Drive	Treasure Island Marina Boat Barn	Construct 82,302-square foot dry boat storage facility	Past, Present
Bay County Planning and Zoning/ 4600 Magnolia Beach Road	JCF Living – Magnolia Beach Road	Construct 79-unit residential development on 17.8 acres	Past, Present
Bay County Planning and Zoning/ 4050 23 <sup>rd</sup> Street	Camping World RV Storage	Construct RV storage facility on 0.7 acre	Past, Present
Bay County Planning and Zoning/ 3333 Highway 77	CEFCO at State Route 77 and 34 <sup>th</sup> Street	Construct 6,000-square foot convenience store with fuel	Past, Present
Bay County Planning and Zoning/ 1719 Moylan Drive	A2Z Recovery Expansion	Construct 7,500-square foot office and warehouse expansion	Past, Present
Bay County Planning and Zoning/ 4815 Thomas Drive	Sims Resort Realty	Construct 2,850-square foot realty office	Present
Bay County Planning and Zoning/ 2403 Harrison Avenue	Forest Lawn Mausoleum Expansion	Construct 1,016-square foot mausoleum expansion	Present

Proponent/Location	Action	Description	Timeframe
Bay County Planning and Zoning/ Thomas Drive and Hibiscus Avenue	Lockhart Storage Centers	Construct 80,770-square foot indoor mini-storage facility	Present, Future
Bay County Planning and Zoning/ 1134 North East Avenue	McElheny Warehouse	Construct 5,000-square foot warehouse	Present, Future
Bay County Planning and Zoning/ 2703 East 15 <sup>th</sup> Street	Circle K (Pending Review)	Construct 5,200-square foot convenience store with fuel on 1.9 acres	Future
Bay County Planning and Zoning/ 3900 Marriot Drive	U.S. Post Office at Bay Point (Pending Review)	Construct 4,300-square foot post office building	Future
FDOT/ Northwest Florida Roads	SR 390 East 14th Street from East of SR 77 to US 231	Resurface four miles of S.R. 390 (East 14th Street) from east of State Route (S.R.) 77 (Ohio Avenue) to U.S. 231. in Bay County. Add new left turn lanes at Britton Road and Harvard Road. Add new turn lanes at Titus Road. Extend westbound right turn lanes at County Road 389 (East Avenue) and Mill Bayou Boulevard. Add a new pedestrian signal at County Road 389. Add pedestrian features at Mill Bayou Boulevard/Cato Road to meet current Americans with Disabilities Act standards. Improve side street culverts and drainage pipe systems throughout project limits.	Past
FDOT/ Northwest Florida Roads	U.S. 98B (Beach Drive) from U.S. 98 (15 <sup>th</sup> St) to West of U.S. Highway 231 (Harrison Ave)	Resurface U.S. 98B (Beach Drive) from U.S. 98 (15th Street) to west of U.S. 231(Harrison Avenue). Additional improvements include resurfacing Johnson Bayou bridge, adding pedestrian lighting at the East Caroline Boulevard pedestrian crossing, upgrading sidewalks to meet current Americans with Disabilities Act standards.	Past, Present
FDOT/ Northwest Florida Roads/ Tyndall AFB	Tyndall Flyover Project - US 98 (SR 30)	Improve S.R. 30 (U.S. 98) through Tyndall AFB. This project involves a one-mile segment of U.S. 98 centered at the intersection of U.S. 98 and Airey Avenue/Tyndall Drive at the Tyndall AFB main gate. The improvements will elevate the U.S. 98 travel lanes above Airey Avenue/Tyndall Drive and Louisiana Avenue to separate Tyndall AFB base traffic from U.S. 98 through traffic.	Past, Present
FDOT/ Northwest Florida Roads	SR 390 from 23rd Street to East of Baldwin Road	Widen S.R. 390 from 23 <sup>rd</sup> Street in Panama City to east of Baldwin Road. Upon completion, the typical section will consist of six 12-foot travel lanes separated by a 22-foot median. Construct new four-foot bicycle lanes, six-foot sidewalks, curb, and gutter on both sides of the roadway.	Past, Present
FDOT/ Northwest Florida Roads	SR 390 from East of County Road 2312 to Jenks Avenue	Widen S.R. 390 from County Road 2312 (Baldwin Road) to Jenks Avenue. Upon completion, the typical section will consist	Past, Present



Proponent/Location	Action	Description	Timeframe
		of six 12-foot travel lanes separated by a 22-foot median. Construct new four-foot bicycle lanes, six-foot sidewalks, curb, and gutter on both sides of the roadway.	

Sources: Air Force, 2015x; Air Force, 2021x; Bay County, 2022a; Bay County, 2022b; FDOT, 2022a; FDOT, 2022b; FDOT, 2022c; FDOT, 2022d; FDOT, 2022e; FDOT, 2022f

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**APPENDIX H SOIL TYPES AND CHARACTERISTICS**



## APPENDIX H

### SOIL TYPES AND CHARACTERISTICS WITHIN PROPOSED ACTION LIMITS OF DISTURBANCE

Soil Series	Depth to Water Table	Location	Characteristics
Arents	8 to 36 inches	Rises on marine terraces	Man-made mixture of various soil series (from earth moving operations such as dredging and filling), neutral, very deep, somewhat poorly drained, have a very low available water capacity, variable permeability, negligible surface runoff, and are not prone to either flooding or ponding
Beaches	At the surface or 0 to 72 inches	Beaches on marine terraces	High salinity levels, inundated by high tide or wave action daily, subject to movement by wind and water, poorly drained
Fripp-Corolla complex	Greater than 72 inches	Undulating, dune like areas adjacent to the Gulf of Mexico	Permeability is very rapid, available water capacity is low, these soils are subject to storm tide flooding
Kureb sand	Below 80 inches	Broad upland areas near the coast	Excessively drained, have a very low available water capacity, and rapid permeability
Leon sand	6 to 18 inches	Flatwoods on marine terraces	Very strongly acidic, very deep, poorly drained, have a very low available water capacity, rapid permeability on the surface, high surface runoff, are not prone to ponding or flooding, but are very susceptible to wind erosion
Mandarin sand	18 to 42 inches	Flats and rises of marine terraces	Very strongly acidic, very deep, somewhat poorly drained, have a low available water capacity, rapid permeability on the surface, very low surface runoff, are not prone to ponding or flooding, but are very susceptible to wind erosion
Osier fine sand	0 to 6 inches	Depressions on marine terraces and flatwood areas	Extremely acidic, very deep, poorly drained, have a low available water capacity, rapid permeability (but internal drainage is impeded by the high water table), negligible surface runoff, are not prone to flooding, but are prone to ponding, and are very susceptible to wind erosion
Pamlico-Dorovan complex	0 to 10 inches	Depressions along drainage ways	Very poorly drained, have a very high available water capacity, have moderate permeability, are not prone to flooding but frequently pond
Pits	Unknown	Varies	These areas consist of soil that has been excavated for use in road construction and as fill material in preparing sites for buildings
Pottsburg	0 to 6 inches	Flats of marine terraces	Very strongly acidic, very deep, poorly drained, have a low available water capacity, rapid permeability on the surface, negligible surface runoff, are not prone to ponding or flooding, and are very susceptible to wind erosion

Soil Series	Depth to Water Table	Location	Characteristics
Resota fine sand	42 to 60 inches	Ridges and knolls of marine terraces	Strongly acidic, very deep, moderately well drained, have a very low available water capacity, very rapid permeability on the surface, negligible surface runoff, are not prone to ponding or flooding, and are very susceptible to wind erosion
Rutledge sand	0 to 6 inches	Depressions on marine terraces	Strongly acidic, very deep, very poorly drained, have a low available water capacity, rapid permeability on the surface (but internal drainage is impeded by the high water table), negligible surface runoff, are not prone to flooding but frequently pond, and are very susceptible to wind erosion

Sources: Air Force, 2020. Integrated Natural Resources Management Plan, Tyndall Air Force Base, Florida. July 2020; U.S. Department of Agriculture (USDA), Soil Conservation Service, 1984. Soil Survey of Bay County, Florida; USDA, Natural Resources Conservation Service (NRCS), 2021. Web Soil Survey. Internet URL: <https://websoilsurvey.sc.egov.usda.gov/App/WebSoilSurvey.aspx>.

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**APPENDIX I ENVIRONMENTAL RESTORATION PROGRAM SITE CLOSURE AND CONTAMINANT  
INFORMATION**



# APPENDIX I - ENVIRONMENTAL RESTORATION PROGRAM (ERP) SITE CLOSURE AND CONTAMINANT INFORMATION

Project	ERP Site ID	Site Name	Site Type	Site Status	Description
Construct EOD Gravel Road	SR169	Jeep Range	Small Arms Range	Active	<p>During 2013 investigations, samples were collected from various media at the sites (including soil, sediment, surface water, and groundwater) and analyzed for munitions constituents associated with small arms debris present at the site. Additionally, as part of the remedial investigation (RI) conducted from July 2015 through July 2016, samples were collected from various media at the sites. Soils, sediment, surface water, and groundwater were evaluated for metals and small arms propellants. <b>Lead and copper are known to be present in surface soil in the berm</b> at Jeep Range 4 and may migrate via erosion and overland flow during heavy precipitation events. Access to the site is limited. A 22 July 2020 Time Critical Removal Action Work Plan initiated the excavation and disposal of lead- and copper-impacted surface soil to a depth of 1.5 feet below ground surface (bgs) from three portions of the Jeep Range 4 berm. An existing entrance from US Highway 98 was modified to allow ingress/egress of loaded trucks following the referenced Removal Action Work Plan for the site. Remediation and monitoring activities are ongoing at the site.</p> <p>Planned construction for the <b>Proposed Action would occur outside of the limits of the ERP site</b>. Therefore, <b>no impacts are expected to occur</b> related to Proposed Action construction activities.</p>
Dredge WEG Small Boathouse Area	AL185	Lagoon Splash Target Range	Small Arms Range	Closed	<b>ERP site has been closed by regulatory agencies.</b> 298 sediment samples were collected at depths up to 2 feet and analyzed for <b>lead</b> , with <b>none of the detected concentrations exceeding either residential human health or ecological screening levels</b> . No small arms debris was observed in any of the sediment samples. A No Action Record of Decision (ROD) was issued in July 2018.
	SR186	Davis Beach Range	Small Arms Range	Closed	<b>ERP site has been closed by regulatory agencies.</b> Historic site investigations have been performed. <b>Copper and zinc</b> were identified as preliminary contaminants of potential ecological concern (COPEC)s in surface water. <b>Soil and sediment concentrations of copper and zinc were relatively low</b> , with only one or two exceedances of the most conservative ecological screening levels. The final ecological risk assessment (ERA) determined that ecological risks are unlikely or not ecologically significant and no further action is warranted. A No Action ROD was issued in July 2018.
	TU233	Building 9725 Wright Labs Motor Pool	Vehicle Maintenance/ Waste Accumulation Area	Active	Site investigations began in 2007 following complaints of petroleum odors following heavy rain events, as well as during hand-digging activities near building 9725. A subsequent preliminary site assessment was conducted in 2008, and the following compounds exceeded groundwater cleanup target levels (GCTL)s at two of the 18 sample locations: <b>benzene; toluene; xylenes; isopropylbenzene; 1,3,5-trimethylbenzene; 1,2,4-trimethylbenzene; and sec-butylbenzene</b> . The assessment concluded that a release of petroleum compounds had occurred within the west-southwest portion of the building.

Project	ERP Site ID	Site Name	Site Type	Site Status	Description
					<p>Subsequent contamination assessment and RI Scoping occurred between 2014 and 2016, when soil samples and additional groundwater samples were collected, with four groundwater sampling locations converted to monitoring wells. <b>TRPH, several VOC compounds, polycyclic aromatic hydrocarbons (PAH)s, and selenium exceeded soil cleanup target levels (SCTL)s for leachability in subsurface soils. One soil sample exceeded the direct contact SCTL for PAH at a depth of three feet bgs.</b> In addition to compounds previously detected, <b>1-methylnaphthalene, 2-methylnaphthalene, and naphthalene</b> were detected above GCTL in at least one sample. Compounds detected in groundwater are most prevalent in the wells nearest to the building. A Remedial Investigation/Feasibility Study (RI/FS) and Remedial Action Plan (RAP) were recommended to address remaining soil and groundwater impacts at the site. In November 2021, a work plan was submitted to Florida Department of Environmental Protection (FDEP) to achieve Risk Management Option (RMO) Level I site closure. The work plan is currently pending final regulatory approval.</p> <p>The proposed dredging activity area is located in vicinity to the southwest corner of the ERP study area; however, the limits of disturbance (LOD) for the Proposed Action would not intersect the ERP site. <b>Recent groundwater sampling in the area indicates that the contaminated plume limit occurs east of the ERP study area boundary. Accordingly, there is a low-to-negligible potential for impacts</b> to this ERP site related to Proposed Action construction activities.</p>
Replace WEG Tower 1802	AOC006	Wastewater Holding Pond	Wastewater Management	Closed	<b>ERP site has been closed by regulatory agencies.</b> Site investigations and monitoring between 1998 and 2005 yielded no detections of any contaminants above Federal or State screening criteria. <b>Aluminum and iron</b> were detected in groundwater samples above State GCTLs based on secondary standards, but <b>below health-based GCTLs</b> . Data collected indicate that constituent concentrations in soil and groundwater do not present unacceptable risks to human health or the environment. A No Action ROD was issued in December 2017.
	LF012	Highway 98 Burial Site	Debris Burial	Closed	<b>ERP site has been closed by regulatory agencies.</b> Historic site investigations did not detect any target compounds above screening levels in any soil or groundwater samples. A No Further Action Decision Document was issued on 03 October 1996. A No Action ROD was issued on 03 January 2019.
Improve Expeditionary/Encampment Roads	LF005	6000 Area Landfill	Debris Burial	Active	No hazardous material storage has been identified in the modern storage building located on site. Industrial shops, which generate the majority of the hazardous materials on the Installation, were not in operation during the time the former landfill was in operation, so significant quantities of hazardous materials are not suspected to have been placed at the site. Seven environmental site investigations were conducted at the site from 1986 to 2009. A 2013 RI/FS was conducted but did not provide sufficient data. A subsequent RI/FS was

Project	ERP Site ID	Site Name	Site Type	Site Status	Description
					<p>prepared in 2016 to address the data gaps. A wide variety of contaminants present at various locations throughout the site exceed residential direct exposure or leaching SCTLs and GCTLs. Soil contamination concentrations notably decrease with depth below surface. <b>Primary soil COPCs for direct contact include arsenic, hexavalent chromium, carcinogenic PAHs. Arsenic and iron are the primary contaminants of potential concern (COPC)s for groundwater.</b> Ongoing Remedial Action Objectives at the site include preventing human exposure (ingestion, inhalation, and dermal contact) to soil containing arsenic, hexavalent chromium, and carcinogenic PAHs above industrial use-based remediation levels; and preventing human exposure (ingestion and dermal contact) to groundwater containing arsenic and iron above industrial use-based remediation levels.</p> <p>Planned construction for the Proposed Action would occur outside of the limits of the ERP site. Therefore, <b>no impacts are expected to occur</b> related to Proposed Action construction activities.</p>
	LF036	6000 Area Construction Debris Landfill	Debris Burial	Closed	<p><b>ERP site has been closed by regulatory agencies.</b> The site was the location of a one-time burial of one 55-gallon drum and one 1,000 gallon storage tank. A Decision Document was issued in August 1996, which found that the site poses no significant threat to human health or the environment and closed the site.</p>
Construct Water Main Along North Side of Flightline	FT016	Former Shell Bank Fire Training Area	Fire Training Area/Fuel Storage Area	Active	<p>This ERP site was identified in 1981 and a series of investigations has been performed under the FDEP POL management program. Soil, soil vapor, and groundwater investigations performed from 1983 to 1995 documented the presence of <b>POL-impacted soil and groundwater, including the presence of TRPH, BTEX, and PAHs.</b> A biosparge system was installed in 2004 to enhance the rate of biological degradation by naturally-occurring microbes, which operated for five years and was effective in reducing contaminated concentrations in groundwater approaching FDEP GCTLs. A remedial work plan has been developed to collect additional data to determine COPCs at the site and determine next steps such as performing a baseline risk assessment.</p> <p>Planned construction for the Proposed Action would occur adjacent to the southwestern boundary of this ERP site. Although the ERP site has not been closed by regulatory agencies, remediation activities on-site have reduced groundwater contamination to concentrations approaching GCTLs. Accordingly, there is a <b>low-to-moderate potential for short-term, minor adverse impacts</b> related to the Proposed Action construction activities.</p>
	FT023	Former Active Fire Training Area	Fire/Crash Training Area	Active	<p>An ongoing RI began in 2011 to address data gaps.</p> <p>Fire-fighting activities, which began at Site FT023 in 1980, may have involved the use of firefighting agents known as Aqueous Film-Forming Foams (AFFFs), which came into use</p>



Project	ERP Site ID	Site Name	Site Type	Site Status	Description
					<p>as early as 1970. AFFFs are comprised of fluorocarbon surfactants and petroleum-based foam stabilizers may have contributed to the release of “emerging” contaminants known as <b>perfluorinated compounds, specifically Perfluorooctanoic acid (PFOA) and Perfluorooctanesulfonic acid (PFOS)</b> into the environment.</p> <p>Planned construction of the <b>Proposed Action would occur well outside of the ERP site boundaries. Accordingly, no impacts are expected</b> related to Proposed Action construction activities.</p>
	OT004	Southeast Runway Extension Burial Site	Debris Burial	Closed	<p><b>ERP Site has been closed by regulatory agencies. No COPCs were detected in soil or groundwater</b> samples that were conducted during a series of investigations from 1984 through 2002 due to historic use of the site for debris burial. A No Action ROD was issued on 03 January 2019.</p>
	OT029	Shoal Point Bayou	Debris Burial, Dredge Spoils Disposal, Pesticide Storage	Active	<p>This site is the subject of numerous historical investigations, as well as ongoing investigations. The Palm Tree Landfill and likely area containing the previous pesticide storage building have been reasonably characterized; however, isolated data gaps and data confirmation needs have been identified, and previous interim remedial actions have been completed to remove contaminated “hot spots” identified from previous sampling. No samples were collected from the dredge spoil piles during previous investigations. A Final Remedial Investigation Uniform Federal Policy for Quality Assurance Project Plan for this ERP site has been approved by regulatory agencies. Contaminants of concern in the debris burial and pesticide storage areas include <b>benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, dibenz(a,h)anthracene, indeno(1,2,3-c,d)pyrene, dieldrin, vinyl chloride, chloroform, 4,6-Dinitro-2-methylphenol, bis (2-ethylhexyl) phthalate, naphthalene, 4,4'-DDD, heptachlor, aluminum, arsenic, iron, lead, manganese, selenium, sodium, thallium, and vanadium.</b></p> <p>Planned construction of the <b>Proposed Action would occur at a sufficient distance from the ERP site boundaries that no impacts are expected to occur</b> related to construction activities.</p>
Renovate Unite Site (Alternative 1)	LF002	Sabre Drive Landfill	Debris Burial	Closed	<p><b>ERP site has been closed by regulatory agencies.</b> Site assessments and investigations were conducted from 1995 through 2002 due to historical illegal dumping at the site. <b>Site soils and groundwater were characterized below regulatory screening levels.</b> State and Federal NFA letters were issued in July of 2002. A No Action Decision Document was issued in March of 2018, and the site was closed.</p>
	SR170 A	Tyndall Elementary School	Small Arms Range	Active	<p>In May 2009, Tyndall’s ERP Management Office collected soil samples around the school grounds as part of the Military Munitions Response Program. Results of these samples showed <b>lead and aromatic hydrocarbon</b> levels in certain areas at the school property were above acceptable residential screening levels.</p>

Project	ERP Site ID	Site Name	Site Type	Site Status	Description
					<p>In July 2009, the Air Force removed approximately two feet of soil from the playground to the rear and adjacent areas the sides of the school and replaced the excavated soil with clean soil and new playground equipment. Another soil removal occurred in front of the school between October and November 2015 in support of a Bay County Schools project to provide driveway improvements, paved parking lots, and landscaping. A third removal action occurred in 2016. A Remedial Investigation is currently underway.</p> <p>Construction of the Proposed Action would occur outside of this ERP site. Therefore, <b>no impacts are expected to occur</b> related to construction activities.</p>