Draft
Environmental Assessment for Infrastructure Construction Projects
Tyndall Air Force Base, Florida

August 2024

United States Air Force
325th Fighter Wing

Tyndall Air Force Base, Florida

U.S. Air Force photo by Tech. Sgt. Betty R. Chevalier

Privacy Advisory

This Environmental Assessment (EA) is provided for public comment in accordance with the National Environmental Policy Act of 1969 (NEPA), the President's Council on Environmental Quality (CEQ) NEPA Regulations (40 Code of Federal Regulations [CFR] Parts 1500-1508), and 32 CFR Part 989, Environmental Impact Analysis Process (EIAP). For this EA, the updated September 2020 CEQ NEPA rules (85 Federal Register 43304-43376) are being followed, as modified by the CEQ NEPA Implementing Regulations Revisions Final Rule, effective 20 May 2022. The EIAP provides an opportunity for public input on Department of the Air Force (DAF) decision-making, allows the public to offer input on alternative ways for the DAF to accomplish the actions it is proposing, and solicits comments on the DAF's analysis of environmental effects.

Public commenting allows the DAF to make better informed decisions. Letters or other written or oral comments provided may be published in the EA. As required by law, comments provided will be addressed in the EA and made available to the public. Providing personal information is voluntary. Any personal information provided will be used only to identify your desire to make a statement during the public comment portion of this process. Private addresses will be compiled to develop a stakeholders list; however, only the names of the individuals making comments and specific comments will be disclosed. Personal home addresses and phone numbers will not be published in the EA.

Compliance with Section 508 of the Rehabilitation Act

This document is compliant with Section 508 of the Rehabilitation Act. This compliance allows assistive technology to be used to obtain the available information from the document. Due to the nature of graphics, figures, tables, and images occurring in the document, accessibility is limited to a descriptive title for each item.

Compliance with Revised CEQ Regulations

This document has been verified that it does not exceed 75 pages, not including appendices, as defined in 40 CFR § 1501.5(f). As defined in 40 CFR § 1508.1(v) a "page" means 500 words and does not include maps, diagrams, graphs, tables, and other means of graphically displaying quantitation or geospatial information.

COVER SHEET
ENVIRONMENTAL ASSESSMENT FOR INFRASTRUCTURE CONSTRUCTION PROJECTS
TYNDALL AIR FORCE BASE, FLORIDA

a. *Responsible Agency:* Department of the Air Force (DAF)

b. *Cooperating Agency:* None

c. *Proposals and Actions:* This environmental assessment (EA) analyzes the Proposed Action to implement various infrastructure construction projects to support airfield operations and safety at Tyndall Air Force Base (AFB), Florida. The Proposed Action would provide facility, infrastructure, and functionality improvements to support the current and future missions of host and tenant units at Tyndall AFB and meet applicable DoD and DAF safety and security requirements.

d. *For Additional Information:* Mr. Edwin Wallace, 325 CES/CEIEC, edwin.wallace.1@us.af.mil.

e. *Report Designation:* Draft Environmental Assessment

f. *Abstract:* This EA has been prepared pursuant to provisions of the National Environmental Policy Act (NEPA) (Title 42 United States Code §§ 4321-4347), Council on Environmental Quality regulations implementing NEPA (Title 40 Code of Federal Regulations [CFR] Parts 1500 - 1508), and the DAF Environmental Impact Analysis Process (32 CFR Part 989).

   The purpose of the Proposed Action is to provide facility, infrastructure, and functionality improvements that support the current and future missions of host and tenant units at Tyndall AFB. The Proposed Action is needed because required facilities are either not currently present at Tyndall AFB or because existing facilities are not sufficient to meet applicable mission requirements. Further, the proposed facilities are needed to meet applicable DoD and DAF requirements specified in the most current versions of Unified Facilities Criteria 4-010-01, *DoD Minimum Antiterrorism Standards for Buildings*; Department of Air Force Manual (DAFMAN) 32-1084, *Standard Facility Requirements*; Department of the Air Force Instruction (DAFI) 31-101, *Integrated Defense*; DAFI 91-212, *Bird/Wildlife Aircraft Strike Hazard (BASH) Management Program*; and Defense Explosives Safety Regulation 6055.09_DAFMAN 91-201, *Explosives Safety Standards*.

   The Proposed Action consists of four individual projects that are currently programmed for implementation between fiscal year (FY) 2024 and FY26: (1) construct a perimeter security fence along the north side of the airfield; (2) construct crossings for vehicles and equipment over existing drainage channels at the north and south ends of Runway 01/19 (drone runway); (3) construct a perimeter security fence between the drone tow-way and U.S. Highway 98; and 4) construct a fueling station, vehicle parking areas and driveway, and explosives trailer parking area in the 7000 Area on the northeastern side of the airfield. All proposed projects would be implemented within the existing boundaries of Tyndall AFB. Each project is independent of the others and could be implemented separately from or concurrently with the other projects over the next 2 to 3 years.

   Based on the analysis of the affected environment and potential environmental consequences presented in the Draft EA, the Proposed Action would have no significant impacts on environmental resources at or near Tyndall AFB.

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PROPOSED FINDING OF NO SIGNIFICANT IMPACT
PROPOSED FINDING OF NO PRACTICABLE ALTERNATIVE

INFRASTRUCTURE CONSTRUCTION PROJECTS
TYNDALL AIR FORCE BASE, FLORIDA

Pursuant to provisions of the National Environmental Policy Act (NEPA), 42 United States Code §§ 4321 to 4370h; Council on Environmental Quality Regulations (CEQ), 40 Code of Federal Regulations (CFR) Parts 1500 to 1508; and 32 CFR Part 989, Environmental Impact Analysis Process (EIAP), the Department of the Air Force (DAF) has prepared the attached Environmental Assessment (EA) to evaluate the potential environmental impacts from the Proposed Action to implement various infrastructure construction projects to support airfield operations and safety at Tyndall Air Force Base (AFB), Florida. The attached EA is incorporated by reference in this proposed Finding of No Significant Impact (FONSI).

Purpose and Need

The purpose of the Proposed Action is to provide facility, infrastructure, and functionality improvements that support the current and future missions of host and tenant units at Tyndall AFB. The Proposed Action is needed because required facilities are either not currently present at Tyndall AFB or because existing facilities are not sufficient to meet applicable mission requirements. Further, the proposed facilities are needed to meet applicable DoD and DAF requirements specified in the most current versions of Unified Facilities Criteria (UFC) 4-010-01, *DoD Minimum Antiterrorism Standards for Buildings*; Department of the Air Force Manual (DAFMAN) 32-1084, *Standard Facility Requirements*; Department of the Air Force Instruction (DAFI) 31-101, *Integrated Defense*; DAFI 91-212, *Bird/Wildlife Aircraft Strike Hazard (BASH) Management Program*; and Defense Explosives Safety Regulation 6055.09_DAFMAN 91-201, *Explosives Safety Standards*.

Description of Proposed Action and Alternatives

The Proposed Action assessed in the EA consists of the four projects listed in **Table 1**.

Table 1. Projects Comprising the Proposed Action

EA Project Number	Project Name	MILCON Project Number	Project Description
1	Airfield Fence	XLWU254001	Construct approximately 17,548 linear feet of welded-wire security fencing along the northern side of the main airfield.
2	Drone Runway Culvert Crossings	XLWU214022	Build four new crossing points over existing drainage channels at the northern and southern ends of existing Runway 01/19 (drone runway).
3	Drone Tow-Way Fence	XLWU224003	**Alternative 1:** construct approximately 10,653 LF of welded-wire security fencing immediately south of the drone tow-way. **Alternative 2:** construct approximately 10,534 LF of welded-wire security fencing along the Tyndall AFB boundary immediately north of U.S. Highway 98.
4	7000 Area Improvements	XLWU254002 XLWU254003 XLWU254004	Construct a fueling station, parking area for explosive ordnance and munitions trailers, and expanded access drive and parking area in the 7000 Area on the northeastern side of the airfield.

Proposed Action Alternative

The Proposed Action Alternative would implement the projects listed in **Table 1**. Projects 1, 2, and 4 each consist of one project-level alternative. Two project-level alternatives are considered in the EA for Project 3 **(Table 1)**. The DAF would determine which siting alternative to implement for Alternative 3 following completion of the NEPA process based on factors including mission, operational, and security requirements, potential environmental impacts, and projected cost.

The Proposed Action Alternative would be implemented entirely within the existing boundaries of Tyndall AFB. Each project is independent of the others and could be implemented separately from or concurrently with the others. None of the projects would involve the demolition of existing facilities or disturbance of known historic properties, including archaeological sites, at Tyndall AFB.

No Action Alternative

Under the No Action Alternative, none of the projects listed in **Table 1** would be implemented and existing conditions at Tyndall AFB would continue. The No Action Alternative does not meet the purpose and need but is carried forward for detailed analysis in accordance with CEQ NEPA regulations at 40 CFR Parts 1500-1508 and 32 CFR Part 989. The No Action Alternative provides a baseline for the evaluation of potential impacts from the Proposed Action Alternative and also represents a potential and viable decision to not implement the Proposed Action.

Summary of Findings

Potential impacts from the Proposed Action on resources analyzed in the EA are summarized below. The Proposed Action would have no significant impacts on resources analyzed in the EA. The following resources were dismissed from analysis in the EA because the Proposed Action would have no potential to affect them: airspace and airfield safety zones, land use, geology and topography, environmental justice, and visual resources. Throughout this proposed FONSI and the attached EA, the terms “impacts” and “effects” are used interchangeably and have the same meaning.

Air Quality, Greenhouse Gases, and Climate Change

The Proposed Action would have no significant short-term or long-term impacts on air quality, greenhouse gases, and climate change. Tyndall AFB is in Bay County, Florida, which is designated as attainment (or unclassifiable) for all criteria pollutants. As such, the General Conformity Rule is not applicable to emissions from the Proposed Action.

The highest annual emission rate from construction activities would be for particulate matter equal to or less than 10 microns (PM_{10}) (15.78 tons per year [tpy]), which would be below the insignificance indicator values of 250 tpy (25 tpy for lead). Contractors would comply with applicable regulations and take reasonable measures to prevent or minimize pollutant emissions during construction activities. In the long term, emissions of criteria air pollutants associated with the Proposed Action would remain well below applicable insignificance indicators and would result in a net reduction in pollutant emissions when combined with the reduction in commuting distance needed to refuel vehicles and equipment associated with the 7000 Area, thereby resulting in a beneficial effect on air quality and no significant adverse effects.

Estimated greenhouse gas (GHG) emissions from the Proposed Action would be negligible relative to GHG emissions at both the state and national levels and therefore, would not be expected to result in a significant impact on climate change at a regional or global scale.

Cultural Resources

The Proposed Action would have no significant short-term or long-term impacts on cultural resources. No known historic properties are within the Area of Potential Effect for Projects 1, 2, 4, or Project 3, Alternative 1. Therefore, these projects, if Project 3, Alternative 1 is selected for implementation, would have no impacts on historic properties at Tyndall AFB.

The boundaries of Project 3, Alternative 2 overlap portions of three archaeological sites on Tyndall AFB. Site 8BY2299 has been determined not eligible for listing in the National Register of Historic Places (NRHP); therefore, this alternative, if selected for implementation, would have no adverse effect on this site. Sites 8BY2298 and 8BY2300 have been determined not eligible for listing in the NRHP, and concurrence with this determination by the Florida State Historic Preservation Officer (SHPO) is anticipated; therefore, Project 3, Alternative 2, if selected for implementation, would have no adverse effects on these sites. If the SHPO determines that these sites are eligible for listing, the DAF would consult further with the SHPO in accordance with Section 106 of the National Historic Preservation Act to mitigate any adverse effect. Therefore, adverse impacts on historic properties from Project 3, Alternative 2, if selected for implementation, would not be significant.

Biological Resources

The Proposed Action would have no significant short-term or long-term impacts on biological resources. Construction of the proposed projects would permanently disturb up to 22.73 acres of vegetation and associated wildlife habitat on Tyndall AFB. Noise, vegetation clearing, and other human activity associated with construction would disturb or displace wildlife within the Region of Influence (ROI). Highly mobile animals would likely relocate to other areas of Tyndall AFB providing suitable habitat, while less-mobile animals could experience inadvertent injury or mortality.

Although the permanent removal of up to 22.73 acres of vegetation and associated habitat would represent an adverse impact, this impact would be small in the overall context of all vegetative cover (approximately 22,891 acres) on Tyndall AFB. Undeveloped areas of the project sites would be replanted with native vegetation to the extent possible, and all remaining vegetation in the ROI would be maintained in accordance with the applicable requirements of the Tyndall AFB *Integrated Natural Resources Management Plan* and other applicable guidance documents. Potential impacts on wildlife would occur at the individual rather than the community, population, or species level and would not jeopardize the continued existence of any species. The distribution of the projects over a period of several years, rather than implementing all projects simultaneously, would somewhat minimize adverse impacts on wildlife.

Once operational, the proposed projects would be operated and maintained in accordance with applicable Tyndall AFB management plans to prevent or minimize impacts on vegetation and wildlife to the extent possible. Construction of proposed perimeter security fencing under Projects 1 and 3 would have a beneficial long-term effect on wildlife by minimizing the potential for wildlife interactions and conflicts with humans and aircraft or other equipment at Tyndall AFB. Therefore, adverse short-term and long-term impacts on vegetation and wildlife from the Proposed Action would not be significant.

In accordance with Section 7 of the Endangered Species Act, the DAF prepared a Biological Assessment (BA) to support the determination of effects from the Proposed Action on federally protected species known or having potential to occur in the ROI. Section 7 consultation between the DAF and U.S. Fish and Wildlife Service (USFWS) is ongoing.

Based on the analysis presented in the BA and EA, the DAF has determined that the Proposed Action would have no effect on the bald eagle (*Haliaeetus leucocephalus*); may affect, but is not likely to adversely affect the eastern black rail (*Laterallus jamaicensis jamaicensis*), eastern indigo snake (*Drymarchon couperi*), Godfrey's butterwort (*Pinguicula ionantha*), telephus spurge (*Euphorbia telephioides*), and white birds-in-a-nest (*Macbridea alba*); and is not likely to jeopardize the continued existence of the alligator snapping turtle (*Macrochelys temminckii*), monarch butterfly (*Danaus plexippus*), and tricolored bat (*Perimyotis subflavus*). These determinations, and the federal listing status of each species, are summarized in **Table 2**. USFWS concurrence with these determinations is pending.

Table 2. Summary of Effects Determinations for Federally Protected Species

Common Name	Scientific Name	Federal Status	Determination
alligator snapping turtle	*Macrochelys temminckii*	PT	Not likely to jeopardize the continued existence; if it becomes listed, the determination would be "may affect, not likely to adversely affect"
bald eagle	*Haliaeetus leucocephalus*	BGEPA	No effect
eastern black rail	*Laterallus jamaicensis jamaicensis*	T	May affect, not likely to adversely affect
eastern indigo snake	*Drymarchon couperi*	T	May affect, not likely to adversely affect
Godfrey's butterwort	*Pinguicula ionantha*	T	May affect, not likely to adversely affect
monarch butterfly	*Danaus plexippus*	C	Not likely to jeopardize the continued existence; if it becomes listed, the determination would be "may affect, not likely to adversely affect"
telephus spurge	*Euphorbia telephioides*	T	May affect, not likely to adversely affect
tricolored bat	*Perimyotis subflavus*	PE	Not likely to jeopardize the continued existence; if it becomes listed, the determination would be "may affect, not likely to adversely affect"
white birds-in-a-nest	*Macbridea alba*	T	May affect, not likely to adversely affect

Notes:
BGEPA = Bald and Golden Eagle Protection Act; C = Candidate; PE = Proposed Endangered; PT = Proposed Threatened; T = Threatened

Water Resources

The Proposed Action would have no significant short-term or long-term impacts on water resources. Construction, operation, and maintenance of the proposed projects would not require new or increased withdrawals of groundwater and would not involve intentional discharges to groundwater. Adherence to applicable best management practices (BMPs) and permitting requirements during construction would prevent or minimize the erosion of exposed soils and corresponding sedimentation and pollution in receiving water bodies. Any accidental spills or releases of hazardous substances during construction would be immediately contained and cleaned up in accordance with Tyndall AFB's *Spill Prevention, Control, and Countermeasures (SPCC) Plan* and would have not potential to degrade water quality in receiving water bodies on and around the installation.

The creation of approximately 13 acres of new impervious surface on Tyndall AFB under the Proposed Action would result in corresponding increases in the volume of stormwater generated on the installation. Stormwater generated on Tyndall AFB would continue to be managed in accordance with the applicable requirements of the installation's National Pollutant Discharge Elimination System permit and would not be expected to introduce new sources of pollutants, contribute to exceedances of applicable water quality

standards, or prevent the achievement of water quality objectives established in applicable Total Maximum Daily Loads. As applicable, Tyndall AFB would also obtain and adhere to the requirements of an Individual Environmental Resource Permit (Chapter 62-330.020, Florida Administrative Code) for stormwater generated by projects that would add more than 4,000 square feet of impervious surface subject to vehicular activity or 9,000 square feet of total impervious surface. No in-water activities or alteration of surface water bodies would occur during the operational phase of the proposed projects. None of the proposed projects would establish a new permitted source of pollutant discharges, and any accidental spills or releases of hazardous substances, such as fuels, during periodic maintenance activities would be immediately contained and cleaned up in accordance with the Tyndall AFB *SPCC Plan*. In the context of permeable surface that would remain on the base following implementation of the Proposed Action, as well as surrounding bodies of surface water that would continue to contribute to the recharge of groundwater underlying the base, increases in impervious surface from the Proposed Action would be small and would have no potential to impede or prevent groundwater infiltration and recharge.

Construction of the proposed projects would have the potential to directly impact up to 21.3 acres of wetlands and surface waters subject to federal and/or state regulatory jurisdiction at Tyndall AFB. These impacts would result in up to 12.4 functional loss units of wetland values, as determined through an evaluation prepared in accordance with the Florida Uniform Mitigation Assessment Method. The Proposed Action would also disturb up to 16.1 acres of 100-year floodplains on Tyndall AFB, depending on which alternative is selected for Project 3.

As project planning continues, each project in the Proposed Action would be designed to avoid or minimize impacts on regulated wetlands, surface waters, and floodplains to the extent possible. Prior to implementing each project, the DAF would coordinate with U.S. Army Corps of Engineers (USACE) and Florida Department of Environmental Protection (FDEP) to obtain a jurisdictional determination and applicable permits for federal and/or state-regulated wetlands and surface waters within each project's limits of disturbance that would be impacted during project construction. Such permits could include an Environmental Resource Permit issued by the State of Florida. The DAF and its contractors would adhere to all applicable permit requirements to avoid, minimize, or mitigate adverse impacts on regulated wetlands and surface waters. Although adverse, the loss or reduction in function and values of 21.3 acres of wetlands would be small in the context of all wetlands on Tyndall AFB, representing approximately 0.2 percent of wetlands on the base.

In the context of all 100-year floodplains on Tyndall AFB (approximately 16,047 acres), potential effects on floodplains from the Proposed Action would be relatively small and highly localized. Potential impacts on floodplains would represent approximately 0.1 percent of all floodplains on Tyndall AFB. Adherence to established BMPs, erosion and sediment control measures, and stormwater management practices during construction would control the discharge of runoff from the project sites and minimize the displacement or increased volume of floodwaters elsewhere on Tyndall AFB. Any potential adverse effects from the localized displacement or increased volume of floodwaters from the proposed projects would be contained within the boundaries of Tyndall AFB.

Based on the security, mission, and operational requirements of the DAF, 325th Fighter Wing, and other units based at Tyndall AFB, the DAF has determined that other than the projects and project-level alternatives analyzed in this EA, no practicable alternatives exist for implementing the proposed projects outside wetlands and floodplains on Tyndall AFB. Accordingly, the DAF has prepared a Finding of No Practicable Alternative (FONPA) to document its decision to consider projects that would have the potential to affect 100-year floodplains at Tyndall AFB. Further, in accordance with Executive order (E.O.) 11988, Floodplain Management and E.O. 11990, Protection of Wetlands, the DAF published an Early Public Notice in the *Panama City News Herald* in March 2024 requesting public and agency comments on its proposal to implement projects in or adjacent to wetlands on Tyndall AFB; no comments in response to this notice were received.

DAF has determined that the Proposed Action would be consistent to the maximum extent practicable with the enforceable policies of the Florida Coastal Management Program (FCMP). In an email dated May 1, 2024, FDEP noted that the State has no objections to the Proposed Action and therefore, the Proposed Action is consistent with the FCMP.

Hazardous Materials and Waste

The Proposed Action would have no significant short-term or long-term impacts on or from hazardous materials and waste. All hazardous materials, hazardous waste, and non-hazardous solid waste associated with the Proposed Action would be used, handled, stored, and disposed of in accordance with applicable federal, state, and local requirements and would not exceed Tyndall AFB's capacity to manage such materials and waste. All proposed projects would be reviewed by the 325th Civil Engineer Squadron (325 CES) to identify potential contaminants in soils and groundwater underlying the project sites, and contractors would adhere to project-specific health and safety plans and the applicable requirements of Tyndall AFB's *Environmental Restoration Program and Aqueous Film Forming Foam Guidelines* to ensure the health and safety of workers at each site. The construction and operation of the proposed projects would not disturb, delay, prevent, or otherwise interfere with the ongoing monitoring and remediation of active Environmental Restoration Program sites at Tyndall AFB or prevent the achievement of long-term objectives for those sites.

Infrastructure / Utilities

The Proposed Action would have no significant short-term or long-term impacts on infrastructure and utilities. Infrastructure and utility systems underlying the project sites would be identified and avoided, rerouted, or abandoned in place in accordance with applicable federal and state requirements prior to beginning construction activities. Advance notice would be provided to any facilities that would potentially be affected by temporary utility shutdowns during construction, and utility systems would be temporarily rerouted or relocated as needed to avoid any such shutdowns to the extent possible. The Proposed Action Alternative does not include increases in the number of personnel assigned to Tyndall AFB, nor does it involve the construction and operation of human-occupied facilities on the installation. Additional utility demand generated by the proposed projects would primarily be limited to electricity to power security lighting, fueling station equipment, and electric security gates associated with the proposed fencing. Such demand would be well within the existing capacity of existing utility systems at Tyndall AFB.

Soils

The Proposed Action would have no significant short-term or long-term impacts on soils. Construction of the proposed projects would disturb up to 83,384 cubic yards of soils on Tyndall AFB. Contractors would implement and adhere to the applicable requirements of site-specific erosion and sediment control plans and stormwater pollution prevention plans to prevent or minimize soil erosion and the migration of sediments and pollutants to receiving water bodies. Implementation of the proposed projects over a period of several years, rather than simultaneously, would minimize the amount of soil disturbance occurring at any given time, further minimizing impacts. None of the proposed projects would involve the intentional release of pollutants or hazardous substances to soils on the project sites; and accidental spills would be immediately contained and cleaned up to minimize soil impacts. Adherence to site- and project-specific health and safety plans by construction contractors would minimize potential risks to workers involved in ground-disturbing activities. Soils determined to contain pollutants or other hazardous substances would be removed and disposed of at a permitted off-base facility in accordance with applicable DoD and DAF requirements.

Any soils remaining exposed or otherwise not built on would be revegetated with native species in accordance with applicable operational and security requirements to prevent or minimize the potential for ongoing erosion of exposed soils. Other than soil disturbance associated with periodic maintenance activities, such as periodic vegetation trimming and removal to maintain visual sight lines along the airfield and drone tow-way fences, none of the proposed projects would involve ongoing soil disturbance; any such soil disturbance occurring as part of these activities would remain small in the context of Tyndall AFB.

Safety

The Proposed Action would have no significant short-term or long-term impacts on safety. Potential adverse effects on the health and safety of construction workers would be minimized and managed to acceptable levels through adherence to applicable Occupational Safety and Health Administration and Air Force Occupational Safety and Health requirements and requirements specified in project and site-specific health and safety plans. The review of project and site plans by the 325 CES prior to beginning construction activities would further prevent or minimize potential health and safety risks to construction workers.

None of the proposed projects would require the establishment of new or the modification of existing Explosives Safety Quantity-Distance zones. None of the proposed projects are in or near active Explosives Ordnance Disposal ranges or firing ranges on Tyndall AFB, or within active Military Munitions Response Program (MMRP) sites. Project 3, Alternative 1 is near the boundary of MMRP site TS-183; therefore, the 325 CES would review the potential for ground-disturbing activities associated with that project, if selected for implementation, to encounter residual lead or other munitions associated with that site. Any munitions suspected to be present or encountered during construction would be removed and disposed of in accordance with applicable DAF procedures.

Tyndall AFB natural resources personnel would monitor wildlife activity in the vicinity of the proposed project sites during construction. Increased movements of wildlife resulting from construction disturbance in the vicinity of the airfield's runways, taxiways, and tow-ways would be reported to the 325th Fighter Wing Flight Safety Office for consideration under the installation's *Bird/Wildlife Aircraft Strike Hazard Plan* and operational procedures, as needed. Nuisance animals would be deterred or captured and relocated in accordance with applicable procedures of the Tyndall AFB natural resources management program.

In the long term, construction of perimeter fencing along the north side of the airfield and between the drone tow-way and US-98 under Projects 1 and 3, respectively, would generally have beneficial long-term effects on force protection and physical security by eliminating potential access points for unauthorized incursions by wildlife and individuals in those areas of the installation. The proposed fencing would also minimize the risk of potential mishaps and conflicts between wildlife and aircraft or other equipment operating on the airfield, thereby improving the safety of pilots, aircrews, and ground operations personnel. None of the proposed projects would create conditions that would compromise force protection and physical security at Tyndall AFB.

Socioeconomics

The Proposed Action would have no significant short-term or long-term impacts on socioeconomics. In the short term, the Proposed Action could have beneficial economic effects if local contractors are hired to design and construct the proposed projects, or from local purchases of construction materials, meals, lodging, and equipment. Any such effects would be small given the relatively small scale of the individual projects in the context of the local economy of Bay County and the overall economic output of Tyndall AFB. All beneficial economic effects would end after the proposed projects are completed. These short-term beneficial effects would not be significant.

The Proposed Action would have no long-term effects on socioeconomics because it would not increase or decrease the number of personnel at Tyndall AFB and would have no potential to affect local socioeconomic conditions such as population, employment, or tax revenue.

Noise

The Proposed Action would have no significant short-term or long-term impacts from noise. In the short term, construction of the proposed projects would generate elevated noise levels from workers' commuting vehicles and heavy trucks traveling to and from the project sites; heavy equipment and tools used to construct the projects, and generally increased levels of human activity. Elevated noise levels associated with each project would be highly localized, would diminish with increased distance from the source, and would be unnoticeable or indistinguishable to listeners outside the boundaries of the installation. Noise from aircraft operations would remain the predominant source of noise at and around Tyndall AFB during

construction activities, and all construction-related noise would cease when construction of the proposed projects is completed.

In the long term, none of the proposed projects would create a new source of noise at Tyndall AFB. Noise associated with periodic maintenance of the proposed facilities would be infrequent, widely distributed around the installation, and similar to noise resulting from similar activities already occurring at Tyndall AFB. Aircraft operations would continue to be the predominant source of noise at and around Tyndall AFB.

Transportation

The Proposed Action would have no significant short-term or long-term impacts on transportation. In the short term, construction workers' commuting vehicles and other construction-related vehicles (such as heavy trucks delivering materials and equipment) would increase traffic traveling to and from Tyndall AFB and could contribute to additional traffic congestion in the ROI. These traffic increases and any additional congestion would be small in the context of existing traffic volumes traveling to and from Tyndall AFB in the ROI, would vary throughout each project's construction phase, and would be distributed over a period of several years. Construction-related traffic impacts would not be expected to contribute to exceedances of the capacity of the existing transportation network in the ROI. Following the completion of the proposed projects, construction-related impacts on the transportation network would end.

In the long term, the Proposed Action would not change the number of personnel assigned to Tyndall AFB and would have no potential to result in changes to commuting patterns, require improvements to on-base and off-base transportation networks, permanently increase traffic volumes on on-base and off-base roads, or otherwise increase demands on or the capacity of existing on-base and off-base transportation networks and infrastructure.

Reasonably Foreseeable Future Actions

When considered with other reasonably foreseeable future actions occurring on and near Tyndall AFB, the Proposed Action would not contribute to significant cumulative impacts on resources analyzed in the EA.

Mitigation

The precise extent of potential impacts on federally and state-regulated wetlands and surface waters from the Proposed Action is not currently known. The DAF would acquire all necessary permits from USACE and FDEP prior to implementing projects that would have the potential to impact federally and state-regulated wetlands and surface waters on Tyndall AFB. Potential impacts on wetlands and surface waters would be avoided, minimized, or mitigated in accordance with all applicable permit requirements.

Project-specific BMPs and environmental commitments are not identified for resources analyzed in the EA; however, the use of standard BMPs is assumed, when applicable, in the discussion of environmental consequences presented in the EA.

Public Involvement

A 30-day public and agency scoping period for the Proposed Action was conducted in March and April 2024. An Early Public Notice announcing the Proposed Action's potential to affect wetlands and floodplains and requesting public comments was published in the *Panama City News Herald* on March 3, 2024. Letters were sent to federal and state agencies and Native American tribes on March 4, 2024, requesting comments on the Proposed Action and potentially affected resources. No comments requiring changes to the Proposed Action, alternatives, or resources evaluated in the EA were received during the scoping period.

The Draft EA is being made available for a 30-day public review period in accordance with NEPA. A Notice of Availability was published in the *Panama City News Herald* inviting the public to review and comment on the Draft EA during the 30-day public comment period. Electronic copies of the Draft EA and proposed FONSI/FONPA are available for public review and download on the Tyndall AFB website at https://www.tyndall.af.mil/About/Environmental/AboutUs/Home/Contact.aspx/. A printed copy of the Draft EA and proposed FONSI/FONPA are available for public review at the Bay County Public Library, 898 W

11th St., Panama City, FL 32401. Comments on the Draft EA will be addressed in the Final EA and FONSI, as applicable.

Conclusion

Finding of No Significant Impact. After review of the attached EA, which was prepared in accordance with the requirements of NEPA, CEQ regulations, and the DAF EIAP, I have determined that the Proposed Action to implement infrastructure construction projects at Tyndall AFB would not have a significant impact on the quality of the human or natural environment. Accordingly, preparation of an Environmental Impact Statement is not required. This decision has been made after considering all submitted information, including a review of any public and agency comments received during the 30-day public comment period, and considering a full range of reasonable alternatives that meet project requirements and are within the legal authority of the DAF.

Finding of No Practicable Alternative. Pursuant to E.O. 11988 and E.O. 11990, and considering all supporting information, I find there is no practicable alternative to implementing elements of the Proposed Action entirely outside of floodplains and wetlands, as described in the attached EA. The DAF will plan, design, and implement the proposed projects to avoid or minimize potential impacts on floodplains and wetlands to the extent possible, and will adhere to all applicable permitting requirements to avoid, minimize, or mitigate any potential impacts that cannot be prevented through project planning and design. This finding fulfills the requirements of the referenced E.O.'s and EIAP regulations at 32 CFR § 989.14 for a FONPA.

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ANDREW E. DEROSA, Colonel, USAF **DATE**
Chief, Civil Engineer Division
HQ ACC/A4C, Directorate of Logistics
Engineering and Force Protection

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LIST OF ACRONYMS AND ABBREVIATIONS

°F ..... degrees Fahrenheit
325 CES..... 325th Civil Engineer Squadron
325 FW ..... 325th Fighter Wing
AADT ..... annual average daily traffic
ACAM..... Air Conformity Applicability Model
AFB..... Air Force Base
AFI ..... Air Force Instruction
AFMAN ..... Air Force Manual
AFOSH..... Air Force Occupational Safety and Health
APE ..... Area of Potential Effect
AQCR..... Air Quality Control Region
AST ..... aboveground storage tank
AT/FP..... antiterrorism/force protection
BA..... Biological Assessment
BASH..... Bird/Wildlife Aircraft Strike Hazard
BGEPA ..... Bald and Golden Eagle Protection Act
BMP..... best management practices
CAA ..... Clean Air Act
CEQ..... Council on Environmental Quality
CERCLA ..... Comprehensive Environmental Response, Compensation, and Liability Act
CFR ..... Code of Federal Regulations
CO_2 ..... carbon dioxide
CO_2e ..... carbon dioxide equivalent
CWA..... Clean Water Act
CY..... cubic yard
DAF..... Department of the Air Force
DAFI ..... Department of the Air Force Instruction
DAFMAN..... Department of the Air Force Air Force Manual
dBA ..... A-weighted decibel
DERP..... Defense Environmental Restoration Program
DESR..... Defense Explosives Safety Regulation
DNL ..... day/night sound level
E.O. ..... Executive order
EA..... Environmental Assessment
ECP ..... entry control facility
EIAP..... Environmental Impact Analysis Process
EIS..... Environmental Impact Statement

EOD ..... explosive ordnance disposal
ERP ..... Environmental Restoration Program
ESA..... Endangered Species Act
ESQD ..... explosives safety quantity-distance
FAC..... Florida Administrative Code
FCMP..... Florida Coastal Management Program
FDEP ..... Florida Department of Environmental Protection
FICUN ..... Federal Interagency Committee on Urban Noise
FONPA..... Finding of No Practicable Alternative
FONSI..... Finding of No Significant Impact
FWC..... Florida Fish and Wildlife Conservation Commission
FY ..... fiscal year
GHG..... greenhouse gas
GOV..... government-owned vehicle
GWP ..... global warming potential
HWMP ..... Hazardous Waste Management Plan
INRMP ..... Integrated Natural Resources Management Plan
IRP..... Installation Restoration Program
ISWMP ..... Integrated Solid Waste Management Plan
LF ..... linear foot or linear feet
L_{max} ..... maximum sound level
MBTA..... Migratory Bird Treaty Act
MMRP..... Military Munitions Response Program
mton/yr ..... metric ton per year
NAAQS ..... National Ambient Air Quality Standards
NAGPRA .... Native American Graves Protection and Repatriation Act
NEPA ..... National Environmental Policy Act
NHPA ..... National Historic Preservation Act
NPDES ..... National Pollutant Discharge Elimination System
NRHP ..... National Register of Historic Places
OSHA..... Occupational Safety and Health Administration
PFAS ..... per- and polyfluoroalkyl substances
PM ..... particulate matter
PM_{10}..... particulate matter equal to or less than 10 microns
$PM_{2.5}$..... particulate matter equal to or less than 2.5 microns
POV ..... privately owned vehicle
PSD ..... Prevention of Significant Deterioration
ROI ..... Region of Influence
SC-GHG ..... social cost of greenhouse gases

SF .....square foot or feet
SHPO .....State Historic Preservation Officer
SPCC.....Spill Prevention, Control, and Countermeasures
TMDL .....Total Maximum Daily Load
tpy.....tons per year
U.S.C .....United States Code
UFC .....Unified Facilities Criteria
UMAM .....Uniform Mitigation Assessment Method
US-98.....U.S. Highway 98
USACE.....U.S. Army Corps of Engineers
USEPA.....U.S. Environmental Protection Agency
USFWS.....U.S. Fish and Wildlife Service

CHAPTER 1 PURPOSE OF AND NEED FOR ACTION

1.1 INTRODUCTION

The Department of the Air Force (DAF) has prepared this Environmental Assessment (EA) to evaluate the potential environmental consequences from the Proposed Action to implement various infrastructure construction projects to support airfield operations and safety at Tyndall Air Force Base (AFB), Florida. Tyndall AFB is in northwestern Florida, along the coast of the Gulf of Mexico, immediately south of Panama City and approximately 80 miles southwest of Tallahassee.

This EA has been prepared in accordance with the National Environmental Policy Act (NEPA) of 1969 (42 United States Code [U.S.C.] §§ 4321-4347, as amended), Council on Environmental Quality (CEQ) regulations implementing NEPA (40 Code of Federal Regulations [CFR] Parts 1500-1508), and the DAF Environmental Impact Analysis Process (EIAP) (32 CFR Part 989). The requirements of other federal, state, and local regulations are also addressed in this EA, as applicable.

1.2 LOCATION AND BACKGROUND

Tyndall AFB covers 29,276 acres in Bay County, Florida, immediately south of Panama City **(Figure 1-1, Figure 1-2)**. More than 30 units and organizations operate at Tyndall AFB, including the 325th Fighter Wing (325 FW), the First Air Force, the 53rd Weapons Evaluation Group, and the Air Force Civil Engineer Center.

The installation is primarily accessed by motor vehicle from U.S. Highway 98 (US-98), which effectively bisects the installation into northern and southern sections. The installation's main aircraft runways, taxiways, aircraft hangars and maintenance facilities, drone runway and tow-way, and other infrastructure associated with airfield operations are primarily north of US-98, while its administrative facilities, residential areas, and other support facilities and infrastructure are primarily south and west of US-98. Tyndall AFB is bounded by waterbodies on three sides: East Bay to the north, the Gulf of Mexico to the south, and Saint Andrew Bay to the west.

Tyndall AFB is currently undergoing substantial construction and replacement of facilities that were damaged or destroyed during Hurricane Michael in 2018. However, the installation still lacks a number of facilities and infrastructure elements needed to support ongoing mission, security, maintenance, and wildlife management requirements. No perimeter security fencing is currently present along the northern side of the main airfield, which extends nearly 2.2 miles in a straight line from Fred Bayou, an inlet of East Bay at the northwestern corner of the airfield, to Ammo Loop. Fencing is also lacking between the drone tow-way, which extends approximately 2.6 miles from the main airfield to Runway 01/19 (drone runway) immediately to the southeast, and the installation boundary along the north side of US-98. The lack of fencing in these areas represents a safety and security risk from potential incursions by wildlife or unauthorized individuals in areas of the installation where aircraft are actively operating.

Crossing points over drainage channels at the northern and southern ends of the drone runway are also needed to support efficient operations for vegetation and wildlife management personnel, vehicles, and equipment in accordance with Department of the Air Force Instruction (DAFI) 91-212, *Bird/Wildlife Aircraft Strike Hazard (BASH) Management Program*. Currently, vegetation and wildlife management personnel, vehicles, and equipment must access these areas from the drone tow-way, which intersects the midpoint of the approximately 9,000-foot-long drone runway. This point of access requires vehicles and equipment to traverse large expanses of maintained vegetation adjacent to the runway, which results in disturbance to vegetation and soil, increased risk of introducing foreign objects and debris on the runway, slower operating speeds, and overall inefficient operations.

Figure 1-1 Location of Tyndall Air Force Base

Figure 1-2 Existing Layout of Tyndall Air Force Base

Additionally, existing space and facilities in the 7000 Area on the northeastern side of the airfield are not sufficient to support operational requirements associated with three squadrons of F-35A Lightning II aircraft that began partially operating at Tyndall AFB in August 2023 and are expected to be fully operational by 2027. The basing of these F-35 squadrons and construction of associated facilities at Tyndall AFB was evaluated in the *Final Environmental Impact Statement (EIS) for F-35A Wing Beddown at Tyndall AFB and MQ-9 Wing Beddown at Tyndall AFB or Vandenberg AFB* (DAF, 2020). Subsequently, the DAF identified additional facilities needed in the 7000 Area to support the growing F-35 mission since the Record of Decision for the F-35 Final EIS was issued in 2021. Vehicles and equipment associated with 7000 Area operations must be driven to the existing fuel station in the 400 Area on the northwestern end of the airfield, a one-way driving distance of more than 3 miles. This results in unnecessary delays and inefficient operations of those vehicles and equipment. Further, no parking areas to conduct inspections and loading/unloading operations for trailers carrying explosives and munitions are currently available in the 7000 Area. Additional parking for government-owned vehicles (GOVs) and privately owned vehicles (POVs) would also be required in the 7000 Area to support the increased number of operations and personnel associated with the F-35 mission.

1.3 PURPOSE AND NEED

The purpose of the Proposed Action is to provide facility, infrastructure, and functionality improvements that support the current and future missions of host and tenant units at Tyndall AFB. The Proposed Action is needed because required facilities are either not currently present at Tyndall AFB or because existing facilities are not sufficient to meet applicable mission requirements. Further, the proposed facilities are needed to meet applicable DoD and DAF requirements specified in the most current versions of Unified Facilities Criteria (UFC) 4-010-01, *DoD Minimum Antiterrorism Standards for Buildings*; Department of the Air Force Manual (DAFMAN) 32-1084, *Standard Facility Requirements*; DAFI 31-101, *Integrated Defense*; DAFI 91-212, *Bird/Wildlife Aircraft Strike Hazard (BASH) Management Program*; and Defense Explosives Safety Regulation (DESR) 6055.09_DAFMAN 91-201, *Explosives Safety Standards*.

The Proposed Action consists of four individual projects that are currently programmed for implementation between fiscal year (FY) 2024 and FY26. These projects are evaluated collectively in this EA to streamline the NEPA compliance process; however, each project is independent of the others and could be implemented separately from or concurrently with the other projects over the next 2 to 3 years.

The individual purpose of and need for each project in the Proposed Action are presented in **Table 1-1**; additional information about each project is presented in **Chapter 2**.

Table 1-1 Purpose of and Need for Individual Projects Included in the Proposed Action

Project Title	MILCON Project Number	Project Purpose	Project Need
Airfield Fence	XLWU254001	The purpose of this project is to prevent inadvertent incursions by wildlife and access by unauthorized individuals to the main airfield from undeveloped areas north of the airfield.	This project is needed to meet applicable DoD and AT/FP requirements, including those specified in UFC 4-010-01, DAFMAN 32-1084, DAFI 31-101, and DAFI 91-212, because no physical infrastructure to deter or prevent inadvertent or unauthorized access is present on Tyndall AFB along the north side of the airfield.

Table 1-1 Purpose of and Need for Individual Projects Included in the Proposed Action

Project Title	MILCON Project Number	Project Purpose	Project Need
Drone Runway Culvert Crossings	XLWU214022	The purpose of this project is to provide additional crossing points over existing drainage channels at the northern and southern ends of the drone runway to support the efficient movement of personnel, vehicles, and equipment associated with vegetation and wildlife management operations.	This project is needed because access to areas adjacent to the northern and southern ends of the drone runway is limited to the location where the drone tow-way intersects the approximate midpoint of the 9,000-foot-long runway, which requires personnel to traverse large expanses of maintained vegetation, increases the risk of introducing foreign objects and debris along the runway, and results in inefficient operations.
Drone Tow-Way Fence	XLWU224003	The purpose of this project is to prevent inadvertent incursions on the drone tow-way by wildlife and unauthorized individuals.	This project is needed to meet applicable DoD and AT/FP requirements, including those specified in UFC 4-010-01, DAFMAN 32-1084, DAFI 31-101, and DAFI 91-212, because no physical infrastructure to deter or prevent inadvertent or unauthorized access is present on Tyndall AFB between the drone tow-way and US-98.
7000 Area Improvements	XLWU254002 XLWU254003 XLWU254004	The purpose of this project is to provide facilities and infrastructure required to support the F-35 mission.	This project is needed because existing facilities in the 7000 Area are not sufficient to support the F-35 mission and do not meet the requirements of DESR 6055.09_DAFMAN 91-201.

Notes:
AT/FP = antiterrorism / force protection; DAF = Department of the Air Force; DAFI = Department of the Air Force Instruction; DAFMAN = Department of the Air Force Manual; DESR = Defense Explosives Safety Regulation; MILCON = Military Construction; UFC = Unified Facilities Criteria

1.4 DECISION TO BE MADE

This EA evaluates the potential environmental consequences associated with the implementation of infrastructure construction projects to support airfield operations and safety at Tyndall AFB. Based on the analysis in this EA, the DAF will make one of three decisions regarding the Proposed Action:

1. Determine the Proposed Action and alternatives would have no significant environmental impacts and issue a signed Finding of No Significant Impact (FONSI) and Finding of No Practicable Alternative (FONPA).
2. Initiate preparation of an EIS if it is determined that implementing the Proposed Action or alternatives would result in significant environmental impacts.
3. Select the No Action Alternative, whereby the Proposed Action would not be implemented.

As required by NEPA and CEQ regulations implementing NEPA (40 CFR Parts 1500-1508), preparation of an environmental document must precede final decisions regarding a federal proposed action and be available to inform decision-makers of the potential environmental impacts. The information presented in this EA will serve as the basis for deciding whether the Proposed Action would result in a significant impact on the human environment, requiring the preparation of an EIS, or whether no significant impacts would occur, in which case a FONSI would be appropriate.

The Proposed Action would involve construction in a wetland as defined in Executive Order (E.O.) 11990, Protection of Wetlands or "action" in a floodplain as defined in E.O. 11988, Floodplain Management. Therefore, a FONPA has been prepared in conjunction with the FONSI to document that no other practicable alternatives for implementing the Proposed Action outside a wetland or floodplain exist.

1.5 Interagency and Intergovernmental Coordination and Consultations

The DAF EIAP, in compliance with NEPA, requires opportunities for the public and agencies to review information relevant to the Proposed Action and alternatives. NEPA also requires federal agencies to consider the effects of their proposed actions in accordance with relevant environmental laws and regulations, including Section 7 of the Endangered Species Act (ESA) and Section 106 of the National Historic Preservation Act (NHPA). Consultation with the U.S. Fish and Wildlife Service (USFWS) and National Marine Fisheries Service is required, as applicable, to comply with Section 7 of the ESA.

Government-to-government consultation between the DAF and Native American tribes having historic, cultural, or religious ties to areas where the Proposed Action would be implemented is being conducted in accordance with DoD Instruction 4710.02, *DoD Interactions with Federally Recognized Tribes*; DAFI 90-2002, *Interactions with Federally Recognized Tribes*; and Air Force Manual (AFMAN) 32-7003, *Environmental Conservation*. Information regarding public, agency, and tribal stakeholder consultation and coordination conducted during preparation of this EA, including relevant correspondence, is provided in **Appendix A**.

1.6 Applicable Laws and Environmental Regulations

This EA has been prepared in accordance with NEPA and the DAF EIAP (32 CFR Part 989). These requirements are briefly described below. The requirements of other laws, regulations, best management practices (BMPs), and permits relevant to resources evaluated in the EA are discussed in **Chapter 3**.

1.6.1 National Environmental Policy Act

NEPA is a federal law enacted in 1969 that requires federal agencies to consider the potential environmental consequences of their proposed actions. The intent of NEPA is to protect, restore, or enhance the environment through well-informed federal decisions. NEPA also established the CEQ to implement and oversee federal policies related to this process. CEQ regulations implementing NEPA (40 CFR Parts 1500-1508) specify that an EA be prepared to:

1. briefly provide sufficient analysis and evidence for determining whether to prepare an EIS or a FONSI/FONPA;
2. aid in an agency's compliance with NEPA when no EIS is necessary; and
3. facilitate preparation of an EIS when one is necessary.

Adherence to the NEPA process ensures that federal agencies consider the potential environmental effects of their proposed actions, provide opportunities for public and agency input, and comply with the requirements of relevant laws and regulations such as the ESA and NHPA.

1.6.2 Environmental Impact Analysis Process

The EIAP is the process by which the DAF facilitates compliance with relevant environmental laws and regulations, including NEPA, which is the primary legislation affecting the agency's decision-making process.

1.7 PUBLIC AND AGENCY REVIEW

A 30-day public and agency scoping period for the Proposed Action was conducted in March and April 2024. An Early Public Notice announcing the Proposed Action's potential to affect wetlands and floodplains and requesting public comments was published in the *Panama City News Herald* on March 3, 2024. Letters were sent to federal and state agencies and Native American tribes on March 4, 2024, requesting comments on the Proposed Action and potentially affected resources. No comments requiring changes to the Proposed Action, alternatives, or resources evaluated in the EA were received during the scoping period. Copies of the Early Public Notice, agency and tribal scoping letters, and responses to the letters are provided in **Appendix A**.

The Draft EA is being made available for a 30-day public review period in accordance with NEPA. A Notice of Availability was published in the *Panama City News Herald* inviting the public to review and comment on the Draft EA during the 30-day public comment period. An electronic copy of the Draft EA and proposed FONSI/FONPA are available for public review and download on the Tyndall AFB website at https://www.tyndall.af.mil/About/Environmental/AboutUs/Home/Contact.aspx/. A printed copy of the Draft EA and proposed FONSI/FONPA is available for public review at the Bay County Public Library, 898 W 11th St., Panama City, FL 32401. Comments on the Draft EA will be addressed in the Final EA and FONSI/FONPA, as applicable.

1.8 SCOPE OF ENVIRONMENTAL ANALYSIS

This EA analyzes the potential environmental consequences from the Proposed Action to implement various infrastructure construction projects to support airfield operations and safety at Tyndall AFB. The EA analysis focuses on resources that would be measurably or meaningfully affected by the Proposed Action; detailed discussions of these resources are provided in **Chapter 3**. Cumulative effects are also described for each resource, as applicable. Resources dismissed from detailed analysis in the EA because the Proposed Action would have no effects on them are briefly described in **Section 3.2**

Information and copies of correspondence relevant to public involvement and DAF consultations with agencies and Native American tribes is provided in **Appendix A**. Reasonably foreseeable future actions are listed in **Appendix B**. **Appendix C** provides additional information on resources analyzed in the EA, methodologies, and modeling, including air quality modeling outputs using the Air Conformity Applicability Model (ACAM). The USFWS Official Species List is provided as **Appendix D**. The Federal Coastal Consistency Determination is provided as **Appendix E**. Information regarding the Florida Uniform Mitigation Assessment Method (UMAM), and worksheets for determining functional loss values for wetlands are provided in **Appendix F**.

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CHAPTER 2 DESCRIPTION OF THE PROPOSED ACTION AND ALTERNATIVES

2.1 INTRODUCTION

This section describes the Proposed Action analyzed in this EA, alternatives for implementing the Proposed Action, and a summary of impacts from the Proposed Action based on the detailed analysis presented in **Chapter 3**.

2.2 PROPOSED ACTION

Individual projects comprising the Proposed Action are summarized in **Table 2-1** and further described below. Project-level alternatives being considered for individual projects are also described, as applicable. The locations of the proposed project sites on Tyndall AFB are shown on **Figure 2-1**; each project is shown in additional detail on **Figure 2-2** through **Figure 2-5**. As noted in **Chapter 1**, these projects are evaluated collectively in this EA to streamline the NEPA compliance process; however, each project is independent of the others and could be implemented separately from or concurrently with the others over the next 2 to 3 years. Project-level alternatives that were initially considered for each project, and the alternatives screening process, are described in **Section 2.3**.

Table 2-1 Summary of Proposed Action Projects

EA Project Number [1]	Project Title	Figure Number
1	Airfield Fence	2-1, 2-2
2	Drone Runway Culvert Crossings	2-1, 2-3
3	Drone Tow-Way Fence	2-1, 2-4
4	7000 Area Improvements	2-1, 2-5

Notes:
[1] Project numbers listed here correspond to the numbers shown on **Figure 2-1**.
EA = Environmental Assessment

2.2.1 Project 1 – Airfield Fence

Project 1 would construct approximately 17,548 linear feet (LF) of welded-wire security fencing along the northern side of the main airfield **(Figure 2-1, Figure 2-2)**. The proposed fence would be 10 feet tall and supported by fence posts installed approximately every 10 feet along its length (approximately 1,755 fence posts). Up to seven security gates would be located at various points along the proposed fence as needed to provide access to undeveloped areas along the northern side of the installation for firefighting, wildlife and vegetation management, maintenance, security, and other purposes. The proposed fence would be topped with barbed wire supported on angled outriggers and would include either a 1-foot-wide by 6-inch-deep concrete footer or a 4-foot-wide skirt of fencing material buried at a 45-degree angle along the entire length of the fence to prevent or deter wildlife from burrowing under the fence. The proposed fence would be equipped with lightning rods and a buried grounding cable. As needed, existing subsurface utilities along the proposed fence line would be relocated via open trenching or directional boring.

Figure 2-1 Locations of Projects Included in the Proposed Action

Figure 2-2 Location of Project 1 – Airfield Fence

A cleared buffer area 20 feet wide (10 feet on each side of the proposed fence) would be maintained along the entire length of the proposed fence in accordance with applicable DoD antiterrorism / force protection (AT/FP) requirements to provide a firebreak, clear sight lines, and access for security and maintenance activities (this buffer is not shown on **Figure 2-1** and **Figure 2-2**). Initial clearing and ongoing maintenance of this area would disturb approximately 8 acres of vegetation and underlying soils. Construction of the proposed fence, including relocation of existing subsurface utilities, would require a total of up to 28,406 cubic yards (CY) of excavation and soil disturbance, depending on whether the concrete footer or 45-degree angled fence skirt is installed. Estimated soil disturbance associated with Project 1 is summarized in **Table 2-2**.

Table 2-2 Summary of Estimated Soil Disturbance Associated with Project 1

Project Component		Approximate Soil Disturbance (cubic yards)
A	Fence posts [1]	459
B	Concrete footer strip [2]	325
C	Angled fence skirt [3]	2,600
D	Trenching for utility relocation [4]	5,849
E	20-foot cleared buffer area [5]	19,498
Total Estimated Soil Disturbance – Components A, B, D, and E		**26,131**
Total Estimated Soil Disturbance – Components A, C, D, and E		**28,406**

Notes:

[1] Based on a total of 1,755 fence posts with estimated excavation of 0.26 cubic yard per fence post.

[2] Based on a 6-inch-wide by 12-inch-deep concrete footer strip installed along the entire length of the proposed fence (approximately 17,548 linear feet).

[3] Based on fence material buried approximately 2.8 feet deep at a 45-degree angle along the entire length of the proposed fence (approximately 17,548 linear feet).

[4] Based on a 3-foot-wide by 3-foot-deep excavation along the entire length of the proposed fence (approximately 17,548 linear feet).

[5] Based on a permanently maintained cleared area 10 feet wide on either side of the proposed fence along its entire length (approximately 17,548 linear feet).

2.2.2 Project 2 – Drone Runway Culvert Crossings

This project would build four new crossing points (A, B, C, and D) over existing drainage channels at the northern and southern ends of the existing drone runway **(Figure 2-3)**. Each crossing point would be approximately 20 feet wide and would consist of compressed gravel topped with geotextile fabric and paved asphalt over 24- or 36-inch concrete pipe that would maintain water flow through the existing drainage channels. The concrete piping would be placed directly on the bottom of the drainage channel at each of the proposed crossing locations to minimize disturbance of soil and vegetation. Crossings A, B, and C would be approximately 30 feet long, and Crossing D would be approximately 40 feet long. The area encompassed by each proposed crossing would be approximately 600 square feet (SF) for crossings A, B, and C, and 800 SF for crossing D, for a total of approximately 2,600 SF. Assuming an average depth of 3 feet for any soil excavation that would be needed to construct the proposed crossings, total soil disturbance would be approximately 289 CY.

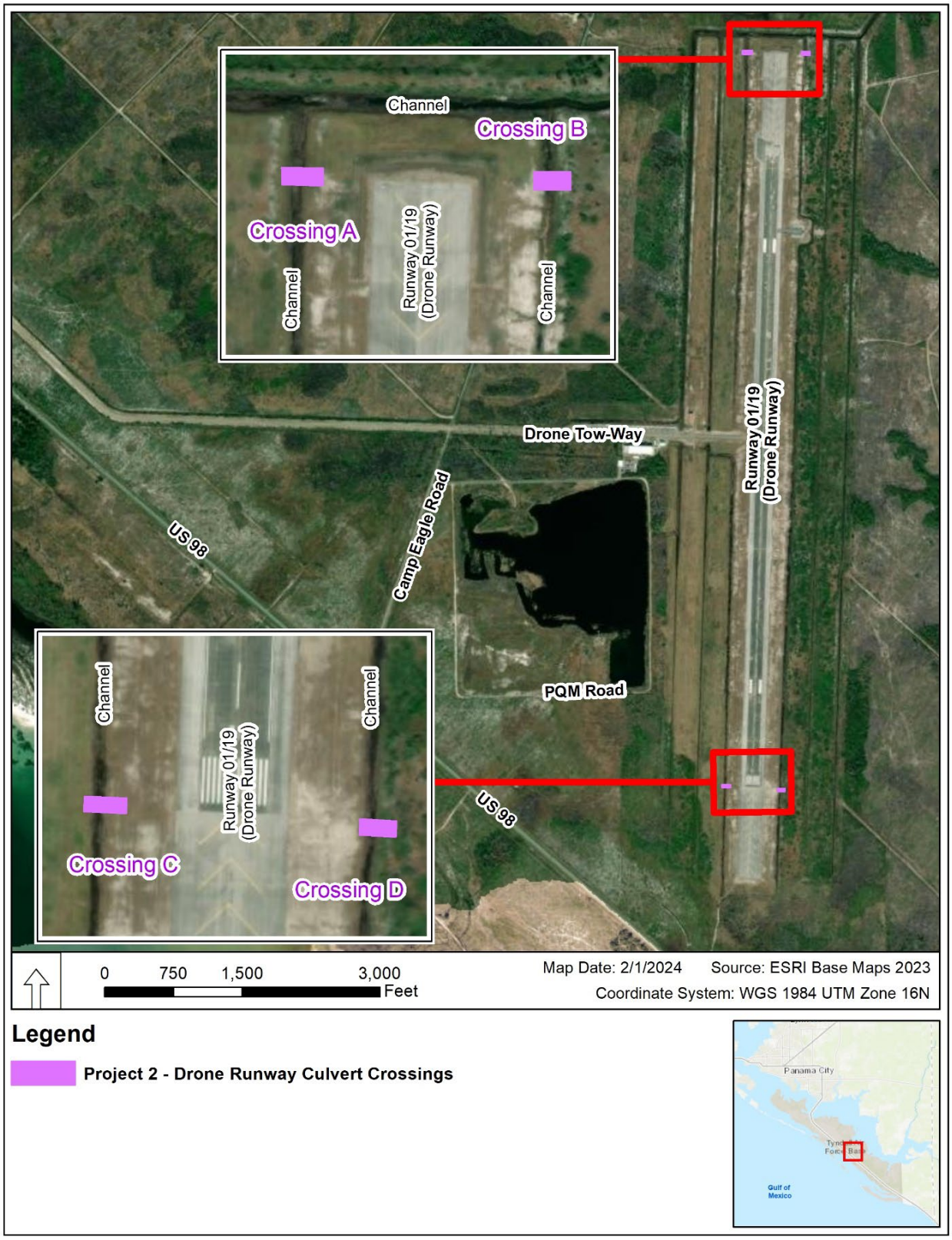

Figure 2-3 Location of Project 2 – Drone Runway Culvert Crossings

2.2.3 Project 3 – Drone Tow-Way Fence

Project 3 would construct a welded-wire fence between the drone tow-way and US-98 **(Figure 2-4)**. The proposed fence would be 7 feet tall and would include fence posts installed approximately every 10 feet. Up to seven security gates would be provided at various points along the proposed fence as needed to provide access for security, firefighting, maintenance, wildlife and vegetation management, and other purposes. The proposed fence would be topped by barbed wire on angled outriggers and would include either a 6-inch-wide by 1-foot-deep concrete footer strip or a 4-foot-wide skirt of fencing material buried at a 45-degree angle along its entire length to prevent or deter animals from burrowing under the fence. The proposed fence would be equipped with lightning rods and a buried grounding cable. A cleared buffer area 20 feet wide (10 feet on each side of the proposed fence) would be maintained along the entire length of the proposed fence in accordance with applicable DoD AT/FP requirements to provide a firebreak, clear sight lines, and access for security and maintenance (this buffer area is not shown on **Figure 2-1** and **Figure 2-4**).

The DAF is considering two project-level alternatives for Project 3. Under Alternative 1, approximately 10,653 LF of fencing would be constructed immediately south of the drone tow-way **(Figure 2-4)**. Under Alternative 2, approximately 10,534 LF of fencing would be constructed along the Tyndall AFB boundary immediately north of US-98. Either alternative would be constructed in previously disturbed areas that currently consist primarily of open space or maintained vegetation. Alternative 1 would involve up to 17,245 CY of soil disturbance and excavation, while Alternative 2 would involve up to 17,052 CY of soil disturbance and excavation, depending on whether a concrete footer strip or fence skirt is used. Estimated soil disturbance associated with each alternative of Project 3 is summarized in **Table 2-3**.

2.2.4 Project 4 – 7000 Area Improvements

Project 4 includes construction of a fueling station, a parking area for explosive ordnance and munitions trailers, and an expanded access drive and parking area in the 7000 Area **(Figure 2-5)**. As applicable, each facility would consist of a reinforced concrete slab or asphalt pavement with appropriate lighting, pavement markings and signage, perimeter fencing, subsurface utilities (such as electrical service, stormwater management), and security features. The total area of the proposed facilities would cover approximately 13.2 acres.

The fueling station would support the fueling of GOVs and equipment associated with the 7000 Area, including equipment used to load munitions onto aircraft. Currently, these vehicles and equipment must be driven to the existing fueling station in the 400 Area on the northwestern end of the airfield, a driving distance of more than 3 miles from the 7000 Area. The new fueling station would consist of an approximately 115,994-SF (2.7 acres) reinforced concrete slab, pumps for dispensing diesel fuel, and a 4,000-gallon diesel fuel aboveground storage tank (AST) with required secondary containment and applicable fire, security, and life safety features. The explosive ordnance / munitions trailer parking area would provide parking for approximately four trailers to facilitate loading and unloading operations as well as appropriate security and safety inspections. This area would consist of a reinforced concrete slab that would cover approximately 261,557 SF (6.0 acres). Pavement and the reinforced concrete slab for the expanded access drive and parking area would cover approximately 196,096 SF (4.5 acres) and would include approximately 24 parking spaces for GOVs and POVs.

Each site would be graded and leveled to achieve positive drainage of stormwater runoff. Stormwater management for each facility would consist of curb and gutter, drainage inlets, and subsurface piping that would convey stormwater to existing infrastructure on Tyndall AFB for eventual discharge to existing detention/retention basins or surface water bodies in accordance with the requirements of the installation's National Pollutant Discharge Elimination System (NPDES) permit. The proposed 7000 Area facilities would be built and operated in accordance with the applicable requirements of DESR 6055.09_DAFMAN 91-201, Chapter 62-762 Florida Administrative Code (FAC), and other applicable federal and state requirements.

Table 2-3 Summary of Estimated Soil Disturbance Associated with Project 3

Project Component		Approximate Soil Disturbance (cubic yards)
Alternative 1 – Construct Fence Immediately South of Drone Tow-Way		
A	Fence posts [1]	279
B	Concrete footer strip [2]	197
C	Angled fence skirt [3]	1,578
D	Trenching for utility relocation [4]	3,551
E	20-foot cleared buffer area [5]	11,837
Total Estimated Soil Disturbance – Components A, B, D and E		**15,864**
Total Estimated Soil Disturbance – Components A, C, D and E		**17,245**
Alternative 2 – Construct Fence Immediately North of US-98		
A	Fence posts [1]	276
B	Concrete footer strip [2]	195
C	Angled fence skirt [3]	1,561
D	Trenching for utility relocation [4]	3,511
E	20-foot cleared buffer area [5]	11,704
Total Estimated Soil Disturbance – Components A, B, D, and E		**15,686**
Total Estimated Soil Disturbance – Components A, C, D, and E		**17,052**

Notes:

[1] Based on a total of 1,065 fence posts under Alternative 1 or 1,053 fence posts under Alternative 2 with estimated excavation of 0.26 cubic yard per fence post.

[2] Based on a 6-inch-wide by 12-inch-deep concrete footer strip installed along the entire length of the proposed fence (approximately 10,653 linear feet under Alternative 1 or 10,534 linear feet under Alternative 2).

[3] Based on fence material buried approximately 2.8 feet deep at a 45-degree angle along the entire length of the proposed fence (approximately 10,653 linear feet under Alternative 1 or 10,534 linear feet under Alternative 2).

[4] Based on a 3-foot-wide by 3-foot-deep excavation along the entire length of the proposed fence (approximately 10,653 linear feet under Alternative 1 or 10,534 linear feet under Alternative 2).

[5] Based on a permanently maintained cleared area 10 feet wide on either side of the proposed fence along its entire length (approximately 10,653 linear feet under Alternative 1 or 10,534 linear feet under Alternative 2).

Construction of each proposed 7000 Area facility would include appropriate site preparation, including grading, leveling, soil excavation or addition of fill soils, and installation of new or relocation of existing buried utilities. All new pavement and concrete would likely require at least 12 inches of base course and 6 inches of concrete. Existing subsurface utilities would be relocated using either directional boring or open trenching; trenching would not exceed 4 feet wide by 8 feet deep. Perimeter fencing around each facility would total approximately 5,958 LF and would include lightning rods, grounding cables, security/access gates as needed, and fence posts installed every 10 feet. As needed, overhead lighting would be provided on aluminum or steel poles with foundations of up to 20 feet deep. Based on the total area of the proposed facilities (13.2 acres), approximately 53 light poles could be needed, assuming approximately 4 light poles per acre. Construction of the proposed 7000 Area facilities, including relocation of existing subsurface utilities and installation of light poles and fencing, would require a total of approximately 37,444 CY of excavation and soil disturbance. Estimated soil disturbance associated with Project 4 is summarized in **Table 2-4**.

Figure 2-4 Location of Project 3 – Drone Tow-Way Fence

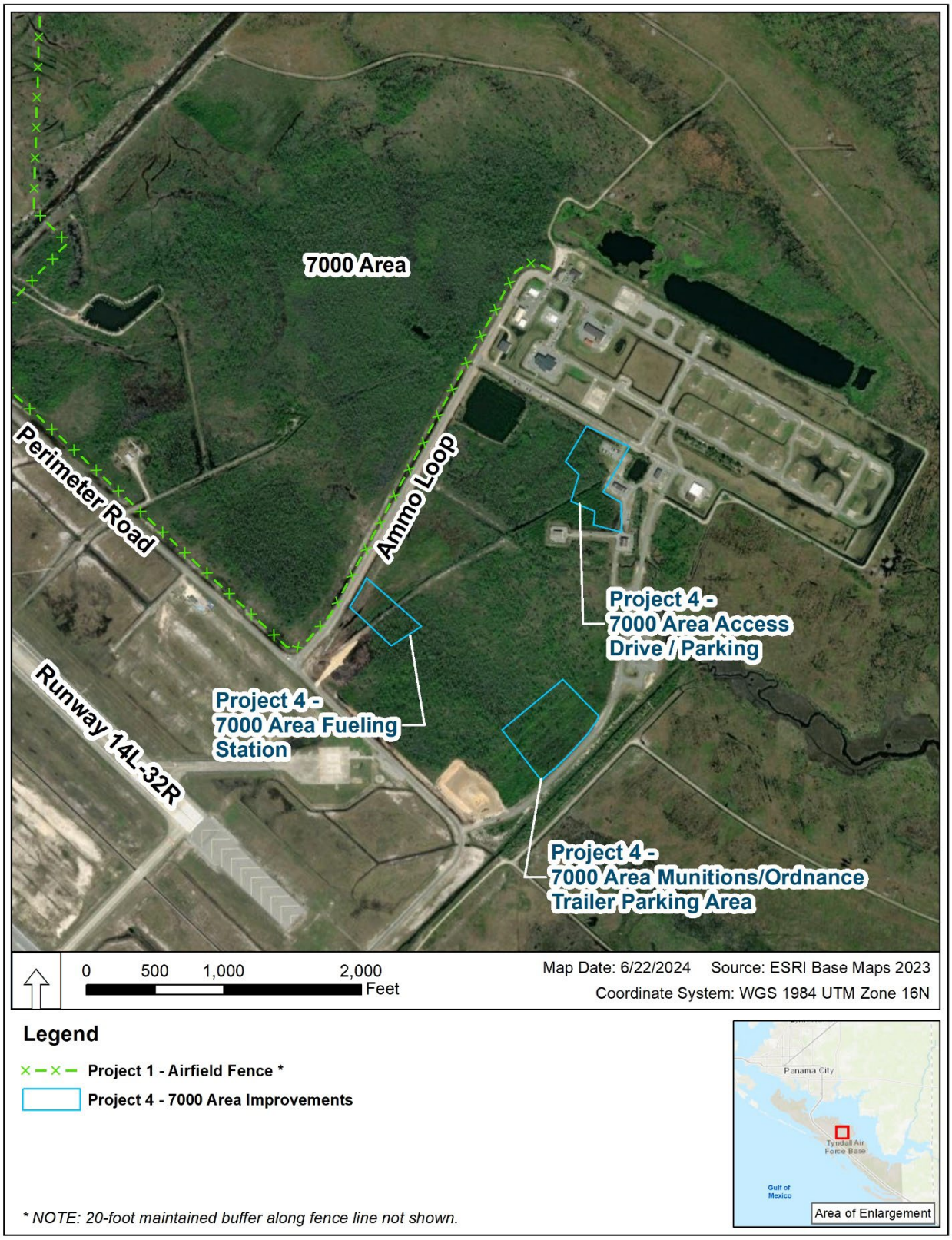

Figure 2-5 Location of Project 4 – 7000 Area Improvements

Table 2-4 Summary of Estimated Soil Disturbance Associated with Project 4

Project Component	Approximate Soil Disturbance (cubic yards)
Site preparation [1]	37,165
Fence posts [2]	156
Light poles [3]	123
Total Estimated Soil Disturbance	**37,444**

Notes:

[1] Includes all soil disturbance associated with site grading and leveling, soil excavation or addition of fill soils, installation of new and relocation of existing utilities, installation of concrete footer or fence skirting associated with perimeter fencing, and establishment and maintenance of 20-foot clear buffer area associated with perimeter fencing.

[2] Based on an estimated total of 596 fence posts installed every 10 feet along a total fenced perimeter of approximately 5,958 linear feet with estimated excavation of 0.26 cubic yard per fence post.

[3] Based on a total of 53 light poles with estimated excavation of 2.33 cubic yards per light pole.

2.3 SELECTION STANDARDS AND ALTERNATIVES SCREENING

2.3.1 Selection Standards

NEPA and the DAF EIAP require the identification of reasonable alternatives for implementing a proposed action. Reasonable alternatives are those that meet the purpose of and need for the Proposed Action, are feasible from a technical and economic standpoint, and meet applicable selection standards. Analysis of the No Action Alternative is also required in accordance with NEPA and the DAF EIAP to provide a baseline for the comparison of potential impacts from the action alternatives.

The DAF developed selection standards to identify reasonable alternatives for implementing the proposed projects described in **Section 2.2**. These selection standards were based on requirements or constraints associated with operational, technical, environmental, budgetary, and time factors. Project alternatives that did not satisfy one or more of the selection standards were considered not to be reasonable and were eliminated from detailed analysis in the EA. The consideration of practicable alternatives is also required by E.O. 11988 and E.O. 11990 to avoid adverse effects on floodplains and wetlands, respectively. Practicable alternatives are those that are capable of being implemented within existing constraints and include consideration of pertinent factors, including the environment, community welfare, cost, and available technology.

Selection standards developed by the DAF to identify reasonable project-level alternatives for implementing the Proposed Action evaluated in this EA consist of the following:

1. The alternative must provide necessary facilities and infrastructure that meet established DoD and DAF sizing, siting, safety, and security requirements specified in UFC 4-010-01, DAFMAN 32-1084, DAFI 31-101, DAFI 91-212, and DESR 6055.09_DAFMAN 91-201.
2. The alternative must promote mission adjacency and operational efficiency.
3. The alternative must avoid, minimize, or mitigate disturbance of environmental resources to the extent practicable and in accordance with applicable regulatory requirements.

2.3.2 Alternatives Screening

The following sections describe the alternatives screening process that the DAF conducted for each of the proposed projects included in the Proposed Action. Project alternatives were evaluated against the selection standards listed in **Section 2.3.1**. Alternatives that met all selection standards were retained for

detailed analysis in this EA, while those that did not meet one or more of the selection standards were dismissed from further analysis.

2.3.2.1 Project 1 – Airfield Fence

Other than constructing this fence along the north side of the airfield in the proposed location shown on **Figure 2-1** and **Figure 2-2**, no reasonable alternatives were identified for this project. Locations farther south would potentially conflict with aircraft clearance requirements associated with the installation's runways and taxiways or would place secure facilities and infrastructure outside the fence perimeter, thereby failing to meet Selection Standards 1 and 2. Although alternatives that would construct the proposed fence in locations farther north of the airfield would meet Selection Standards 1 and 2, these alternatives would not meet Selection Standard 3 because of the potential to increase human activity in and disturbance of adjacent and nearby wetlands, floodplains, wildlife habitat, and vegetated / undisturbed areas during both construction and long-term maintenance. Construction of the proposed fence as shown on **Figure 2-1** and **Figure 2-2** would meet all three selection standards because it would primarily occur in areas of the airfield where vegetation has been previously cleared or is regularly maintained and would thereby limit the disturbance of adjacent and nearby wetlands, floodplains, and wildlife habitat. Therefore, alternatives that would construct the proposed fence in locations other than the one described in **Section 2.2.1** and shown on **Figure 2-1** and **Figure 2-2** were not considered reasonable and were dismissed from further analysis in the EA.

2.3.2.2 Project 2 – Drone Runway Culvert Crossings

As proposed, the culverts and crossing points would be located at each end of the drone runway adjacent to the overrun areas and outside areas of the runway where aircraft could be actively operating during takeoffs and landings. The proposed locations would minimize potential safety risks to personnel conducting vegetation and wildlife management. These locations would also minimize the need to extensively traverse vegetated/unpaved areas adjacent to the runway that would be required if the culverts and crossings were placed closer to the runway midpoint, thereby minimizing potential impacts on vegetation and underlying soils. The DAF concluded that the culverts and crossing points in the proposed locations would meet all the Selection Standards, while those in other locations along the runway would fail to meet the Selection Standards because they would increase potential safety risks to personnel, be less operationally efficient, and potentially result in additional environmental impacts. Alternatives that would construct crossings using box culverts or resembling traditional bridge structures (such as a concrete or steel deck supported by concrete or steel piles and other structural elements) would be more expensive to design, build, and maintain and thus, less operationally efficient, and would result in greater disturbance of environmental resources relative to the proposed method of construction. Therefore, other alternatives for constructing this project were not considered reasonable and were dismissed from further consideration in the EA.

2.3.2.3 Project 3 – Drone Tow-Way Fence

Constructing a fence in a location midway between the drone tow-way and US-98 would result in greater disturbance of environmental resources relative to the locations proposed under Alternative 1 and Alternative 2, as that location predominantly consists of dense, relatively undisturbed vegetation that is allowed to propagate with no or minimal human maintenance and intervention. Thus, this alternative would fail to meet Selection Standard 3 and was dismissed from detailed analysis in the EA.

2.3.2.4 Project 4 – 7000 Area Improvements

Available space for development in the 7000 Area is limited, and the locations of the proposed facilities and associated infrastructure were identified to maximize adjacency to and efficiency with existing facilities, infrastructure, and operations in the 7000 Area; comply with required standoff distances to ensure the safety

and security of personnel, materials being handled and stored, and other adjacent and nearby facilities; and minimize potential impacts on existing wetlands, floodplains, and other environmental resources in and near the 7000 Area. Locating these facilities in other areas of Tyndall AFB would result in operational inefficiencies because they would not collocate necessary facilities within the 7000 Area, thereby failing to meet Selection Standard 2. Therefore, other potential locations for the proposed 7000 Area facilities were dismissed from further analysis in the EA.

2.3.3 Alternatives Evaluated in the Environmental Assessment

Based on the alternatives screening process described in **Section 2.3.2**, the following project-level alternatives meet the Selection Standards listed in **Section 2.3.1**:

- Project 1, Alternative 1
- Project 2, Alternative 1
- Project 3, Alternative 1
- Project 3, Alternative 2
- Project 4, Alternative 1

Table 2-5 summarizes how each project-level alternative met or failed to meet the Selection Standards.

Together, the project-level alternatives listed above are retained for detailed analysis in the EA as the Proposed Action Alternative. The No Action Alternative is also analyzed in the EA in accordance with CEQ NEPA regulations (40 CFR § 1502.14(c)). The Proposed Action Alternative and No action Alternative are briefly described below.

2.3.3.1 Proposed Action Alternative

The Proposed Action Alternative consists of the project-level alternatives listed in **Section 2.3.3**. These projects would be implemented as described in **Section 2.2** and shown on **Figure 2-1** through **Figure 2-5**.

2.3.3.2 No Action Alternative

Under the No Action Alternative, none of the proposed projects described in **Section 2.2** would be implemented at Tyndall AFB and existing conditions would continue. The No Action Alternative does not meet the purpose of and need for the Proposed Action but is carried forward for detailed analysis in accordance with CEQ NEPA regulations (40 CFR Parts 1500 - 1508) and the DAF EIAP (32 CFR Part 989). The No Action Alternative provides a baseline for the evaluation of potential impacts from the Proposed Action and also represents a potential and viable decision to not implement the Proposed Action.

Table 2-5 Summary of Alternatives Screening

Proposed Project	Alternative	Selection Standards			Retained for Analysis in the EA?
		1. Provide necessary facilities that comply with all applicable DoD and DAF facility requirements	2. Promote mission adjacency and operational efficiency	3. Avoid or minimize disturbance of environmental resources	
1. Airfield Fence	Alternative 1 – Proposed location **(Figure 2-1** and **Figure 2-2)**	Yes	Yes	Yes	**YES**
	Alternative 2 – Location north of proposed location	Yes	Yes	No	**NO**
	Alternative 3 – Location south of proposed location	No	No	Yes	**NO**
2. Drone Runway Culvert Crossings	Alternative 1 – Proposed location **(Figure 2-1** and **Figure 2-3)**	Yes	Yes	Yes	**YES**
	Alternative 2 – Crossing locations closer to runway midpoint	No	No	Yes	**NO**
	Alternative 3 – Box culverts or bridge structures	Yes	No	Yes	**NO**
3. Drone Tow-Way Fence	Alternative 1 – Construct fence immediately south of existing drone tow-way **(Figure 2-1** and **Figure 2-4)**	Yes	Yes	Yes	**YES**
	Alternative 2 – Construct fence immediately north of US-98 **(Figure 2-1** and **Figure 2-4)**	Yes	Yes	Yes	**YES**
	Alternative 3 – Construct fence midway between drone tow-way and US-98	Yes	Yes	No	**NO**
4. 7000 Area Improvements	Alternative 1 – Proposed location **(Figure 2-1** and **Figure 2-5)**	Yes	Yes	Yes	**YES**
	Alternative 2 – Other locations on Tyndall AFB outside the 7000 Area	Yes	No	Yes	**NO**

Notes:
DAF = Department of the Air Force; EA = Environmental Assessment

2.4 Environmental Commitments and Best Management Practices

Based on the analysis presented in this EA, the Proposed Action would have no significant adverse impacts on environmental resources at or around Tyndall AFB; therefore, mitigation measures to mitigate significant impacts are not identified. As applicable, environmental commitments and BMPs to prevent or minimize non-significant effects from the Proposed Action are described for environmental resources evaluated in **Chapter 3**.

2.5 Summary of Potential Environmental Consequences

Potential impacts from the Proposed Action are summarized in **Table 2-6**. This summary is derived from the detailed discussion of potential impacts on each resource presented in **Chapter 3** of this EA. For all resources analyzed in this EA, potential impacts from the Proposed Action and No Action Alternatives would not be significant.

Table 2-6 Summary of Potential Environmental Consequences

Resource	Proposed Action Alternative	No Action Alternative
Air Quality, Climate Change, and Greenhouse Gases	No significant short-term or long-term impacts on air quality, greenhouse gases, and climate change. Beneficial long-term effects on air quality from a net reduction in pollutant emissions when combined with the reduction in commuting distance needed to refuel 7000 Area vehicles and equipment.	No change.
Cultural Resources	No significant short-term or long-term impacts on cultural resources.	No change.
Biological Resources	No significant short-term or long-term impacts on biological resources. Beneficial long-term effects on wildlife from construction of proposed perimeter security fencing that would minimize the potential for wildlife interactions and conflicts with humans and aircraft or other equipment at Tyndall AFB.	No change. The lack of perimeter security fencing along the north side of the airfield and between the drone tow-way and US-98 would represent a potentially adverse long-term impact on biological resources but would continue to be managed as it currently is and therefore, would not be significant.
Water Resources	No significant short-term or long-term impacts on water resources.	No change.
Hazardous Materials and Waste	No significant short-term or long-term impacts on or from hazardous materials and waste.	No change.
Infrastructure / Utilities	No significant short-term or long-term impacts on infrastructure and utilities.	No change.
Soils	No significant short-term or long-term impacts on soils.	No change.

Table 2-6 Summary of Potential Environmental Consequences

Resource	Proposed Action Alternative	No Action Alternative
Safety	No significant short-term or long-term impacts on safety. Beneficial long-term effects on safety from construction of proposed perimeter security fencing that would minimize the potential for incursions on Tyndall AFB by unauthorized individuals.	No change. The lack of perimeter security fencing along the north side of the airfield and between the drone tow-way and US-98 would represent a potentially adverse long-term impact on safety but would continue to be managed as it currently is and therefore, would not be significant.
Socioeconomics	No significant short-term or long-term impacts on safety. Beneficial short-term effects on the local economy if local contractors are hired to design and construct the proposed projects, or from local purchases of construction materials, meals, lodging, and equipment.	No change.
Noise	No significant short-term or long-term impacts from noise.	No change.
Transportation	No significant short-term or long-term impacts on transportation.	No change.

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CHAPTER 3 AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

This chapter describes the existing conditions of environmental resources on and around Tyndall AFB and potential impacts on those resources from the Proposed Action and No Action Alternative. The effects of reasonably foreseeable future actions are also considered. Throughout this EA, the terms “impact” and “effects” are used interchangeably and have the same meaning.

3.1 ANALYZED RESOURCES AND EVALUATION CRITERIA

Table 3-1 lists the environmental resources analyzed in this EA and the Region of Influence (ROI) for each resource. The ROI is the geographic area where potential impacts on a particular resource from the Proposed Action Alternative or No Action Alternative could occur or be experienced. The area and extent of the ROI varies for each resource based on the characteristics of the particular resource being evaluated.

Table 3-1 Resources Analyzed in the Environmental Assessment and Region of Influence

Resource	Region of Influence
Air Quality, Greenhouse Gases, and Climate Change	Tyndall AFB, its environs, and the Bay County region.
Cultural Resources	A 100-foot buffer beyond the Area of Potential Effect is defined as follows for each project included in the Proposed Action: • **Project 1:** a 20-foot by 17,548-foot buffer area associated with the proposed fence centerline. • **Project 2:** a 50-foot buffer associated with each proposed (up to 800 square feet) culvert crossing. • **Project 3:** a 20-foot by 10,653-foot buffer area for Alternative 1 and 20-foot by 10,534-foot buffer area for Alternative 2 associated with the proposed fence centerlines. • **Project 4:** the footprints of the proposed 7000 Area facilities (13.2 acres total).
Biological Resources	The sites of each project included in the Proposed Action where direct impacts on biological resources could occur, and areas within the immediate vicinity of each project site where indirect impacts on biological resources, such as disturbance from noise and human activity, could be experienced.
Water Resources	The sites of each project included in the Proposed Action and water bodies on and around Tyndall AFB that potentially receive drainage or infiltration from those sites.
Hazardous Materials and Waste	The sites of each project included in the Proposed Action and adjacent or nearby lands where adverse effects from hazardous materials and hazardous wastes could occur.
Infrastructure / Utilities	The sites of each project included in the Proposed Action and utility and infrastructure systems on Tyndall AFB that could be affected by the Proposed Action.
Soils	The sites of each project included in the Proposed Action.
Safety	The sites of each project included in the Proposed Action.
Socioeconomics	Tyndall Air Force Base, Panama City, and Bay County.

Resource	Region of Influence
Noise	Areas within 0.5 miles of the proposed project sites. Beyond this distance, it is expected that noise associated with the construction and operation of the proposed projects would not be readily identifiable or distinguishable from other noise sources contributing to the ambient noise environment on and around the installation.
Transportation	Segments of US-98 adjacent to Tyndall Air Force Base, and on-base roads and transportation infrastructure north of US-98.

3.2 RESOURCES ELIMINATED FROM FURTHER ANALYSIS

In compliance with NEPA, CEQ guidelines, and DAF guidance in 32 CFR Part 989, as amended, the description of the affected environment focuses on those resources that may be affected by the Proposed Action. Based on the scope of the Proposed Action, resources that would not be impacted were identified through a preliminary screening process. **Table 3-2** summarizes the resources dismissed from analysis in the EA and the rationale for their dismissal.

Table 3-2 Resources Dismissed from Analysis in the Environmental Assessment

Resource Dismissed from Analysis	Rationale for Dismissal
Airspace and Airfield Safety Zones	The Proposed Action does not involve aircraft operations in or modifications to military or civilian airspace above the Earth's surface and would have no potential to affect any such airspace. All project elements would be designed, sited, and constructed in a manner that does not interfere with aircraft navigation and ensures consistency and compatibility with applicable airfield safety and operational requirements, including those associated with airspace imaginary surfaces, clear zones, and accident potential zones established in UFC 3-260-01, *Airfield and Heliport Planning and Design*. Therefore, this resource was dismissed from detailed analysis in the EA.
Land Use	The proposed projects would be consistent with, and would not impede or prevent, the continued operation of adjacent and nearby land uses on or outside Tyndall AFB. The Proposed Action would have no potential to affect land use planning or policies of local jurisdictions outside the installation. Therefore, land use is not retained for detailed analysis in the EA.
Geology and Topography	Ground disturbance associated with the Proposed Action would be relatively shallow and would have no potential to penetrate geologic strata underlying Tyndall AFB or affect unique or noteworthy geologic features, if present. Although sinkholes are common in Florida, Tyndall AFB and its surrounding region are not identified by the U.S. Geological Survey as having a high potential for sinkhole formation (USGS, 2020). Topography on Tyndall AFB is generally flat, and construction of the proposed projects would not substantially alter topographic conditions on the project sites; topography would generally be similar to conditions that existed prior to construction, and all project sites would be graded to achieve positive drainage toward receiving stormwater management infrastructure. The Proposed Action would not alter or otherwise affect any particularly unique or noteworthy topographic features. Therefore, geology and topography were dismissed from detailed analysis in the EA.

Table 3-2 Resources Dismissed from Analysis in the Environmental Assessment

Resource Dismissed from Analysis	Rationale for Dismissal
Environmental Justice	The Proposed Action would have no potential to affect local demography or socioeconomic conditions that could result in disproportionate effects on environmental justice populations in communities adjacent to Tyndall AFB. Potential effects from construction and long-term operation or maintenance of the proposed projects, such as increased noise, generation of fugitive dust, emissions of criteria pollutants from construction vehicles and equipment, and accidental releases of petroleum products or other hazardous materials, would have no potential to disproportionately affect environmental justice populations because they would be localized to the project sites and would not be experienced by disadvantaged or non-disadvantaged populations outside the installation (any accidental releases of hazardous materials during construction or operation of the proposed projects would be immediately contained and cleaned up in accordance with Tyndall AFB's *Spill Prevention, Control, and Countermeasure Plan*). Therefore, environmental justice was dismissed from detailed analysis in the EA.
Visual Resources	The visual character of the proposed projects would be consistent with the visual character of similar, existing facilities at Tyndall AFB and the installation's overall visual character as an active miliary airfield. As applicable, each project would be designed in accordance with Tyndall AFB's current design guidelines to ensure cohesion with other visual elements on the base. Therefore, this resource was dismissed from detailed analysis in the EA.

Notes:
AFB = Air Force Base; EA = Environmental Assessment

3.3 AIR QUALITY, GREENHOUSE GASES, AND CLIMATE CHANGE

3.3.1 Definition of the Resource

Ambient air quality in a specified area or region is measured by the concentration of various pollutants in the atmosphere. Pollutant concentrations are affected by the both the amount of pollutants in the atmosphere and the extent to which these pollutants can be transported and diluted in the air.

3.3.1.1 Air Quality and National Ambient Air Quality Standards

The Clean Air Act (CAA) authorizes the U.S. Environmental Protection Agency (USEPA) to establish National Ambient Air Quality Standards (NAAQS) for select air pollutants, referred to as "criteria pollutants," that are known to affect human health and the environment (40 CFR Part 50). Criteria pollutants regulated by the NAAQS consist of ozone, carbon monoxide, nitrogen dioxide, sulfur dioxide, respirable particulate matter (PM), including particulates equal to or less than 10 microns in diameter (PM_{10}) and particulates equal to or less than 2.5 microns in diameter ($PM_{2.5}$), and lead.

The USEPA has established Air Quality Control Regions (AQCRs) throughout the United States to evaluate compliance with the NAAQS. Regulatory areas within each AQCR that exceed the NAAQS for a pollutant are classified non-attainment for that pollutant. Regulatory areas where air pollutant concentrations are within an applicable NAAQS are designated attainment/unclassifiable for that NAAQS.[1] Areas that have transitioned from nonattainment to attainment are designated as maintenance, and as such are required to follow requirements in the state's maintenance plans to ensure continued compliance with NAAQS.

[1] A designation of "unclassifiable" applies to areas where not enough information is available to appropriately classify the attainment or non-attainment status of those areas.

Tyndall AFB, located in Bay County, is within the Mobile (Alabama)-Pensacola-Panama City (Florida)-Southern Mississippi Interstate AQCR (40 CFR § 81.68). Bay County is in attainment (or is unclassifiable) for each of the criteria pollutants regulated under the NAAQS (40 CFR § 81.335). The ROI for air quality includes Tyndall AFB and its environs and the Bay County region.

Clean Air Act Conformity and Permitting

Under the CAA, the USEPA established the General Conformity rule (40 CFR Part 93), which applies to federal actions occurring in nonattainment or maintenance areas. Proposed federal actions are evaluated to determine if the total indirect and direct net emissions from those actions would be below *de minimis* levels (that is, too trivial or minor to merit consideration) for each of the pollutants as specified in 40 CFR § 93.153. If *de minimis* levels would not be exceeded for any of the pollutants, no further evaluation is required. Additional analysis would be required if net emissions from the proposed project would exceed the *de minimis* thresholds for one or more of the specified pollutants.

Under the CAA, Title V operating permits are required for large (major) stationary sources of air emissions. Stationary sources include boilers, generators, fuel storage tanks and fuel dispensing equipment, chemical usage, and surface coating. If a facility (plant, base, or activity) has the potential to emit more than the specified amount of regulated pollutants (for example, more than 100 tons per year [tpy] of any criteria air pollutant), it would be considered a major stationary source. Major stationary sources would be required to obtain a Title V operating permit that would include federally enforceable emission limits and operational requirements.

The CAA provides special protections for air quality in pristine areas of the country known as Class 1 areas. Class 1 areas include National Parks greater than 6,000 acres or National Wilderness Areas greater than 5,000 acres. Any deterioration of air quality, based on Prevention of Significant Deterioration (PSD) criteria established by USEPA, is considered significant in Class 1 areas. The USEPA has also established regional haze regulations that require states to make initial improvements in visibility within Class 1 areas.

Greenhouse Gases and Climate Change

Greenhouse gases (GHGs) are gases, occurring from natural processes and human activities, that trap heat in the atmosphere. The accumulation of GHGs in the atmosphere helps regulate the Earth's temperature and are believed to contribute to global climate change. The USEPA regulates GHG emissions via permitting and reporting requirements that are applicable mainly to large stationary sources of emissions. Emissions from GHG are expressed in terms of the carbon dioxide equivalent emissions (CO_2e), which is a measure used to compare the emissions from various GHGs based on their Global Warming Potential (GWP). The GWP is a measure of how much energy the emissions of 1 ton of a gas will absorb over a given period of time, relative to the emissions of 1 ton of carbon dioxide (CO_2). The larger the GWP, the more that a given gas warms the earth compared to CO_2 over the same time period. Analysts cumulatively compare emission estimates of different gases using standardized GWPs.

Climate change is the variation in the Earth's climate (including temperature, precipitation, humidity, wind, and other meteorological variables) over time. Climate change is primarily driven by accumulation of GHGs in the atmosphere caused by the increased consumption of fossil fuels (such as coal, petroleum, and natural gas) (IPCC, 2021).

Detailed information on air quality regulations, general conformity, climate change, and GHGs is provided in **Appendix C**.

3.3.2 Affected Environment

Climate

Tyndall AFB is in the northwestern part of Florida, and its climate is representative of the regional climate of the Florida panhandle. The general climate conditions for Tyndall AFB are classified as humid subtropical,

which is characterized by relatively high temperatures and humid conditions with evenly distributed precipitation throughout the year. Summers are usually somewhat wetter than winters, with much of the rainfall coming from convectional thunderstorm activity; tropical cyclones also enhance warm-season rainfall in some regions. The average annual temperature at Tyndall AFB is 66 degrees Fahrenheit (°F). The warmest month, on average, is July with an average temperature of 80°F. The coolest month on average is January, with an average temperature of 53°F. The average amount of precipitation for the year at Tyndall AFB is 53.2 inches (Weatherbase, 2023).

CAA Conformity and Permitting

Tyndall AFB is in Bay County, Florida, which is in attainment for all criteria pollutants (ACAM, 2023). Therefore, the General Conformity Rule does not apply to the Proposed Action.

The installation currently operates under a minor source state operation permit issued by the Florida Department of Environmental Protection (FDEP). This permit regulates specific major stationary sources of air emissions at Tyndall AFB and requires that emissions from these sources do not exceed major source values regulated under Title V air permitting. Activities that generate air pollutant emissions at Tyndall AFB include surface preparation and coating; gas, diesel, and jet fuel storage tanks; fuel transfers; fossil fuel boilers; and stationary emergency generator engines.

Tyndall AFB is not located within 100 kilometers (62 miles) of any USEPA-designated Class I areas protected by the Regional Haze Rule. No Class 1 areas would be affected by emissions associated with the Proposed Action.

Greenhouse Gases and Climate Change

Florida's climate is changing, and the state has warmed 1°F over the last 120 years. Sea levels are rising approximately 1 inch per decade and tropical storms and hurricanes have become more intense. Higher water levels are eroding beaches, submerging lowlands, exacerbating coastal flooding, and increasing the salinity of estuaries and aquifers. Cities, roads, railways, ports, and water supplies are vulnerable to the impacts of storms and sea-level rise (USEPA, 2016). Tyndall AFB is particularly vulnerable to intense hurricanes that could result in damage to infrastructure and delays in training and testing programs (DoD, 2019).

Statewide emissions of CO_2 in Florida totaled 226.3 million metric tons of energy-related carbon dioxide in 2021. This total includes CO_2 emissions from direct fuel use across all sectors, including residential, commercial, industrial, and transportation, as well as primary fuels consumed for electricity generation (USEIA, 2021).

3.3.3 Environmental Consequences

3.3.3.1 Evaluation Criteria

Bay County is designated as attainment (or unclassifiable) for all criteria pollutants. As such, the General Conformity Rule is not applicable to emissions from the Proposed Action and is not addressed in this air quality analysis.

Based on guidance in Chapter 4 of the *Air Force Air Quality EIAP Guide, Volume II – Advanced Assessments*, estimated criteria pollutant emissions from the Proposed Action were compared against the insignificance indicator of 250 tpy (25 tpy for lead) PSD major source permitting threshold for actions occurring in areas that are in attainment for all criteria pollutants (Air Force, 2020). These "Insignificance Indicators" were used in the analysis to provide an indication of the significance of potential impacts on air quality based on current ambient air quality relative to the NAAQS. These insignificance indicators do not define a significant impact; rather, they provide a threshold to identify actions that are insignificant. Any

action with net emissions below the insignificance indicators for a criteria pollutant indicates that the action would not cause or contribute to emissions that would exceed one or more NAAQSs.

The ACAM Version 5.0.23a was used to estimate the total direct and indirect emissions from the Proposed Action. Project emissions estimated using ACAM would primarily be associated with earth disturbance (such as excavation, fill, and grading using heavy equipment), operation of diesel-powered construction equipment and vehicles hauling materials, worker trips to and from the project sites, and paving. Also, operational emissions were estimated for a proposed new diesel fuel storage tank and for potential commutes by 7000 Area vehicles and equipment along a shorter route to and from the proposed new fueling station (Project 4). These emissions would begin once the proposed fueling station is operational after construction has been completed.

Contractors would adhere to typical BMPs to reduce fugitive dust (PM_{10}) during construction, grading, trenching, and land and vegetation clearing activities associated with the proposed projects. Such BMPs could include regular spraying of water or approved chemical dust suppressants on exposed soil and on unpaved roads, proper soil stockpiling methods including installation of windbreakers around soil storage piles, and replacement of ground cover. Additional measures, such as use of efficient grading practices, proper use of equipment in accordance with manufacturer instructions, and lowering engine idling times, would reduce combustion emissions. Such measures, if implemented, would further reduce dust and other pollutant emissions to levels below those estimated for this EA.

The Proposed Action would be implemented over a 3-year period. However, to provide a conservative analysis of potential air quality impacts, and following Air Force Civil Engineer Center policy, all construction activities are assumed to occur within a single calendar year in 2025. Operational emissions are assumed to start in 2026 after construction ends and would occur indefinitely (thereby representing “steady state” emissions).

Greenhouse Gases and Climate Change

ACAM Version 5.0.23a was also used to evaluate GHG emissions from the Proposed Action. The GHG Emissions Evaluation calculates potential GHG emissions (CO_2e) from the action, determines if the action’s emissions are insignificant, and provides a relative significance comparison. For the analysis, the PSD threshold for GHG of 75,000 tpy of CO_2e (or 68,039 metric ton per year, [mton/yr] was used as an indicator or "threshold of insignificance" for NEPA air quality impacts in all areas. This indicator does not define a significant impact; however, it provides a threshold to identify actions that are insignificant (*de minimis*). Actions with a net change in GHG (CO_2e) emissions below the insignificance indicator (threshold) are considered too insignificant on a global scale to warrant further analysis. Note that actions with a net change in GHG (CO_2e) emissions above the insignificance indicator (threshold) are only considered potentially significant and require further assessment to determine if the action would have a significant impact. Action-related GHGs have no significant impact on local air quality. However, from a global perspective, GHG emissions from individual actions each make a relatively small addition to global atmospheric GHG concentrations that collectively may have a large effect on climate change. If activities have *de minimis* (insignificant) GHG emissions, then on a global scale they are effectively zero and irrelevant (AFCEC, 2023).

ACAM model assumptions, detailed emissions calculations, and summary results for the Proposed Action are provided in **Appendix C**.

3.3.3.2 Proposed Action Alternative

Construction Impacts

Table 3-3 presents estimated emissions from construction activities associated with the individual projects included in the Proposed Action Alternative, including each project-level alternative for Project 3. As shown

in **Table 3-3**, the highest annual emission rate from construction-phase activities would be for PM_{10} (15.78 tpy), which would be below the insignificance indicator values of 250 tpy (25 tpy for lead).

Anticipated increases in construction emissions would be associated with fugitive dust from grading and trenching, operation of diesel-fuel construction equipment and vehicles hauling materials, and workers commuting to and from the project sites. These emissions would be localized and temporary, occurring only for the duration of construction. Adherence to applicable BMPs during construction would reduce emissions by minimizing the generation of dust and other pollutants. Contractors would comply with applicable regulations and take reasonable measures for mitigating dust that may become airborne during construction. Thus, construction activities associated with the Proposed Action Alternative would have no significant adverse impacts on air quality, regardless of the alternative selected for Project 3.

Table 3-3 Emissions from Construction Activities Under the Proposed Action Alternative Compared to Insignificance Indicator

Project	CO	NO_X	PM_{10}	$PM_{2.5}$	SO_2	VOC	Pb	NH_3
1. Airfield Fence	0.680	0.473	4.322	0.019	0.001	0.056	0.000	0.001
2. Drone Runway Culvert Crossings	0.084	0.058	0.015	0.002	<0.001	0.008	0.000	<0.001
3. Drone Tow-Way Fence – Alternative 1	0.488	0.370	2.446	0.015	0.001	0.042	0.000	0.001
3. Drone Tow-Way Fence – Alternative 2	0.488	0.370	2.300	0.015	0.001	0.042	0.000	0.001
4. 7000 Area Improvements	1.753	1.320	8.998	0.051	0.003	0.170	0.000	0.003
Total tpy (with Project 3, Alternative 1) [1,2]	**3.01**	**2.22**	**15.78**	**0.09**	**0.00**	**0.28**	**0.00**	**0.01**
Insignificance Indicator (tpy) [3]	250	250	250	250	250	250	25	250
Exceedance (Yes/No)	No	No	No	No	No	No	No	No
Total tpy (with Project 3, Alternative 2) [1,2]	**3.01**	**2.22**	**15.63**	**0.09**	**0.00**	**0.28**	**0.00**	**0.01**
Insignificance Indicator (tpy) [3]	250	250	250	250	250	250	25	250
Exceedance (Yes/No)	No	No	No	No	No	No	No	No

Notes:

[1] Air Conformity Applicability Model output results.

[2] To be conservative, all construction projects are assumed to occur over one calendar year (2025)..

[3] Insignificance Indicator values are for attainment area criteria pollutants.

CO = carbon monoxide; NH_3 = ammonia; NO_x = nitrogen oxides; Pb = lead; $PM_{2.5}$ = particulate matter less than 2.5 microns; PM_{10} = particulate matter less than 10 microns; SO_2 = sulfur dioxide; tpy = tons per year; VOC = volatile organic compound

Operational Impacts

Table 3-4 presents the estimated operational emissions from the Proposed Action Alternative. A 4,000-gallon diesel fuel AST associated with the proposed 7000 Area fueling station (Project 4) is the only new stationary source of air emissions included in the Proposed Action Alternative. Estimated emissions of volatile organic compounds (0.001 tpy) from this source would be negligible. Once the proposed fueling station becomes operational, commuting distance for fueling 7000 Area vehicles and equipment would substantially decrease. This decrease in commuting distance combined with increased emissions from the new diesel AST would result in a negligible net reduction in total operational emissions (indicated with a minus sign in **Table 3-4**). Thus, the Proposed Action Alternative would have beneficial long-term effects on air quality and no significant adverse effects. The ACAM Report Record of Air Analysis and the Detail ACAM Report are provided in **Appendix C.**

Table 3-4 Annual Operational Emissions Under the Proposed Action Alternative Compared to Insignificance Indicator

Proposed Action Alternative	CO	NO_X	PM_{10}	$PM_{2.5}$	SO_2	VOC	Pb	NH_3
Total Net Emissions (tpy) [1,2]	**-0.111**	**-0.004**	**-0.0001**	**-0.0001**	**-0.0001**	**-0.006**	**0.000**	**-0.001**
Insignificance Indicator (tpy) [3]	250	250	250	250	250	250	25	250
Exceedance (Yes/No)	No	No	No	No	No	No	No	No

Notes:

[1] Air Conformity Applicability Model output results for operational emissions. Minus sign (-) indicates net reduction in total emissions.

[2] Would occur after construction ends and operations begin, assumed 2026 and beyond.

[3] Insignificance Indicator values are for attainment area criteria pollutants.

CO = carbon monoxide; NH_3 = ammonia; NO_x = nitrogen oxides; Pb = lead; $PM_{2.5}$ = particulate matter less than 2.5 microns; PM_{10} = particulate matter less than 10 microns; SO_2 = sulfur dioxide; tpy = tons per year; VOC = volatile organic compound

Other than the 4,000-gallon diesel AST discussed above, the Proposed Action Alternative does not include the establishment of any other new stationary sources of emissions (such as gasoline tanks or emergency generators) at Tyndall AFB. The addition of any such sources, if determined necessary after this EA has been completed, would be required to comply with air quality permitting and operating requirements applicable to Tyndall AFB.

Greenhouse Gases and Climate Change

Table 3-5 summarizes estimated annual GHG emissions through the projected life cycle of the Proposed Action Alternative and provides its relative significance in a global context. **Table 3-5** also presents the estimates of the action-related social cost of greenhouse gases (SC-GHG). The SC-GHG is the monetary value (in terms of 2020 dollars) of the net harm to society from emitting GHGs into the atmosphere. Generally, individual projects are not large enough to have an impact on climate change but cumulatively can have an impact. Estimated annual GHG emissions of 77 mton/yr CO_2e from the Proposed Action Alternative would be low, amounting to only a small fraction (0.113 percent) of the insignificance indicator value. If estimated GHG emissions from a proposed activity are *de minimis* (insignificant), then on a global scale they are effectively zero and irrelevant (including the theoretical SC- GHG).

Table 3-5 Annual Greenhouse Gas Emissions Associated with the Proposed Action Alternative Compared to Insignificance Indicator and Total Social Cost-Greenhouse Gas

Year	CO_2 (mton/yr)[1]	CH_4 (mton/yr)[1]	N_2O (mton/yr)[1]	CO_2e (mton/yr)[1]	Threshold (mton/yr)[2]	Exceedance
2025	76	0.00306859	0.00078622	77	68,039	No
2026	0	0	0	0	68,039	No
2027 [SS Year]	0	0	0	0	68,039	No
Total Greenhouse Gas (CO_2e) Relative Significance (mton)[1]						
Percent of State Totals	0.00001683%					
Percent of U.S. Totals	0.00000074%					
Total SC-GHG ($K [In 2020 $])						
Action (2025-2037)	$29.81	$0.003	$0.12	$29.96	Not applicable	

Notes:

[1] Air Conformity Applicability Mode output results for greenhouse gas emissions and action-related total SC-GHGs.

[2] Air Force Prevention of Significant Deterioration threshold for greenhouse gas of 75,000 tons per year of CO_2e (or 68,039 mton/yr) as an indicator or "threshold of insignificance" for NEPA air quality impacts in all areas.

CH_4 = methane; CO_2 = carbon dioxide; CO_2e = carbon dioxide equivalent; mton/yr = metric ton per year; N_2O = nitrous oxide; SC-GHG = social cost of greenhouse gases; SS = steady-state

Based on the total GHG relative significance values in **Table 3-5**, estimated GHG emissions (including the estimated SC-GHG) from the Proposed Action Alternative would also be negligible relative to GHG emissions at both the state and national levels. At such low levels, the Proposed Action Alternative would not be expected to result in a significant impact on climate change at a regional or global scale.

The ACAM SC-GHG Report is included in **Appendix C**.

3.3.3.3 No Action Alternative

Under the No Action Alternative, the proposed projects would not be implemented and existing conditions at Tyndall AFB would continue. This would have no impact on air quality at Tyndall AFB or the surrounding region.

3.3.3.4 Reasonably Foreseeable Future Actions and Other Environmental Considerations

Criteria pollutants regulated by the NAAQS would be emitted during the construction and operational phases of the reasonably foreseeable future projects listed in **Table B-1**. Quantities of criteria pollutants emitted during each project would vary widely; however, these emissions would be regulated in accordance with applicable regulatory and permitting requirements to ensure that they do not contribute to the substantial degradation of local or regional air quality or result in a change to an AQCR attainment designation. Therefore, when considered with these reasonably foreseeable future actions, the Proposed Action Alternative would not contribute to significant cumulative impacts on air quality.

The Proposed Action Alternative would generate very low levels of GHG emissions and is not anticipated to contribute to climate change in any meaningful way. In a global context, its contribution would be negligible when considered with reasonably foreseeable future actions. Global climate change may continue to cause increased sea level rise and extremes in temperature and precipitation events. As a result, cumulative climate changes to the ROI over time could be anticipated. Tyndall AFB is particularly vulnerable to the occurrence of intense hurricanes that may have an adverse impact on its mission and weaken its infrastructure (DoD, 2019). In response to these and other climate change threats, the installation would implement climate mitigation measures as required.

3.4 CULTURAL RESOURCES

3.4.1 Definition of the Resource

Cultural resources include archaeological and architectural sites that provide essential information to understand the prehistory and historical development of the United States. The primary law protecting cultural resources is the NHPA of 1966. Under Section 106 of the NHPA, federal agencies must consider the effects of their proposed actions (or undertakings) on historic properties, defined as any district, site, building, structure, or object that is listed or eligible for listing in the National Register of Historic Places (NRHP). To the extent possible, adverse effects on historic properties must be avoided, minimized, or mitigated in consultation with the State Historic Preservation Officer (SHPO) and other consulting parties, as appropriate. The Florida Division of Historical Resources is the SHPO for Florida.

Generally, if under Section 106 an action would have an adverse effect on a historic property listed or eligible for listing in the NRHP, the action would also have an adverse impact under NEPA. An adverse effect that is mitigated in consultation with the SHPO and other parties, as appropriate, can generally be considered a non-significant impact under NEPA.

The Proposed Action is considered an undertaking for the purposes of Section 106. The Area of Potential Effect (APE) for each project included in the Proposed Action is defined as follows:

- Project 1: a 20-foot by 17,548-foot buffer area associated with the proposed fence centerline shown on **Figure 2-2**.

- Project 2: a 50-foot buffer associated with each proposed (up to 800 SF) culvert crossing shown on **Figure 2-3**.
- Project 3: a 20-foot by 10,653-foot buffer area for Alternative 1 and 20-foot by 10,534-foot buffer area for Alternative 2 associated with the proposed fence centerlines shown on **Figure 2-4**.
- Project 4: the footprints of the proposed 7000 Area facilities (13.2 acres total) shown on **Figure 2-5**.

In a letter dated March 4, 2024, the DAF initiated consultation with the Florida SHPO in accordance with Section 106 and requested concurrence with the APE; SHPO concurrence with the APE is pending. Copies of relevant Section 106 correspondence are provided in **Appendix A**.

Traditional cultural properties are places eligible for inclusion in the NRHP because of their association with cultural practices or beliefs of a living community that are (a) rooted in that community's history and (b) important in maintaining the continuing cultural identity of the community. Under the Native American Graves Protection and Repatriation Act (NAGPRA), federal agencies are required to plan for and protect Native American human remains or cultural items that may be removed from federal lands and return such remains or items to lineal descendants or tribes (NPS, 2021). DoD Instruction 4710.02, *DoD Interactions with Federally Recognized Tribes* (September 2018) establishes policy, assigns responsibilities, and provides procedures for DoD interactions with federally recognized Native American tribes. The *2021 DoD Plan of Action on Tribal Consultation* (May 2021) outlines the DoD's commitment to improving implementation of E.O. 13175, Consultation and Coordination with Indian Tribal Governments.

In February 2024, the DAF initiated government-to-government consultation with Native American tribes having historic, cultural, and religious ties to lands within the boundaries of Tyndall AFB. Copies of relevant government-to-government correspondence are included in **Appendix A**.

The cultural resources ROI consists of the APE for each proposed project as described above plus an additional 100-foot buffer that was applied for the purposes of identifying and analyzing potential effects on cultural resources.

3.4.2 Affected Environment

The sites of the proposed projects are within the confines of the airfield at Tyndall AFB, which is situated on a peninsula between East Bay and St. Andrew Sound within the Gulf Coast Lowlands Lake Region of the Florida panhandle (Griffith et al., 1997). This region is characterized by coastal dune and flatwood lakes, underlain by Pleistocene beach and dune sands, silt, and clay (Brooks, 1981). Vegetation consists of sand and slash pine, saw palmetto, and live oak communities. The project areas are drained by ditches and bayous along the shore of East Bay. Elevations vary between 10 and 20 feet above mean sea level.

Previous archaeological surveys at Tyndall AFB have identified 402 archaeological sites across the installation (Tyndall AFB, 2022a). These sites include prehistoric, historical (pre-military), and military sites. Prehistoric site types consist of artifact scatters, shell middens, and occupation locales spanning the Paleoindian through Late Woodland periods (12000 – 450 Before Present). Historical sites span mid-19th to mid-20th centuries and include refuse dumps, homesteads, turpentine processing locations, transportation infrastructure, and agricultural features. Military-era sites consist of World War II-era target and training ranges and an aircraft crash site. Additionally, 11 family or community cemeteries are within the boundaries of Tyndall AFB; all are unevaluated for NRHP eligibility.

Four archaeological sites have been recorded within the APE. Approximately 4,900 LF of the western portion of the Project 3, Alternative 1 APE and 1,900 LF of the western portion of the Project 3, Alternative 2 APE are within archaeological site 8BY03184, a World War II-era skeet and trap range that has been determined not eligible for the NRHP. Portions of three additional sites, 8BY02298, 8BY02300, and 8BY02299, are also located within the Project 3 Alternative 2 APE; these sites consist of two homesteads and a Late Woodland prehistoric site. Site 8BY2299 has been determined not eligible. Sites 8BY02298 and

8BY02300 have been evaluated and recommended not eligible for the NRHP and are pending SHPO concurrence (Gerard-Little et al., 2022).

In total, 233 buildings at Tyndall AFB have been evaluated for NRHP eligibility (Tyndall AFB, 2022a). These buildings were constructed between 1941 and 1998, with the majority constructed between 1941 and 1959 (n=89) and 1970 to 1989 (n=87). Of the total, 21 buildings have been determined eligible for listing in the NRHP, 207 have been determined not eligible for listing, and 5 are currently unevaluated. Sixty-five buildings were demolished at Tyndall AFB following damage sustained during Hurricane Michael in 2018, including two NRHP-eligible buildings (8BY1117 and 8BY1178). Two potentially eligible historic districts have been identified at Tyndall AFB, representing the former communities of Cromanton and Farmdale; these districts are located more than 3 miles west and east of the APE, respectively.

None of the extant NRHP-eligible buildings, potentially eligible districts and cemeteries, or other listed historic properties are located within the APE (NPS, 2023). The drone taxiway, apron, and runway are currently under evaluation with a preliminary recommendation of not eligible for the NRHP, pending SHPO concurrence. The drone taxiway falls within 70 feet of the limits of disturbance of Project 3, Alternative 1.

No federally recognized tribal lands are located within the APE (BIA, 2023). Native American tribes with ancestral ties to Tyndall AFB are listed in **Appendix A**. The DAF initiated government-to-government consultation with these tribes in February 2024. To date, no traditional cultural properties have been identified on Tyndall AFB (Tyndall AFB, 2022a).

3.4.3 Environmental Consequences

3.4.3.1 Evaluation Criteria

Adverse impacts on cultural resources could include altering characteristics of the resource that make it eligible for listing in the NRHP. Such impacts could include introducing visual or audible elements that are out of character with the property or its setting; neglecting the resource to the extent that it deteriorates or is destroyed; or the sale, transfer, or lease of the property out of agency ownership (or control) without adequate enforceable restrictions or conditions to ensure preservation of the property's historic significance. For this EA, an effect is considered adverse if it would alter the integrity of an NRHP-listed or eligible resource or if it has the potential to adversely affect traditional cultural properties and the practices associated with the property.

3.4.3.2 Proposed Action Alternative

No known historic properties are within the APEs for Projects 1, 2, or 4. Therefore, these projects would have no impacts on historic properties at Tyndall AFB.

There are no known historic properties within the Project 3, Alternative 1 APE. Therefore, this alternative, if selected for implementation, would have no impacts on known historic properties, including archaeological site 8BY3184, which has been determined not eligible for listing in the NRHP.

There are no known historic properties within the Project 3, Alternative 2 APE. Archaeological site 8BY2299 has been determined not eligible for listing in the NRHP; therefore, this alternative, if selected for implementation, would have no adverse effect on this site. Archaeological sites 8BY2298 and 8BY2300 have been determined not eligible for listing in the NRHP, and SHPO concurrence with this determination is anticipated; therefore, Project 3, Alternative 2, if selected for implementation, would have no adverse effects on these sites, and adverse impacts on historic properties would not be significant. If the SHPO determines that these sites are eligible for listing, the DAF would consult further with the SHPO in accordance with Section 106 of the NHPA to mitigate any adverse effect.

For all proposed projects, should inadvertent discovery of archaeological deposits or human remains be made during construction or other ground-disturbing activities, the DAF would follow standard operating

procedures for Discoveries of Archaeological Resources and NAGPRA Cultural Items as detailed in the Tyndall AFB *Integrated Cultural Resources Management Plan* (Tyndall AFB, 2022a). Adherence to these procedures would ensure that adverse impacts on previously undocumented archaeological deposits or human remains would not be significant.

3.4.3.3 No Action Alternative

Under the No Action Alternative, the proposed projects would not be implemented and existing conditions at Tyndall AFB would continue. Cultural resources at Tyndall AFB would continue to be managed as they currently are. This would have no effect on cultural resources.

3.4.3.4 Reasonably Foreseeable Future Actions and Other Environmental Considerations

The Proposed Action Alternative would have no effects on cultural resources. Therefore, when considered with other reasonably foreseeable future actions occurring on or near Tyndall AFB, the Proposed Action Alternative would not contribute to cumulatively significant adverse effects on cultural resources or historic properties, including architectural resources, archaeological resources, or traditional cultural properties and sacred sites.

3.5 BIOLOGICAL RESOURCES

3.5.1 Definition of the Resource

Biological resources include native, nonnative, and invasive plants and animals; sensitive and protected plant and animal species; and the habitats, such as wetlands, forests, and grasslands, where plants and wildlife occur. Habitat consists of the resources and conditions in an area that support nesting, breeding, and foraging by wildlife and growth and propagation of plants.

Sensitive and protected biological resources include species listed as threatened or endangered by the federal or state government. Animal and plant species that are federally listed as threatened, endangered, candidate, and proposed species under the ESA fall under the regulatory jurisdiction of the USFWS and National Oceanic and Atmospheric Administration Fisheries, as applicable. Migratory birds are protected under the Migratory Bird Treaty Act (MBTA). Sensitive habitats include designated critical habitat protected by the ESA and sensitive ecological areas designated by state or other federal rulings. Bald and golden eagles are protected under the Bald and Golden Eagle Protection Act (BGEPA). Sensitive habitats also include wetlands, plant communities that are unusual or limited in distribution, and important seasonal use areas for wildlife (such as migration routes, breeding areas, and crucial summer and winter habitats).

The Florida Fish and Wildlife Conservation Commission (FWC) Is responsible for managing and conserving Florida's fish and wildlife resources. The FWC regulates activities related to hunting, fishing, boating, and wildlife conservation. The Florida Department of Agriculture and Consumer Services regulates endangered, threatened, and commercially exploited plants of Florida. State-listed threatened, endangered, and protected plant and animal species are managed by the State of Florida in accordance with Chapter 5B-40 FAC (plants) and Chapter 68A-27 FAC (wildlife).

The ROI for biological resources consists of the sites of each project included in the Proposed Action **(Figure 2-1)** where direct impacts on biological resources could occur, and areas within the immediate vicinity of each project site where indirect impacts on biological resources, such as disturbance from noise and human activity, could be experienced. The Proposed Action does not involve in-water activities and would have no potential to alter or otherwise disturb surface water bodies providing suitable habitat for fish and aquatic or marine mammals; therefore, the analysis of biological resources in this EA is limited to terrestrial species of birds, mammals, reptiles, amphibians, and plants, including those having potential to occur in wetlands. A Biological Assessment (BA) (DAF, 2024a) was prepared to evaluate potential impacts from the Proposed Action on federally listed species and support Section 7 consultation with the USFWS.

3.5.2 Affected Environment

3.5.2.1 Vegetation

Tyndall AFB contains approximately 22,891 acres of vegetative cover (Tyndall AFB, 2020). Vegetation within the ROI primarily consists of forested wetlands and pine plantations, with smaller amounts of coastal scrublands and herbaceous prairie present **(Table 3-6)**. Vegetation communities listed in **Table 3-6** are based on land cover data obtained from FDEP and on-site conditions observed during field surveys conducted at Tyndall AFB in March 2024 to support development of the BA.

Predominant wetland communities within the ROI include freshwater emergent, freshwater forested, and freshwater shrub wetlands. Pine plantations primarily consist of slash pine (*Pinus elliottii*) overstories and shrubby understories with species such as inkberry (*Ilex glabra*), swamp titi (*Cyrilla racemiflora*), and black titi (*Cliftonia monophylla*). Tyndall AFB is currently working to convert slash pine plantations to longleaf (*Pinus palustris*) and slash pine mixed forests. Restoration of longleaf pine ecosystems is a regional conservation priority because of its importance as habitat for multiple threatened and endangered species (Tyndall AFB, 2020).

Table 3-6 Vegetation Community Acreage within the Region of Influence

Vegetation Community	Acres
Hydric Pine Flatwoods	14.89
Shrub and Brushland	8.16
Coastal Scrub	1.93
Forest Regeneration Areas	1.17
Herbaceous (Dry Prairie)	1.14
Wet Prairies	0.17
Pine Flatwoods	0.13
Total	**27.59**

Source: FDEP, 2023

Common plant species within wet, mesic, or scrubby flatwoods include longleaf and slash pine overstories; shrubby understories consisting of saw palmetto (*Serenoa repens*), high bush blueberry (*Vaccinium corymbosum*), dwarf huckleberry (*Gaylussacia dumosa*), swamp titi, and fetterbush (*Lyonia lucida*); and groundcover assemblages dominated by wiregrass (*Aristida stricta*), other native warm season grasses, sedges, and suites of other herbaceous species. Common plant species within inland grassland communities include bluestem species (*Andropogon* spp., *Schizachyrium scoparium*), sea oats (*Uniola paniculata*), muhly grass (*Muhlenbergia capillaris*), wax myrtle (*Morella cerifera*), bush goldenrod (*Chrysoma pauciflosculosa*), and Godfrey's goldenaster (*Chrysopsis godfreyi*) (Tyndall AFB, 2020).

3.5.2.2 Wildlife

Undeveloped areas on Tyndall AFB support a wide range of wildlife, including mammals, songbirds, shorebirds, neotropical migrant birds, reptiles, and amphibians. Examples of common wildlife species known or having potential to occur at Tyndall AFB, and potentially within the ROI, are listed in **Table 3-7**.

Table 3-7 Examples of Common Wildlife Species Potentially Occurring in the Region of Influence

Common Name	Scientific Name	Common Name	Scientific Name
Birds			
wild turkey	*Meleagris gallopavo*	great blue heron	*Ardea herodias*
belted kingfisher	*Megaceryle alcyon*	red-shouldered hawk	*Buteo lineatus*

Table 3-7 Examples of Common Wildlife Species Potentially Occurring in the Region of Influence

Common Name	Scientific Name	Common Name	Scientific Name
flycatchers	*Tyrannidae* spp.	red winged blackbird	*Agelaius phoenicius*
Mammals			
white-tailed deer	*Odocoileus virginianus*	black bear	*Ursus americanus floridanus*
eastern gray squirrel	*Sciurus carolinensis*	eastern red bat	*Lasiurus borealis*
gray fox	*Urocyon cineroargenteus*	cotton mouse	*Peromyscus gossypinus*
red fox	*Vulpes vulpes*	eastern mole	*Scalopus aquaticus*
opossum	*Didelphis virginiana*		
Reptiles and Amphibians			
black racer	*Coluber constrictor*	slender glass lizard	*Ophisaurus attenuatus*
cottonmouth	*Agkistrodon piscivorus*	southern leopard frog	*Lithobates sphenocephalus utricularius*
garter snake	*Thamnophis sirtalis*	squirrel treefrog	*Hyla squirella*
common five-lined skink	*Plestiodon fasciatus*	southern cricket frog	*Acris gryllus*
green anole	*Anolis carolinensis*	southern toad	*Anaxyrus terrestris*

Source: Tyndall AFB, 2020

3.5.2.3 Invasive Species

Invasive species are defined in E.O. 13112, Invasive Species as "an alien species whose introduction does or is likely to cause economic or environmental harm to human health." Invasive species are highly adaptable and often displace native species. Characteristics of invasive species include high reproduction rates, resistance to disturbances, lack of natural predators, efficient dispersal mechanisms, and the ability to outcompete native species.

The primary invasive plants of concern at Tyndall AFB are Japanese climbing fern (*Lygodium japonicum*), Chinese tallow tree (*Triadica sebifera*), torpedo grass (*Panicum repens)*, and cogon grass (*Imperata cylindrica*). Invasive animal and insect species include feral hogs (*Sus scrofa*) and fire ants (*Solenopsis invicta*) (Tyndall AFB, 2020). Invasive species management objectives set forth in Tyndall AFB's *Nuisance and Invasive Species Component Plan* include treating and controlling infestations, preventing new infestations, restoring infested areas to the natural ecological community type, and protecting threatened and endangered species and habitats (Tyndall AFB, 2020).

3.5.2.4 Threatened and Endangered Species

Federally Listed Species

Threatened and endangered species include plants and animals listed as threatened or endangered under the ESA and species listed under Chapters 5B-40 and 68A-27 FAC. An endangered species is "any species in danger of extinction through all, or a large portion, of its range," while a threatened species is "any species which is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range." Critical habitat designated under the ESA contains features essential for the conservation of a threatened or endangered species and may require special management and protection (USFWS, 2017).

Federally listed, proposed, or candidate species known or having potential to occur in the ROI are listed in **Table 3-8** (USFWS, 2024; Tyndall AFB, 2020). All bird species listed in **Table 3-8** are also protected under

the MBTA. Although delisted from the federal endangered species list in 2007, the bald eagle (*Haliaeetus leucocephalus*) remains federally protected under the BGEPA, as well as the MBTA. No federally designated critical habitat is present in the ROI (USFWS, 2024). A copy of the USFWS Official Species List for the ROI is provided in **Appendix D**.

The DAF has prepared a BA to evaluate effects from the Proposed Action on federally listed species potentially occurring at Tyndall AFB and support ESA Section 7 consultation with the USFWS (DAF, 2024a). Field surveys to support development of the BA were conducted at Tyndall AFB in March 2024. Additional information regarding federally listed species and habitat observed at Tyndall AFB during these field surveys is provided in the BA.

Table 3-8 Federally Listed Species Known or Having Potential to Occur in the Region of Influence

Common Name	Scientific Name	Federal Status	Known to Occur at Tyndall AFB	Suitable Habitat within the ROI [1]
Birds				
bald eagle	*Haliaeetus leucocephalus*	BGEPA	Yes	Yes
eastern black rail	*Laterallus jamaicensis jamaicensis*	T	Yes	Yes
Invertebrates				
monarch butterfly	*Danaus plexippus*	C	No	Yes
Mammals				
tricolored bat	*Perimyotis subflavus*	PE	No	Yes
Plants				
Godfrey's butterwort	*Pinguicula ionantha*	T	Yes	Yes
telephus spurge	*Euphorbia telephioides*	T	Yes	Yes
white birds-in-a-nest	*Macbridea alba*	T	No	Yes
Reptiles				
alligator snapping turtle	*Macrochelys temminckii*	PT	Yes	Yes
eastern indigo snake	*Drymarchon couperi*	T	No	Yes

Notes:

Sources: Tyndall AFB, 2020; USFWS, 2024

[1] Based on habitat conditions observed during Biological Assessment field surveys conducted at Tyndall AFB in March 2024.
BGEPA = Bald and Golden Eagle Protection Act; C = Candidate; PE = Proposed Endangered; PT = Proposed Threatened; ROI = Region of Influence; T = Threatened

State-Listed Species

State-listed threatened and endangered species known or having potential to occur at Tyndall AFB and in the ROI include 1 mammal species, 9 bird species, 2 reptile species, and more than 40 plant species. These species are shown in **Table 3-9** (FWC, 2022). Suitable habitat is present in the ROI for the Florida black bear (*Ursus americanus floridanus*), protected under the Florida Black Bear Conservation Rule (Chapter 68A-4.009 FAC); the state-threatened gopher tortoise (*Gopherus polyphemus*), protected and managed pursuant to Chapter 68A-27.003 FAC; and the state-threatened southern milkweed (*Asclepias viridula*), a wildflower endemic to the Florida panhandle and northeast Florida that can be found in wet prairies, flatwoods, seepage slopes, and pitcher plant bogs. Southern milkweed also serves as a larval host plant for the federal candidate monarch butterfly (*Danaus plexippus*).

Florida black bears can be found in a wide variety of forested communities statewide and are frequently observed at Tyndall AFB. Tyndall AFB actively manages gopher tortoise habitat by restoring longleaf pine ecosystem habitat, conducting prescribed burns, removing invasive species, and implementing preventive

measures during construction activities. Such measures include conducting field surveys, avoiding existing burrows, or relocating tortoises to areas on the installation with suitable habitat in accordance with the FWC's *Gopher Tortoise Permitting Guidelines* (FWC, 2023). Generally, state-listed species occurring at Tyndall AFB are managed in accordance with polices established in the installation's *Integrated Natural Resources Management Plan* (INRMP) (Tyndall AFB, 2020).

Table 3-9 State-Listed Species Potentially Occurring at Tyndall Air Force Base and in the Region of Influence

Common Name	Scientific Name	State Status	Known to Occur at Tyndall AFB
Mammals			
Florida black bear	*Ursus americanus floridanus*	FBBCR	Yes
Birds			
Bald eagle	*Haliaeetus leucocephalus*	FBER	Yes
American oystercatcher	*Haematopus palliates*	T	Yes
black skimmer	*Rynchops niger*	T	Yes
least tern	*Sternula antillarum*	T	Yes
little blue heron	*Egretta caerulea*	T	Yes
Marian's marsh wren	*Cistothorus palustris marianae*	T	Yes
reddish egret	*Egretta rufescens*	T	Yes
snowy plover	*Charadrius nivosus*	T	Yes
southeastern American kestrel	*Falco sparverius paulus*	T	Yes
tricolored heron	*Egretta tricolor*	T	Yes
Reptiles			
Florida pine snake[1]	*Pituophis melanoleucus mugitus*	T	No
gopher tortoise	*Gopherus polyphemus*	T	Yes
Plants			
Apalachicola aster	*Eurybia spinulosa*	E	Yes
Apalachicola dragonhead	*Physostegia godfreyi*	T	Yes
Apalachicola wild-indigo	*Baptisia megacarpa Chapman ex Torrey & Gray*	E	No
Baltzell's sedge	*Carex baltzellii Chapman ex Dewey*	T	No
Burk's southern pitcher plant	*Sarracenia rosea*	T	Yes
Chapman's butterwort	*Pinguicula planifolia*	T	Yes
Chapman's crownbeard	*Verbesina chapmanii*	T	Yes
dew thread sundew	*Drosera filiformis*	E	Yes
eastern featherbells	*Stenanthium gramineum (KerGawl) Morong*	E	No
fever-tree	*Pinckneya bracteate (Bartram) Rafinesque*	T	No
fire pink	*Silene virginica L.*	E	No
giant water dropwort	*Oxypolis greenmanii*	E	Yes
Godfrey's golden aster	*Chrysopsis godfreyi*	E	Yes
Gulf Coast lupine	*Lupinus westianus*	T	Yes
Harper's yellow-eyed grass	*Xyris scabrifolia*	T	Yes
hummingbird-flower	*Macranthera flammea (Bartram) Pennell*	E	No
Karst pond yellow-eyed grass	*Xyris longisepala*	E	Yes

Table 3-9 State-Listed Species Potentially Occurring at Tyndall Air Force Base and in the Region of Influence

Common Name	Scientific Name	State Status	Known to Occur at Tyndall AFB
large-leaved jointweed	*Polygonum smallianum*	T	Yes
mock pennyroyal	*Stachydeoma graveolens (Chapman) Small*	E	No
naked-stemmed panic grass	*Panicum nudicaule Vasey*	T	No
narrow-leaved beakrush	*Rhynchospora stenophylla Carey ex Chapman*	T	No
orange rein orchid	*Platanthera integra (Nuttall) Gray ex Beck*	E	No
Panhandle bogbuttons	*Lachnocaulon digynum Koernicke*	T	No
Panhandle meadow-beauty	*Rhexia salicifolia*	T	No
parrot pitcher plant	*Sarracenia psittacina*	T	Yes
pinewoods bluestem	*Andropogon arctatus*	T	Yes
primrose-flowered butterwort	*Pinguicula primuliflora Wood & Godfrey*	E	No
purple pitcher plant	*Sarracenia purpurea L.*	T	No
quillwort yellow-eyed grass	*Xyris isoetifolia*	E	Yes
silky camellia	*Stewartia malacodendron L.*	E	No
small spreading pogonia	*Cleistes bifaria*	E	Yes
snakemouth orchid	*Pogonia ophioglossoides*	T	Yes
southern milkweed	*Asclepias viridula*	T	Yes
southern red lily	*Lilium catesbaei*	T	Yes
spoon-leafed sundew	*Drosera intermedia*	T	Yes
spring hill flax	*Linum macrocarpum C.M. Rogers*	E	No
St. John's susan	*Rudbeckia nitidia Nuttall*	E	No
thick-leaved water willow	*Justicia crassifolia*	E	Yes
toothed savory	*Calamintha dentata Chapman*	T	No
white-flowered plantain	*Arnoglossum album L.C. Anderson*	E	No
white-flowered wild petunia	*Ruellia noctiflora*	E	Yes
white-top pitcher-plant	*Sarracenia leucophylla Raf.*	E	No
wiregrass gentian	*Gentiana pennelliana*	E	Yes
yellow-flowered butterwort	*Pinguicula lutea*	T	Yes

Notes:
Sources: FDACS, 2023; FWC, 2023; Tyndall AFB, 2020
[1] Not documented at Tyndall AFB, though the species occurs in the region and/or appropriate habitat exists at Tyndall AFB
FBBCR = Florida Black Bear Conservation Rule; FBER = Florida Bald Eagle Rule; E = Endangered; T = Threatened

3.5.3 Environmental Consequences

3.5.3.1 Evaluation Criteria

Potential impacts on biological resources would be adverse if the Proposed Action would result in the temporary or permanent removal of vegetative cover, the temporary or permanent removal of vegetation providing suitable wildlife habitat, and the associated displacement, injury, or mortality of individual animals. Potential impacts on biological resources would be considered significant if the Proposed Action introduces or contributes to the spread of invasive species at Tyndall AFB; prevents or impedes the continued propagation of common species of plants and wildlife at the community, population level, or species level;

or results in an adverse effect on federally listed threatened and endangered species that cannot be avoided or mitigated through consultation with USFWS.

3.5.3.2 Proposed Action Alternative

Vegetation

The Proposed Action Alternative would permanently disturb up to 22.73 acres of vegetation on Tyndall AFB from construction of proposed fencing, paved areas, associated infrastructure, culvert crossings, and maintenance of permanent 10-foot buffers on either side of fences that would be constructed under Project 1 and Project 3. Permanent impacts on dominant vegetation communities on Tyndall AFB from the Proposed Action Alternative are summarized in **Table 3-10**.

Table 3-10 Summary of Permanent Disturbance to Dominant Vegetation Communities on Tyndall Air Force Base from the Proposed Action Alternative

Project	Dominant Vegetation Community	Approximate Area of Disturbance (acres)
1. Airfield Fence	Hydric Pine Flatwoods	3.45
	Coastal Scrub	1.92
	Pine Flatwoods	0.13
2. Drone Runway Culvert Crossings	Herbaceous (Dry Prairie)	0.29
3. Drone Tow-Way Fence, Alternative 1	Shrub and Brushland	3.81
	Herbaceous (Dry Prairie)	0.85
	Hydric Pine Flatwoods	0.22
3. Drone Tow-Way Fence, Alternative 2	Shrub and Brushland	4.35
	Hydric Pine Flatwoods	0.50
4. 7000 Area Improvements	Hydric Pine Flatwoods	10.72
	Forest Regeneration Areas	1.17
	Wet Prairies	0.17
Total – Proposed Action Alternative with Project 3, Alternative 1		**22.73**
Total – Proposed Action Alternative with Project 3, Alternative 2		**22.70**

Source: FDEP, 2023

While impacts on vegetation from the Proposed Action Alternative would be adverse, they would be small within the overall context of all vegetative cover (approximately 22,891 acres) on Tyndall AFB. To the extent practicable, undeveloped areas within the ROI would be replanted with native vegetation to prevent or minimize soil erosion and generation of fugitive dust. All vegetation remaining within the ROI after construction is complete would be managed and maintained in accordance with the applicable requirements of the Tyndall AFB INRMP and other applicable guidance documents. Contractors would adhere to applicable requirements of the Tyndall AFB *INRMP* and *Nuisance and Invasive Species Component Plan* to prevent the introduction and spread of invasive species on the installation. Therefore, adverse impacts on vegetation from the Proposed Action Alternative would not be significant.

Wildlife

In the short term, noise, vegetation clearing and site preparation, and other human activity associated with construction of the proposed projects would disturb or displace wildlife within the ROI. Highly mobile animals would likely relocate to other areas of Tyndall AFB that provide suitable habitat, while less-mobile animals could experience inadvertent injury or mortality. In the long term, the proposed projects would permanently remove up to 22.73 acres of wildlife habitat on the installation.

While these short-term and long-term impacts would be adverse, they would occur at the individual rather than the community, population, or species level and would not jeopardize the continued existence of any species. The distribution of the projects over a period of several years, rather than implementing all projects simultaneously, would somewhat minimize adverse impacts on wildlife. Adherence to the applicable requirements of the Tyndall AFB *Nuisance and Invasive Species Component Plan* by construction contractors would support the plan's management objectives and minimize the potential for injury to contractors from nuisance wildlife species. Once operational, the proposed projects would be operated and maintained in accordance with applicable Tyndall AFB management plans to prevent or minimize impacts on wildlife to the extent possible. Construction of proposed perimeter security fencing for Projects 1 and 3 would have a beneficial long-term effect on wildlife by minimizing the potential for wildlife interactions and conflicts with humans and aircraft or other equipment at Tyndall AFB. Therefore, adverse short-term and long-term impacts on wildlife from the Proposed Action Alternative would not be significant.

Threatened and Endangered Species

The Proposed Action Alternative would have the potential to temporarily or permanently disturb or displace federally and state-listed threatened and endangered plant and animal species and alter potential, but currently unoccupied, habitat for such species. The Proposed Action Alternative is not intended to result in the "take" of any federally or state listed species; any "take" resulting from the Proposed Action Alternative would be inadvertent and unintentional. As project planning continues, each of the proposed projects would be designed, constructed, and operated to avoid and prevent temporary and permanent impacts on federally and state-listed species and suitable habitat for such species. Construction contractors would adhere to all applicable Tyndall AFB measures to prevent or minimize adverse effects on federally and state-listed species, including time of year restrictions on construction if necessary. In the long term, activity and noise associated with aircraft operations would continue to be the primary source of potential effects on threatened and endangered species at Tyndall AFB. While the Proposed Action Alternative would have the potential to result in the inadvertent disturbance or displacement of one or more federally or state-listed threatened and endangered species potentially occurring in the ROI, or alter potential but currently unoccupied habitat, any such impact would occur at the individual rather than population, community, or species level, and would not jeopardize the continued existence of any federally or state-listed species. Tyndall AFB would continue to manage state-listed threatened and endangered species occurring within its boundaries as described in **Section 3.5.2.4**.

Based on the analysis presented in this EA and the BA, the DAF has determined that the Proposed Action Alternative would have no effect on the bald eagle; may affect, but is not likely to adversely affect the eastern black rail (*Laterallus jamaicensis jamaicensis*), eastern indigo snake (*Drymarchon couperi*), Godfrey's butterwort (*Pinguicula ionantha*), telephus spurge (*Euphorbia telephioides*), and white birds-in-a-nest (*Macbridea alba*); and is not likely to jeopardize the continued existence of the alligator snapping turtle (*Macrochelys temminckii*), monarch butterfly, and tricolored bat (*Perimyotis subflavus*). The Proposed Action Alternative may affect but is not likely to adversely affect either the alligator snapping turtle or the monarch butterfly if either were to become listed under the ESA. These determinations are summarized in **Table 3-11**. The Proposed Action would have no effect on federally designated critical habitat because none is present within the ROI.

Table 3-11 Summary of Effects Determinations for Federally Protected Species

Common Name	Scientific Name	Federal Status	Determination
alligator snapping turtle	*Macrochelys temminckii*	PT	Not likely to jeopardize the continued existence; if it becomes listed, the determination would be "may affect, not likely to adversely affect"
bald eagle	*Haliaeetus leucocephalus*	BGEPA	No effect
eastern black rail	*Laterallus jamaicensis jamaicensis*	T	May affect, not likely to adversely affect
eastern indigo snake	*Drymarchon couperi*	T	May affect, not likely to adversely affect
Godfrey's butterwort	*Pinguicula ionantha*	T	May affect, not likely to adversely affect
monarch butterfly	*Danaus plexippus*	C	Not likely to jeopardize the continued existence; if it becomes listed, the determination would be "may affect, not likely to adversely affect"
telephus spurge	*Euphorbia telephioides*	T	May affect, not likely to adversely affect
tricolored bat	*Perimyotis subflavus*	PE	Not likely to jeopardize the continued existence; if it becomes listed, the determination would be "may affect, not likely to adversely affect"
white birds-in-a-nest	*Macbridea alba*	T	May affect, not likely to adversely affect

Notes:
BGEPA = Bald and Golden Eagle Protection Act; C = Candidate; PE = Proposed Endangered; PT = Proposed Threatened; T = Threatened

In accordance with Section 7 of the ESA, the DAF has initiated consultation with USFWS regarding the Proposed Action Alternative's potential effects on federally listed species. USFWS concurrence with the DAF's determination is pending.

3.5.3.3 No Action Alternative

Under the No Action Alternative, none of the proposed projects would be constructed and existing conditions at Tyndall AFB would continue. Vegetation, wildlife, and federally and state-listed species would continue to be managed as they currently are. The risk of potential wildlife conflicts with humans, aircraft, or other equipment resulting from the lack of perimeter security fencing along the north side of the airfield and south of the drone tow-way would continue to represent an adverse effect on wildlife; however, this risk would continue to be managed in accordance with established procedures as it currently is and, therefore, would not be significant.

3.5.3.4 Reasonably Foreseeable Future Actions and Other Environmental Considerations

Other reasonably foreseeable future actions listed in **Table B-1** would adhere to the requirements of applicable permits and management plans to minimize adverse effects on biological resources and ensure that any such effects are not significant. Therefore, when considered with potential impacts from other reasonably foreseeable future actions, the Proposed Action Alternative would not contribute to cumulatively significant adverse impacts on biological resources.

3.6 WATER RESOURCES

3.6.1 Definition of the Resource

Water resources include naturally occurring and human-built bodies of surface water, such as oceans, lakes, ponds, rivers, streams, canals, ditches, and wetlands, and their associated watersheds; stormwater; groundwater; floodplains; and the coastal zone. Water quality refers to the presence of pollutants in water resources and applicable restrictions on human uses of water resources based on the levels and types of pollutants. The use of and potential effects on water resources, particularly with respect to water quality, are primarily regulated at the federal level under the Clean Water Act (CWA) and the Rivers and Harbors Act of 1899.

The ROI for the analysis of water resources consists of the individual sites of the proposed projects and water bodies on and around Tyndall AFB that potentially receive drainage or infiltration from those sites. The applicable requirements of the federally approved Florida Coastal Management Program (FCMP) are also addressed in this section.

3.6.2 Affected Environment

3.6.2.1 Groundwater

Groundwater is water that fills the pores and fractures in underground materials such as sand, gravel, and other rock. Aquifers are rock materials where groundwater flows naturally or can be pumped in useful quantities (USGS, n.d.).

Tyndall AFB is underlain by three groundwater aquifers, from shallowest to deepest: surficial aquifer, intermediate confining unit, and the Floridan aquifer (Tyndall AFB, 2020). Three permitted on-base wells are used to draw some potable water from the Floridan aquifer; however, most of the potable water used at Tyndall AFB is supplied by the Bay County Utility Services Department (Tyndall AFB, 2021).

3.6.2.2 Water Quality

Naturally occurring surface waters include wetlands, swamps, streams, rivers, ponds, lakes, marshes, bayous, and oceans. Man-made surface waters include impoundments, canals, drainage ditches, and storm water catchments. Water quality and the use of water in aquifers is regulated under the Safe Drinking Water Act of 1974 (42 U.S.C. § 300f et seq.).

Major bodies of surface water surrounding Tyndall AFB consist of East Bay to the north, Saint Andrew Bay to the west, and Saint Andrew Sound and the Gulf of Mexico to the south **(Figure 1-1)**. Smaller bodies of surface water adjacent to Tyndall AFB include Wild Goose Lagoon, Blind Alligator Bayou, Strange Bayou, Fred Bayou, Pearl Bayou, Freshwater Bayou, Sheephead Bayou, and Smack Bayou; these features are either connected to St. Andrew Sound or East Bay. Felix Lake, located in the northwestern section of the base, is the only naturally occurring lake on Tyndall AFB (Tyndall AFB, 2020). Generally, Tyndall AFB is within the St. Andrew Bay watershed, which covers approximately 740,000 acres of the central Florida panhandle. This watershed is unique in that it contains no major rivers, resulting in estuarine waters that are deeper, clearer, and characterized by high and consistent salinity (NWFWMD, 2017).

Tyndall AFB manages and discharges stormwater generated within its boundaries to receiving water bodies in accordance with the applicable requirements of the NPDES and a Multi-Sector Generic Permit issued by FDEP. Tyndall AFB implements BMPs such as preventative maintenance, prevention and response to accidental spills, sediment and erosion control, structural runoff controls, hazardous material and waste management, and shoreline cleanups to effectively prevent stormwater pollution (Tyndall AFB, 2020). Runoff on Tyndall AFB is conveyed via multiple naturally occurring and man-made open drainage channels to receiving water bodies in accordance with the base's NPDES permit.

As of 2020, the mouth of Saint Andrew Bay and the segment of East Bay east of US-98 were listed as impaired in accordance with Section 303(d) of the CWA (USEPA, 2020). Total Maximum Daily Load (TMDL) plans to quantify the maximum amount of a particular pollutant that a surface water body can absorb without exceeding water quality standards are being developed to address pollutants in those water bodies. The Gulf of Mexico side of St. Andrew Bay and the segment of East Bay west of US-98 currently meet CWA water quality standards (USEPA, 2020).

3.6.2.3 Wetlands

Wetlands are jointly defined and regulated by the USEPA and U.S. Army Corps of Engineers (USACE) and include swamps, marshes, bogs, sloughs, and similar areas (33 CFR Part 328). USACE defines wetlands as “those areas that are inundated or saturated with ground or surface water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted to life in saturated soil conditions” (USACE, 1987). It is estimated that wetlands cover approximately 40 percent (11,710 acres) of Tyndall AFB (Tyndall AFB, 2020).

A wetland delineation conducted at Tyndall AFB in November 2023 identified 32 wetland and surface water features covering approximately 23 acres within the proposed project sites (DAF, 2024b). These wetlands and water features are summarized in **Table 3-12** and shown on **Figure 3-1** through **Figure 3-3**. Fifteen of these features totaling approximately 3.5 acres were identified as wetlands or surface waters potentially subject to regulation as Waters of the United States or in accordance with Section 10 of the Rivers and Harbors Act of 1899. The remaining 17 features totaling approximately 19 acres were identified as wetlands and surface waters potentially subject to state regulation. A detailed summary of potential federally and state-regulated wetlands and surface waters within each project site is provided in **Table 3-13**. Additional information regarding the wetland delineation is provided in the Final Wetland Delineation Report (DAF, 2024b).

Table 3-12 Summary of Potential Federally and State-Regulated Wetlands and Surface Water Features Delineated on the Proposed Project Areas

Feature	Quantity	Area (acres)
Wetlands		
Potential Waters of the United States	11	3.20
Potential Waters of the State	14	18.68
Wetlands Subtotal	**25**	**21.88**
Surface Waters		
Potential Waters of the United States	3	0.23
Potential Section 10 Waters	1	0.02
Potential State Jurisdiction	3	0.37
Surface Waters Subtotal	**7**	**0.62**
Total Delineated Wetlands and Surface Water Features	**32**	**22.5**

Source: DAF, 2024b

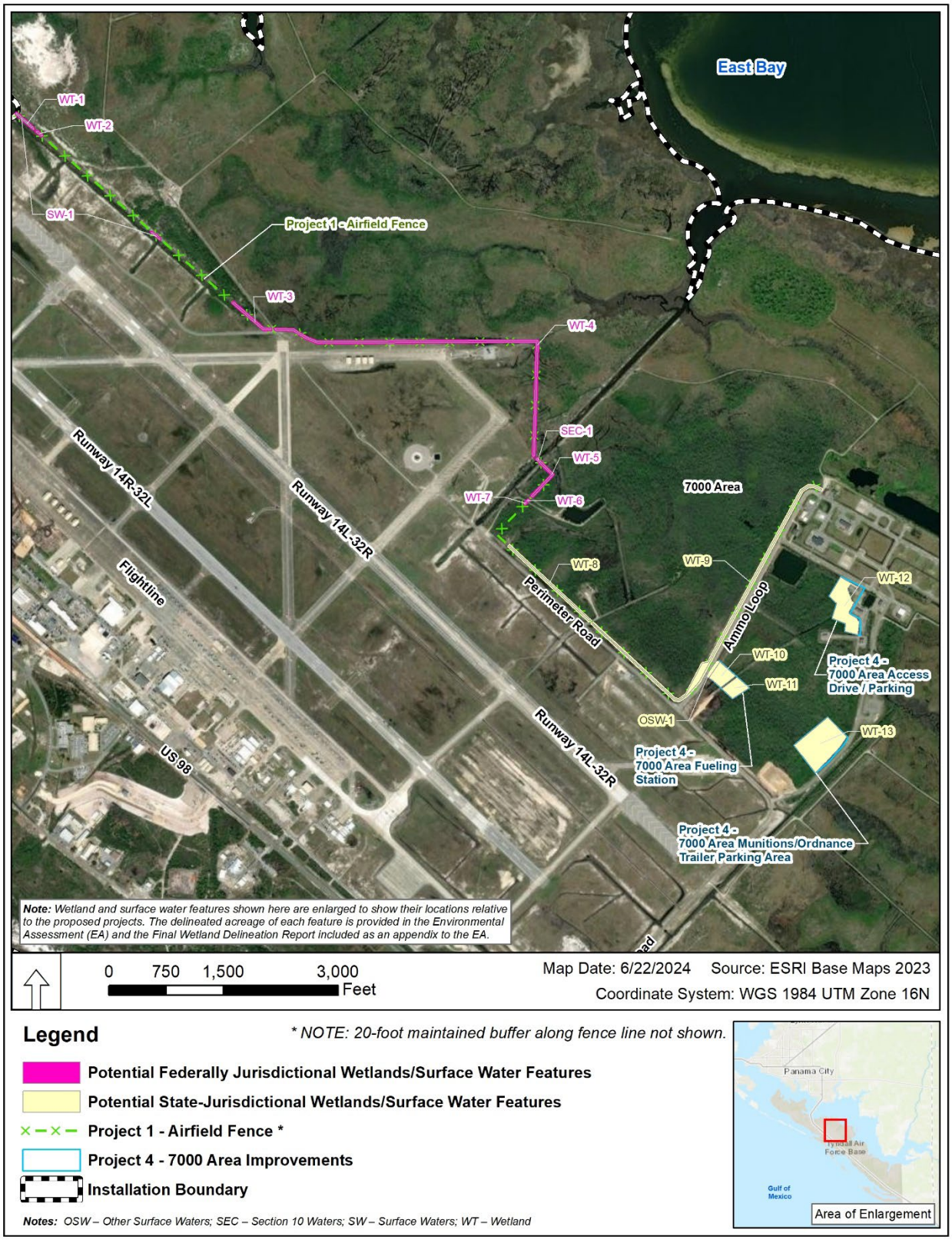

Figure 3-1 Wetland Delineation Results for Projects 1 and 4

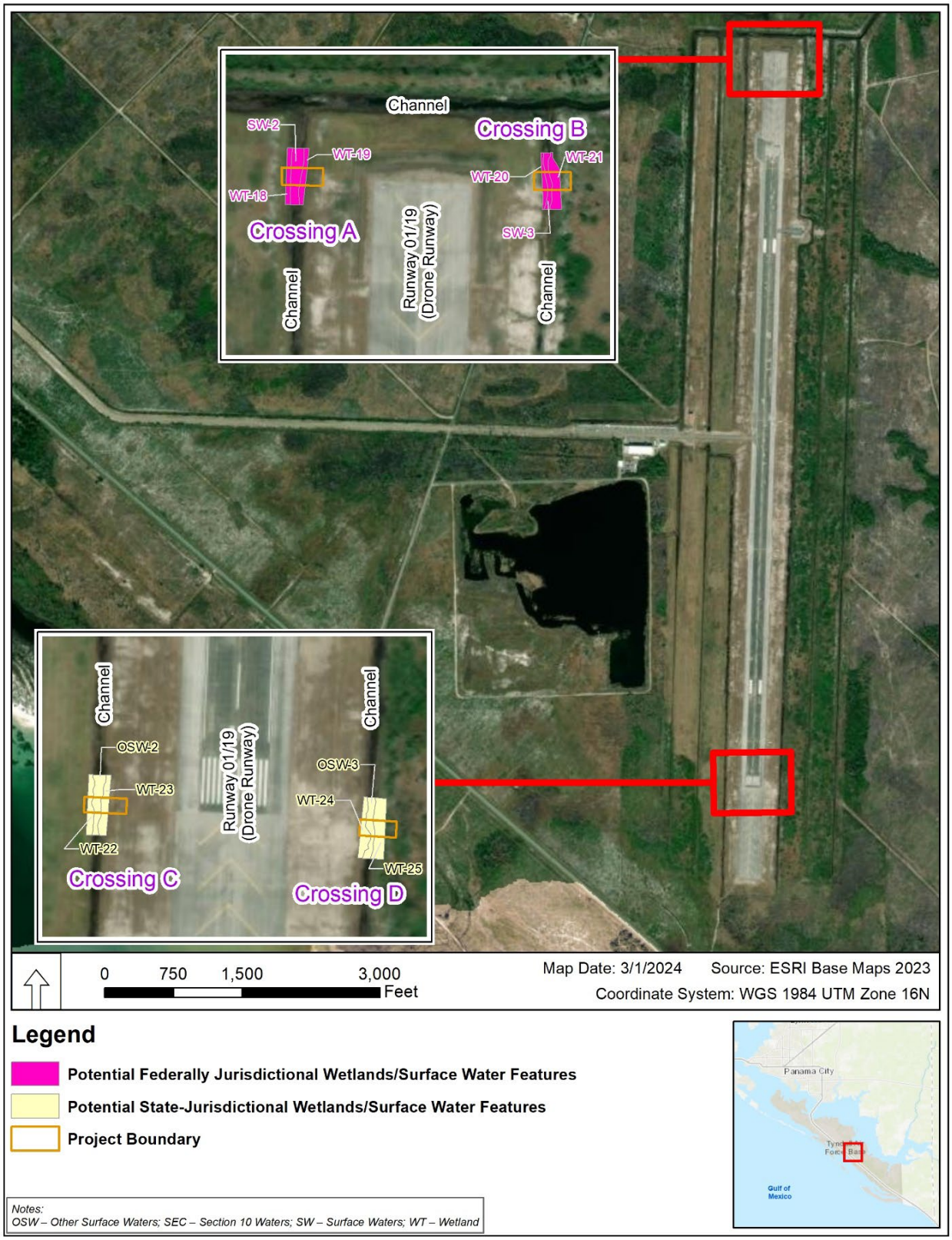

Figure 3-2 Wetland Delineation Results for Project 2

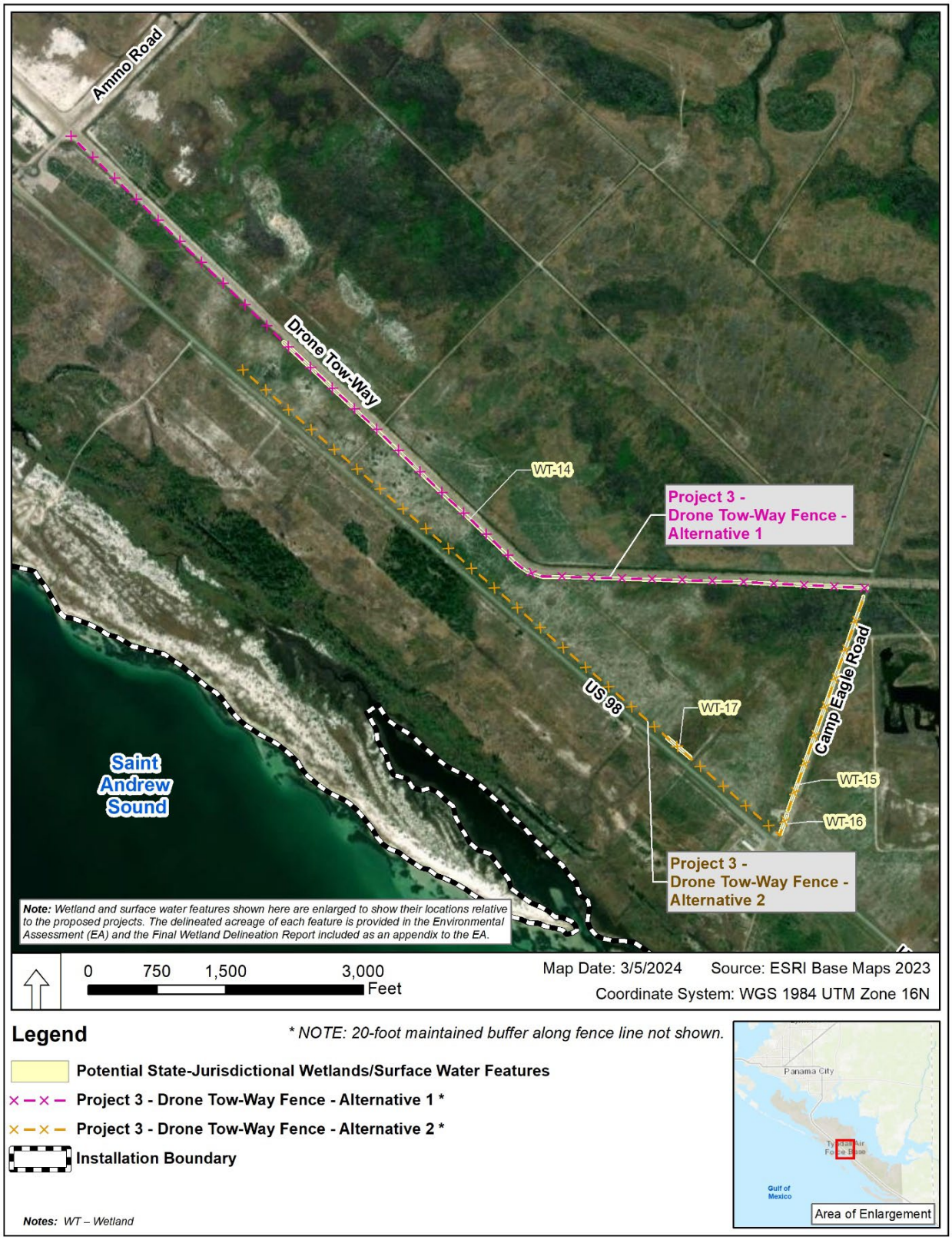

Figure 3-3 Wetland Delineation Results for Project 3

Table 3-13 Wetlands and Surface Water Features Delineated in the Proposed Project Areas at Tyndall Air Force Base

Project	Feature ID[1]	USFWS Classification	FLUCFCS Description	Area (acres)	Potential Jurisdiction
1. Airfield Fence	WT-1	Freshwater Emergent Wetland	Coniferous Plantations	0.08	Federal
	WT-2	Freshwater Emergent Wetland	Coastal Scrub	0.04	Federal
	WT-3	Freshwater Emergent Wetland	Coastal Scrub	0.29	Federal
	WT-4	Freshwater Forested / Shrub Wetland	Coastal Scrub / Pine Flatwoods / Hydric Pine Flatwoods	2.30	Federal
	WT-5	Freshwater Forested / Shrub Wetland	Hydric Pine Flatwoods	0.29	Federal
	WT-6	Freshwater Forested / Shrub Wetland	Hydric Pine Flatwoods	0.01	Federal
	WT-7	Freshwater Forested / Shrub Wetland	Hydric Pine Flatwoods	0.01	Federal
	WT-8	Freshwater Forested / Shrub Wetland	Hydric Pine Flatwoods	0.69	State
	WT-9	Freshwater Forested / Shrub Wetland	Hydric Pine Flatwoods	2.79	State
	SW-1	Freshwater Emergent Wetland	Slough Waters	0.10	Federal
	SEC-1	Estuarine and Marine Deepwater	Streams and Waterway	0.02	Federal
2. Drone Runway Culvert Crossings	WT-18	Freshwater Emergent Wetland	Surface Water Collection Feature	0.04	Federal
	WT-19	Freshwater Emergent Wetland	Surface Water Collection Feature	0.04	Federal
	WT-20	Freshwater Emergent Wetland	Open Land (Urban)	0.03	Federal
	WT-21	Freshwater Emergent Wetland	Open Land (Urban)	0.07	Federal
	WT-22	Freshwater Emergent Wetland	Open Land (Urban)	0.04	State
	WT-23	Freshwater Emergent Wetland	Open Land (Urban)	0.05	State
	WT-24	Freshwater Emergent Wetland	Open Land (Urban)	0.04	State
	WT-25	Freshwater Emergent Wetland	Open Land (Urban)	0.08	State
	SW-2	Freshwater Emergent Wetland	Surface Water Collection Feature	0.09	Federal
	SW-3	Freshwater Emergent Wetland	Open Land (Urban)	0.04	Federal
	OSW-2	Freshwater Emergent Wetland	Open Land (Urban)	0.06	State
	OSW-3	Freshwater Emergent Wetland	Open Land (Urban)	0.05	State

Table 3-13 Wetlands and Surface Water Features Delineated in the Proposed Project Areas at Tyndall Air Force Base

Project	Feature ID[1]	USFWS Classification	FLUCFCS Description	Area (acres)	Potential Jurisdiction
3. Drone Tow-Way Fence Alternative 1	WT-14	Freshwater Forested / Shrub Wetland	Coniferous Plantations	2.04	State
3. Drone Tow-Way Fence Alternative 2	WT-15	Freshwater Forested / Shrub Wetland	Coniferous Plantations	0.98	State
	WT-16	N/A	Coniferous Plantations	0.10	State
	WT-17	Freshwater Forested / Shrub Wetland	Coniferous Plantations	0.16	State
4. 7000 Area Improvements	WT-10	Freshwater Forested / Shrub Wetland	Coniferous Plantations / Hydric Pine Flatwoods	1.34	State
	WT-11	Freshwater Forested / Shrub Wetland	Hydric Pine Flatwoods	1.15	State
	WT-12	Freshwater Forested / Shrub Wetland	Hydric Pine Flatwoods	3.49	State
	WT-13	Freshwater Forested / Shrub Wetland	Hydric Pine Flatwoods / Wet Prairies	5.73	State
	OSW-1	Freshwater Forested / Shrub Wetland	Coniferous Plantations	0.26	State
			Wetlands Subtotal	**21.88**	
			Surface Waters Subtotal	**0.62**	
			Total	**22.50**	

Notes:
Source: DAF, 2024b
[1] Numbers listed here correspond to labels shown on **Figures 3-1** through **3-3**.
FLUCFCS = Florida Land Use, Cover and Forms Classification System; ID = identification; N/A = not applicable; OSW = Other Surface Waters; SEC = Section 10 Waters; SW = Surface Water; USFWS = U.S. Fish and Wildlife Service; WT = wetland

3.6.2.4 Floodplains

Floodplains are areas of low, level ground along rivers, stream channels, and coastal waters that are subject to periodic inundation by floodwaters. The risk of flooding in these areas is associated with topographic conditions, frequency of precipitation events, size of the watershed upgradient to the floodplain, storm surge intensity, and other factors. Floodplain ecosystem functions include natural moderation of floods, flood storage and conveyance, groundwater recharge, nutrient cycling, water quality maintenance, and provision of habitat for a diversity of plants and animals.

The Federal Emergency Management Agency categorizes floodplains as Special Flood Hazard Areas based on their chance of flooding in any given year. The 100-year floodplain is an area that has a 1 percent chance of inundation by a flood event in a given year, or a flood event in the area once every 100 years. The 500-year floodplain is an area that has a 0.2 percent chance of inundation by a flood event in a given year, or a flood event in the area once every 500 years. The likelihood of a 100-year or 500-year flood event is based on historical hydrology; future flood flows may be more or less frequent. E.O. 11988 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 unless it is the only practicable alternative.

Tyndall AFB contains approximately 16,047 acres of 100-year floodplains. No 500-year floodplains are present at Tyndall AFB and therefore, are not discussed further in this EA. Approximately 16 acres of 100-year floodplains on Tyndall AFB are located within the proposed project sites. Floodplains within these areas are summarized in **Table 3-14** and shown on **Figure 3-4**. The proposed site of Project 4 contains the largest area of the 100-year floodplain (11.6 acres), followed by Project 1 (4.2 acres); Projects 2 and 3 each contain less than 1 acre of 100-year floodplains.

Table 3-14 100-Year Floodplains Within the Proposed Project Sites

Project	Acres	Percent of 100-Year Floodplains on Tyndall AFB
All 100-Year Floodplains on Tyndall AFB	16,047	100
1. Airfield Fence	4.2	<0.1
2. Drone Runway Culvert Crossings	0.2	<0.1
3. Drone Tow-Way Fence – Alternative 1	0.2	<0.1
3. Drone Tow-Way Fence – Alternative 2	0.1	<0.1
4. 7000 Area Improvements	11.6	<0.1
Total – Projects 1, 2, 4, and Project 3, Alternative 1	**16.1**	**0.1**
Total – Projects 1, 2, 4, and Project 3, Alternative 2	**16.0**	**0.1**

Notes:

Source: FEMA, 2023b

[1]Zones A and AE – Special Flood Hazard Areas within the 100-year floodplain that have at least a 1 in 4 chance of flooding over a 30-year period (FEMA, 2023a).

3.6.2.5 Coastal Zone Management

The Coastal Zone Management Act of 1972 (16 U.S.C. Part 1451, et seq., as amended) provides assistance to the states, in cooperation with federal and local agencies, for developing land and water use programs in coastal zones. Section 307(c)(1) of the Coastal Zone Management Act Reauthorization Amendment stipulates that federal projects that affect land uses, water uses, or coastal resources of a state's coastal zone must be consistent, to the maximum extent practicable, with the enforceable policies of that state's federally approved coastal zone management plan.

Florida's coastal zone includes the entirety of the state's 67 counties and adjacent territorial waters. The federally approved FCMP comprises 24 Florida statutes that are intended to protect and enhance the state's natural, cultural, and economic coastal resources. Under the FCMP, federal consistency requirements apply to proposed federal actions that would occur in any of Florida's 35 coastal counties or adjoining territorial waters (FDEP, 2024).

Tyndall AFB is in Bay County, one of Florida's coastal counties where federal consistency requirements are applicable. As a federally owned military installation, Tyndall AFB is statutorily excluded from the Florida's coastal zone. However, federal actions occurring at Tyndall AFB that have the potential to affect coastal zone resources outside the installation's boundaries must be consistent, to the maximum extent practicable, with the enforceable policies of the FCMP. Therefore, the DAF is required to determine the consistency of proposed activities potentially affecting Florida's coastal zone resources with the enforceable policies of the FCMP.

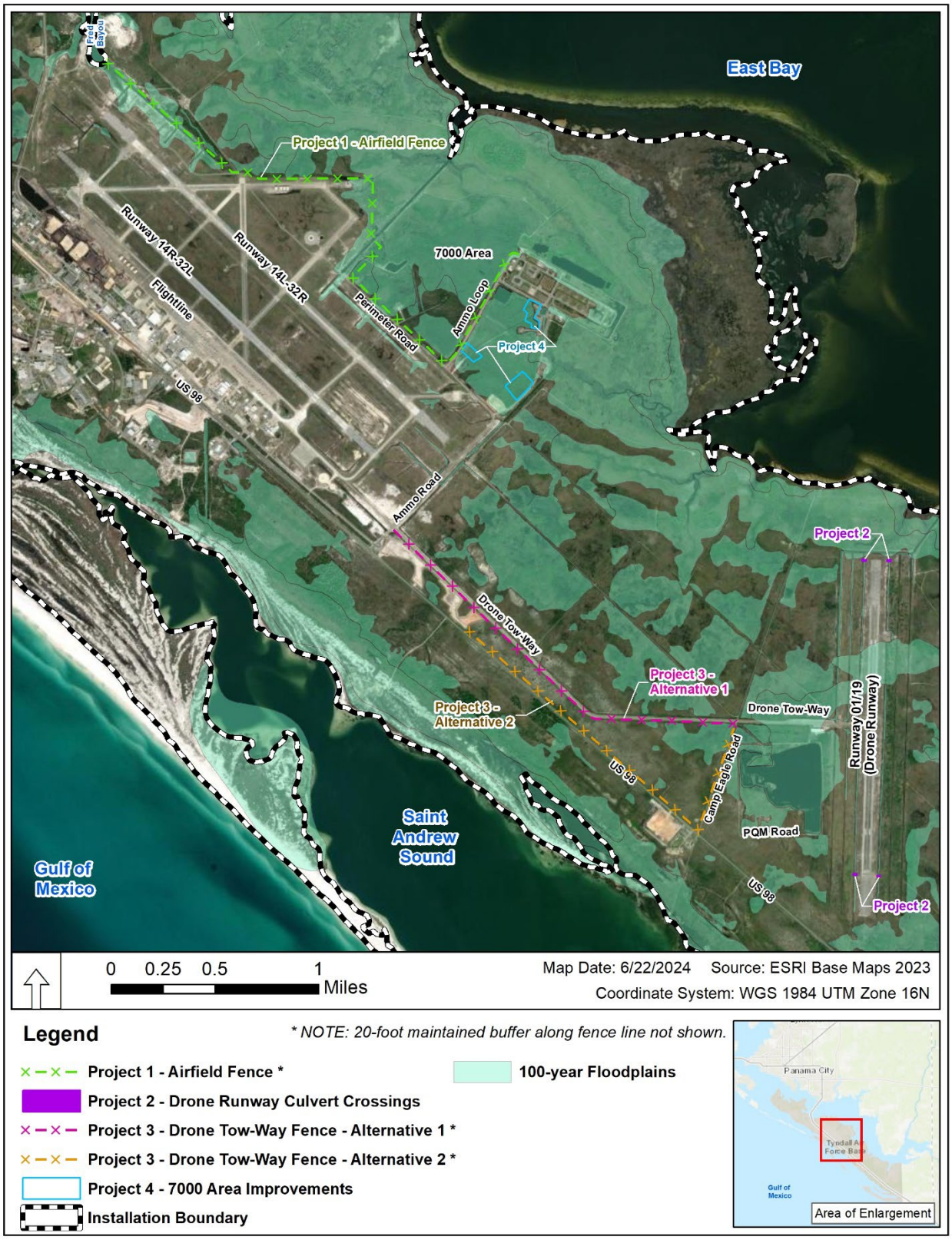

Figure 3-4 100-Year Floodplains on Tyndall Air Force Base

3.6.3 Environmental Consequences

3.6.3.1 Evaluation Criteria

Potential impacts on water resources would be adverse if the Proposed Action resulted in one or more of the following:

- the reduction of water availability or supply to existing users,
- overdrafts of groundwater basins,
- increases in impervious surface that decrease or prevent groundwater infiltration and recharge, or increase stormwater runoff generated on the installation,
- increased sediment or pollution of receiving water bodies that results in exceedances of applicable regulatory criteria, water quality standards, and/or permitting requirements,
- accidental releases of hazardous or toxic substances to surface waters or groundwater that cannot be contained, controlled, or cleaned up in accordance wtih the Tyndall AFB *Spill Prevention, Control, and Countermeasures* (*SPCC) Plan*,
- the clearing or filling of wetlands or wetland habitat, or
- would not be consistent to the maximum extent practicable with the Enforceable Policies of the FCMP.

Adverse impacts on water resources would be considered significant if one or more of the impacts listed above could not be avoided or minimized through adherence to applicable BMPs or permitting requirements.

3.6.3.2 Proposed Action Alternative

Groundwater

Construction, operation, and maintenance of the proposed projects would not require new or increased withdrawals of groundwater and would not involve intentional discharges to groundwater. Accidental releases of hazardous substances during construction, operation, and maintenance, such as fuel spills, would be prevented or minimized to the extent possible through adherence to applicable BMPs. Any accidental spills or releases would be immediately contained and cleaned up in accordance with the Tyndall AFB *SPCC Plan* before the spilled substances could infiltrate groundwater underlying the base.

In the long term, the construction of new paved areas under Project 4 would increase impervious surface on Tyndall AFB by approximately 13 acres. The installation of the proposed culvert crossings and associated drainage piping, compressed gravel, and asphalt under Project 2 would also increase impervious surface on the base by approximately 2,600 square feet (0.06 acres). These increases would have the potential to decrease or prevent groundwater infiltration and recharge; however, in the context of permeable surface that would remain on the base after the Proposed Action Alternative has been implemented, as well as surrounding bodies of surface water that would continue to contribute to the recharge of groundwater underlying the base, these increases would be small. Therefore, short-term and long-term adverse impacts on groundwater would not be significant.

Water Quality

In the short term, the exposure of soils during ground-disturbing construction activities, such as excavation, fill, vegetation removal, and grading/leveling, would increase the potential for erosion by wind and water and the corresponding sedimentation and pollution of receiving water bodies. Projects involving ground-disturbing activities would be subject to applicable requirements of the Florida NPDES Stormwater Program and would not contribute to releases that would exceed applicable water quality standards; runoff would continue to be discharged in accordance with the base's NPDES permit. Adherence to applicable erosion

and sediment control measures and stormwater management BMPs during construction would ensure that discharges of runoff from the project sites do not introduce new sources of pollutants, contribute to releases that would exceed applicable water quality standards, or prevent the achievement of water quality objectives established in applicable TMDLs. The distribution of the proposed projects over a period of several years, rather than occurring simultaneously, would further minimize impacts on water quality during construction. Therefore, short-term adverse impacts on surface water and water quality would not be significant.

In the long term, the creation of approximately 13 acres of new impervious surface under Projects 2 and 4 would result in corresponding increases in the volume of stormwater runoff generated and discharged from Tyndall AFB. Stormwater runoff would continue to be managed in accordance with the requirements of Tyndall AFB's NPDES permit and would not be expected to introduce new sources of pollutants, contribute to releases that would exceed applicable water quality standards, or prevent the achievement of water quality objectives established in applicable TMDLs. As applicable, Tyndall AFB would obtain and adhere to the requirements of an Individual Environmental Resource Permit for stormwater (Chapter 62-330.020, FAC) generated by projects that would add more than 4,000 square feet of impervious surface subject to vehicular activity or 9,000 square feet of total impervious surface. No in-water activities or alteration of surface water bodies would occur during the operational phase of the proposed projects. None of the proposed projects would establish a new permitted source of pollutant discharges, and any accidental spills or releases of hazardous substances, such as fuels, during periodic maintenance would be immediately contained and cleaned up in accordance with the Tyndall AFB *SPCC Plan*; such accidental releases, if they occur, would have no potential to degrade water quality in receiving water bodies on or around the installation. Therefore, long-term adverse effects on surface water and water quality from the Proposed Action Alternative would not be significant.

Wetlands

Based on the wetland delineation conducted at Tyndall AFB in November 2023, construction of the proposed projects would have the potential to directly impact up to 21.3 acres of wetlands and surface waters subject to federal and/or state regulatory jurisdiction at Tyndall AFB, depending on which alternative is selected for Project 3. A summary of potential impacts on regulated and wetlands and surface waters associated with each project included in the Proposed Action Alternative is provided in **Table 3-15**.

Table 3-15 Summary of Potential Impacts on Wetlands and Surface Waters from the Proposed Action Alternative

Project	Regulatory Jurisdiction	Area (acres)
1. Airfield Fence	State and/or Federally Jurisdictional	3.14
	State Jurisdictional Only	3.48
	Subtotal – Project 1	***6.62***
2. Drone Runway Culvert Crossings	State and/or Federally Jurisdictional	0.31
	State Jurisdictional Only	0.32
	Subtotal – Project 2	***0.63***
3. Drone Tow-Way Fence – Alternative 1	State and/or Federally Jurisdictional	0.00
	State Jurisdictional Only	2.04
	Subtotal – Project 3, Alternative 1	***2.04***
3. Drone Tow-Way Fence – Alternative 2	State and/or Federally Jurisdictional	0.00
	State Jurisdictional Only	1.24
	Subtotal – Project 3, Alternative 2	***1.24***
4. 7000 Area Improvements	State and/or Federally Jurisdictional	0.00
	State Jurisdictional Only	11.97

Table 3-15 Summary of Potential Impacts on Wetlands and Surface Waters from the Proposed Action Alternative

Project	Regulatory Jurisdiction	Area (acres)
	Subtotal – Project 4	***11.97***
Total Impacts on State and/or Federally Jurisdictional Wetlands and Surface Waters – Projects 1, 2, 3 (either alternative), and 4		**3.45** [1]
Total Impacts on State Jurisdictional Wetlands and Surface Waters Only – Projects 1, 2, 4, and Project 3, Alternative 1		**17.81**
Total Impacts on State Jurisdictional Wetlands and Surface Waters Only – Projects 1, 2, 4, and Project 3, Alternative 2		**17.01**
Total Impacts on All Regulated Wetlands and Surface Waters – Projects 1, 2, 4, and Project 3, Alternative 1		**21.26**
Total Impacts on All Regulated Wetlands and Surface Waters – Projects 1, 2, 4, and Project 3, Alternative 2		**20.46**

Notes:

[1] Neither alternative for Project 3 would have impacts on state and/or federally jurisdictional wetlands and surface waters; therefore, potential impacts on state and/or federally jurisdictional wetlands and surface waters from the Proposed Action would be the same regardless of which alternative is selected for Project 3.

Source: DAF, 2024b

All wetlands located within the proposed project sites were further assessed in accordance with the Florida UMAM (Chapter 62-345, FAC). The UMAM 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. Based on this assessment, impacts on wetlands from implementation of Proposed Action Alternative would result in up to 12.4 functional loss units of wetland values **(Table 3-16)**. These functional loss units are approximate and would be further refined during the permitting process and formal jurisdictional approval.

Table 3-16 Summary of Wetland Functional Loss Units for the Proposed Action Alternative

Project	Area of Impact (acres)	Functional Loss (units)
1. Airfield Fence	6.50	3.17
2. Drone Runway Culvert Crossings	0.39	0.17
3. Drone Tow-Way Fence – Alternative 1	2.04	1.22
3. Drone Tow-Way Fence – Alternative 2	1.24	0.59
4. 7000 Area Improvements	11.71	7.86
Total – Projects 1, 2, 4, and Project 3, Alternative 1	**20.64**	**12.42**
Total – Projects 1, 2, 4, and Project 3, Alternative 2	**19.84**	**11.79**

Source: DAF, 2024b

As project planning continues, each project in the Proposed Action Alternative would be designed to avoid or minimize impacts on regulated wetlands and surface waters to the extent possible. Before each project would be implemented, the DAF would coordinate with USACE and FDEP to obtain a jurisdictional determination and applicable permits for federal or state-regulated wetlands and surface waters within each project's limits of disturbance that would be impacted during project construction. Such permits could include an Environmental Resource Permit issued by the State of Florida. The DAF and its contractors would adhere to all applicable permit requirements to avoid, minimize, or mitigate adverse impacts on regulated wetlands and surface waters. Although adverse, the loss or reduction in function and values of 21.3 acres of wetlands would be small in the context of all wetlands on Tyndall AFB, representing

approximately 0.2 percent of wetlands on the base. Therefore, short-term adverse impacts on wetlands would not be significant.

In the long term, the operation and periodic maintenance of the proposed projects would not involve additional or ongoing disturbance of wetlands. Therefore, the Proposed Action Alternative would have no long-term impacts on wetlands.

Based on the security, mission, and operational requirements of the DAF, 325 FW, and other units based at Tyndall AFB, the DAF has determined that, other than the projects and project-level alternatives analyzed in this EA, no practicable alternatives exist for implementing the proposed projects outside wetlands on Tyndall AFB. Accordingly, the DAF has prepared a FONPA to document its decision to consider projects that would have the potential to affect 100-year floodplains at Tyndall AFB. The FONPA is included in the Proposed FONSI for this EA. Furthermore, in accordance with E.O. 11990, the DAF published an Early Public Notice in the *Panama City News Herald* in March 2024 requesting public and agency comments on its proposal to implement projects in or adjacent to wetlands on Tyndall AFB; no comments in response to this notice were received.

Floodplains

Assuming all areas within the proposed project sites are disturbed during construction, the Proposed Action Alternative would disturb up to 16.1 acres of 100-year floodplains on Tyndall AFB, depending on which alternative is selected for Project 3. The largest area of impacts on 100-year floodplains would result from Project 4 (11.6 acres), followed by Project 1 (4.2 acres). Projects 2 and 3 would each disturb less than 1 acre of 100-year floodplains.

As project planning continues, the design of each project would be refined to minimize impacts on 100-year floodplains to the extent possible. Excavation, fill, grading/leveling, and other earth-disturbing activities during construction would alter topography and drainage characteristics, potentially altering the flow and storage of floodwaters. However, in the context of all 100-year floodplains on Tyndall AFB (approximately 16,047 acres), any such changes would be relatively small and highly localized. Potential impacts on floodplains from the Proposed Action Alternative would represent approximately 0.1 percent of all floodplains on Tyndall AFB. Adherence to established BMPs, erosion and sediment control measures, and stormwater management practices during construction would control the discharge of runoff from the project sites and minimize the displacement or increased volume of floodwaters elsewhere on Tyndall AFB. Any potential adverse effects from the localized displacement or increased volume of floodwaters from the proposed projects would be contained within the boundaries of Tyndall AFB. Therefore, short-term adverse effects on floodplains from the Proposed Action Alternative would not be significant.

In the long term, new fencing constructed under Projects 1 and 3 would not be expected to result in noticeable increases in floodwater displacement, volume, duration, or frequency. Increased stormwater volumes resulting from new impervious surface created by Projects 2 and 4 would continue to be managed in accordance with the applicable requirements of Tyndall AFB's NPDES permit, including requirements to reduce the volume and velocity of stormwater discharge. Any changes in the displacement, volume, duration, or frequency of floodwaters resulting from new impervious surface under Projects 2 and 4 would be contained within the boundaries of Tyndall AFB. Therefore, long-term impacts on floodplains from the Proposed Action Alternative would not be significant.

Based on the security, mission, and operational requirements of the DAF, 325 FW, and other units based at Tyndall AFB, the DAF has determined that, other than the projects and project-level alternatives analyzed in this EA, no practicable alternatives exist for implementing the proposed projects outside 100-year floodplains. Accordingly, the DAF has prepared a FONPA to document its decision to consider projects that would have the potential to affect 100-year floodplains at Tyndall AFB. The FONPA is included in the Proposed FONSI for this EA. Furthermore, in accordance with E.O. 11988, the DAF published an Early Public Notice in the *Panama City News Herald* in March 2024 requesting public and agency comments on

its proposal to implement projects in or adjacent to floodplains on Tyndall AFB; no comments in response to this notice were received.

Coastal Zone Management

The DAF has determined that the Proposed Action Alternative would be consistent, to the maximum extent practicable, with the enforceable policies of the FCMP. Therefore, potential impacts on Florida Coastal Zone resources would not be significant. A summary of the Proposed Action's applicability to or consistency with each of the Florida statutes that constitute the FCMP is provided in **Appendix E**.

In an email dated May 1, 2024, FDEP noted that the state has no objections to the Proposed Action and therefore, the Proposed Action is consistent with the FCMP. A copy of the FDEP email is included in **Appendix A**.

3.6.3.3 No Action Alternative

Under the No Action Alternative, the proposed projects would not be implemented and existing conditions at Tyndall AFB would continue. Water resources at Tyndall AFB would continue to be managed as they currently are. This would have no effect on water resources at Tyndall AFB.

3.6.3.4 Reasonably Foreseeable Future Actions and Other Environmental Considerations

Other reasonably foreseeable future actions listed in **Table B-1** would adhere to applicable BMPs and permitting requirements to minimize adverse effects on water resources and ensure that any such effects would not be significant. Therefore, when considered with potential impacts from other reasonably foreseeable future actions, the Proposed Action Alternative would not contribute to cumulatively significant adverse impacts on water resources.

3.7 HAZARDOUS MATERIALS AND WASTE

3.7.1 Definition of the Resource

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), the Solid Waste Disposal Act as amended by the Resource Conservation and Recovery Act (42 U.S.C. §§ 6901-6992), and the Federal Insecticide, Fungicide, and Rodenticide Act (7 U.S.C. § 136 et seq.). 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 items covered by the Occupational Safety and Health Administration (OSHA) (29 U.S.C. § 651 et seq.).

Hazardous wastes are defined as "a solid waste, or combination of solid wastes, which because of its quantity, concentration, or physical, chemical, or infectious characteristics may (a) cause, or significantly contribute to an increase in mortality or an increase in serious irreversible, or incapacitating reversible, illness; or (b) pose a substantial present or potential hazard to human health or the environment when improperly treated, stored, transported, or disposed of, or otherwise managed" (42 U.S.C. § 6903(5), as amended). DoD and DAF requirements for the use, handling, transport, reporting, documentation, storage, and disposal of hazardous materials and hazardous waste are established by the following:

- Air Force Instruction (AFI) 32-7020, *Environmental Restoration Program*
- AFI 32-7042, *Waste Management*
- AFI 32-7086, *Hazardous Materials Management*

- Defense Environmental Restoration Program (DERP) 10 U.S.C. §§ 2700-2711

The Tyndall AFB *Hazardous Waste Management Plan* (HWMP) provides guidance on the proper handling and disposal of hazardous waste, including spill contingency and response requirements (Tyndall AFB, 2023). Procedures and responsibilities for responding to a hazardous waste spill or other incidents are also addressed in the Tyndall AFB *SPCC Plan* (Tyndall AFB, 2022b).

The DoD established the Installation Restoration Program (IRP) in 1975 to address contamination from historical releases of hazardous materials and hazardous wastes on its installations and properties in accordance with CERCLA. The Military Munitions Response Program (MMRP) was established in 2001 to address sites known or suspected to contain unexploded ordnance, discarded military munitions, or munitions constituents. The DoD currently manages and administers IRP and MMRP activities under the DERP (DoD, 2016).

The Proposed Action would have no potential to disturb or affect buildings, structures, or equipment containing asbestos containing materials, lead-based paint, or polychlorinated biphenyls. Therefore, these substances are not addressed in this EA.

The ROI for hazardous materials and hazardous waste consists of the areas on Tyndall AFB where the Proposed Action would be implemented, and adjacent or nearby lands where adverse effects from hazardous materials and hazardous wastes could occur.

3.7.2 Affected Environment

Operational activities that typically involve the use of hazardous materials at Tyndall AFB include aircraft fueling and defueling, aircraft maintenance and repair, maintenance of aerospace ground equipment, and ammunition supply and weapons maintenance. Contractors also use hazardous materials extensively during construction or renovation of facilities and infrastructure on the installation. Hazardous materials used in these types of activities include fuels and lubricating oils, chlorinated solvents and other solvents/degreasers, paints and thinners, antifreeze and deicing compounds, and acids. Hazardous materials at Tyndall AFB are used, handled, stored, and managed in accordance with the procedures set forth in AFI 32-7086 and the *HWMP*. The handling and use of hazardous materials is limited to authorized personnel who have received appropriate training, including contractors involved in construction and renovation on the installation. All hazardous materials used at Tyndall AFB are securely stored in labeled containers when not in use.

Activities involving the use of hazardous materials typically generate corresponding quantities of hazardous waste. Hazardous waste generated at Tyndall AFB is managed in accordance with the HWMP. Accidental spills or releases of hazardous materials at the base are addressed in the Tyndall AFB 's *SPCC Plan*.

USEPA classifies Tyndall AFB as a Large Quantity Generator of hazardous waste. Large quantity generators generate 1,000 kilograms (2,205 pounds) per month or more of hazardous waste or more than 1 kilogram per month of acutely hazardous waste (40 CFR Part 260). 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 at work locations. Once the storage limit is reached, the wastes are transferred to the 90-Day Hazardous Waste Accumulation Site. Within 90 days, hazardous wastes are transported off base by a licensed contractor and disposed of at a permitted facility in accordance with applicable regulations (DAF, 2022).

Non-hazardous solid waste generated at Tyndall AFB is managed in compliance with the Tyndall AFB Integrated Solid Waste Management Plan (ISWMP) (Tyndall AFB, 2022c). Non-hazardous solid waste is collected in appropriate containers and transported by a licensed contractor to a permitted off-base disposal facility.

Tyndall AFB manages IRP and MMRP sites within its boundaries in accordance with its installation-specific Environmental Restoration Program (ERP). ERP cleanup activities at Tyndall AFB are guided by a Federal Facility Agreement that was signed by USEPA, DAF, and FDEP in September 2013. This agreement ensures the coordination of cleanup priorities and establishes enforceable schedules for the duration of cleanup (DAF, 2022). To date, at least 80 ERP sites have been identified on the base; of these, 34 are identified as active, and the remainder have achieved closure or no further remedial action is planned (DAF, 2020; DAF, 2024c). ERP sites on or near the proposed project sites are briefly summarized in **Table 3-17** and shown on **Figure 3-5**.

The DoD has recognized per- and polyfluoroalkyl substances (PFAS) as emerging environmental issues that have impacted various DAF installations. PFAS include substances contained in aqueous film forming foam, which the DAF adopted during the 1970s to combat petroleum fires. PFAS is a known or suspected contaminant at ERP Sites FT016 and FT023 in the vicinity of Project 1, and at SS022 in the vicinity of Project 2 **(Table 3-17)**. Tyndall AFB has developed base-specific *Environmental Restoration Program and Aqueous Film Forming Foam Guidelines* to establish health and safety requirements for workers and activities involving ground disturbance in or near areas of the installation where PFAS are known or suspected to be present in underlying soils and groundwater (Tyndall AFB, 2022d).

Table 3-17 Environmental Restoration Program Sites Within or Adjacent to Proposed Action

Project Title	ERP Site Name	Site Description	Status
1. Airfield Fence	**OT029** Shoal Point Bayou DDT Contamination Area	Superfund site formerly used for construction debris burial and dredge spoil disposal; contaminants include pesticides, heavy metals, VOCs, SVOCs, and PCBs; RIs are ongoing.	Active
	FT016 Shell Bank Fire Training Area	Formerly used for fire training, fuel and pesticide storage; contaminants include chlorinated VOCs, SVOCs, TRPHs, TCE, vinyl chloride, and PFAS; remediation efforts include biosparging and RIs are ongoing.	Active
	FT023 Fire Training Area	Formerly used for fire training; contaminants include VOCs, TRPHs, SVOCs, heavy metals, PCBs, lead, and PFAS; remediation efforts include in-situ chemical oxidation, and further testing is needed.	Active
2. Drone Runway Culvert Crossings	**SS022** F-22 Raptor Crash Site (by proposed crossings C and D)	Former aircraft crash and burn site south end of the drone runway; contaminants included VOCs, TRPHs, metals, and PFAS.	NFA Achieved 2020
3. Drone Tow-Way Fence (Alternatives 1 and 2)	**TS183** Skeet Range East	Former 204-acre trap and skeet range that is now a munitions response site; lead from lead shot is primary contaminant; recommended remedy is soil excavation combined with MNA and land use controls to restrict site access; further testing is needed.	Active
4. 7000 Area Improvements	**SS520** AST Spill Site (Bldg 7022)	Spill site of a removed 400-gallon AST that contained diesel fuel; contaminants included benzene and TRPH.	NFAP Achieved
	OW579 Oil Water Separator (between Bldgs 7040 and 7028)	Former oil water separator that has been removed; contaminants included low level VOCs and TRPHs.	No Action ROD Achieved 2020

Table 3-17 Environmental Restoration Program Sites Within or Adjacent to Proposed Action

Project Title	ERP Site Name	Site Description	Status
	TU543 UST Spill Site (Bldg 7002)	Spill site of a removed 550-gallon UST that contained fuel oil; contaminants included VOCs, SVOCs, and TRPHs; remedy included in-situ oxygen releasing compound injection treatments	NFA Achieved 2019

Notes:

AST = aboveground storage tank; Bldg = Building; DDT = dichlorodiphenyltrichloroethane; ERP = Environmental Restoration Program; MNA = monitored natural attenuation; NFA = No Further Action; NFAP = No Further Action Planned; PCB = polychlorinated biphenyls; PFAS = per- and polyfluoroalkyl substances; RI = remedial investigation; ROD = Record of Decision; SVOC = semi-volatile organic compound; TCE = trichloroethylene; TRPH = total recoverable petroleum hydrocarbons; UST = underground storage tank; VOC = volatile organic compound

3.7.3 Environmental Consequences

3.7.3.1 Evaluation Criteria

A significant impact on hazardous materials, hazardous waste, non-hazardous solid waste, or ERP sites would occur if implementation of the Proposed Action resulted in any of the following conditions:

- Using hazardous materials that are highly toxic or have a potential to cause severe environmental damage.
- Increasing the risk of exposure of Tyndall AFB personnel, visitors, and the general public to hazardous material and hazardous waste that could not be managed to acceptable levels through adherence to established procedures and BMPs.
- Generating types or quantities of hazardous or non-hazardous solid waste that could not be accommodated by current management systems.
- Disturbing an ERP site that would pose a potential for environmental health impacts or result in additional remediation measures.

3.7.3.2 Proposed Action Alternative

Hazardous Materials, Hazardous Waste, and Non-Hazardous Solid Waste

Construction of the proposed new facilities would involve use of typical construction-related hazardous materials such as petroleum, oils and lubricants, paints, and solvents. Hazardous materials associated with construction would be used, handled, and stored in accordance with applicable federal, state, and Tyndall AFB requirements.

Bulk petroleum products (such as fuels and lubricants) used on the project sites would be stored in double-walled tanks with appropriate secondary containment, as applicable, to prevent infiltration or runoff to soil and groundwater in the event of an accidental spill or release. Any accidental spills of hazardous materials would be immediately contained, controlled, and cleaned up in accordance with the Tyndall AFB *SPCC Plan* and applicable project- or site-specific plans (Tyndall AFB, 2022b). Hazardous waste generated from the use of hazardous materials during construction would be stored, handled, and disposed of in accordance with the Tyndall AFB *HWMP* (Tyndall AFB, 2023). All such hazardous materials would be transported by licensed contractors to permitted off-site facilities for proper disposal or recycling. Through adherence to applicable regulatory requirements and established procedures, short-term adverse impacts from hazardous materials and hazardous wastes would not be significant.

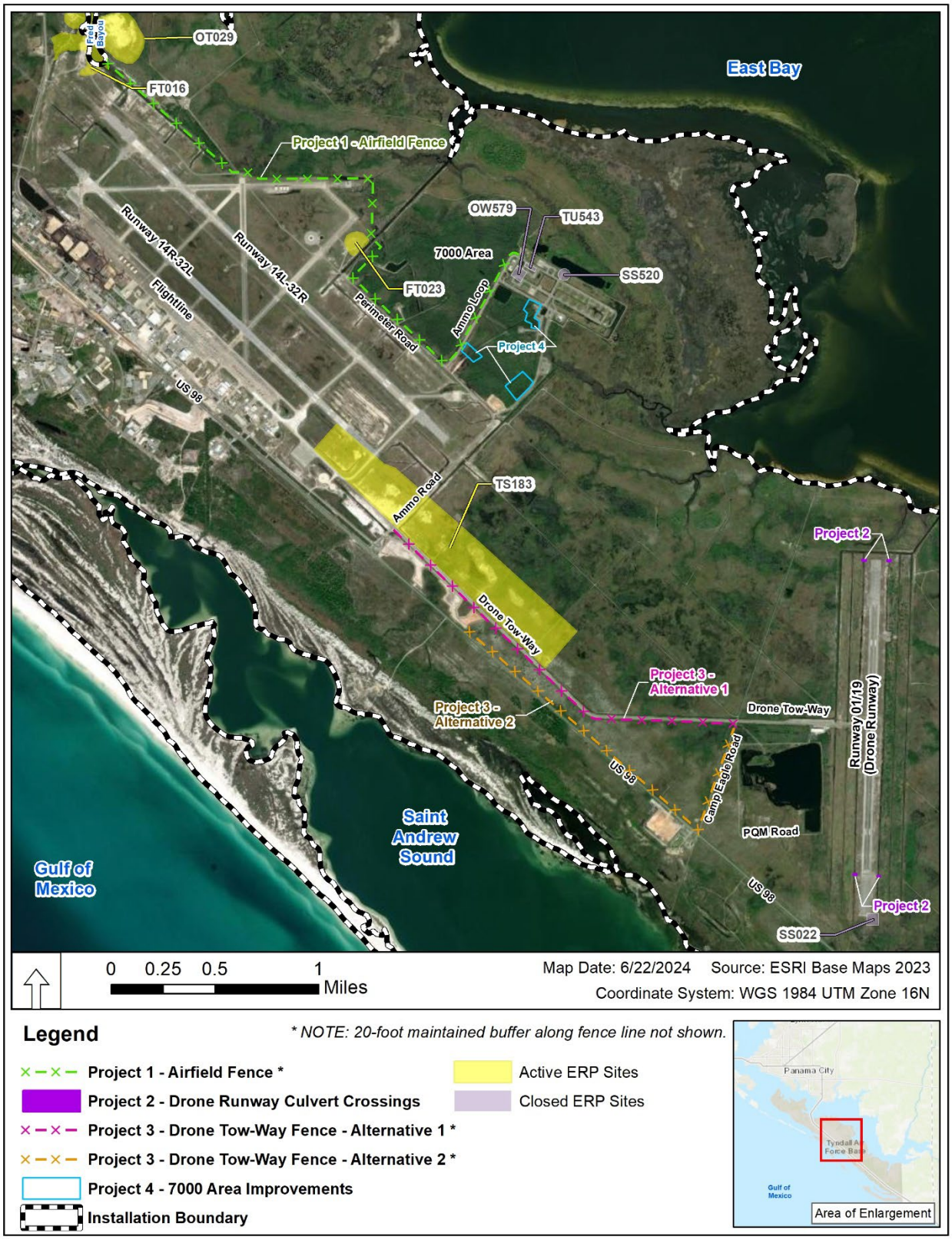

Figure 3-5 Environmental Restoration Program Sites in Proximity to Proposed Action

In the long term, the operation and periodic maintenance associated with the proposed projects would involve the use of hazardous materials, such as paints, solvents, and petroleum-based lubricants. The use of these substances would generate corresponding quantities of hazardous waste. These activities would not require the introduction of new or unusual hazardous materials not currently in use at Tyndall AFB. In the context of hazardous materials used and hazardous waste generated at Tyndall AFB, use and generation of these substances during the operational phase of the Proposed Action would be exceedingly small. All hazardous materials used and hazardous waste generated during the operational phase of the Proposed Action would continue to be handled, stored, transported, managed, and disposed of by authorized personnel in accordance with applicable DoD and DAF requirements. Any accidental releases of hazardous materials or hazardous waste would be immediately contained and cleaned up in accordance with the Tyndall AFB *HWMP* and *SPCC Plan*. Therefore, long-term adverse effects from hazardous materials and hazardous waste under the Proposed Action Alternative would not be significant.

Construction and operation of the proposed projects would also generate nonhazardous solid waste. Given the type and size of the proposed projects, the volume of non-hazardous solid waste generated during their construction and operational phases would be relatively small in the context of ongoing construction and operational activities at Tyndall AFB. All non-hazardous solid waste associated with the proposed projects would be managed and recycled or disposed of in accordance with the Tyndall AFB ISWMP (Tyndall AFB, 2022c). Therefore, short-term and long-term adverse effects from solid waste associated with the Proposed Action Alternative would not be significant.

Environmental Restoration Program Sites

Before construction begins, Tyndall AFB would review all project plans for the presence of or proximity to active or closed ERP sites. Construction contractors would also be required to complete and submit AF Form 103, *Work Clearance Request/Dig Permit*, for review and approval by the 325th Civil Engineer Squadron (325 CES) before they can begin construction and ground-disturbing activities. Measures for avoiding known contaminants or responding to previously unknown contaminants, avoiding disturbance of active ERP sites, and adhering to land use controls (for example., fencing, signage, or barricades) and other requirements on active ERP sites, would be specified in all final project construction documents and site- and project-specific health and safety plans, as applicable. All construction and ground-disturbing activities associated with the proposed projects would be conducted in accordance with Tyndall AFB's *Environmental Restoration Program and Aqueous Film Forming Foam Guidelines* to ensure the health and safety of workers at each site (Tyndall AFB, 2022d). Construction and operation of the proposed projects would not disturb, delay, prevent, or otherwise interfere with the ongoing monitoring and remediation of active ERP sites at Tyndall AFB or prevent achievement of long-term objectives for those sites. Therefore, short-term and long-term adverse impacts on or from ERP sites at Tyndall AFB would not be significant.

3.7.3.3 No Action Alternative

Under the No Action Alternative, the proposed projects would not be implemented and existing conditions at Tyndall AFB would continue. Hazardous materials, hazardous waste, non-hazardous solid waste, and ERP sites would continue to be managed as they currently are. This would have no impact on or from hazardous materials, hazardous waste, non-hazardous solid waste, and ERP sites at Tyndall AFB.

3.7.3.4 Reasonably Foreseeable Future Actions and Other Environmental Considerations

Management of hazardous materials, hazardous waste, and non-hazardous solid waste during the course of other reasonably foreseeable future actions occurring on and around Tyndall AFB would ensure that any adverse effects from such materials and waste would not be significant. These actions would also have no potential to impede or prevent ongoing remediation activities or achievement of remediation objectives for ERP sites at Tyndall AFB. Therefore, the Proposed Action Alternative would not contribute to cumulatively

significant adverse effects on hazardous materials, hazardous waste, non-hazardous solid waste, and ERP sites when considered with other reasonably foreseeable future actions.

3.8 INFRASTRUCTURE / UTILITIES

3.8.1 Definition of the Resource

Infrastructure and utilities are the services and systems that support the efficient and comfortable operation of a facility or location. Utilities typically considered include water, wastewater, irrigation systems, steam, electricity, natural gas, and telecommunications. The ROI for the analysis of infrastructure and utilities consists of the sites where each of the proposed projects would be implemented and utility and infrastructure systems on Tyndall AFB that could be affected by the Proposed Action.

3.8.2 Affected Environment

The portion of Tyndall AFB north of US-98, which includes the installation's runways, taxiways, hangars, 7000 Area, and other facilities associated with aircraft operations, is intensively developed and served by an extensive network of aboveground and underground utility systems. These include electricity, data/communications, potable water and sewer, stormwater management, waste management, and natural gas systems. A full network of utility systems supports operational facilities along the southern side of the main airfield, and selected systems also extend to the 7000 Area and other areas on the north side of the airfield. Portions of multiple aboveground and underground utility systems either intersect or are in areas adjacent to the locations of Project 1 and Project 4 (particularly the proposed vehicle access drive and parking area). Existing electrical lines and a water main are parallel to the site of Project 3, Alternative 2 (DAF, 2024c).

As Tyndall AFB continues to rebuild from damage experienced during Hurricane Michael in 2018, the capacity of utility systems on the installation is considered sufficient to serve existing and planned facilities. Utility systems are upgraded on the installation to provide additional capacity as needed. The 325 CES identifies the presence of existing or planned utility systems during the site review process before proposed construction projects can begin. As applicable, utilities crossing or underlying proposed project sites are avoided, rerouted, or abandoned in place in accordance with applicable DoD and DAF requirements.

3.8.3 Environmental Consequences

3.8.3.1 Evaluation Criteria

Impacts on utilities and infrastructure would be adverse if the Proposed Action resulted in the temporary disruption or loss of utility services without advance notice to the affected facilities. Adverse impacts would be significant if utility relocations necessitated by the Proposed Action required temporary shutdowns of utility services that could not be rerouted to maintain service during the relocation process, or if utility demand generated by the proposed projects would exceed available capacity at Tyndall AFB.

3.8.3.2 Proposed Action Alternative

Before construction of the proposed projects, the 325 CES would review project plans to identify utility systems that would require avoidance or relocation during construction or other ground-disturbing activities. Any such systems would be clearly marked prior to ground disturbance and avoided during construction. As needed, portions of utility systems would be temporarily or permanented relocated to avoid disturbance during construction. Any subsurface utility systems or components would be abandoned, if needed, in accordance with applicable DAF and other federal, state, and local requirements. Advance notice would be provided to any facilities that would potentially be affected by temporary utility shutdowns during construction, and utility systems would be temporarily rerouted or relocated as needed to avoid any such

shutdowns to the extent possible. Therefore, any short-term adverse impacts on utilities and infrastructure at Tyndall AFB would not be significant.

In the long term, the Proposed Action Alternative does not include increases in the number of personnel assigned to Tyndall AFB, nor does it involve construction and operation of human-occupied facilities on the installation. Additional utility demand generated by the proposed projects would primarily be limited to electricity to operate security lighting, fueling station equipment, and electric security gates associated with the proposed fencing. Such demand would be well within the existing capacity of existing utility systems at Tyndall AFB. Therefore, any long-term adverse effects on utility systems from the Proposed Action Alternative would not be significant.

3.8.3.3 No Action Alternative

Under the No Action Alternative, the proposed projects would not be implemented and existing conditions at Tyndall AFB would continue. Infrastructure and utility systems at Tyndall AFB would continue to be operated and maintained as they currently are. This would have no adverse impacts on utility and infrastructure systems at Tyndall AFB.

3.8.3.4 Reasonably Foreseeable Future Actions and Other Environmental Considerations

Other reasonably foreseeable future actions listed in **Table B-1** would be planned and implemented to avoid or minimize potential impacts on utility and infrastructure systems and ensure the capacity of utility and infrastructure systems are sufficient to adequately service any new facilities or operations. Therefore, when considered with other reasonably foreseeable future actions, the Proposed Acton Alternative would not contribute to cumulatively significant adverse impacts on utility and infrastructure at Tyndall AFB.

3.9 SOILS

3.9.1 Definition of the Resource

Soils are the unconsolidated mineral or organic materials on the immediate surface of the Earth that serve as a natural medium for the growth of land plants (USDA NRCS, 2024a). Soils can be characterized by their level of previous disturbance; suitability to support agriculture or construction of buildings, roads, and infrastructure; susceptibility to erosion; potential to occur in wetlands; and other properties. Hydric soils are those that formed under conditions of saturation, flooding, or ponding long enough during the growing season to develop anaerobic conditions in the upper part (USDA NRCS, 2024b); they are typically considered as one indicator of wetland conditions. Soils designated as prime farmland or farmland of statewide importance are those that have the best combination of physical and chemical characteristics for producing food, feed, forage, fiber, and oilseed crops and are available for these uses (USDA NRCS, 2024c). K factor is an indicator of soil erodibility which represents both susceptibility of soil to erosion and the rate of runoff; a K factor of .05 or less indicates soils that have a low susceptibility to erosion, while a K factor of 0.4 or greater indicates a high susceptibility to erosion (MSU IWR, 2002).

The ROI for the analysis of potential effects on soils consists of the individual sites of each project included in the Proposed Action.

3.9.2 Affected Environment

Twenty different soil units underlie Tyndall AFB. These soils are formed from sandy, marine sediments and are predominantly sandy, acidic, poorly drained, have low shrink-swell potential, and are relatively close to the underlying water table (Tyndall AFB, 2020). Eight different soil units are present in the ROI. Characteristics of soil units in the ROI are provided in **Table 3-18**. The area of each soil unit underlying the project sites is provided in **Table 3-19**.

Osier fine sand is the predominant soil unit within the ROI (29.1 percent), followed by Rutlege sand, 0 to 2 percent slopes (23.5 percent). Pickney fine sand is the only soil unit considered hydric, although minor components of other soil units in the ROI have hydric characteristics. Soils in the ROI generally have a K factor of .05 or less, indicating low susceptibility to erosion. None of the soils underlying the ROI are considered prime farmland (USDA NRCS, 2024d).

Table 3-18 Summary of Soil Units in the Region of Influence

Soil Unit	Acres in ROI	Percent of ROI	Soil Unit Description	Hydric (yes / no)	K Factor
Arents, 0 to 5 percent slopes	5.1	16.4	Arents soils are a mixture of various soil series from earth moving operations such as dredging and filling. They are very deep, somewhat poorly drained, have a very low available water capacity, variable permeability, negligible surface runoff, and are not prone to flooding or ponding.	No	.05
Chipley sand, 0 to 5 percent slopes	1.2	4.0	Chipley sands are very deep, somewhat poorly drained, very rapid or rapidly permeable, and light gray, dark gray, yellowish brown / brownish yellow in color.	No	.02
Leon sand, 0 to 2 percent slopes	3.8	12.2	Leon sand soils are very deep, poorly drained, rapidly permeable on the surface, have high surface runoff, and are not prone to ponding. They are susceptible to wind erosion and are strongly acidic.	No	.05
Mandarin sand, 0 to 2 percent slopes	3.0	9.6	Mandarin sands are 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. They are also very strongly acidic.	No	.02
Osier fine sand	9.1	29.1	Osier fine sands are 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. They are also extremely acidic.	No	.05
Pickney fine sand	0.7	2.3	Pickney fine sands are very deep, very poorly drained, have a moderate available water capacity, rapid permeability on the surface (but internal drainage is impeded by the high water table), negligible surface runoff, frequently ponded and occasionally prone to flooding, are very susceptible to wind erosion, and are very acidic.	Yes	.02

Table 3-18 Summary of Soil Units in the Region of Influence

Soil Unit	Acres in ROI	Percent of ROI	Soil Unit Description	Hydric (yes / no)	K Factor
Resota fine sand, 0 to 5 percent slopes	0.9	2.9	Resota fine sands are 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. They are also very acidic.	No	.05
Rutlege sand, 0 to 2 percent slopes	7.3	23.5	Rutledge sands are 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. They are very susceptible to wind erosion and strongly acidic	No	.02
Total	**31.2**	**100.0**			

Source: USDA NRCS, 2024d

Table 3-19 Soil Units Within Proposed Action Project Sites

Project	Soil Unit	Acres Within Project Site	Percent Within Project Site[1]
1. Airfield Fence	Arents, 0 to 5 percent slopes	3.6	44.6
	Leon sand, 0 to 2 percent slopes	0.7	8.6
	Osier fine sand	1.3	16.3
	Resota fine sand, 0 to 5 percent slopes	0.2	2.1
	Rutlege sand, 0 to 2 percent slopes	2.2	27.9
	Subtotal – Project 1	**8.0**	**100.0**
2. Drone Runway Culvert Crossings	Arents, 0 to 5 percent slopes	0.3	100.0
3. Drone Tow-Way Fence	Arents, 0 to 5 percent slopes	0.6	6.0
	Chipley sand, 0 to 5 percent slopes	1.2	12.7
	Leon sand, 0 to 2 percent slopes	2.4	24.9
	Mandarin sand, 0 to 2 percent slopes	3.0	30.9
	Osier fine sand	0.9	9.7
	Pickney fine sand	0.7	7.4
	Resota fine sand, 0 to 5 percent slopes	0.7	7.7
	Rutlege sand, 0 to 2 percent slopes	0.1	1.0
	Subtotal – Project 3	**9.7**	**100.0**
4. 7000 Area Improvements	Arents, 0 to 5 percent slopes	0.6	4.8
	Leon sand, 0 to 2 percent slopes	0.7	5.3
	Osier fine sand	6.8	51.8
	Rutlege sand, 0 to 2 percent slopes	5.0	37.9
	Subtotal – Project 4	**13.2**	**100.0**

Notes:
Source: USDA NRCS, 2024e
[1] Percentages may not total 100% due to rounding.

3.9.3 Environmental Consequences

3.9.3.1 Evaluation Criteria

Adverse effects on soils could result from excavation, fill, leveling/grading, trenching, vegetation removal, compaction, or other disturbance during the construction or operational phases of the proposed projects that alters soil layer structure or increases soil impermeability. Adverse effects would be significant if ground disturbance associated with the Proposed Action permanently increased the susceptibility of soils to erosion from wind and water and resulted in the corresponding sedimentation and turbidity in receiving water bodies.

3.9.3.2 Proposed Action Alternative

In the short term, construction of the proposed projects, including associated excavation, fill, grading/leveling, and trenching to reroute subsurface utilities, would disturb up to 83,384 cubic yards of soils on Tyndall AFB. The volume of total soil disturbance from the Proposed Action Alternative would depend on the methods used to construct proposed fencing under Projects 1 and 3 as well as the alternative selected for implementation under Project 3. While such disturbance would represent an adverse impact on soils, contractors would implement and adhere to the applicable requirements of site-specific erosion and sediment control plans and stormwater pollution prevention plans to prevent or minimize soil erosion and migration of sediments and pollutants to receiving water bodies. Applicable BMPs would include use of silt fences, covering temporary soil stockpiles and truckloads of soils hauled off site to prevent generation of fugitive dust, and temporarily vegetating soils that would remain exposed for extended periods. Implementation of the proposed projects over a period of several years, rather than simultaneously, would minimize the amount of soil disturbance occurring at any given time, further minimizing impacts. None of the proposed projects would involve the intentional release of pollutants or hazardous substances to soils on the project sites; and accidental spills would be immediately contained and cleaned up to minimize soil impacts. Therefore, while short-term impacts on soils from the Proposed Action Alternative would be adverse, they would not be significant.

Before construction of each proposed project begins, the 325 CES would review project site plans to determine the potential for hazardous substances to be present in soils or groundwater underlying the site. Contractors would prepare and adhere to site- and project-specific health and safety plans in accordance with applicable DoD, DAF, and Tyndall AFB health and safety requirements, including Tyndall AFB's *Environmental Restoration Program and Aqueous Film Forming Foam Guidelines* (Tyndall AFB, 2022d) to minimize potential risks to workers involved in ground-disturbing activities. Soils suspected to contain pollutants or other hazardous substances would be tested before conducting ground-disturbing activities and, if determined to contain elevated levels of such substances, would be removed and disposed of at a permitted off-base facility in accordance with applicable DoD and DAF requirements. Adherence to these procedures would ensure potential adverse effects on worker health and safety from potential contaminants in soils would not be significant.

After construction has been completed for each project, any soils remaining exposed or otherwise not built on would be revegetated with native species in accordance with applicable operational and security requirements to prevent or minimize the potential for ongoing erosion of exposed soils. Other than soil disturbance associated with periodic maintenance, such as periodic vegetation trimming and removal to maintain visual sight lines along the airfield and drone tow-way fences, none of the proposed projects would involve ongoing soil disturbance; any such soil disturbance occurring as part of these activities would remain small in the context of Tyndall AFB. Therefore, long-term adverse impacts on soils from the Proposed Action Alternative would not be significant.

3.9.3.3 No Action Alternative

Under the No Action Alternative, the proposed projects would not be implemented and existing conditions at Tyndall AFB would continue. Activities involving soil disturbance would adhere to applicable BMPs and permitting requirements to prevent or minimize soil erosion and prevent accidental releases of pollutants or hazardous substances to soils. This would have no adverse effects on soils.

3.9.3.4 Reasonably Foreseeable Future Actions and Other Environmental Considerations

Other reasonably foreseeable future actions listed in **Table B-1** would adhere to applicable BMPs and permitting requirements to minimize adverse effects on soils and ensure that any such effects would not be significant. Therefore, when considered with potential impacts from other reasonably foreseeable future actions, the Proposed Action Alternative would not contribute to cumulatively significant adverse impacts on soils.

3.10 SAFETY

3.10.1 Definition of the Resource

A safe environment is one in which there is no, or an optimally reduced, potential for death, serious bodily injury or illness, or property damage. Safety, as addressed in this EA, includes worker health and safety during construction; public safety during construction and subsequent operations; consideration of safety zones associated with munitions storage facilities; the potential presence of unexploded ordnance; conflicts between wildlife and aircraft or other equipment operating on the airfield; and AT/FP requirements established by the DoD and DAF that are intended to safeguard personnel, visitors, facilities, and equipment on military installations.

The following sections describe applicable safety procedures, requirements, and conditions at Tyndall AFB. The ROI for safety consists of areas on Tyndall AFB where the proposed projects would be built and operated.

3.10.2 Affected Environment

3.10.2.1 Construction Safety

Construction, excavation, and infrastructure upgrade projects are ongoing activities at Tyndall AFB. All contractors involved in construction are responsible for following applicable OSHA regulations and Air Force Occupational Safety and Health (AFOSH) standards. All construction activities must be conducted in a manner that does not pose any risk to workers, personnel, or bystanders. Contractors must abide by the procedures set forth in approved, project-specific health and safety plans throughout construction. All construction and ground-disturbing activities occurring in areas of Tyndall AFB where hazardous substances are known or suspected to be present in underlying soils or groundwater are conducted in accordance with the installation's *Environmental Restoration Program and Aqueous Film Forming Foam Guidelines* dated November 28, 2022 (Tyndall AFB, 2022d) to prevent or safely minimize worker exposure to such substances.

3.10.2.2 Explosives Safety

Tyndall AFB has established multiple explosives safety quantity-distance (ESQD) zones in accordance with DESR 6055.09_AFMAN 91-201 to safeguard on-base and off-base populations from the effects of an accidental detonation. These ESQD zones are established around facilities where ammunition, ordnance, or other highly explosive or combustible materials are routinely stored. In the vicinity of the proposed projects, ESQD zones are primarily associated with the aircraft hazardous cargo area along Taxiway Bravo

on the north side of the main airfield, the 7000 Area, and the northern end of the drone runway **(Figure 3-6)**. Smaller ESQD zones are also located south of US-98 near the proposed site of Project 3, Alternative 2.

None of the proposed project sites are in proximity to Tyndall AFB's existing explosive ordnance disposal (EOD) range, which is located south of US-98 approximately 3,800 feet south of the drone tow-way, nor are any of the project sites in proximity to active firing ranges on the base. Of the four proposed projects, the site Project 3, Alternative 1 is immediately south of TS-183, an active MMRP remediation site immediately north of the drone tow-way **(Figure 3-5, Table 3-17)**. TS-183 is a former trap and skeet range where residual lead from lead shot is the primary contaminant.

3.10.2.3 Bird/Wildlife Aircraft Strike Hazards

Approximately 22,891 acres of Tyndall AFB are vegetated or otherwise undeveloped; these areas, particularly those north of the main airfield and surrounding the drone runway and drone tow-way, and areas south of US-98, provide a variety of habitats for wildlife including deer, Florida black bear, feral hogs, and other large animals. Although DAF bird/wildlife aircraft strike hazard (BASH) programs typically focus on potential conflicts between aircraft and birds, interactions between terrestrial wildlife and taxiing aircraft or other motorized equipment operating on the airfield also pose a substantial safety risk to the safety of DAF personnel and contractors. As set forth in DAFI 91-212, DAF airfields must include a complete perimeter fence with closing gates that exclude wildlife hazards that could threaten safe aviation operations; however, as noted in **Section 1.2**, perimeter fencing at Tyndall AFB is currently incomplete between the main airfield and undeveloped areas immediately to the north, and between the drone tow-way and densely vegetated areas along the north side of US-98. The 325 FW Flight Safety Office monitors and implements the Tyndall AFB BASH Plan (DAF, 2020).

3.10.2.4 Force Protection and Physical Security

Tyndall AFB is a secure military installation with access limited to DoD personnel, civilian employees, military dependents, and authorized visitors. Most personnel and visitors access the northern and southern sides of the base through the main security checkpoints that are directly opposite each other along the north and south sides of US-98; these checkpoints are staffed 24 hours a day, 7 days a week. Security fencing extends from these checkpoints to the east and west along the installation's perimeter adjacent to US-98. Fencing is also present in areas of Tyndall AFB that require additional security or access control, such facilities within the 7000 Area and the fuel depot in the 400 area west of the main airfield. However, security fencing is not present along the entirety of the base's outer perimeter. As noted above, no perimeter security fencing is currently present along the northern side of the main airfield or between the drone tow-way and US-98. The lack of perimeter security fencing in these areas is inconsistent with requirements established in DAFI 91-212. Security fencing is also necessary where determined appropriate by the installation commander to safeguard personnel, facilities, protect capabilities, and accomplish the mission in accordance with DoD Regulation 5200.08-R, Physical Security Program (April 9, 2007). All new facilities and existing facilities that undergo substantial renovation are constructed in accordance with the requirements of UFC 4-010-01.

3.10.3 Environmental Consequences

3.10.3.1 Evaluation Criteria

Adverse impacts on safety would be considered significant if the Proposed Action resulted in an increased risk of accidents, injury to persons, or threats to Tyndall AFB's operations and overall mission that could not be minimized to an acceptable level through adherence to applicable BMPs and control measures.

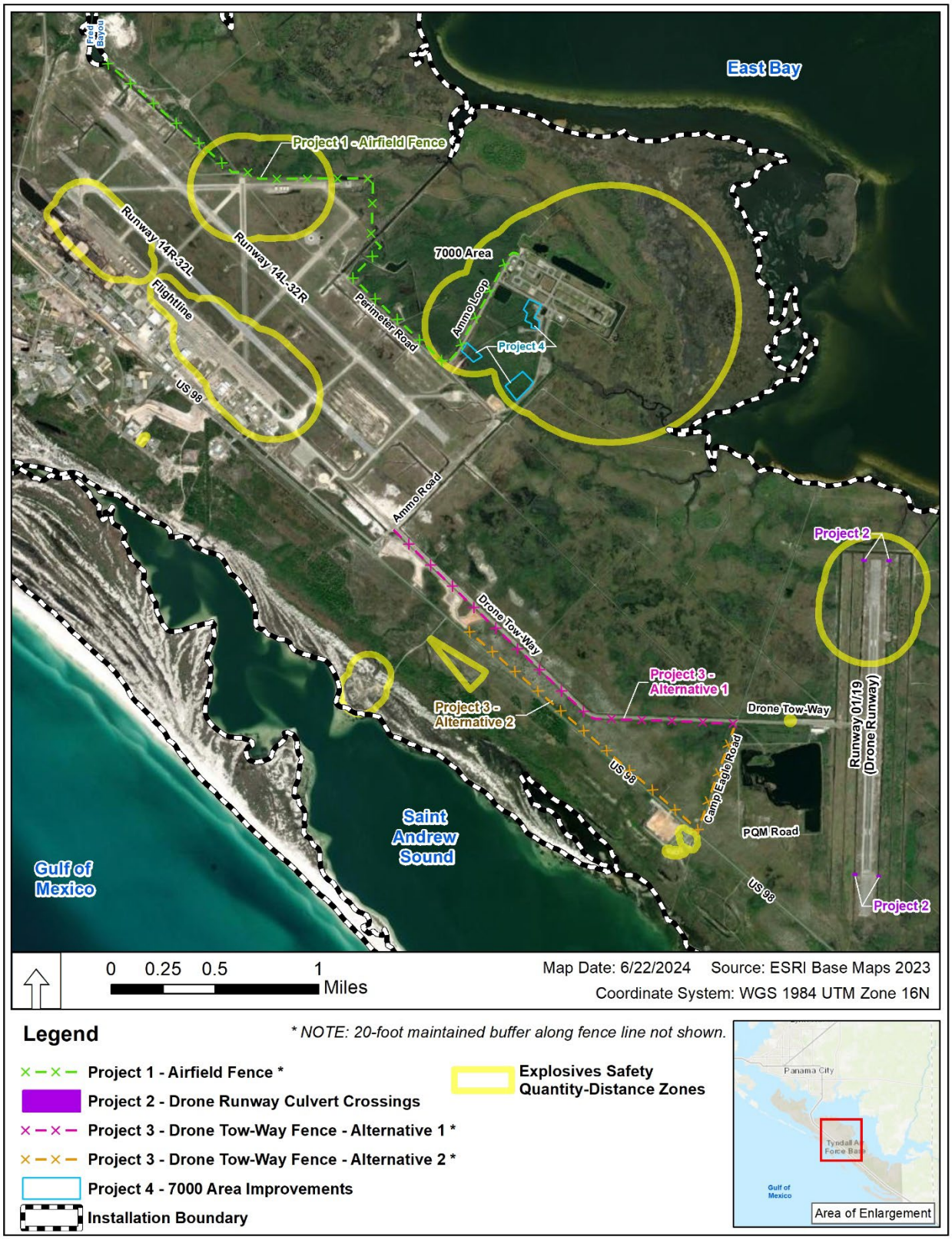

Figure 3-6 Explosives Safety Quantity-Distance Zones at Tyndall Air Force Base

3.10.3.2 Proposed Action Alternative

In the short term, potential adverse effects on the health and safety of workers involved in construction of the proposed projects would be minimized and managed to acceptable levels through adherence to applicable OSHA and AFOSH requirements and requirements specified in project and site-specific health and safety plans. Before construction begins, the 325 CES would review project plans and proposed sites to identify potential health and safety risks; any such potential risks would be identified and either addressed prior to or avoided during construction. After construction is complete, short-term risks to worker health and safety would cease; the proposed projects would have no long-term effects on the health and safety of construction workers.

The proposed projects would be compatible with the requirements of existing ESQD zones. None of the proposed projects would require establishment of new or modification of existing ESQD zones. None of the proposed projects are in or near active EOD ranges or firing ranges on Tyndall AFB or within active MMRP sites. Although the site of Project 3, Alternative 1 is outside the boundaries of TS-183, the 325 CES would review the potential for ground-disturbing activities associated with that project, if selected for implementation, to encounter residual lead or other munitions associated with that MMRP site. Any munitions suspected to be present or encountered during construction would be removed and disposed of in accordance with applicable DAF procedures. Therefore, the Proposed Action Alternative would have no short-term or long-term effects on explosives safety or from unexploded ordnance at Tyndall AFB.

In the short term, noise, vegetation clearing, ground disturbance, and increased human activity from construction of the proposed projects would have the potential to startle or displace wildlife from nesting, breeding, and foraging habitat on Tyndall AFB. Increased startle responses from these activities could result in movement of wildlife on the airfield and result in a corresponding increase in potential conflicts between wildlife and aircraft or other equipment operating on the airfield. Tyndall AFB natural resources personnel would monitor wildlife activity in the vicinity of the proposed project sites during construction and would report increased movements of wildlife in the vicinity of the airfield's runways, taxiways, and tow-ways to the 325 FW Flight Safety Office for consideration under the installation's BASH Plan and operational procedures, as needed. Nuisance animals would be deterred or captured and relocated in accordance with applicable procedures of the Tyndall AFB natural resources management program. Therefore, short-term adverse effects from potential interactions between wildlife and taxiing aircraft or other equipment on the airfield would not be significant.

In the long term, construction of perimeter fencing along the north side of the airfield and between the drone tow-way and US-98 under Projects 1 and 3, respectively, would generally have beneficial long-term effects on force protection and physical security by eliminating potential access points for unauthorized incursions by wildlife and individuals in those areas of the installation. The proposed fencing would also minimize the risk of potential mishaps and conflicts between wildlife and aircraft or other equipment operating on the airfield, thereby improving the safety of pilots, aircrews, and ground operations personnel. None of the proposed projects would create conditions that would compromise force protection and physical security at Tyndall AFB; therefore, the Proposed Action Alternative would have no long-term or short-term impacts on force protection and physical security.

3.10.3.3 No Action Alternative

Under the No Action Alternative, the proposed projects would not be implemented and existing conditions at Tyndall AFB would continue. This alternative would represent an adverse effect on safety because perimeter security fencing would not be constructed along the north side of the airfield or between the drone tow-way and US-98 to prevent unauthorized or inadvertent incursions by individuals and wildlife into areas of the base where aircraft and other equipment are actively operating. However, Tyndall AFB would continue to manage these conditions as it currently does; therefore, adverse impacts on safety from the No Action Alternative would not be significant.

3.10.3.4 Reasonably Foreseeable Future Actions and Other Environmental Considerations

Other reasonably foreseeable future actions listed in **Table B-1** would adhere to applicable health and safety requirements to prevent or minimize safety risks to workers, employees, and visitors to the extent possible and ensure they remain less than significant. Therefore, when considered with other reasonably foreseeable future actions, the Proposed Action Alternative would not contribute to cumulatively significant adverse effects on safety.

3.11 SOCIOECONOMICS

3.11.1 Definition of the Resource

This section evaluates the social and economic characteristics of populations or communities in or near the area where the Proposed Action would occur, and the Proposed Action's potential effects on those characteristics. Socioeconomic characteristics evaluated in this section include population; sales, revenue, and expenditures; and employment, payroll and income, and poverty. The socioeconomics ROI includes Tyndall AFB, Panama City, and Bay County. Corresponding characteristics for the state of Florida are provided for reference and comparison, as applicable.

3.11.2 Affected Environment

Bay County, where Tyndall AFB is located, had an estimated population of 185,210 people in 2022 (the most recent year for which estimates are available) **(Table 3-20)**. Panama City, the largest urbanized area in Bay County and immediately north of Tyndall AFB, had an estimated population of 34,690 people in 2022, representing approximately 19 percent of the county population. Bay County's population represented 0.8 percent of the total state population in 2022 (U.S. Census Bureau, 2024).

As of FY22, approximately 4,000 military and civilian personnel were assigned to Tyndall AFB. The installation also supported more than 19,000 active-duty military dependents, retirees, and retiree dependents (325th Comptroller Squadron, 2022).

Table 3-20 Total Population of Florida, Bay County, and Panama City

Jurisdiction	Population
State of Florida	22,245,521
Bay County	185,210
Panama City	34,690

Source: U.S. Census Bureau, 2024

In 2017, Bay County businesses generated more than $5.5 billion in sales, revenue, and receipts in selected retail and services categories **(Table 3-21)**. Businesses in Panama City accounted for more than half ($2.8 billion) of this economic activity (U.S. Census Bureau, 2024). Combined, total sales, revenue, and receipts generated in Bay County and Panama City in 2017 represented 1.3 percent of the total activity in these categories relative to the state of Florida.

Table 3-21 Total Sales and Receipts/Revenue for Selected Categories in Florida, Bay County, and Panama City (2017)

Jurisdiction	Selected Categories of 2017 Total Sales and Receipts/Revenue				Total ($1,000)
	Accom-modation and Food Services ($1,000)	Health Care and Social Assistance ($1,000)	Transportation and Warehousing ($1,000)	Retail ($1,000)	
State of Florida	67,950,386	155,283,578	68,145,959	333,134,553	**624,514,476**
Bay County	757,414	1,288,895	275,309	3219,279	**5,540,897**
Panama City	191,487	1,058,469	182,076	1,422,825	**2,854,857**

Source: U.S. Census Bureau, 2024

For FY22, the 325th Comptroller Squadron estimated that Tyndall AFB's total expenditures in construction; services; and materials, equipment, and supply procurement categories exceeded $2.4 billion **(Table 3-22)**. They also estimated that Tyndall AFB indirectly contributed nearly $1.8 billion to the local and regional economy in FY22 **(Table 3-23)** (325th Comptroller Squadron, 2022).

Table 3-22 Tyndall Air Force Base Economic Expenditures (Fiscal Year 2022)

Category	Expenditure ($1,000)
Construction	2,304,565
Services	42,779
Materials, Equipment, and Supply Procurement	57,251
Total	**2,404,595**

Source: 325th Comptroller Squadron, 2022

Table 3-23 Tyndall Air Force Base Indirect Economic Impacts (Fiscal Year 2022)

Category	Number of Indirect Jobs	Expenditure ($)
Payroll	2,057	263,944,857
Construction	24,197	1,466,164,322
Services	1,399	59,431,701
Travel and Lodging	141	6,838,468
Total	**27,794**	**1,796,379,349**

Source: 325th Comptroller Squadron, 2022

More than 57,000 people in Bay County were employed in 2021, and businesses in Bay County had a total annual payroll of more than $2.5 billion **(Table 3-24)**. Total employment in Bay County declined by less than 0.1 percent between 2020 and 2021, likely due to the COVID-19 pandemic. This decline was substantially less than the decline in statewide employment (-2.3 percent) that occurred during the same period.

In 2022, total payroll for all military and civilian personnel assigned to Tyndall AFB was almost $340 million (325th Comptroller Squadron, 2022).

Table 3-24 Total Employment, Payroll, and Change in Total Employment in Florida, Bay County, and Panama City

Jurisdiction	Number of People Employed in 2021	Total Annual Payroll, 2021 ($1,000)	Percent Change in Employment from 2020 to 2021
Florida	8,877,389	492,355,693	-2.3
Bay County	57,266	2,516,972	-0.05
Panama City	NA	NA	NA

Notes:
Source: U.S. Census Bureau, 2024
NA = data not available

Although median household income and per capita income are lower in Bay County relative to the state, the percentage of persons in poverty in the county is comparatively lower than both the state and Panama City (U.S. Census Bureau, 2024). Panama City has the lowest median household income and per capita income, and highest percentage of persons in poverty of the three jurisdictions shown in **Table 3-25**.

Table 3-25 Median Household Income, Per Capita Income in the Past 12 Months, and Persons in Poverty in Florida, Bay County, and Panama City

Jurisdiction	Median Household Income (2018-2022) $	Per Capita Income in the Past 12 Months (2018-2022) $	Percent of Persons in Poverty
Florida	67,917	38,850	12.7
Bay County	65,999	36,868	11.9
Panama City	57,221	33,853	18.6

Notes:
Source: U.S. Census Bureau, 2024
Dollar values are based on 2022 dollars.

As of March 2024, Panama City's unemployment rate (not seasonally adjusted) was slightly higher than both the state and Bay County **(Table 3-25)** (Bureau of Labor Statistics, 2024a). Unemployment in all three jurisdictions was less than the nationwide unemployment rate of 3.9 percent (Bureau of Labor Statistics, 2024b).

Table 3-26 Unemployment Rates in Florida, Bay County, and Panama City as of March 2024

Jurisdiction	Unemployment Rate (percent)
Florida	3.3
Bay County	3.2
Panama City	3.5

Notes:
Source: Bureau of Labor Statistics, 2024a
Unemployment rates shown are not seasonally adjusted.

3.11.3 Environmental Consequences

3.11.3.1 Evaluation Criteria

Adverse impacts on socioeconomics would be significant if the Proposed Action resulted in a population increase that would exceed a community's capacity to provide services, or a loss of tax revenue from a population decrease, layoffs or job losses, disinvestment, or other economic loss that impaired a community's ability to provide services (such as schools/public education, or police and fire/emergency services) to its residents.

3.11.3.2 Proposed Action Alternative

In the short term, the Proposed Action Alternative could have beneficial economic effects if local contractors are hired to design and construct the proposed projects, or from local purchases of construction materials, meals, lodging, and equipment. However, any such effects would be small given the relatively small scale of the individual projects in the context of the local economy of Bay County and the overall economic output of Tyndall AFB. These effects would be further diminished by the distribution of the proposed projects over a period of several years, and all beneficial economic effects would end after the proposed projects are completed. Therefore, short-term beneficial effects on socioeconomics would not be significant.

In the long term, the Proposed Action Alternative would not increase or decrease the number of personnel at Tyndall AFB and, therefore, would have no potential to affect local socioeconomic conditions such as population, employment, or tax revenue. Therefore, the Proposed Action Alternative would have no long-term effects on socioeconomics.

3.11.3.3 No Action Alternative

Under the No Action Alternative, the proposed projects would not be implemented and existing conditions would continue. This would have no impacts on local or regional socioeconomic conditions.

3.11.3.4 Reasonably Foreseeable Future Actions and Other Environmental Considerations

Other reasonably foreseeable future actions listed in **Table B-1** would contribute to short-term beneficial effects on socioeconomic conditions from construction-related expenditures in the local and regional economy. Other projects that involve increases in the number of personnel at Tyndall AFB would also have long-term beneficial effects on local tax revenues and would not be expected to exceed the capacity of local communities to provide public services to their residents. Therefore, when considered with other reasonably foreseeable future actions, the Proposed Action would not contribute to cumulatively significant adverse effects on socioeconomics.

3.12 NOISE

3.12.1 Definition of the Resource

Noise is defined as any sound that is undesirable because it interferes with communication, is intense enough to damage hearing, or otherwise causes annoyance. Types of noise may be intermittent or continuous, steady or impulsive, and can involve any number of sources and frequencies. Sources of noise may be readily identifiable or generally nondescript. Human response to noise varies according to the source type, characteristics of the sound source, distance between the source and receptor, receptor sensitivity, and time of day. Noise sensitive receptors include both specific and broad facilities or areas where occasional or persistent sensitivity to noise above ambient levels exists. These typically include residential areas, schools, churches, hospitals, cemeteries, nature preserves, or other designated areas or districts.

The 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, typically around 135 dBA (USEPA, 1981). Noise levels associated with common sources and their perception by or potential effect on humans is summarized in **Table 3-27**. Noise levels can become annoying at 80 dBA and very annoying at 90 dBA. To the human ear, each 10-dBA increase is perceived as twice as loud (USEPA, 1981).

Table 3-27 Common Sound Levels and Typical Human Response

Sound Level (dB)	Common Sound	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; potential hearing damage after 8 hours of exposure
100	Garbage truck	Very annoying
110	Pile driver	Strained vocal effort
120	Jet takeoff (200 feet) or auto horn (3 feet)	Maximum vocal effort
140	Jet operations on aircraft carrier deck	Painfully loud

Notes:
Source: USEPA, 1981
dB = decibel

Sound levels vary with time. For example, the sound from an aircraft increases as the 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 cumulative noise exposure generated by a sound source. Two events with identical L_{max} levels may produce very different total noise exposures. One may be of very short duration, while the other may last much longer.

The average day/night sound level (DNL) is an alternate measure used to assess the overall noise environment within a community. DNL represents the average A-weighted sound level over a 24-hour period, with a 10-dBA adjustment applied to nighttime levels (between 10:00 p.m. and 7:00 a.m.). This adjustment accounts for the heightened sensitivity of humans to noise events during nighttime. Land use compatibility and incompatibility are assessed by comparing the projected DNL at a particular site with the recommended land uses. Nighttime noise levels tend to cause more annoyance than equivalent levels during the day. It is widely accepted that people perceive nighttime noise as being 10 dBA more intrusive than daytime noise, in terms of its potential to generate community annoyance.

In June 1980, the Federal Interagency Committee on Urban Noise (FICUN) published guidelines relating DNL to compatible land uses (FICUN, 1980). This committee was composed of representatives of DoD, the U.S. Department of Transportation, Housing and Urban Development, USEPA, and Veterans Affairs. Since the issuance of these guidelines, federal agencies have generally incorporated the discussion of

compatibility into their comprehensive planning in analysis of noise effects. The land use compatibility guidelines that the DAF uses are consistent with FICUN guidelines. In general, residential land uses are not compatible with an outdoor DNL above 65 dBA.

The ROI for noise consists of areas within 0.5 miles of the proposed project sites. Beyond this distance, it is expected that noise associated with the construction and operation of the proposed projects would not be readily identifiable or distinguishable from other noise sources contributing to the ambient noise environment on and around the installation.

3.12.2 Affected Environment

The ambient noise environment at Tyndall AFB is influenced by the relatively flat topography of lands on and around the base, expansive open spaces around the aircraft runways, the presence of existing development and vegetation, military aircraft operations, traffic noise on US-98 and other on-base and off-base roads, light industrial operations associated with aircraft and facility maintenance on the base, and other factors. Generally, however, military aircraft noise is the predominant source of noise on and around Tyndall AFB. Approximately 66,400 airfield operations were conducted annually at Tyndall AFB, prior to Hurricane Michael in 2018. More than half of these operations consisted of takeoffs and landings by twin-engine F-22 (37,900 annual operations) and T-38 (11,800 annual operations) jet aircraft. Other aircraft historically or currently operating at Tyndall AFB include jet-powered QF-16 drones and propeller-driven E-9 and MU-2 aircraft (DAF, 2020).

The F-35, the DAF's primary twin-engine jet fighter, began operating at Tyndall AFB in 2023. Three F-35 squadrons totaling 78 aircraft are expected to be based at Tyndall AFB by 2026. Once fully operational, these squadrons will conduct approximately 33,440 annual operations at Tyndall AFB, or an average of 129 daily operations occurring on 260 flying days per year. Noise levels associated with the three fully operational F-35 squadrons that would exceed 65 dBA DNL are anticipated to occur primarily within the boundaries of Tyndall AFB and relatively small offshore areas of the Gulf of Mexico, St. Andrew Bay, and East Bay adjacent to Tyndall AFB (DAF, 2020).

Fifteen representative noise sensitive land uses, including on-base and off-base residential areas, schools, parks, and churches, were identified in the 2020 F-35 Final EIS (DAF, 2020). None of these land uses are within 1 mile of the proposed project sites. Generally, human-occupied facilities within the ROI include Buildings 6027, 6030, 6070, and 6067 near the northwestern end of Project 1; facilities within the 7000 Area, adjacent to the southeastern portion of Project 1; and drone maintenance and storage facilities immediately south and east of Project 3, Alternative 1 and Alternative 2 (DAF, 2024c). Activities occurring at these facilities can be characterized as light industrial and therefore, are not considered noise sensitive receptors.

3.12.3 Environmental Consequences

3.12.3.1 Evaluation Criteria

Potential impacts from noise associated with the Proposed Action would be considered significant if noise levels (1) violated applicable noise regulations, (2) caused unsafe noise conditions for nearby receptors during construction, or (3) substantially affected normal operations of noise-sensitive sites.

3.12.3.2 Proposed Action Alternative

In the short term, construction of the proposed projects would generate elevated noise levels from workers' commuting vehicles and heavy trucks traveling to and from the project sites; heavy equipment used to excavate, grade, level, and compact soils; electric and pneumatic tools, and generators and compressors used to power those tools; and generally increased levels of human activity. Noise levels generated by

representative types of common construction equipment that could be used to build the proposed projects are listed in **Table 3-28**.

Table 3-28 Construction Equipment Noise Levels and Typical Human Response

Equipment	Maximum Sound Level (L_{max}) Measured at 50 feet (dBA)
Air Compressor	78
Backhoe	78
Concrete Mixer Truck	79
Concrete Saw	90
Crane	81
Bulldozer	82
Dump Truck	76
Excavator	81
Flatbed Truck	74
Front-end Loader	79
Generator	81
Impact Hammer	90
Paving Equipment	77
Pickup Truck	75
Roller	80
Welding	74

Notes:
Source: USDOT, 2006
dBA = A-weighted decibel; L_{max} = maximum sound level

None of the proposed projects would occur near on-base or off-base noise sensitive uses, and construction-related noise would not impede or prevent the continued operation of nearby facilities and land uses on Tyndall AFB. Generally, elevated noise levels associated with each project would be highly localized, would diminish with increased distance from the source, and would be unnoticeable or indistinguishable to listeners outside the boundaries of the installation. The distribution of the projects over a period of several years, rather than occurring simultaneously, would aid in minimizing potential noise impacts. Noise from aircraft operations would remain the predominant source of noise at and around Tyndall AFB during construction activities. All construction-related noise would cease when construction of the proposed projects is completed. Therefore, short-term impacts from noise under the Proposed Action Alternative would not be significant.

In the long term, none of the proposed projects would create a new source of noise at Tyndall AFB. Noise associated with periodic maintenance of the proposed facilities would be infrequent, widely distributed around the installation, and similar to noise resulting from similar activities already occurring at Tyndall AFB. Such noise would not be particularly unusual or distinct from other sources contributing to the ambient noise environment on and around the base and would likely be unnoticeable outside the installation boundaries. Aircraft operations would continue to be the predominant source of noise at and around Tyndall AFB. For these reasons, long-term impacts from noise under the Proposed Action Alternative would not be significant.

3.12.3.3 No Action Alternative

Under the No Action Alternative, the proposed projects would not be built and existing noise conditions would continue. This would have no impacts from noise on and around Tyndall AFB.

3.12.3.4 Reasonably Foreseeable Future Actions and Other Environmental Considerations

The construction and operation of the other reasonably foreseeable future actions listed in **Table B-1** would generate increased noise levels on and around Tyndall AFB. Short-term and long-term increases in noise would vary for each project; however, each project would adhere to applicable measures and procedures to prevent or minimize adverse effects from noise and ensure such effects remain less than significant. Therefore, when considered with potential impacts from other reasonably foreseeable future actions, the Proposed Action Alternative would not contribute to cumulatively significant adverse impacts from noise.

3.13 TRANSPORTATION

3.13.1 Definition of the Resource

Transportation resources include elements of the transportation network in a community or area, including road networks, vehicular traffic, and associated infrastructure. The transportation ROI consists of segments of US-98 adjacent to Tyndall AFB, and on-base roads and transportation infrastructure north of US-98. This analysis assumes that workers constructing the proposed facilities would travel to and from the project sites using POVs; therefore, public transportation and pedestrian and bicycle facilities are not addressed in this section.

Major components of the road network and transportation infrastructure in the ROI consist of US-98, which bisects Tyndall AFB into northern and southern sections; entry control facilities (ECFs) that provide most vehicular access to the base; and on-base roads that facilitate traffic circulation and movement on the installation. The majority of vehicles traveling to and from the north side of Tyndall AFB access the installation via the ECF on Tyndall Drive, immediately north of US-98. Vehicles traveling eastbound on US-98 access the Tyndall Drive ECF via two signal-controlled left-turn lanes. Vehicles traveling westbound on US-98 access the Tyndall Drive ECF via one signal-controlled right-turn lane and one signal-controlled through-travel/right-turn lane. Morning and evening peak traffic periods occur at Tyndall AFB from 5:30 a.m. to 8:00 a.m. and 3:00 p.m. to 6:00 p.m., respectively (Wallace, E., 2024a).

3.13.2 Affected Environment

US-98 is a four-lane divided highway with a speed limit of 50 miles per hour in the vicinity of Tyndall AFB. In 2023, annual average daily traffic (AADT) volumes on US-98, west of Tyndall Drive (22,000 vehicles) were substantially higher than volumes east of Tyndall Drive (6,800 vehicles) **(Table 3-29)** (FDOT, 2023). A traffic analysis prepared for the 2020 F-35 Final EIS assumed that 97 percent of vehicle trips to Tyndall AFB originate from the west and 3 percent originate from the east (DAF, 2020). It is likely that traffic associated with the construction of new facilities to replace those damaged or destroyed by Hurricane Michael in 2018, and construction of new facilities associated with the basing of three F-35 squadrons at the base, substantially contributes to traffic volumes in the ROI.

Table 3-29 2023 Annual Average Daily Traffic Volumes on US-98 Near Tyndall Air Force Base

Road Segment	Average Annual Daily Traffic Volume	Approximate Length of Road Segment (miles)
Southern End of Dupont Bridge to Tyndall Drive	22,000	2.7
Tyndall Drive to Canal Parkway	6,800	12.7

Source: FDOT, 2023

Given the AADT volumes occurring on US-98 west of the Tyndall Drive ECF, and assuming that a substantial proportion of this volume consists of vehicles traveling to and from Tyndall AFB, it is likely that traffic congestion occurs frequently on US-98 in the vicinity of the Tyndall Drive ECF, particularly during the morning and evening peak traffic periods. To help alleviate this congestion, FDOT, in cooperation with the Federal Highway Administration and DoD, is currently constructing an overpass (known as the Tyndall Flyover Project) along US-98 immediately south of the Tyndall Drive ECF. Once operational, this flyover will provide grade separation between through-traffic and traffic entering Tyndall AFB, and will allow on-base traffic to travel between the north and south sides of the base without interrupting through-traffic on US-98 (FDOT, 2024). Construction traffic and activity associated with the Tyndall Flyover Project likely contributes to additional congestion on US-98 in the vicinity of the Tyndall Drive ECF. Currently, the Tyndall Flyover Project is expected to be open to traffic in late summer or fall 2024 (Wallace E., 2024b).

The on-base transportation network on the north side of Tyndall AFB is generally laid out in an east-west and north-south grid pattern between US-98 and the flight line. Vehicular access to facilities along the northern side of the airfield is primarily via the perimeter road, which encircles the installation's runways and taxiways. With prior approval from the Full-Scale Drone Runway Office, use of the drone taxiway and drone runway is permitted to provide vehicular access to adjacent areas and facilities when not in active use by aircraft. The on-base road network is considered sufficient to handle existing and future traffic volumes, including traffic associated with current and planned construction projects and the ongoing military mission at Tyndall AFB.

3.13.3 Environmental Consequences

3.13.3.1 Evaluation Criteria

Impacts on transportation would be significant if traffic associated with the Proposed Action contributed to exceedances of the capacity of the exiting transportation network in the ROI or conflicted with airfield operations or the military mission at Tyndall AFB.

3.13.3.2 Proposed Action Alternative

The Proposed Action Alternative would result in short-term increases in daily traffic to and from Tyndall AFB from construction workers and other construction-related vehicles (such as heavy trucks delivering materials and equipment) commuting to and from the project sites. These increases would have the potential to contribute to additional traffic congestion in the ROI. However, these increases and any additional congestion would be small in the context of existing traffic volumes traveling to and from Tyndall AFB in the ROI, would vary throughout each project's construction phase, and would be distributed over a period of several years. Travel routes along on-base roads would be planned prior to beginning construction to prevent or minimize conflicts with GOV supporting aircraft operations and Tyndall's overall military mission. As needed, contractors would coordinate with the Full-Scale Drone Runway Office to ensure that construction-related vehicles using the drone taxiway and drone runway to access the sites of Project 2 and Project 3, Alternative 1 (if selected for implementation) would not conflict with drone aircraft operations on the airfield. Construction-related traffic impacts would not be expected to contribute to exceedances of the capacity of the existing transportation network in the ROI. The opening of the Tyndall Flyover Project to traffic, prior to or during construction of the proposed projects would further alleviate traffic congestion on US-98 in the vicinity of the Tyndall Drive ECF. Following the completion of the proposed projects, construction-related impacts on the transportation network would end. For these reasons, short-term impacts on transportation would not be significant.

In the long term, the Proposed Action Alternative would not change the number of personnel assigned to Tyndall AFB and would have no potential to result in changes to commuting patterns, require improvements to on-base and off-base transportation networks, permanently increase traffic volumes on on-base and off-base roads, or otherwise increase demands on or the capacity of existing on-base and off-base

transportation networks and infrastructure. Therefore, the Proposed Action Alternative would have no long-term impacts on transportation.

3.13.3.3 No Action Alternative

Under the No Action Alternative, none of the proposed projects would be implemented and existing conditions in the ROI would continue. This would have no impacts on transportation in the ROI.

3.13.3.4 Reasonably Foreseeable Future Actions and Other Environmental Considerations

Other reasonably foreseeable future actions listed in **Table B-1** would have the potential to contribute to temporary or permanent increases in traffic volumes and congestion in the ROI. Temporary increases from construction-related traffic would vary throughout each project's construction phase and would end upon the completion of each project. FDOT, the Federal Highway Administration, local agencies, and the DoD, as applicable, would continue to plan and implement improvements as needed to manage traffic safely and efficiently within their jurisdictions and ensure impacts on transportation are not significant. Therefore, when considered with other reasonably foreseeable future actions, the Proposed Action Alternative would not contribute to cumulatively significant adverse impacts on transportation in the ROI.

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APPENDIX A – INTERAGENCY AND INTERGOVERNMENTAL COORDINATION AND CONSULTATIONS

A.1 INTRODUCTION

Scoping is an early and open process for developing the breadth of issues addressed in an Environmental Assessment (EA) and for identifying significant concerns related to an action. Per the requirements of Executive Order (E.O.) 12372, Intergovernmental Review of Federal Programs, as amended by E.O. 12416, federal, state, and local agencies with jurisdiction that could be affected by the Proposed Action or alternatives were notified during development of this EA.

The Intergovernmental Coordination Act and E.O. 12372 require federal agencies to cooperate with and consider state and local views in implementing a federal proposal. Through the coordination process, potentially interested and affected government agencies, government representatives, elected officials, and interested parties that could be affected by the Proposed Action and alternatives were notified during development of this EA. The list of stakeholders and agency and intergovernmental coordination letters and responses are included in this appendix.

A.1.1 Agency Consultations

Implementation of the Proposed Action involves coordination with several organizations and agencies. Compliance with Section 7 of the Endangered Species Act and implementing regulations (50 Code of Federal Regulations [CFR] Part 402), requires communication with the U.S. Fish and Wildlife Service in cases where a federal action could affect listed threatened or endangered species, species proposed for listing, or candidates for listing. The primary focus of this consultation is to request a determination of whether any of these species occur in the proposal area. If any of these species is present, a determination would be made of any potential adverse impacts on the species.

The National Historic Preservation Act (NHPA) of 1966 (54 United States Code 300101 et seq.) established the National Register of Historic Places (NRHP) and outlined procedures for managing cultural resources on federal property. NHPA requires federal agencies to consider the potential impacts of federal undertakings on historic properties that are: listed, nominated to, or eligible for listing on the NRHP; designated a National Historic Landmark; or valued by modern American Indians for maintaining their traditional culture. Section 106 of the NHPA requires federal agencies to consult with State Historic Preservation Officers, and others, if their undertakings have the potential to impact historic properties and to afford the Advisory Council on Historic Preservation a reasonable opportunity to comment on such undertakings.

A.1.2 Government-to-Government Consultation

Consistent with the NHPA's implementing regulations (36 CFR Part 800), DoD Instruction 4710.02, *DoD Interactions with Federally Recognized Tribes*, Department of the Air Force (DAF) Instruction 90-2002, *Interactions with Federally Recognized Tribes*, and Air Force Manual 32-7003, *Environmental Conservation*, the DAF has a responsibility to consult in good faith with federally recognized tribes who have a documented interest in DAF lands and activities, even though the tribe may not be geographically located near the installation or its airspace, regarding a Proposed Action's potential to affect properties of cultural, historical, or religious significance to the tribes. The tribal coordination process is distinct from National Environmental Protection Act consultation or the intergovernmental coordination processes and requires separate notification of all relevant tribes. The timelines for tribal consultation are also distinct from those of intergovernmental consultations. The installation commander's role in tribal government-to-government consultation is similar to the commander's role with an ambassador. The installation commander may also designate a civilian government employee as the Installation Tribal Liaison Officer (ITLO). The ITLO must be a high-level civilian who is able to interact directly with base leaders and is allowed access to the installation commander without multiple chain of command impediments.

Government-to-government consultation is included in this appendix.

A.2 PUBLIC AND AGENCY REVIEW OF ENVIRONMENTAL ASSESSMENT

A Notice of Availability for the Draft EA and proposed Finding of No Significant Impact (FONSI) / Finding of No Practicable Alternative (FONPA) was published in the *Panama City News Herald* inviting the public to review and comment on the Draft EA during the 30-day review period.

A printed copy of the Draft EA and proposed FONSI/FONPA is available for review at the Bay County Public Library, 898 West 11th Street, Panama City, Florida 32401. An electronic copy of the Draft EA and proposed FONSI/FONPA is available on Tyndall AFB's website at https://www.tyndall.af.mil/About/.

Persons who are unable to access these documents online are asked to contact Edwin Wallace at 850-283-2714 or via email at edwin.wallace.1@us.af.mil to arrange alternate access.

A.3 STAKEHOLDERS LIST

The following is the stakeholder list for correspondence associated with this Environmental Assessment.

Federal Agencies

U.S. Army Corps of Engineers
Jacksonville Regulatory District
Panama City Permits Section
Panama City, FL 32407-3887

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

State Agencies

Ms. Alissa Slade Lotane, Director
Florida Division of Historical Resources
Tallahassee, FL 32399-0250

Florida Fish and Wildlife Conservation Commission
Panama City, FL 32409
conservationplanningservices@MyFWC.com

Mr. Chris Stahl, Coordinator
Office of Intergovernmental Programs
Department of Environmental Protection
Tallahassee, FL 32399
state.clearinghouse@dep.state.fl.us

Native American Tribes

Ryan Morrow
Town King
Thlopthlocco Tribal Town
Okemah, OK 74859-0188

Marcellus W. Osceola Jr.
Chairman
Seminole Tribe of Florida
Hollywood, FL 33024

Victoria L. Menchaca
STOF-THPO, Compliance Review Seminole Tribe of Florida
Clewiston, FL 33440

Mr. Lewis J. Johnson, Chief
Seminole Nation of Oklahoma
Wewoka, OK 74884

Stephanie A. Bryan
Tribal Chair
Poarch Band of Creek Indians
Atmore, AL 36502

Muscogee Creek Nation
Attn: David Hill, Principal Chief
Okmulgee, OK 74447

Miccosukee Tribe
PO Box 440021
Miami, FL 33144

A.4 PUBLIC NOTICES OF AVAILABILITY

A.4.1 Early Public Notice

EARLY PUBLIC NOTICE FOR PROPOSED NEAR-TERM CONSTRUCTION PROJECTS WITHIN WETLANDS AND 100-YEAR FLOODPLAINS AT TYNDALL AIR FORCE BASE, BAY COUNTY, FLORIDA

To: All Interested Agencies, Groups, and Individuals

The Department of the Air Force (DAF) is proposing to implement four near-term construction projects at Tyndall Air Force Base (AFB), Bay County, Florida. These projects would provide facilities and infrastructure to support the ongoing mission, operations, and security requirements of Tyndall AFB. These projects are referred to as the Proposed Action and would consist of the following: 1) construct a perimeter security fence along the north side of the main airfield; 2) construct four culvert crossings at the north and south ends of the drone runway; 3) construct a perimeter security fence between the drone tow-way and US Highway 98; 4) construct a fueling station, parking area for explosive ordnance and munitions trailers, and expanded access drive and parking area near the existing Munitions Storage Area (MSA). The Proposed Action would be implemented entirely within the existing boundaries of Tyndall AFB.

The DAF is preparing an Environmental Assessment (EA) to evaluate the potential environmental impacts from the Proposed Action. The EA is being prepared in accordance with the National Environmental Policy Act (NEPA) of 1969, Council on Environmental Quality regulations implementing NEPA (Title 40 Code of Federal Regulations [CFR] Parts 1500-1508), and the DAF *Environmental Impact Analysis Process* (32 CFR Part 989). The DAF requests input on the Proposed Action from Federal, state, and local regulatory agencies during preparation of the Draft EA as part of the NEPA review process. The DAF is also requesting early public comments on the Proposed Action, its potential environmental impacts, and potential project alternatives. The Draft EA will be made available for a 30-day public review and comment period when completed.

Portions of the Proposed Action are subject to the requirements of Sections 401, 404 and 404(b)(1) of the Clean Water Act, Executive Order (EO) 11988, *Floodplain Management*, and EO 11990, *Protection of Wetlands* because they would be constructed in or adjacent to wetlands and 100-year floodplains on Tyndall AFB. Therefore, the DAF is hereby giving notice of the Proposed Action and requesting public comments in accordance with Section 2(a)(4) of EO 11988, Section 2(b) of EO 11990, and 32 CFR § 989.24.

Please submit written comments on the Proposed Action to the attention of Mr. Edwin Wallace, 325 CES/CEIEC, 101 Mississippi Road Building 36233, Tyndall AFB, FL 32403. Written comments will be accepted for 30 days from publication of this notice.

LOCALiQ

The Gainesville Sun | The Ledger
Daily Commercial | Ocala StarBanner
News Chief | Herald-Tribune | News Herald
Northwest Florida Daily News

PO Box 631244 Cincinnati, OH 45263-1244

PROOF OF PUBLICATION

JESSICA BOTTE
Jessica Botte
VERSAR
[redacted]

STATE OF WISCONSIN, COUNTY OF BROWN

Before the undersigned authority personally appeared, who on oath says that he or she is the Legal Coordinator of the Panama City News Herald, published in Bay County, Florida; that the attached copy of advertisement, being a Main Legal CLEGL, was published on the publicly accessible website of Bay County, Florida, or in a newspaper by print in the issues of, on:

03/03/2024

Affiant further says that the website or newspaper complies with all legal requirements for publication in chapter 50, Florida Statutes.
Subscribed and sworn to before me, by the legal clerk, who is personally known to me, on 03/03/2024

Legal Clerk

Notary, State of WI, County of Brown

3-7-27
My commission expires

Publication Cost:	$193.68	
Order No:	9845288	# of Copies:
Customer No:	954619	1
PO #:	Tyndall AFB EA Fonpa Fina	

THIS IS NOT AN INVOICE!

Please do not use this form for payment remittance.

KAITLYN FELTY
Notary Public
State of Wisconsin

Page 1 of 2

A.5 SCOPING LETTERS

A.5.1 U.S. Army Corps of Engineers

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

4 March 2024

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

U.S. Army Corps of Engineers
Jacksonville Regulatory District
Panama City Permits Section
415 N Richard Jackson Blvd, Suite 411
Panama City FL 32407-3887

Re: Environmental Assessment for Construction of Installation Security Features and Munitions Support Facilities, Tyndall Air Force Base, Florida

Dear Sir or Madam

The Department of the Air Force (DAF) is preparing an Environmental Assessment (EA) to evaluate the potential environmental impacts from the Proposed Action to implement four near-term construction projects at Tyndall Air Force Base (AFB), Bay County, Florida. The location of Tyndall AFB is shown on **Figure 1**. The EA is being prepared in accordance with the National Environmental Policy Act (NEPA) of 1969, Council on Environmental Quality regulations implementing NEPA (40 Code of Federal Regulations [CFR] Parts 1500-1508), and the DAF Environmental Impact Analysis Process (32 CFR Part 989).

The Proposed Action would provide facilities and infrastructure to support the ongoing mission, operations, and security requirements of Tyndall AFB. Projects included in the Proposed Action would be implemented entirely within the boundaries of Tyndall AFB. These projects are shown on **Figure 2** and briefly summarized below:

- Project 1 – Airfield Fence: This project would construct approximately 17,548 linear feet (LF) of welded-wire security fencing along the northern side of the main airfield to prevent incursions by wildlife and unauthorized individuals. A cleared buffer area 20 feet wide (10 feet on each side of the proposed fence) would be maintained along the entire length of the proposed fence in accordance with applicable Department of Defense (DoD) antiterrorism/force protection (AT/FP) requirements to provide a firebreak, clear sightlines, and access for security and maintenance activities.

2

- Project 2 – Drone Runway Culvert Crossings: This project would build four new crossing points over existing drainage channels at the northern and southern ends of the existing drone runway. The proposed crossings would allow personnel, vehicles, and equipment to cross the drainage channels. Depending on location, each proposed crossing would be approximately 30 to 40 feet long and encompass an area of 600 to 800 square feet, for a total of approximately 2,600 square feet.

- Project 3 – Drone Tow-way Fence: This project would construct a welded-wire fence between the drone tow-way and US Highway 98 to prevent incursions by wildlife and unauthorized individuals. A cleared buffer area 20 feet wide (10 feet on each side of the proposed fence) would be maintained along the entire length of the proposed fence in accordance with applicable DoD AT/FP requirements to provide a firebreak, clear sightlines, and access for security and maintenance. The DAF is considering two project-level alternatives for Project 3. Under Alternative 1, approximately 10,930 LF of fencing would be constructed immediately south of the drone tow-way. Under Alternative 2, approximately 10,274 LF of fencing would be constructed along the Tyndall AFB boundary immediately north of US Highway 98.

- Project 4 – Munitions Storage Area (MSA) Improvements: This project includes construction of a fueling station, a parking area for explosive ordnance and munitions trailers, and an expanded access drive and parking area in areas adjacent to and immediately southwest of the MSA. These facilities would support the F-35 mission at Tyndall AFB. As applicable, each facility would consist of a reinforced concrete slab or asphalt pavement with appropriate lighting, pavement markings and signage, perimeter fencing, subsurface utilities (e.g., electrical service, stormwater management), and security features. The total area of the proposed MSA facilities would cover approximately 13.2 acres.

As part of the NEPA process, the DAF will delineate wetlands to determine potential impacts from the Proposed Action on wetland or water resources protected under the Clean Water Act. The DAF will coordinate with the U.S. Army Corps of Engineers with respect to potential impacts on wetland and water resources throughout the NEPA process.

The DAF 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, Federal Consistency Determination, and Wetland Delineation Report. The Draft EA will be provided to your office for review and comment when available.

3

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, or via telephone at (850) 283-2714.

Sincerely

CINTRON.JOSE J.1182275146 Digitally signed by CINTRON.JOSE.J.1182275146 Date: 2023.12.28 10:36:02 -06'00'

JOSÉ CINTRON, GS-13, DAF

Sent via email to: saj-rd-n@usace.army.mil

Enclosures:
1. Location of Tyndall Air Force Base
2. Location of Proposed Action Projects

4

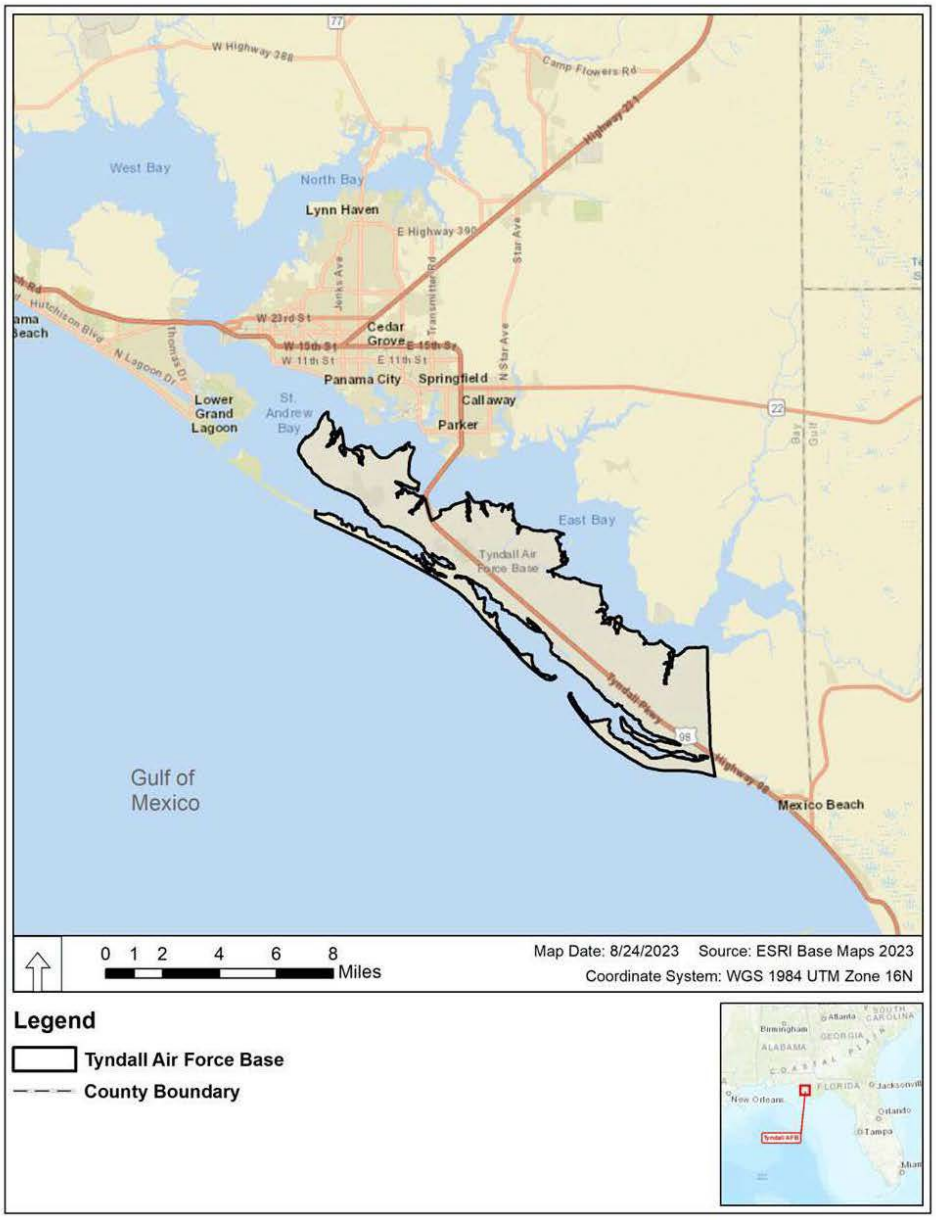

Figure 1. Location of Tyndall Air Force Base

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Figure 2. Location of Proposed Action Projects

A.5.2 U.S. Fish and Wildlife Service

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

4 March 2024

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

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

Re: Environmental Assessment for Construction of Installation Security Features and Munitions Support Facilities, Tyndall Air Force Base, Florida

Dear Sir or Madam

The Department of the Air Force (DAF) is preparing an Environmental Assessment (EA) to evaluate the potential environmental impacts from the Proposed Action to implement four near-term construction projects at Tyndall Air Force Base (AFB), Bay County, Florida. The location of Tyndall AFB is shown on **Figure 1**. The EA is being prepared in accordance with the National Environmental Policy Act (NEPA) of 1969, Council on Environmental Quality regulations implementing NEPA (40 Code of Federal Regulations [CFR] Parts 1500-1508), and the DAF Environmental Impact Analysis Process (32 CFR Part 989).

The Proposed Action would provide facilities and infrastructure to support the ongoing mission, operations, and security requirements of Tyndall AFB. Projects included in the Proposed Action would be implemented entirely within the boundaries of Tyndall AFB. These projects are shown on **Figure 2** and briefly summarized below:

- Project 1 – Airfield Fence: This project would construct approximately 17,548 linear feet (LF) of welded-wire security fencing along the northern side of the main airfield to prevent incursions by wildlife and unauthorized individuals. A cleared buffer area 20 feet wide (10 feet on each side of the proposed fence) would be maintained along the entire length of the proposed fence in accordance with applicable Department of Defense (DoD) antiterrorism/force protection (AT/FP) requirements to provide a firebreak, clear sightlines, and access for security and maintenance activities.

2

- Project 2 – Drone Runway Culvert Crossings: This project would build four new crossing points over existing drainage channels at the northern and southern ends of the existing drone runway. The proposed crossings would allow personnel, vehicles, and equipment to cross the drainage channels. Depending on location, each proposed crossing would be approximately 30 to 40 feet long and encompass an area of 600 to 800 square feet, for a total of approximately 2,600 square feet.

- Project 3 – Drone Tow-way Fence: This project would construct a welded-wire fence between the drone tow-way and US Highway 98 to prevent incursions by wildlife and unauthorized individuals. A cleared buffer area 20 feet wide (10 feet on each side of the proposed fence) would be maintained along the entire length of the proposed fence in accordance with applicable DoD AT/FP requirements to provide a firebreak, clear sightlines, and access for security and maintenance. The DAF is considering two project-level alternatives for Project 3. Under Alternative 1, approximately 10,930 LF of fencing would be constructed immediately south of the drone tow-way. Under Alternative 2, approximately 10,274 LF of fencing would be constructed along the Tyndall AFB boundary immediately north of US Highway 98.

- Project 4 – Munitions Storage Area (MSA) Improvements: This project includes construction of a fueling station, a parking area for explosive ordnance and munitions trailers, and an expanded access drive and parking area in areas adjacent to and immediately southwest of the MSA. These facilities would support the F-35 mission at Tyndall AFB. As applicable, each facility would consist of a reinforced concrete slab or asphalt pavement with appropriate lighting, pavement markings and signage, perimeter fencing, subsurface utilities (e.g., electrical service, stormwater management), and security features. The total area of the proposed MSA facilities would cover approximately 13.2 acres.

In parallel with the NEPA process and in accordance with Section 7 of the Endangered Species Act, the DAF is preparing a Biological Assessment (BA) to support formal consultation with the U.S. Fish and Wildlife Service (USFWS). The BA will identify federally listed species present or potentially present in or near the project areas at Tyndall AFB, potential effects on those species from the Proposed Action, and measures to avoid or minimize potential effects, as applicable. The BA will be submitted to USFWS for review and concurrence.

The DAF 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 Federal Consistency Determination. The Draft EA will also be provided to the USFWS for review and comment when available.

3

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, or via telephone at (850) 283-2714.

Sincerely

CINTRON.JOSE J.1182275146 Digitally signed by CINTRON.JOSE.J.1182275146 Date: 2023.12.28 10:44:42 -06'00'

JOSÉ CINTRON, GS-13, DAF

Sent via email to: catrina_martin@fws.gov.

Enclosures:
1. Location of Tyndall Air Force Base
2. Location of Proposed Action Projects

4

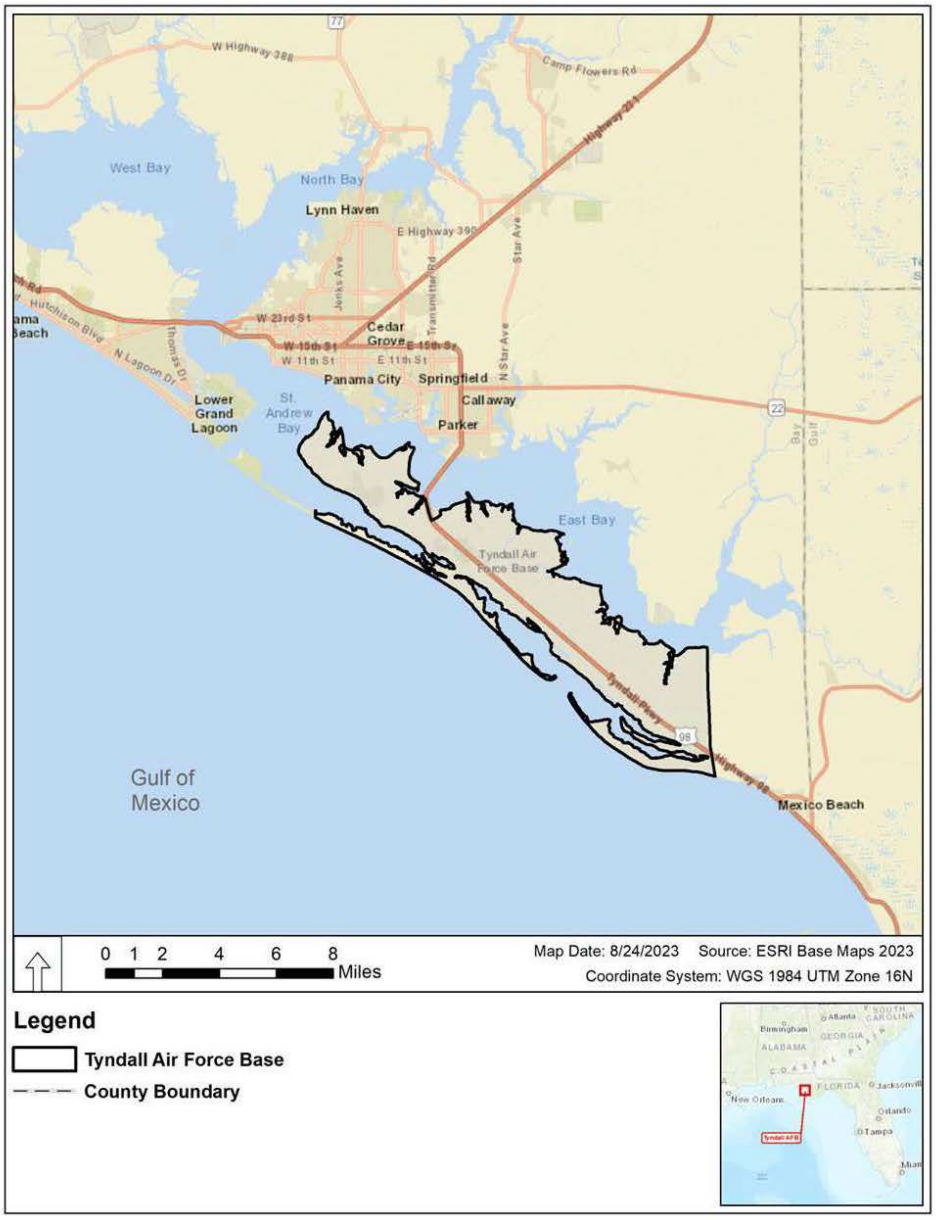

Figure 1. Location of Tyndall Air Force Base

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Figure 2. Location of Proposed Action Projects

A.5.3 State Historic Preservation Officer

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

4 March 2024

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

Ms. Alissa Slade Lotane, Director
Florida Division of Historical Resources
R.A. Gray Building, Room 305
500 South Bronough St
Tallahassee FL 32399-0250

Re: Environmental Assessment for Near-term Construction Projects, Tyndall Air Force Base, Florida

Dear Ms. Lotane

The Department of the Air Force (DAF) is preparing an Environmental Assessment (EA) to evaluate the potential impacts from the Proposed Action to implement four near-term construction projects at Tyndall Air Force Base (AFB), Bay County, Florida. The regional location of Tyndall AFB is shown on **Figure 1**. The EA is being prepared in accordance with the National Environmental Policy Act (NEPA) of 1969, Council on Environmental Quality regulations implementing NEPA (40 Code of Regulations [CFR] Parts 1500-1508), and the DAF Environmental Impact Analysis Process (32 CFR Part 989).

The Proposed Action would provide facilities and infrastructure to support the ongoing mission, operations, and security requirements of Tyndall AFB. Projects included in the Proposed Action would occur entirely within the existing boundaries of Tyndall AFB and would not involve the alteration or demolition of historic properties, including archaeological sites, that are listed or eligible for listing in the National Register of Historic Places. The DAF is initiating consultation with Native American tribes regarding the Proposed Action in accordance with Section 106 of the National Historic Preservation Act, implementing regulations at 36 CFR Part 800, and Department of Defense (DoD) Instruction 4710.02, *DoD Interactions with Federally Recognized Tribes*.

The Proposed Action is considered an undertaking under Section 106. Therefore, the purpose of this letter is to initiate Section 106 consultation with your office regarding the proposed undertaking. The DAF also requests concurrence with the Area of Potential Effects (APE) for the proposed undertaking, which is further described below. Projects comprising the proposed undertaking are shown on **Figure 2** through **Figure 6** and are described below.

2

- Project 1 – Airfield Fence: This project would construct approximately 17,548 linear feet (LF) of welded-wire security fencing along the northern side of the main airfield to prevent incursions by wildlife and unauthorized individuals (**Figure 3**). A cleared buffer area 20 feet wide (10 feet on each side of the proposed fence) would be maintained along the entire length of the proposed fence in accordance with applicable DoD antiterrorism/force protection (AT/FP) requirements to provide a firebreak, clear sightlines, and access for security and maintenance activities. The 20-foot by 17,548-foot buffer area associated with the proposed fence represents the APE for this project.

- Project 2 – Drone Runway Culvert Crossings: This project would build four new crossing points over existing drainage channels at the northern and southern ends of the existing drone runway (**Figure 4**). The proposed crossings would allow personnel, vehicles, and equipment to cross the drainage channels. Each crossing point would be approximately 20 feet wide and would consist of compressed gravel topped with geotextile fabric and paved asphalt over 24- or 36-inch concrete pipe that would maintain water flow through the existing drainage channels. The concrete piping would be placed directly on the bottom of the drainage channel at each of the proposed crossing locations to minimize disturbance to soil and vegetation. Depending on location, each proposed crossing would be approximately 30 to 40 feet long and encompass an area of 600 to 800 square feet, for a total of approximately 2,600 square feet. The APE for this project consists of the areas within the 50-foot buffer associated with each proposed crossing (**Figure 4**).

- Project 3 – Drone Tow-way Fence: This project would construct a welded-wire fence between the drone tow-way and US Highway 98 to prevent incursions by wildlife and unauthorized individuals. A cleared buffer area 20 feet wide (10 feet on each side of the proposed fence) would be maintained along the entire length of the proposed fence in accordance with applicable DoD AT/FP requirements to provide a firebreak, clear sightlines, and access for security and maintenance. The DAF is considering two project-level alternatives for Project 3 (**Figure 5**). Under Alternative 1, approximately 10,930 LF of fencing would be constructed immediately south of the drone tow-way. Under Alternative 2, approximately 10,274 LF of fencing would be constructed along the Tyndall AFB boundary immediately north of US Highway 98. The 20-foot by 10,930-foot buffer area for Alternative 1 and 20-foot by 10,274-foot buffer area for Alternative 2 represent the APE for this project.

- Project 4 – Munitions Storage Area (MSA) Improvements: This project includes construction of a fueling station, a parking area for explosive ordnance and munitions trailers, and an expanded access drive and parking area in areas adjacent to and immediately southwest of the MSA (**Figure 6**). These facilities would support the F-35 mission at Tyndall AFB. As applicable, each facility would consist of a reinforced concrete slab or asphalt pavement with appropriate lighting, pavement markings and signage, perimeter fencing, subsurface utilities (e.g., electrical service, stormwater management), and security features. The total area of the proposed MSA facilities would cover approximately 13.2 acres. The APE for this project consists of the footprints of the proposed MSA facilities (**Figure 6**).

The DAF respectfully requests your concurrence with the APE as well as your written comments and other input on the proposed undertaking. Your response is requested within 30 days of receipt of this letter so it can be considered during preparation of the Draft EA and Federal Consistency Determination. The Draft EA will be provided to your office for review and

3

comment, when available. 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, or via telephone at (850) 283-2714.

Sincerely

CINTRON.JOSE.J.1182275146 Digitally signed by CINTRON.JOSE.J.1182275146 Date: 2024.01.23 07:40:01 -06'00'

JOSÉ CINTRON, GS-13, DAF

Sent via email to: alissa.lotane@dos.myflorida.com; Compliancepermits@dos.myflorida.com

Enclosures:
Figure 1. Location of Tyndall Air Force Base
Figure 2. Locations of Proposed Action Projects
Figure 3. Project 1 – Airfield Fence Area of Potential Effects
Figure 4. Project 2 – Drone Runway Culvert Crossings Area of Potential Effects
Figure 5. Project 3 – Drone Tow-way Fence Area of Potential Effects
Figure 6. Project 4 – Munitions Storage Area Improvements Area of Potential Effects

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Figure 1. Location of Tyndall Air Force Base

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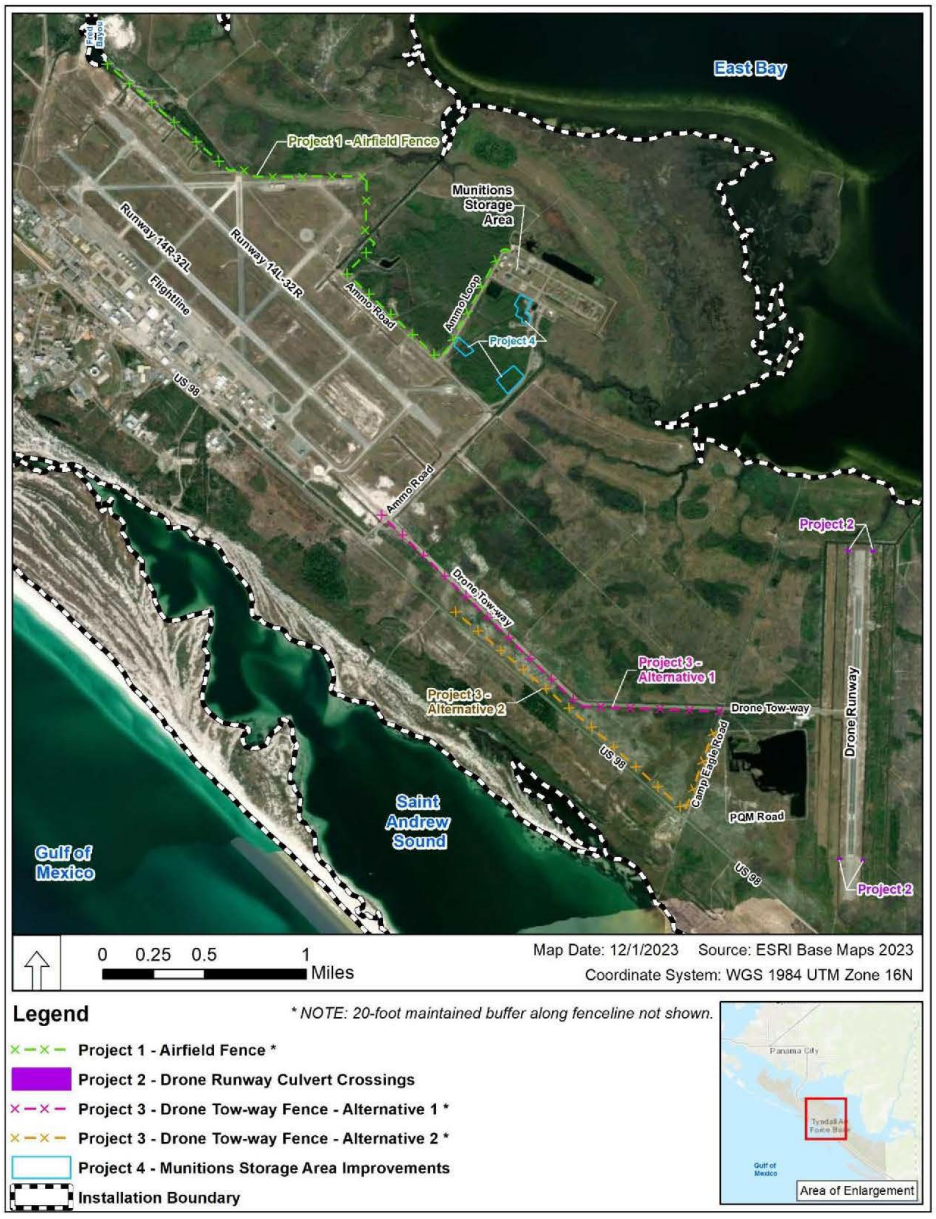

Figure 2. Locations of Proposed Action Projects

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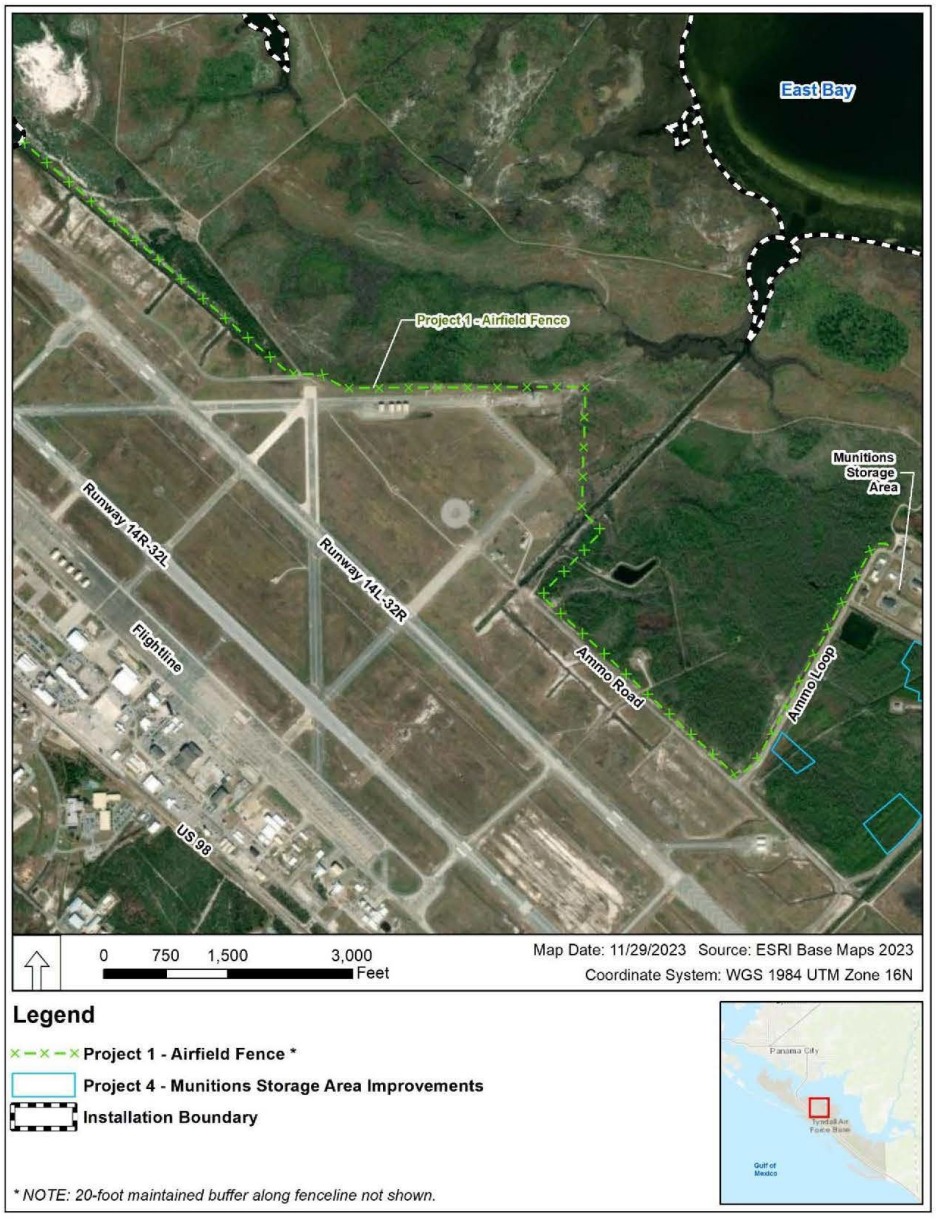

Figure 3. Project 1 – Airfield Fence Area of Potential Effects

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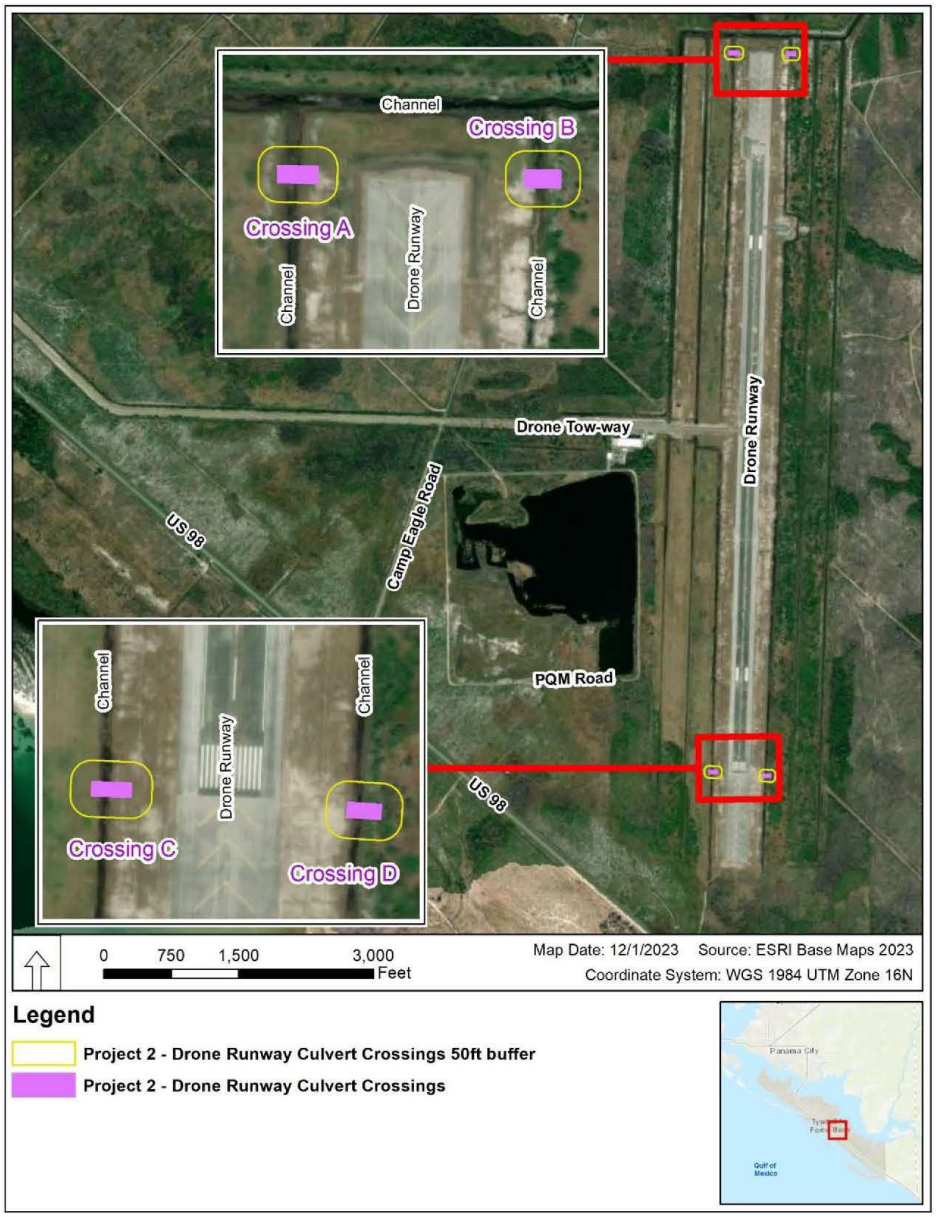

Figure 4. Project 2 – Drone Runway Culvert Crossings Area of Potential Effects

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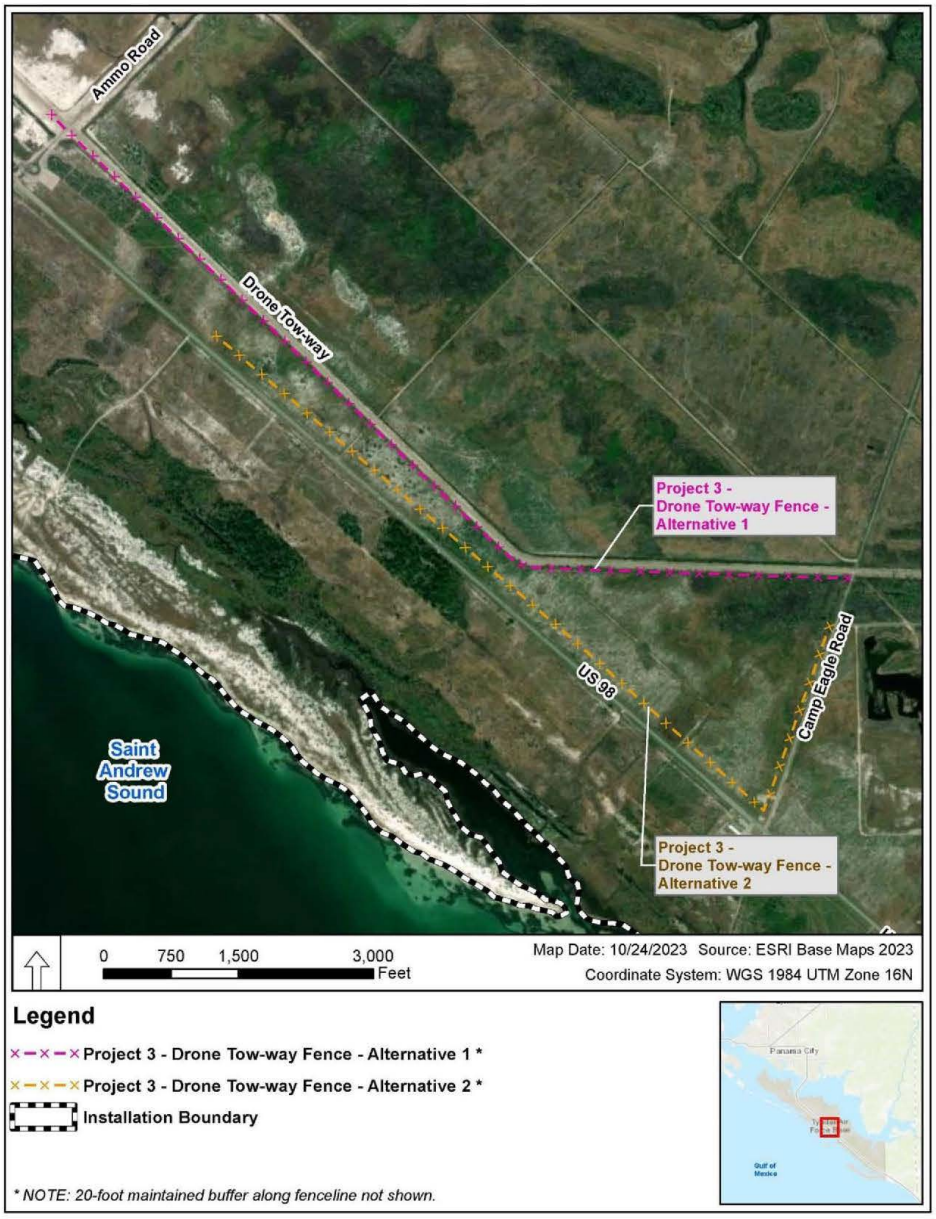

Figure 5. Project 3 – Drone Tow-way Fence Area of Potential Effects

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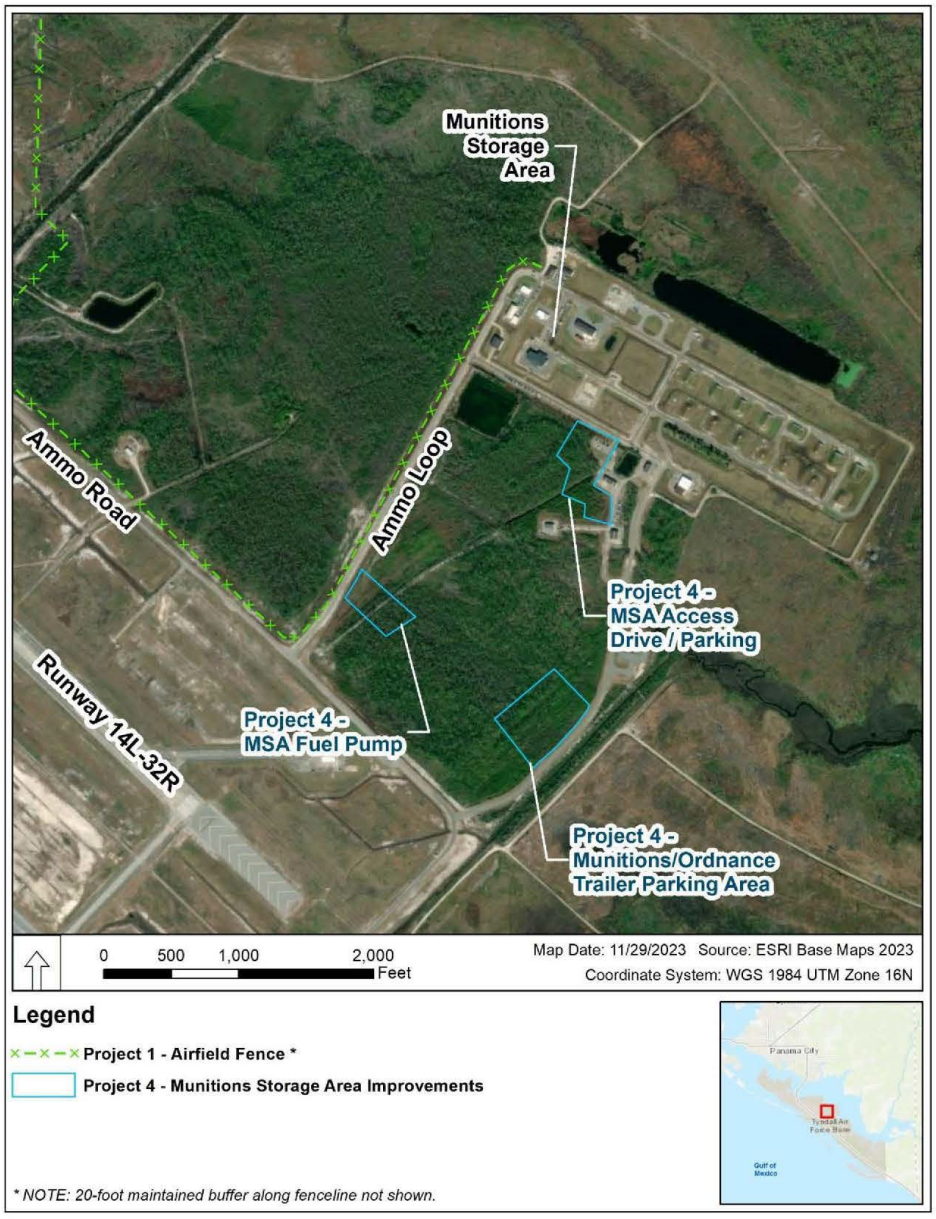

Figure 6. Project 4 – Munitions Storage Area Improvements Area of Potential Effects

A.5.4 Florida Fish and Wildlife Conservation Commission

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

4 March 2024

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

Florida Fish and Wildlife Conservation Commission
Northwest Region
3911 Hwy. 2321
Panama City FL 32409-1658

Re: Environmental Assessment for Construction of Installation Security Features and Munitions Support Facilities, Tyndall Air Force Base, Florida

Dear Sir or Madam

The Department of the Air Force (DAF) is preparing an Environmental Assessment (EA) to evaluate the potential environmental impacts from the Proposed Action to implement four near-term construction projects at Tyndall Air Force Base (AFB), Bay County, Florida. The location of Tyndall AFB is shown on Figure 1. The EA is being prepared in accordance with the National Environmental Policy Act (NEPA) of 1969, Council on Environmental Quality regulations implementing NEPA (40 Code of Federal Regulations [CFR] Parts 1500-1508), and the DAF Environmental Impact Analysis Process (32 CFR Part 989).

The Proposed Action would provide facilities and infrastructure to support the ongoing mission, operations, and security requirements of Tyndall AFB. Projects included in the Proposed Action would be implemented entirely within the boundaries of Tyndall AFB. These projects are shown on Figure 2 and briefly summarized below:

- Project 1 – Airfield Fence: This project would construct approximately 17,548 linear feet (LF) of welded-wire security fencing along the northern side of the main airfield to prevent incursions by wildlife and unauthorized individuals. A cleared buffer area 20 feet wide (10 feet on each side of the proposed fence) would be maintained along the entire length of the proposed fence in accordance with applicable Department of Defense (DoD) antiterrorism/force protection (AT/FP) requirements to provide a firebreak, clear sightlines, and access for security and maintenance activities.

2

- Project 2 – Drone Runway Culvert Crossings: This project would build four new crossing points over existing drainage channels at the northern and southern ends of the existing drone runway. The proposed crossings would allow personnel, vehicles, and equipment to cross the drainage channels. Depending on location, each proposed crossing would be approximately 30 to 40 feet long and encompass an area of 600 to 800 square feet, for a total of approximately 2,600 square feet.

- Project 3 – Drone Tow-way Fence: This project would construct a welded-wire fence between the drone tow-way and US Highway 98 to prevent incursions by wildlife and unauthorized individuals. A cleared buffer area 20 feet wide (10 feet on each side of the proposed fence) would be maintained along the entire length of the proposed fence in accordance with applicable DoD AT/FP requirements to provide a firebreak, clear sightlines, and access for security and maintenance. The DAF is considering two project-level alternatives for Project 3. Under Alternative 1, approximately 10,930 LF of fencing would be constructed immediately south of the drone tow-way. Under Alternative 2, approximately 10,274 LF of fencing would be constructed along the Tyndall AFB boundary immediately north of US Highway 98.

- Project 4 – Munitions Storage Area (MSA) Improvements: This project includes construction of a fueling station, a parking area for explosive ordnance and munitions trailers, and an expanded access drive and parking area in areas adjacent to and immediately southwest of the MSA. These facilities would support the F-35 mission at Tyndall AFB. As applicable, each facility would consist of a reinforced concrete slab or asphalt pavement with appropriate lighting, pavement markings and signage, perimeter fencing, subsurface utilities (e.g., electrical service, stormwater management), and security features. The total area of the proposed MSA facilities would cover approximately 13.2 acres.

The DAF will determine potential effects from the Proposed Action on fish and wildlife resources regulated by the Florida Fish and Wildlife Conservation Commission (FWC) during the NEPA process.

The DAF 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 Federal Consistency Determination. The Draft EA will be provided to the FWC for review and comment when available.

3

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, or via telephone at (850) 283-2714.

Sincerely

CINTRON.JOSE J.1182275146 Digitally signed by CINTRON.JOSE.J.1182275146 Date: 2023.12.28 10:09:42 -06'00'

JOSÉ CINTRON, GS-13, DAF

Sent via email to: conservationplanningservices@MyFWC.com; jon.creamer@myfwc.com

Enclosures:
1. Location of Tyndall Air Force Base
2. Location of Proposed Action Projects

4

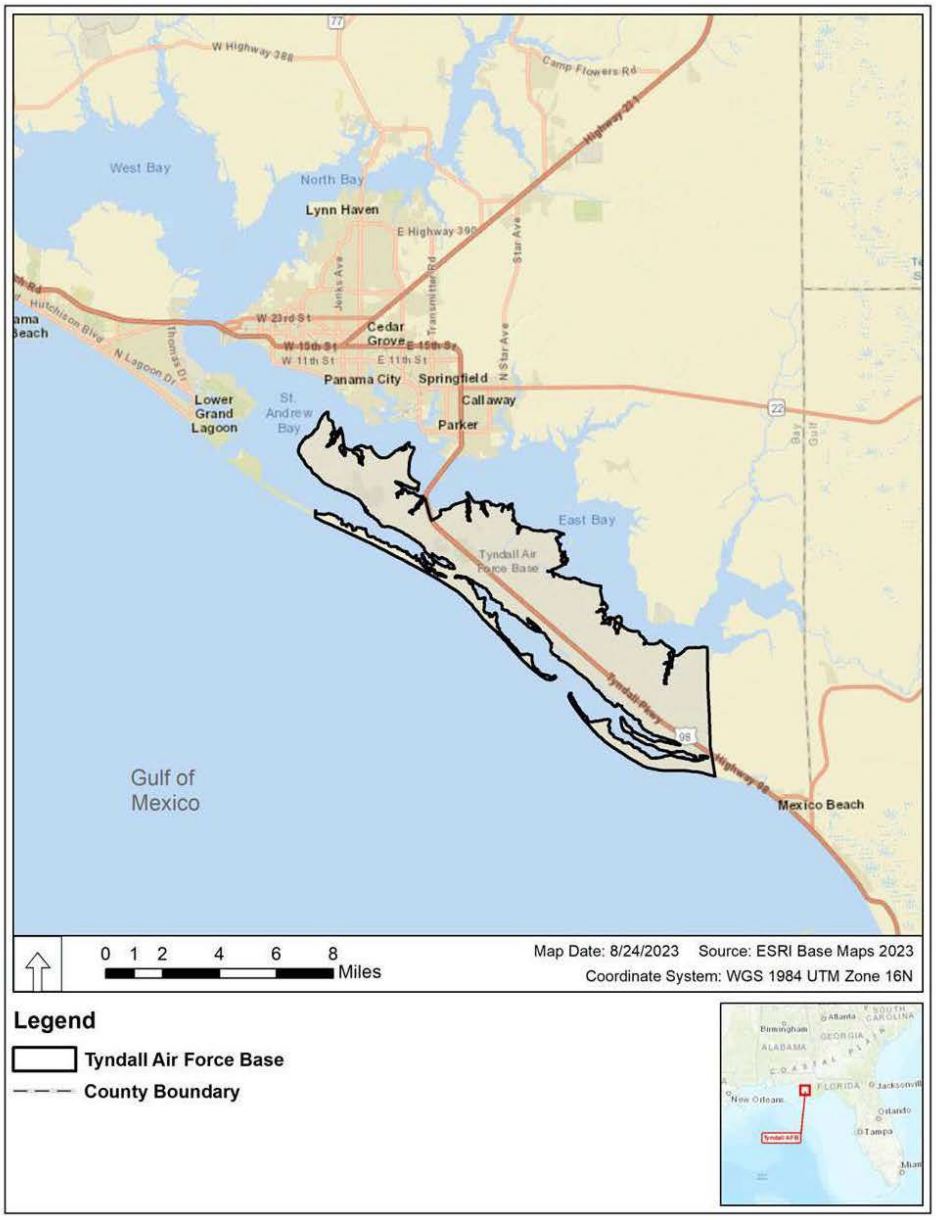

Figure 1. Location of Tyndall Air Force Base

5

Figure 2. Location of Proposed Action Projects

A.5.5 Florida Clearinghouse – Florida Department of Environmental Protection

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

4 March 2024

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 Construction of Installation Security Features and Munitions Support Facilities, Tyndall Air Force Base, Florida

Dear Mr. Stahl

The Department of the Air Force (DAF) is preparing an Environmental Assessment (EA) to evaluate the potential environmental impacts from the Proposed Action to implement four near-term construction projects at Tyndall Air Force Base (AFB), Bay County, Florida. The location of Tyndall AFB is shown on Figure 1. The EA is being prepared in accordance with the National Environmental Policy Act (NEPA) of 1969, Council on Environmental Quality regulations implementing NEPA (40 Code of Federal Regulations [CFR] Parts 1500-1508), and the DAF Environmental Impact Analysis Process (32 CFR Part 989).

The Proposed Action would provide facilities and infrastructure to support the ongoing mission, operations, and security requirements of Tyndall AFB. Projects included in the Proposed Action would be implemented entirely within the boundaries of Tyndall AFB. These projects are shown on Figure 2 and briefly summarized below:

- Project 1 – Airfield Fence: This project would construct approximately 17,548 linear feet (LF) of welded-wire security fencing along the northern side of the main airfield to prevent incursions by wildlife and unauthorized individuals. A cleared buffer area 20 feet wide (10 feet on each side of the proposed fence) would be maintained along the entire length of the proposed fence in accordance with applicable Department of Defense (DoD) antiterrorism/force protection (AT/FP) requirements to provide a firebreak, clear sightlines, and access for security and maintenance activities.

2

- Project 2 – Drone Runway Culvert Crossings: This project would build four new crossing points over existing drainage channels at the northern and southern ends of the existing drone runway. The proposed crossings would allow personnel, vehicles, and equipment to cross the drainage channels. Depending on location, each proposed crossing would be approximately 30 to 40 feet long and encompass an area of 600 to 800 square feet, for a total of approximately 2,600 square feet.

- Project 3 – Drone Tow-way Fence: This project would construct a welded-wire fence between the drone tow-way and US Highway 98 to prevent incursions by wildlife and unauthorized individuals. A cleared buffer area 20 feet wide (10 feet on each side of the proposed fence) would be maintained along the entire length of the proposed fence in accordance with applicable DoD AT/FP requirements to provide a firebreak, clear sightlines, and access for security and maintenance. The DAF is considering two project-level alternatives for Project 3. Under Alternative 1, approximately 10,930 LF of fencing would be constructed immediately south of the drone tow-way. Under Alternative 2, approximately 10,274 LF of fencing would be constructed along the Tyndall AFB boundary immediately north of US Highway 98.

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The DAF will determine the consistency of the Proposed Action with Florida's federally approved coastal zone management program during the NEPA process.

The DAF 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 Federal Consistency Determination. The Draft EA and Federal Consistency Determination will be provided to the State Clearinghouse for review and comment when available.

3

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, or via telephone at (850) 283-2714.

Sincerely

CINTRON.JOSE J.1182275146 Digitally signed by CINTRON.JOSE.J.1182275146 Date: 2023.12.28 10:12:45 -06'00'

JOSÉ CINTRON, GS-13, DAF

Sent via email to: state.clearinghouse@dep.state.fl.us; Chris.Stahl@dep.state.fl.us.
Enclosures:
1. Location of Tyndall Air Force Base
2. Location of Proposed Action Projects

4

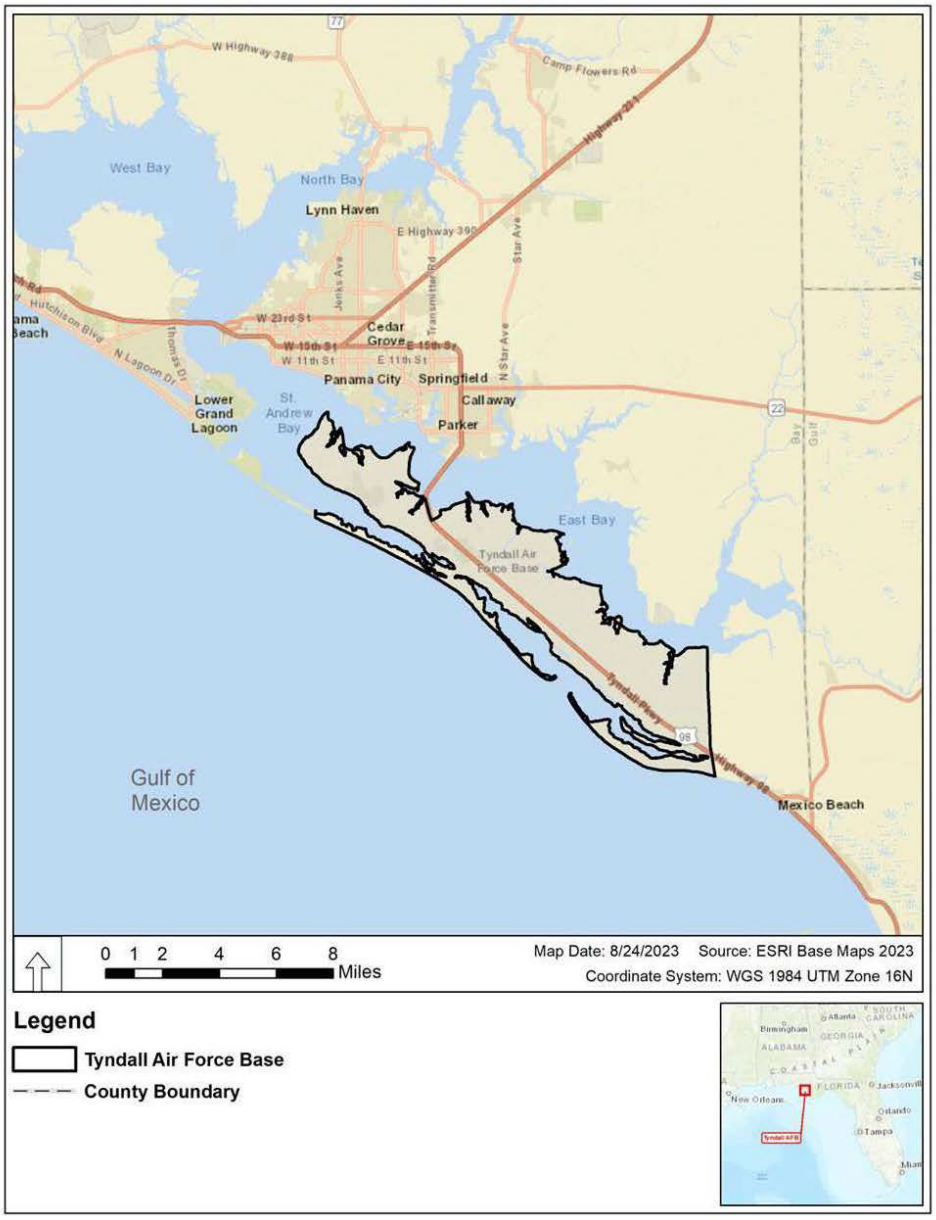

Figure 1. Location of Tyndall Air Force Base

5

Figure 2. Location of Proposed Action Projects

A.5.6 Government-to-Government Representative Letter

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

March 4, 2024

Colonel George R. Watkins
Commander
325th Fighter Wing
501 Airey Avenue, Suite 1
Tyndall AFB FL 32403-5549

Billy Cypress, Chairman
Miccosukee Tribe of Indians of Florida
Tamiami Station
PO Box 440021
Miami FL 33144

Dear Chairman Cypress

The Department of the Air Force (DAF) is preparing an Environmental Assessment (EA) to evaluate the potential environmental impacts from the Proposed Action to implement four near-term construction projects at Tyndall Air Force Base (AFB), Bay County, Florida. The regional location of Tyndall AFB is shown on **Figure 1**. The EA is being prepared in accordance with the National Environmental Policy Act (NEPA) of 1969, Council on Environmental Quality regulations implementing NEPA (40 Code of Federal Regulations [CFR] Parts 1500-1508), and the DAF Environmental Impact Analysis Process (32 CFR Part 989).

The Proposed Action would provide facilities and infrastructure to support the ongoing mission, operations, and security requirements of Tyndall AFB. Projects included in the Proposed Action would be implemented entirely within the boundaries of Tyndall AFB. These projects are shown on **Figure 2** and briefly summarized below:

- Project 1 – Airfield Fence: This project would construct approximately 17,548 linear feet (LF) of welded-wire security fencing along the northern side of the main airfield to prevent incursions by wildlife and unauthorized individuals. A cleared buffer area 20 feet wide (10 feet on each side of the proposed fence) would be maintained along the entire length of the proposed fence in accordance with applicable Department of Defense (DoD) antiterrorism/force protection (AT/FP) requirements to provide a firebreak, clear sightlines, and access for security and maintenance activities.

- Project 2 – Drone Runway Culvert Crossings: This project would build four new crossing points over existing drainage channels at the northern and southern ends of the existing drone runway. The proposed crossings would allow personnel, vehicles, and equipment to cross the drainage channels. Depending on location, each proposed crossing would be approximately 30 to 40 feet long and encompass an area of 600 to 800 square feet, for a total of approximately 2,600 square feet.

- Project 3 – Drone Tow-way Fence: This project would construct a welded-wire fence between the drone tow-way and US Highway 98 to prevent incursions by wildlife and unauthorized individuals. A cleared buffer area 20 feet wide (10 feet on each side of the proposed fence)

would be maintained along the entire length of the proposed fence in accordance with applicable DoD AT/FP requirements to provide a firebreak, clear sightlines, and access for security and maintenance. The DAF is considering two project-level alternatives for Project 3. Under Alternative 1, approximately 10,930 LF of fencing would be constructed immediately south of the drone tow-way. Under Alternative 2, approximately 10,274 LF of fencing would be constructed along the Tyndall AFB boundary immediately north of US Highway 98.

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The Proposed Action is considered an undertaking under Section 106 of the National Historic Preservation Act. During the NEPA process, the DAF will determine whether the proposed undertaking would have adverse impacts on archaeological resources, architectural resources, traditional cultural properties, or other cultural resources. The DAF is not aware of any historic properties of religious or tribal significance located within the project areas on Tyndall AFB. In accordance with Section 106, implementing regulations at 36 CFR Part 800, and DoD Instruction 4710.02, *DoD Interactions with Federally Recognized Tribes*, the DAF is inviting you to participate in government-to-government consultation regarding the proposed undertaking. The DAF is also consulting with the Florida State Historic Preservation Officer with respect to the proposed undertaking.

Please let us know if you are aware of any properties of cultural, historical, or religious significance that could potentially be affected by the proposed undertaking. Additionally, as a stakeholder in the NEPA process, the DAF requests your input in identifying any issues or areas of concern you feel should be addressed in the EA.

The DAF respectfully requests your written comments and other input on the proposed undertaking within 30 days of receipt of this letter so they can be considered during preparation of the Draft EA and Section 106 consultation materials. Responses provided after 30 days will also be considered. 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, or via telephone at (850) 283-2714.

Sincerely

KABEL.DOUGLAS.A.1157392847 Digitally signed by KABEL.DOUGLAS.A.1157392847 Date: 2024.01.22 19:44:41 -06'00'

DOUGLAS A. KABEL, Colonel, USAF
Deputy Commander

2 Attachments:
1. Figure 1 - Location of Tyndall Air Force Base
2. Figure 2 - Locations of Proposed Action Projects

Sent via email to: kevind@miccosukeetribe.com; hopel@miccosukeetribe.com

Figure 1. Location of Tyndall Air Force Base

Figure 2. Locations of Proposed Action Projects

A.6 COMMENTS RECEIVED

From: Taylor, Brian S <[redacted]>
Sent: Thursday, March 7, 2024 8:27 AM
To: Scott, Brandy <[redacted]>
Cc: FPS.Submittals <FPS.Submittals@floridadep.gov>; French, Jason T <[redacted]>; Evans, Kathryn C. <[redacted]>; Webster, Alex <[redacted]>; Stahl, Chris [redacted]v>; CINTRON, JOSE J CIV USAF ACC 325 CES/CEIE [redacted]
Subject: [Non-DoD Source] Review Request for FL202403060036C- Environmental Assessment for Construction of Installation Security Features and Munitions Support Facilities, Tyndall Air Force Base, Florida

Hi Brandy,

I have reviewed the Air Force's notification letter, dated March 4, 2024, for the preparation of an Environmental Assessment for Construction of Installation Security Features and Munitions Support Facilities at Tyndall Air Force Base, Florida. Upon review, there are no contaminated sites under the purview of the Federal Programs Section that are expected to be impacted by these projects.

Please let me know if you need any additional information.

Thank you.
Brian

Brian Taylor
Florida Department of Environmental Protection
Division of Waste Management
Remedial Project Manager
[redacted]

From: State_Clearinghouse
To: [redacted]
Subject: FW: SAI# FL202403060036C
Date: Thursday, March 7, 2024 2:51:15 PM

Please see correction below…

Kae Craig
Office of Intergovernmental Programs
Florida Dept. Environmental Protection
ph: [redacted]
state.clearinghouse@FloridaDEP.gov

From: State_Clearinghouse
Sent: Thursday, March 7, 2024 3:45 PM
To: [redacted]
Subject: SAI# FL202403060036C

To: Edwin Wallace,

Re: Florida State Clearinghouse Project Review

Project SAI#: ~~FL202403030036C~~ FL202403060036C
-
Date Received: 03/04/24
Project Description: DEPARTMENT OF DEFENSE, U.S. AIR FORCE, ENVIRONMENTAL ASSESSMENT FOR CONSTRUCTION OF INSTALLATION SECURITY FEATURES AND MUNITIONS SUPPORT FACILITIES, TYNDALL AIR FORCE BASE, FLORIDA.

The Florida State Clearinghouse has received the above-referenced project and has forwarded it to the appropriate state agencies for review. Please refer to the State Application Identifier (SAI) number in all correspondence with the Florida State Clearinghouse regarding this project. Applicants should expect to receive their State Clearance Letter 30-60 days from the received date. Additional information can be found at http://dep.state.fl.us/secretary/oip/state_clearinghouse/manual2.htm.

Please submit all future project applications and correspondence by email to state.clearinghouse@FloridaDEP.gov. If your submittal is too large to send via email or if you need other assistance, contact Chris Stahl at [redacted].

From: MOSS, JENNIFER E CTR USAF ACC 325 CES/CEIEA <[redacted]>
Sent: Tuesday, February 27, 2024 11:06 AM
To: THPO Compliance <[redacted]>; Tina Osceola [redacted]>; Danielle Simon [redacted]>; info.thpo [redacted]>
Cc: CINTRON, JOSE J CIV USAF ACC 325 CES/CEIE <[redacted]>; HARRACH HARCOURT, ILARIA CIV USAF AFCEC AFCEC/CZOE [redacted] WALLACE, EDWIN B CIV USAF ACC 325 CES/CEIEC [redacted]>
Subject: Munitions and Security EA Scoping Letter, Tyndall Air Force Base (AFB), Bay County, Florida

Dear Ms. Osceola,

On behalf of Tyndall AFB, please accept for review the attached consultation for the proposed undertaking. Any questions may be directed to Mrs. Ilaria Harrach Harcourt at [redacted], [redacted] or Mr. Jose Cintron at [redacted]

Regards,

Jennifer E. Moss-CTR Archaeologist
Jacobs Engineering Group Inc.

From: Victoria Menchaca <[redacted]
Sent: Thursday, March 21, 2024 2:09 PM
To: WALLACE, EDWIN B CIV USAF ACC 325 CES/CEIEC <[redacted]; MOSS, JENNIFER E CTR USAF ACC 325 CES/CEIEA [redacted]>
Cc: THPO Compliance <[redacted]>; CINTRON, JOSE J CIV USAF ACC 325 CES/CEIE [redacted]>
Subject: [Non-DoD Source] Re: Munitions and Security EA Scoping Letter, Tyndall Air Force Base (AFB), Bay County, Florida

SEMINOLE TRIBE OF FLORIDA
TRIBAL HISTORIC PRESERVATION OFFICE

TRIBAL HISTORIC
PRESERVATION OFFICE

SEMINOLE TRIBE OF FLORIDA

30290 JOSIE BILLIE HIGHWAY
PMB 1004
CLEWISTON, FL 33440

THPO PHONE: (863) 983-6549
FAX: (863) 902-1117

THPO WEBSITE: WWW.STOFTHPO.COM

TRIBAL OFFICERS

MARCELLUS W. OSCEOLA JR.
CHAIRMAN

MITCHELL CYPRESS
VICE CHAIRMAN

LAVONNE ROSE
SECRETARY

PETER A. HAHN
TREASURER

March 21, 2024

Edwin Wallace
Cultural Resources Program
Tyndall Air Force Base
Email: [redacted]
Phone: [redacted]

Subject: Tyndall AFB - Munitions and Security EA Scoping Letter, Bay County, Florida
THPO Compliance Tracking Number: 0034315

Dear Edwin Wallace,

Thank you for contacting the Seminole Tribe of Florida – Tribal Historic Preservation Office (STOF-THPO) Compliance Section regarding the *Tyndall AFB - Munitions and Security EA Scoping Letter, Bay County, Florida.*

The proposed undertaking does fall within the STOF Area of Interest. We have reviewed the information that you provided pursuant to Section 106 of the National Historic Preservation Act and its implementing authority, 36 CFR Part 800. For us to complete our review we would like to request the following additional information:

- Have the proposed project areas been subject to a Cultural Resources Assessment Survey that meets the current requirements of the Florida Division of Historic Resources'(FDHR) Module 3 Guidelines for Use by Historic Preservation Professionals?

We look forward to the delivery of the additional information requested. Please continue to consult with our office and feel free to contact us with any questions or concerns.

Sincerely,
Victoria L. Menchaca, MA, Compliance Analyst II
STOF-THPO, Compliance Review Section
[redacted]
Email: [redacted]

From: MOSS, JENNIFER E CTR USAF ACC 325 CES/CEIEA [redacted]
Sent: Thursday, March 21, 2024 2:59 PM
To: Victoria Menchaca <[redacted]>; WALLACE, EDWIN B CIV USAF ACC 325 CES/CEIEC <[redacted]>
Cc: THPO Compliance [redacted]>; CINTRON, JOSE J CIV USAF ACC 325 CES/CEIE <[redacted]>
Subject: RE: Munitions and Security EA Scoping Letter, Tyndall Air Force Base (AFB), Bay County, Florida

Good afternoon Victoria,

On behalf of Tyndall AFB, areas within the EA mentioned above have been previously surveyed according to the standards provided by the Florida Division of Historic Resources'(FDHR) Module 3 Guidelines. Please find attached a map of these surveyed areas. Most of these survey reports have been filed with the Florida SHPO and depending on the year may still be in review by them. One area was just surveyed last year and is still being prepared for a final deliverable. Please note, the surveyed areas will be discussed in the EA when the draft copy is produced, and a copy of that draft report will be provided to your office for review once that is ready.

If you have any additional questions or concerns or need more information, please let me know or reach out to Mr. Edwin Wallace at [redacted]

Regards,

Jennifer E. Moss
Archaeologist CTR - Jacobs
325th CES/CEIE | [redacted]
DSN: [redacted] | Ph: [redacted] | C: [redacted]

From: Victoria Menchaca <[redacted]>
Sent: Thursday, March 28, 2024 10:26 AM
To: MOSS, JENNIFER E CTR USAF ACC 325 CES/CEIEA <[redacted]>
Subject: [Non-DoD Source] Re: Munitions and Security EA Scoping Letter, Tyndall Air Force Base (AFB), Bay County, Florida

Hi Jennifer,

Thank you for the information. We will just wait until the draft EA comes out to review that.

Sincerely,
Victoria L. Menchaca, MA, Compliance Analyst II
STOF THPO, Compliance Section
[redacted]
Phone: [redacted]
Email: [redacted]

From: Stahl, Chris <[redacted]>
Sent: Wednesday, May 1, 2024 1:35 PM
To: WALLACE, EDWIN B CIV USAF ACC 325 CES/CEIEC <[redacted]>
Cc: State_Clearinghouse <[redacted]>
Subject: [Non-DoD Source] State Clearance Letter for FL202403060036C- Environmental Assessment For Construction Of Installation Security Features And Munitions Support Facilities, Tyndall Air Force Base, Florida

May 1, 2024

Edwin Wallace
USAF -Tyndall
325th Fighter Wing
[redacted]

RE: Department of Defense, Department of the Air Force, U.S. Air Force, Environmental Assessment For Construction Of Installation Security Features And Munitions Support Facilities, Tyndall Air Force Base, Florida
SAI # FL202403060036C

Dear Edwin:

Florida State Clearinghouse staff has reviewed the proposal under the following authorities: Presidential Executive Order 12372; § 403.061(42), Florida Statutes; the Coastal Zone Management Act, 16 U.S.C. §§ 1451-1464, as amended; and the National Environmental Policy Act, 42 U.S.C. §§ 4321-4347, as amended.

According to the supplied documents, an Environmental Resource Permit may be required if construction will take place in wetlands. In addition, a stormwater Individual ERP permit may be required, per 62-330.020, F.A.C., if the proposed project includes the addition of more than 4,000 sq. ft. of impervious surface subject to vehicular activity or 9,000 sq. ft. total. For any future guidance for this project, please contact the Department of Environmental Protection. The discussion for Project 4 notes the construction of a fueling station. The construction and operation of the fueling station will need to follow the requirements of Ch. 62-761/Ch. 62-762, Florida Administrative Code depending on whether the facility will have underground or aboveground storage tanks.

Based on the information submitted and minimal project impacts, the state has no objections to the subject project and, therefore, it is consistent with the Florida Coastal Management Program (FCMP). Thank you for the opportunity to review the proposed plan. If you have any questions or need further assistance, please don't hesitate to contact me at [redacted].

Sincerely,

Chris Stahl

Chris Stahl, Coordinator
Florida State Clearinghouse
Florida Department of Environmental Protection
[redacted]

APPENDIX B
REASONABLY FORESEEABLE FUTURE ACTIONS

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APPENDIX B – REASONABLY FORESEEABLE FUTURE ACTIONS

Potential effects from the reasonably foreseeable future actions listed in **Table B-1** were considered in determining the potential for effects from the Proposed Action to contribute to significant adverse cumulative effects on environmental resources on and around Tyndall Air Force Base. In all cases, it is assumed that the projects listed in **Table B-1** would adhere to applicable regulatory permitting requirements, best management practices, and other avoidance or minimization measures to ensure that potential impacts from those projects are not significant. Therefore, when considered with potential environmental effects from the Proposed Action evaluated in the Environmental Assessment, cumulative effects from projects listed in **Table B-1** would not be significant.

Table B-1 Reasonably Foreseeable Future Actions

Scheduled Project	Project Summary	Implementation Date	Relevance to Proposed Action
Military Construction Area 7000 – Air Support Section	Projects include equipment maintenance; three above ground magazines; and administrative holding areas for munitions.	Current	Project is in the 7000 Area.
Military Construction F-35	Constructing new buildings and modifying existing buildings to support establishment of three F-35A squadrons at Tyndall AFB.	Current	Project is in the 7000 Area.
Facility Sustainment, Restoration and Maintenance B7052 Expansion	(not available)	Current	Project is in or near the 7000 Area.
Facility Sustainment, Restoration and Maintenance Ammo Phase 3	Project includes building a wall in B7042 and finishing renovation of B7028	Current	Project is in or near the 7000 Area.
Ammunitions District Plan	Seventeen different construction projects will provide a complete 325th Munitions Squadron campus, including increased parking for private and government-owned vehicles, flood protection, parking structures, sustainable elements, buildings, and weapons storage	Current, near term	Projects are or will be in or near the 7000 Area.
Construct Hot Pit Refueling Apron Tyndall AFB Flight Line	(not available)	Future, unknown	Project would occur within proximity of the Proposed Action.
Construct Information Transfer Nodes, 6000 and 7000 Areas Tyndall AFB Flight Line	(not available)	Future, unknown	Project would occur within proximity of the Proposed Action.

Table B-1 Reasonably Foreseeable Future Actions

Scheduled Project	Project Summary	Implementation Date	Relevance to Proposed Action
Tyndall AFB/Multiple Locations	Establish new base missions for beddown of F-35A wing (72 aircraft and 6 backup aircraft). Includes construction of facilities, mission HQ buildings, and operation of aircraft.	Current, future	Projects would occur at Tyndall AFB.
Tyndall AFB/Multiple Locations	Hurricane Michael recovery projects: 28 construction projects, plus 3 projects spanning multiple planning areas, including demolition of 268 buildings.	Current, future	Some of the actions will occur within the same timeframe and within the vicinity of the Proposed Action.
FDOT – Traffic Control Devices	This project includes the installation of intelligent transportation systems, from Walton to Gulf County.	No date – estimated end 9/4/2024	Project occurs along US-98 adjacent to Tyndall AFB.
FDOT – Tyndall AFB Flyover Project	FDOT, in cooperation with the DoD and Tyndall AFB, is constructing a flyover along US-98 immediately south of the Tyndall Drive entry control facility. When completed, this project will provide dedicated turn lanes into Tyndall AFB from the eastbound and westbound sides of US-98, and will allow through-traffic on US-98 to continue uninterrupted by traffic crossing between the north and south sides of Tyndall AFB.	Current	Project occurs along US-98 adjacent to Tyndall AFB.

Notes:
AFB = Air Force Base; FDOT = Florida Department of Transportation; HQ = Headquarters

APPENDIX C
FURTHER DEFINITIONS OF RESOURCE AREAS ANALYZED, METHODOLOGIES, AND MODELING

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APPENDIX C – FURTHER DEFINITIONS OF RESOURCE AREAS ANALYZED, METHODOLOGIES, AND MODELING

C.1 AIR QUALITY

Air quality is an indicator of the suitability of the atmosphere to support human life and the environment, generally described in terms of the types and levels of air pollutants present in outdoor air. This appendix presents an overview of the Clean Air Act (CAA) and the relevant State of Florida air quality regulations or standards. It also presents emissions calculations and key assumptions used for the air quality analyses presented in the Air Quality sections of this Environmental Assessment (EA).

C.1.1 Criteria Pollutants and National Ambient Air Quality Standards

The CAA directed the U.S. Environmental Protection Agency (USEPA) to develop, implement, and enforce strong environmental regulations that would ensure clean and healthy ambient air quality. To protect public health and welfare, the USEPA developed numerical concentration-based standards, National Ambient Air Quality Standards (NAAQS), for pollutants that have been determined to impact human health and the environment and established both primary and secondary NAAQS under the provisions of the CAA (40 Code of Federal Regulations [CFR] Part 50. NAAQS are currently established for six criteria air pollutants: ozone (O_3), carbon monoxide (CO), nitrogen dioxide (NO_2), sulfur dioxide (SO_2), respirable particulate matter (including particulates equal to or less than 10 microns in diameter [PM_{10}] and particulates equal to or less than 2.5 microns in diameter [$PM_{2.5}$]), and lead.

In accordance with CAA requirements, the air quality in each region or area is measured by the concentration of various pollutants in the atmosphere. Measurements of these “criteria pollutants” in ambient air are expressed in units of parts per million or in units of micrograms per cubic meter. Regional air quality is a result of the types and quantities of atmospheric pollutants and pollutant sources in an area as well as surface topography, the size of the “air basin,” and prevailing meteorological conditions.

The primary NAAQS represent maximum levels of background air pollution that are considered safe, with an adequate margin of safety to protect public health. Secondary NAAQS represent the maximum pollutant concentration necessary to protect vegetation, crops, and other public resources in addition to maintaining visibility standards. The primary and secondary NAAQS are presented in **Table C-1**. The Florida Division of Air Resources Management oversees the state’s air pollution control program under the authority of the federal CAA and amendments, federal regulations, and state laws. Florida has adopted the federal NAAQS (Florida Administrative Code 62-204.800).

The criteria pollutant O_3 is not usually emitted directly into the air but is formed in the atmosphere by photochemical reactions involving sunlight and previously emitted pollutants, or “O_3 precursors.” These O_3 precursors consist primarily of nitrogen oxides (NO_x) and volatile organic compounds (VOCs) that are directly emitted from a wide range of emissions sources. For this reason, regulatory agencies limit atmospheric O_3 concentrations by controlling VOC pollutants (also identified as reactive organic gases) and NO_x.

The USEPA has recognized that particulate matter emissions can have different health affects depending on particle size and, therefore, developed separate NAAQS for coarse particulate matter (PM_{10}) and fine particulate matter ($PM_{2.5}$). The pollutant $PM_{2.5}$ can be emitted from emission sources directly as very fine dust or liquid mist or formed secondarily in the atmosphere as condensable particulate matter, typically forming nitrate and sulfate compounds. Ammonia, for example, is evaluated as a precursor of $PM_{2.5}$. Secondary (indirect) emissions vary by region depending on the predominant emission sources located there and thus which precursors are considered significant for $PM_{2.5}$ formation are identified for ultimate control.

Table C-1 National Ambient Air Quality Standards

Pollutant	Standard Value [6]		Standard Type
Carbon Monoxide (CO)			
8-hour average	9 ppm	(10 mg/m^3)	Primary
1-hour average	35 ppm	(40 mg/m^3)	Primary
Nitrogen Dioxide (NO_2)			
Annual arithmetic mean	0.053 ppm	(100 µg/m^3)	Primary and Secondary
1-hour average [1]	0.100 ppm	(188 µg/m^3)	Primary
Ozone (O_3)			
8-hour average [2]	0.070 ppm	(137 µg/m^3)	Primary and Secondary
Lead (Pb)			
3-month average [3]		0.15 µg/m^3	Primary and Secondary
Particulate <10 Micrometers (PM_{10})			
24-hour average [4]		150 µg/m^3	Primary and Secondary
Particulate <2.5 Micrometers ($PM_{2.5}$)			
Annual arithmetic mean [4]		12 µg/m^3	Primary
Annual arithmetic mean [4]		15 µg/m^3	Secondary
24-hour average[4]		35 µg/m^3	Primary and Secondary
Sulfur Dioxide (SO_2)			
1-hour average [5]	0.075 ppm	(196 µg/m^3)	Primary
3-hour average [5]	0.5 ppm	(1,300 µg/m^3)	Secondary

Notes:

Source: USEPA, 2023a

[1] In February 2010, the USEPA established a new 1-hour standard for NO_2 at a level of 0.100 ppm, based on the 3-year average of the 98th percentile of the yearly distribution concentration, to supplement the then-existing annual standard.

[2] In October 2015, the USEPA revised the level of the 8-hour standard to 0.070 ppm, based on the annual 4th highest daily maximum concentration, averaged over 3 years; the regulation became effective on 28 December 2015. The previous (2008) standard of 0.075 ppm remains in effect for some areas. A 1-hour standard no longer exists.

[3] In November 2008, USEPA revised the primary Pb standard to 0.15 µg/m^3. USEPA revised the averaging time to a rolling 3-month average.

[4] In October 2006, USEPA revised the level of the 24-hour $PM_{2.5}$ standard to 35 µg/m^3 and retained the level of the annual $PM_{2.5}$ standard at 15 µg/m^3. In 2012, USEPA split standards for primary & secondary annual $PM_{2.5}$. All are averaged over 3 years, with the 24-hour average determined at the 98th percentile for the 24-hour standard. USEPA retained the 24-hour primary standard and revoked the annual primary standard for PM_{10}.

[5] In 2012, the USEPA retained a secondary 3-hour standard, which is not to be exceeded more than once per year. In June 2010, USEPA established a new 1-hour SO_2 standard at a level of 75 parts per billion, based on the 3-year average of the annual 99th percentile of 1-hour daily maximum concentrations.

[6] Parenthetical value is an approximately equivalent concentration for NO_2, O_3, and SO_2.

µg/m^3 = microgram(s) per cubic meter; mg/m^3 = milligram(s) per cubic meter; ppm = part(s) per million; USEPA = United States Environmental Protection Agency

The CAA and USEPA delegated responsibility for ensuring compliance with NAAQS to the states and local agencies. As such, each state must develop air pollutant control programs and promulgate regulations and rules that focus on meeting NAAQS and maintaining healthy ambient air quality levels.

Areas designated as “attainment” have demonstrated compliance with NAAQS. An area is designated as unclassified if there is insufficient information for a compliance determination. Maintenance areas are those that were previously designated nonattainment but are now in compliance with the NAAQS. When a region

or area fails to meet a NAAQS for a pollutant, that region is classified as "non-attainment" for that pollutant. In such cases, the affected state must develop a State Implementation Plan (SIP) that is subject to USEPA review and approval. A SIP is a compilation of regulations, strategies, schedules, and enforcement actions designed to move the state into compliance with all NAAQS. Any changes to the compliance schedule or plan (such as new regulations, emissions budgets, or controls) must be incorporated into the SIP and approved by USEPA.

State Implementation Program

Each state is required to develop a SIP that sets forth how CAA provisions will be imposed within the state. The SIP is the primary means for implementation, maintenance, and enforcement of the measures needed to attain and maintain the NAAQS within each state and includes control measures, emissions limitations, and other provisions required to attain and maintain the ambient air quality standards. The purpose of the SIP is twofold. First, it must provide a control strategy that will result in attainment and maintenance of the NAAQS. Second, it must demonstrate that progress is being made in attaining the standards in each nonattainment area. Maintenance areas are subject to a maintenance plan to ensure that compliance is maintained. To demonstrate progress toward attainment or maintenance status, the Air Quality Monitoring Program monitors ambient air throughout the state. The purpose is to monitor, assess, and provide information on statewide ambient air quality conditions and trends. Air monitoring stations collect representative data that indicate how much of a pollutant is in the air. Currently, 89 air-monitoring stations are strategically located across Florida for measuring levels of regulated pollutants in ambient air (FDEP, 2023).

Conformity Rules

The CAA required the USEPA draft general conformity regulations that are applicable in nonattainment areas, or in designated maintenance areas. These regulations are designed to ensure that federal actions do not impede local efforts to achieve or maintain attainment with the NAAQS. The General Conformity Rule and the promulgated regulations found in 40 CFR Part 93 exempt certain federal actions from conformity determinations (e.g., contaminated site cleanup and natural disaster response activities.

Federal actions are evaluated to determine if the total indirect and direct net emissions from the project are below *de minimis* levels for each of the pollutants as specified in 40 CFR § 93.153. The *de minimis* threshold levels (in tons of pollutant per year) depend on the nonattainment status that USEPA has assigned to a region. If *de minimis* levels are not exceeded for any of the pollutants, no further evaluation is required. However, if net emissions from the project exceed the *de minimis* thresholds for one or more of the specified pollutants, a demonstration of conformity, as prescribed in the General Conformity Rule, is required.

The General Conformity Rule would not apply to the Proposed Action because Bay County, within which Tyndall AFB is located, is designated attainment for all criteria NAAQS.

New Source Performance Standards and Permitting

Title I of the CAA Amendments of 1990 requires the federal government to reduce emissions from cars, trucks, and buses; from consumer products such as hair spray and window-washing compounds; and from ships and barges during loading and unloading of petroleum products to address urban air pollution problems of O_3, CO, and PM_{10}. Under Title I, the federal government develops the technical guidance that states need to control stationary sources of pollutants. For stationary sources, the CAA establishes New Source Performance Standards for specific source categories. Standards and compliance requirements are listed in Title 40 CFR Parts 60 - 61. Title V of the CAA Amendments of 1990 requires state and local agencies to implement permitting programs for major stationary sources.

Under the CAA, Title V operating permits are required for large ("major") stationary sources of air emissions. Stationary sources include boilers, generators, fuel storage tanks and fuel dispensing, chemical usage, and surface coating. A major stationary source is a facility (plant, base, or activity) that has the potential to emit more than 100 tons per year (tpy) of any criteria air pollutant or has the potential to emit 10 or 25 tpy or

more of any single or combination of hazardous air pollutants (HAPs). HAPs are toxic substances that are known or suspected to cause serious health effects in small concentrations. However, unlike the NAAQS for criteria pollutants, federal ambient air quality standards do not exist for non-criteria pollutants (HAPs) and are not considered here further.

Tyndall AFB is a synthetic minor source[1] of criteria pollutants and is required to limit its emissions from specified sources in order not to exceed major source permitting thresholds. Titles I and V of the CAA Amendments of 1990 apply mainly to permanent stationary sources, and compliance requirements under the relevant regulations would not apply to the transient construction emissions for the Proposed Action.

Prevention of Significant Deterioration

Prevention of Significant Deterioration (PSD) applies to new major sources or major modifications to existing pollutant sources in areas that are in attainment or unclassifiable with the NAAQS (USEPA, 2023b). The rule is to ensure that these sources are constructed or modified without causing significant adverse deterioration of the clean air in the area. Sources subject to PSD review are required to obtain a permit before they begin construction. The permit process requires an extensive air quality review of all other major sources within a 50-mile radius and all Class I areas within a 62-mile radius of the facility. Emissions from any new or modified source must be controlled using the maximum degree of control that can be achieved. The air quality, in combination with other PSD sources in the area, must not exceed the maximum allowable incremental increase as specified in the regulations.

The rule also provides special protections for specific national parks or wilderness areas, known as Mandatory Federal Class I Areas (40 CFR Part 81), where any appreciable deterioration in air quality is considered significant. Class 1 areas are given special air quality and visibility protection under the CAA. PSD regulations also define air pollutant emissions from proposed major stationary sources or modifications to be “significant” if a proposed project’s net emission increase meets or exceeds the rate of emissions listed in 40 CFR § 52.21(b)(23)(i); or a proposed project is within 10 miles of any Class I area (wilderness area greater than 5,000 acres or national park greater than 6,000 acres). The goals of the PSD program are to (1) ensure economic growth while preserving existing air quality; (2) protect public health and welfare from adverse effects that might occur even at pollutant levels better than the NAAQS; and (3) preserve, protect, and enhance the air quality in areas of special natural recreational, scenic, or historic value, such as national parks and wilderness areas. The nearest Mandatory Federal Class I Area in Florida is the St. Marks Wilderness Area, located more than 50 miles east of Tyndall AFB. Emissions from the Proposed Action would not have the potential to impact visibility in Class 1 areas. Thus, they are not considered for this EA.

C.1.2 Air Conformity Applicability Analysis

Section 176(c) (1) of the CAA contains legislation that ensures federal activities conform to relevant SIPs and thus do not hamper local efforts to control air pollution. Conformity to a SIP is defined as conformity to a SIP’s purpose of eliminating or reducing the severity and number of violations of the NAAQS and achieving expeditious attainment of such standards. As such, a general conformity analysis is required for areas of nonattainment or maintenance where a federal action is proposed.

An action can be shown to conform by demonstrating that the total direct and indirect emissions are below the *de minimis* levels **(Table C-2)** or showing that the Proposed Action emissions are within the state- or Tribe-approved budget of the facility as part of the SIP or Tribal Implementation Plan (USEPA, 2010). Direct

[1] A "synthetic minor source" is a source that otherwise has the potential to emit regulated New Source Review pollutants in amounts that are at or above the thresholds for major sources in 40 CFR § 49.167, 40 CFR § 52.21 or 40 CFR § 71.2, as applicable, but has taken a restriction so that its Potential to Emit is less than such amounts for major sources. Such restrictions must be enforceable as a practical matter (as defined in 40 CFR § 49.152) (USEPA, 2023c).

emissions are those that occur as a direct result of the action. For example, emissions from new equipment that are a permanent component of the completed action (e.g., boilers, heaters, generators, or paint booths) are considered direct emissions. Indirect emissions are those that occur at a later time or at a distance from the Proposed Action. For example, increased vehicular/commuter traffic because of the action is considered an indirect emission. Construction emissions must also be considered. For example, the emissions from vehicles and equipment used to clear and grade building sites, build new buildings, and construct new roads must be evaluated. These types of emissions are considered direct emissions.

Table C-2 General Conformity Rule *De Minimis* Emission Thresholds

Pollutant	Attainment Classification	Tons per year
Ozone (VOC and NO_x)	Serious nonattainment	50
	Severe nonattainment	25
	Extreme nonattainment	10
	Other areas outside an ozone transport region	100
Ozone (NO_x)	Marginal and moderate nonattainment inside an ozone transport region	100
	Maintenance	100
Ozone (VOC)	Marginal and moderate nonattainment inside an ozone transport region	50
	Maintenance within an ozone transport region	50
	Maintenance outside an ozone transport region	100
Carbon Monoxide, SO_2 and NO_2	All nonattainment and maintenance	100
PM_{10}	Serious nonattainment	70
	Moderate nonattainment and maintenance	100
$PM_{2.5}$ Direct emissions, SO_2, NO_x (unless determined not to be a significant precursor), VOC and ammonia (if determined to be significant precursors)	All nonattainment and maintenance	100
Lead	All nonattainment and maintenance	25

Notes:

Source: USEPA, 2022

NO_2 = nitrogen dioxide; NO_x = nitrogen oxides; $PM_{2.5}$ = particulates equal to or less than 2.5 microns in diameter; PM_{10} = particulates equal to or less than 10 microns in diameter; SO_2 = sulfur dioxide; VOC = volatile organic compound

C.1.3 Greenhouse Gases and Climate Change

Greenhouse gases (GHGs) are gases, occurring from natural processes and human activities, that trap heat in the atmosphere. Natural sources of GHGs include land use, such as through deforestation, land clearing for agriculture, and degradation of soils. The largest source of GHGs from human activities in the United States is from burning fossil fuels for electricity, heat, and transportation. Combustion of fossil fuels (coal, oil, and natural gas) primarily generate three main GHGs: carbon dioxide (CO_2), methane (CH_4) and nitrous oxide (N_2O). These three GHGs alone represent more than 97 percent of the United States' total GHG emissions (USEPA, 2024). GHGs are generally not a concern to human health at normal ambient levels and can potentially cause warming of the climatic system only at a cumulative global scale.

Emissions from GHG are expressed in terms of the carbon dioxide equivalent emissions (CO_2e), which is a measure used to compare the emissions from various GHGs based on their Global Warming Potential (GWP). The GWP is a measure of how much energy the emissions of 1 ton of a gas will absorb over a given period of time, relative to the emissions of 1 ton of CO_2. The larger the GWP, the more that a given gas warms the Earth compared with CO_2 over the same time period. Analysts cumulatively compare emission estimates of different gases using standardized GWPs.

Climate change is the variation in the Earth's climate (including temperature, precipitation, humidity, wind, and other meteorological variables) over time. Climate change is primarily driven by accumulation of GHGs in the atmosphere caused by the increased consumption of fossil fuels (e.g., coal, petroleum, and natural gas) since the early beginnings of the industrial age and accelerating in the mid- to late-20th century (IPCC, 2021). Human activities are altering the carbon cycle–both by adding more CO_2 to the atmosphere and by influencing the ability of natural sinks, like forests and soils, to remove and store CO_2 from the atmosphere (USEPA, 2024). Human-induced climate change is already affecting many weather and climate extremes in every region across the globe, resulting in observed changes in extremes such as heatwaves, heavy precipitation, droughts, and tropical cyclones (IPCC, 2021).

C.1.4 Significance Indicators and Evaluation Criteria

The CAA Section 176(c), *General Conformity*, requires federal agencies to demonstrate that their proposed activities would conform to the applicable SIP for attainment of the NAAQS. General conformity applies only to nonattainment and maintenance areas. If the emissions from a federal action proposed in a nonattainment area exceed annual *de minimis* thresholds identified in the rule, a formal conformity determination is required of that action. The thresholds are more restrictive as the severity of the nonattainment status of the region increases. The Council on Environmental Quality (CEQ) defines significance in terms of context and intensity in 40 CFR § 1508.27. This definition requires that the significance of the action be analyzed with respect to the setting of the Proposed Action and based relative to the severity of the impact. The CEQ National Environmental Policy Act (NEPA) regulations (40 CFR § 1508.27[b]) provide 10 key factors to consider in determining an impact's intensity.

Based on guidance in Chapter 4 of the *Air Force Air Quality Environmental Impact Analysis Process (EIAP) Guide*, *Volume II – Advanced Assessments* (Air Force, 2020*)*, for air quality impact analysis, project criteria pollutant emissions were compared against the insignificance indicator of 250 tpy for PSD major source permitting threshold for actions occurring in areas that are in attainment for all criteria pollutants (25 tpy for lead). These "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 NAAQS. The insignificance 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 each criteria pollutant is considered so insignificant that the action would not cause or contribute to an emission that exceeds on one or more NAAQSs.

For a proposed action that would occur in nonattainment/maintenance areas, the net-change emissions estimated for the relevant criteria pollutant or pollutants are compared against General Conformity *de minimis* values to perform a General Conformity evaluation. If the estimated annual net emissions for each relevant pollutant from the Proposed Action are below the corresponding *de minimis* threshold values, General Conformity Rule requirements would not be applicable. Emissions from the Proposed Action at Tyndall AFB, and its vicinity, are assessed in the EA and compared with applicable insignificance indicators.

GHG and Climate Change

The Air Conformity Applicability Model (ACAM) (5.0.23a) was used to evaluate GHG emissions. The methodology in ACAM for assessing GHG emissions is based on recent CEQ guidance on the consideration of GHG emissions and Climate Change for proposed actions under NEPA (CEQ, 2023).

A GHG Emissions Evaluation establishes the quantity of speciated GHGs and CO_2e, determines if an action's emissions are insignificant, and provides a relative significance comparison. For the analysis, the PSD threshold for GHG of 75,000 tpy of CO_2e (or 68,039 metric tpy) was used as an indicator or "threshold

of insignificance" for NEPA air quality impacts in all areas. This indicator does not define a significant impact; however, it provides a threshold to identify actions that are insignificant (*de minimis*, too trivial or minor to merit consideration). Actions with a net change in GHG (CO_2e) emissions below the insignificance indicator (threshold) are considered too insignificant on a global scale to warrant any further analysis. Note that actions with a net change in GHG (CO_2e) emissions above the insignificance indicator (threshold) are only considered potentially significant and require further assessment to determine if the action poses a significant impact. The action related GHGs have no significant impact to local air quality. However, from a global perspective, individual actions with GHG emissions each make a relatively small addition to global atmospheric GHG concentrations that collectively may have a large effect on climate change. If activities have *de minimis* (insignificant) GHG emissions, then on a global scale they are effectively zero and irrelevant (AFCEC, 2023).

An overview of ACAM inputs and the methodologies used to estimate emissions is summarized in the following sections.

C.1.5 Emissions Calculations and Assumptions

The following assumptions were used in the air quality analysis for the Proposed Action:

1. The ACAM model was completed for all relevant activities associated with the four Proposed Action projects as described in the EA.
2. For air quality analysis, the proposed construction projects are assumed to occur within a single calendar year to provide a conservative estimate of emissions. The duration of the construction project is assumed to be 12 months from the assumed start date of January 2025. For operational emissions, the start date is assumed to be the beginning of the year after construction is complete (January 2026) and would occur indefinitely.
3. The calculations assumed there were no controls used to reduce fugitive emissions or other regulated pollutants. It is assumed that reasonable mitigation measures (BMPs) would be used during construction to reduce particulate matter emissions and other pollutant emissions.
4. Construction phase emissions for the Proposed Action Alternative 1 are included for demolition, grading, trenching, construction, and paving.
5. Operational emissions are estimated for a proposed new diesel fuel tank storage and for potential commute by 7000 Area vehicles and equipment along a shorter route to the proposed new gas station. Commute emissions were estimated in ACAM assuming 15 contractor personnel traveling a round trip distance of 6 miles each day.
6. If the square footage for construction, renovation, or land disturbance was available, then it was used for ACAM modeling. In the absence of square footage data for construction, an estimate of the area proposed for construction was derived based on engineering judgement.
7. Duration of construction phase activities was estimated based on the area proposed for construction, including grading and trenching.
8. For grading, if data on the amount of material hauled in and hauled out (in cubic yards) were provided by the facility, then they were used in ACAM. In the absence of these data, it has been estimated using the assumed depth and graded area. Fill depth for gravel and grading depth is assumed based on the type of project.
9. In the absence of trenching data, trenching in linear feet for utility was derived based on the size of the project. An estimated trench depth and trench width is assumed based on the nature of the project.
10. Emissions from personnel commute were not calculated as no new personnel will be working at the new facilities upon completion of construction of this project.

C.1.6 References

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USEPA. 2024. Overview of Greenhouse Gases. https://www.epa.gov/ghgemissions/overview-greenhouse-gases. Accessed December 12, 2024.

C.1.7 Detailed ACAM Report, Record of Conformity Analysis and Record of No Applicability

C.1.7.1 Detailed Air Conformity Applicability Model Report

Alternative 1

1. General Information

- Action Location
Base: TYNDALL AFB
State: Florida
County(s): Bay
Regulatory Area(s): NOT IN A REGULATORY AREA

- Action Title: EA for Infrastructure Construction Projects at Tyndall AFB, Florida

- Project Number/s (if applicable): N/A

- Projected Action Start Date: 1 / 2025

- Action Purpose and Need:
The purpose of the Proposed Action is to provide facility, infrastructure, and functionality improvements that support the current and future missions at Tyndall AFB. The Proposed Action is needed because required facilities are either not currently present at Tyndall AFB or because existing facilities are not sufficient to meet applicable mission requirements. Further, the proposed facilities are needed to bring the facilities into compliance with applicable Department of Defense (DoD) and DAF requirements.

- Action Description:
The Proposed Action consists of four individual projects that are currently programmed for implementation between fiscal year (FY) 2024 and FY26. Individual projects are independent of the others and could be implemented separately from or concurrently with the other projects over the next 2 to 3 years. Some projects have alternatives that are also evaluated.

Four repair and construction projects are included with the Proposed Action:

1. Airfield Fence
Construct approximately 17,548 linear feet (LF) of welded-wire security fencing. Clear 10 feet of buffer area on either side of fence, and relocate existing utilities.
Total maximum soil disturbance and excavation = 28,406 Cubic Yards (CY).

2. Drone Runway Culvert Crossings
Build four new crossing points over existing drainage channels at ends of Drone Runway. Each crossing point proposed is 20 feet wide, with compressed gravel and paved asphalt surface,
Total crossing area for construction = 2600 Square Feet (SF)

3. Drone tow-way Fence
Construct a 7-feet-tall welded-wire fence. Two alternatives proposed. Clear 10 feet of buffer area on either side of fence, and relocate existing utilities.
Alternative 1 would involve up to approximately 17,692 CY of soil disturbance and excavation
Alternative 2 would involve up to approximately 16,632 CY of soil disturbance and excavation

4. 7000 Area Improvements

Construct fueling station, reinforced concrete slab or asphalt pavement parking area, an expanded access drive and parking area in the 7000 Area with utilities, lighting and security fence.
Total maximum soil disturbance and excavation = 37,444 Cubic Yards (CY).

- Point of Contact

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Report generated with ACAM version: 5.0.23a

- Activity List:

Activity Type		Activity Title
2.	Construction / Demolition	Project 1: Airfield Fence - Alternative 1
3.	Construction / Demolition	Project 2: Drone Runway Culvert Crossings - Alternative 1
4.	Construction / Demolition	Project 3: Drone tow-way Fence - Alternative 1
5.	Construction / Demolition	Project 4: 7000 Area Improvements - Alternative 1
6.	Personnel	Project 4 – 7000 Area - Alternative 1 (reduction)
7.	Tanks	Project 4 - Tank at 7000 Area - Alternative 1

Emission factors and air emission estimating methods come from the United States Air Force's Air Emissions Guide for Air Force Stationary Sources, Air Emissions Guide for Air Force Mobile Sources, and Air Emissions Guide for Air Force Transitory Sources.

2. Construction / Demolition

2.1 General Information & Timeline Assumptions

- Activity Location
County: Bay
Regulatory Area(s): NOT IN A REGULATORY AREA

- Activity Title: Project 1: Airfield Fence - Alternative 1

- Activity Description:
Construct approximately 17,548 linear feet (LF) of welded-wire security fencing. Clear 10 feet of buffer area on either side of fence, and relocate existing utilities.

Activity in Square Feet
Grading - 350,960
Trenching - 81,437
Construction - 8,774

- Activity Start Date
Start Month: 1
Start Month: 2025

- Activity End Date
Indefinite: False
End Month: 6
End Month: 2025

- Activity Emissions:

Pollutant	Total Emissions (TONs)
VOC	0.055547
SO_x	0.000995
NO_x	0.472860
CO	0.679899

Pollutant	Total Emissions (TONs)
PM 10	4.321742
PM 2.5	0.018648
Pb	0.000000
NH_3	0.001148

- Activity Emissions of GHG:

Pollutant	Total Emissions (TONs)
CH_4	0.004504
N_2O	0.001206

Pollutant	Total Emissions (TONs)
CO_2	112.428722
CO_2e	112.900601

- Global Scale Activity Emissions for SCGHG:

Pollutant	Total Emissions (TONs)
CH_4	0.004504
N_2O	0.001206

Pollutant	Total Emissions (TONs)
CO_2	112.428722
CO_2e	112.900601

2.1 Site Grading Phase

2.1.1 Site Grading Phase Timeline Assumptions

- Phase Start Date
Start Month: 1
Start Quarter: 1
Start Year: 2025

- Phase Duration
Number of Month: 1
Number of Days: 0

2.1.2 Site Grading Phase Assumptions

- General Site Grading Information
Area of Site to be Graded (ft^2): 350960
Amount of Material to be Hauled On-Site (yd^3): 0
Amount of Material to be Hauled Off-Site (yd^3): 975

- Site Grading Default Settings
Default Settings Used: Yes
Average Day(s) worked per week: 5 (default)

- Construction Exhaust (default)

Equipment Name	Number Of Equipment	Hours Per Day
Dumpers/Tenders Composite	4	3
Excavators Composite	1	8
Graders Composite	1	8
Other Construction Equipment Composite	1	8
Rollers Composite	1	4
Rubber Tired Dozers Composite	1	8
Rubber Tired Loaders Composite	1	8
Tractors/Loaders/Backhoes Composite	3	8

- Vehicle Exhaust

Average Hauling Truck Capacity (yd^3): 20 (default)
Average Hauling Truck Round Trip Commute (mile): 20 (default)

- Vehicle Exhaust Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

- Worker Trips
Average Worker Round Trip Commute (mile): 20 (default)

- Worker Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	50.00	50.00	0	0	0	0	0

2.1.3 Site Grading Phase Emission Factor(s)

- Construction Exhaust Criteria Pollutant Emission Factors (g/hp-hour) (default)

Dumpers/Tenders Composite [HP: 16] [LF: 0.38]						
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**
Emission Factors	0.57117	0.00727	4.36728	2.35886	0.16310	0.15005
Excavators Composite [HP: 36] [LF: 0.38]						
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**
Emission Factors	0.40191	0.00542	3.44643	4.21104	0.10704	0.09848
Graders Composite [HP: 148] [LF: 0.41]						
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**
Emission Factors	0.33951	0.00490	2.85858	3.41896	0.15910	0.14637
Other Construction Equipment Composite [HP: 82] [LF: 0.42]						
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**
Emission Factors	0.29762	0.00487	2.89075	3.51214	0.17229	0.15851
Rollers Composite [HP: 36] [LF: 0.38]						
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**
Emission Factors	0.56682	0.00541	3.67816	4.11298	0.16639	0.15308
Rubber Tired Dozers Composite [HP: 367] [LF: 0.4]						
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**
Emission Factors	0.37086	0.00491	3.50629	2.90209	0.15396	0.14165
Rubber Tired Loaders Composite [HP: 150] [LF: 0.36]						
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**
Emission Factors	0.22519	0.00486	1.60239	3.28281	0.08489	0.07810
Tractors/Loaders/Backhoes Composite [HP: 84] [LF: 0.37]						
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**
Emission Factors	0.19600	0.00489	2.00960	3.48168	0.07738	0.07119

- Construction Exhaust Greenhouse Gasses Pollutant Emission Factors (g/hp-hour) (default)

Dumpers/Tenders Composite [HP: 16] [LF: 0.38]				
	CH_4	**N_2O**	**CO_2**	**CO_2e**
Emission Factors	0.02324	0.00465	572.88007	574.84605
Excavators Composite [HP: 36] [LF: 0.38]				
	CH_4	**N_2O**	**CO_2**	**CO_2e**
Emission Factors	0.02382	0.00476	587.13772	589.15263
Graders Composite [HP: 148] [LF: 0.41]				
	CH_4	**N_2O**	**CO_2**	**CO_2e**
Emission Factors	0.02155	0.00431	531.19419	533.01712
Other Construction Equipment Composite [HP: 82] [LF: 0.42]				
	CH_4	**N_2O**	**CO_2**	**CO_2e**

Emission Factors	0.02141	0.00428	527.74261	529.55369
Rollers Composite [HP: 36] [LF: 0.38]				
	CH_4	**N_2O**	**CO_2**	**CO_2e**
Emission Factors	0.02381	0.00476	586.90234	588.91644
Rubber Tired Dozers Composite [HP: 367] [LF: 0.4]				
	CH_4	**N_2O**	**CO_2**	**CO_2e**
Emission Factors	0.02159	0.00432	532.17175	533.99803
Rubber Tired Loaders Composite [HP: 150] [LF: 0.36]				
	CH_4	**N_2O**	**CO_2**	**CO_2e**
Emission Factors	0.02134	0.00427	526.16054	527.96619
Tractors/Loaders/Backhoes Composite [HP: 84] [LF: 0.37]				
	CH_4	**N_2O**	**CO_2**	**CO_2e**
Emission Factors	0.02149	0.00430	529.86270	531.68105

- Vehicle Exhaust & Worker Trips Criteria Pollutant Emission Factors (grams/mile)

	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**NH_3**
LDGV	0.30440	0.00175	0.13290	4.77199	0.00371	0.00328	0.05325
LDGT	0.26083	0.00216	0.17973	4.20900	0.00418	0.00370	0.04444
HDGV	0.98518	0.00481	0.66400	11.99902	0.02092	0.01850	0.09582
LDDV	0.08914	0.00133	0.14951	6.42748	0.00351	0.00323	0.01693
LDDT	0.20580	0.00152	0.47872	6.07454	0.00570	0.00525	0.01788
HDDV	0.12304	0.00426	2.47202	1.65242	0.05496	0.05057	0.06504
MC	3.22233	0.00193	0.54715	12.64378	0.02290	0.02026	0.05135

- Vehicle Exhaust & Worker Trips Greenhouse Gasses Emission Factors (grams/mile)

	CH_4	**N_2O**	**CO_2**	**CO_2e**
LDGV	0.01506	0.00514	346.03787	347.94148
LDGT	0.01548	0.00747	427.58921	430.19622
HDGV	0.05923	0.02786	951.90377	961.66618
LDDV	0.04271	0.00073	395.50643	396.79223
LDDT	0.03143	0.00108	447.56743	448.67639
HDDV	0.01995	0.16036	1266.81748	1315.09331
MC	0.11395	0.00333	391.06501	394.90588

2.1.4 Site Grading Phase Formula(s)

- Fugitive Dust Emissions per Phase

$PM10_{FD}$ = (20 * ACRE * WD) / 2000

$PM10_{FD}$: Fugitive Dust PM_{10} Emissions (TONs)
20: Conversion Factor Acre Day to pounds (20 lb / 1 Acre Day)
ACRE: Total acres (acres)
WD: Number of Total Work Days (days)
2000: Conversion Factor pounds to tons

- Construction Exhaust Emissions per Phase

CEE_{POL} = (NE * WD * H * HP * LF * EF_{POL}* 0.002205) / 2000

CEE_{POL}: Construction Exhaust Emissions (TONs)
NE: Number of Equipment
WD: Number of Total Work Days (days)
H: Hours Worked per Day (hours)
HP: Equipment Horsepower
LF: Equipment Load Factor
EF_{POL}: Emission Factor for Pollutant (g/hp-hour)

0.002205: Conversion Factor grams to pounds
2000: Conversion Factor pounds to tons

- Vehicle Exhaust Emissions per Phase

$VMT_{VE} = (HA_{OnSite} + HA_{OffSite}) * (1 / HC) * HT$

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
HA_{OnSite}: Amount of Material to be Hauled On-Site (yd^3)
$HA_{OffSite}$: Amount of Material to be Hauled Off-Site (yd^3)
HC: Average Hauling Truck Capacity (yd^3)
(1 / HC): Conversion Factor cubic yards to trips (1 trip / HC yd^3)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

$V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Vehicle Exhaust On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

- Worker Trips Emissions per Phase

$VMT_{WT} = WD * WT * 1.25 * NE$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
WD: Number of Total Work Days (days)
WT: Average Worker Round Trip Commute (mile)
1.25: Conversion Factor Number of Construction Equipment to Number of Works
NE: Number of Construction Equipment

$V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

2.2 Trenching/Excavating Phase

2.2.1 Trenching / Excavating Phase Timeline Assumptions

- Phase Start Date
Start Month: 2
Start Quarter: 1
Start Year: 2025

- Phase Duration
Number of Month: 1
Number of Days: 0

2.2.2 Trenching / Excavating Phase Assumptions

- General Trenching/Excavating Information
Area of Site to be Trenched/Excavated (ft^2): 81437
Amount of Material to be Hauled On-Site (yd^3): 325
Amount of Material to be Hauled Off-Site (yd^3): 0

- Trenching Default Settings
Default Settings Used: Yes
Average Day(s) worked per week: 5 (default)

- Construction Exhaust (default)

Equipment Name	Number Of Equipment	Hours Per Day
Excavators Composite	2	8
Other General Industrial Equipment Composite	1	8
Skid Steer Loaders Composite	3	8
Tractors/Loaders/Backhoes Composite	1	8

- Vehicle Exhaust
Average Hauling Truck Capacity (yd^3): 20 (default)
Average Hauling Truck Round Trip Commute (mile): 20 (default)

- Vehicle Exhaust Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

- Worker Trips
Average Worker Round Trip Commute (mile): 20 (default)

- Worker Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	50.00	50.00	0	0	0	0	0

2.2.3 Trenching / Excavating Phase Emission Factor(s)

- Construction Exhaust Criteria Pollutant Emission Factors (g/hp-hour) (default)

Excavators Composite [HP: 36] [LF: 0.38]						
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**
Emission Factors	0.40191	0.00542	3.44643	4.21104	0.10704	0.09848
Other General Industrial Equipment Composite [HP: 35] [LF: 0.34]						
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**
Emission Factors	0.49122	0.00542	3.71341	4.67487	0.13603	0.12515
Skid Steer Loaders Composite [HP: 71] [LF: 0.37]						
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**
Emission Factors	0.13914	0.00488	1.86188	3.24884	0.05631	0.05180
Tractors/Loaders/Backhoes Composite [HP: 84] [LF: 0.37]						
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**
Emission Factors	0.19600	0.00489	2.00960	3.48168	0.07738	0.07119

- Construction Exhaust Greenhouse Gasses Pollutant Emission Factors (g/hp-hour) (default)

Excavators Composite [HP: 36] [LF: 0.38]				
	CH_4	**N_2O**	**CO_2**	**CO_2e**
Emission Factors	0.02382	0.00476	587.13772	589.15263
Other General Industrial Equipment Composite [HP: 35] [LF: 0.34]				
	CH_4	**N_2O**	**CO_2**	**CO_2e**
Emission Factors	0.02385	0.00477	588.02637	590.04433

Skid Steer Loaders Composite [HP: 71] [LF: 0.37]				
	CH_4	**N_2O**	**CO_2**	**CO_2e**
Emission Factors	0.02143	0.00429	528.37420	530.18744
Tractors/Loaders/Backhoes Composite [HP: 84] [LF: 0.37]				
	CH_4	**N_2O**	**CO_2**	**CO_2e**
Emission Factors	0.02149	0.00430	529.86270	531.68105

- Vehicle Exhaust & Worker Trips Criteria Pollutant Emission Factors (grams/mile)

	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**NH_3**
LDGV	0.30440	0.00175	0.13290	4.77199	0.00371	0.00328	0.05325
LDGT	0.26083	0.00216	0.17973	4.20900	0.00418	0.00370	0.04444
HDGV	0.98518	0.00481	0.66400	11.99902	0.02092	0.01850	0.09582
LDDV	0.08914	0.00133	0.14951	6.42748	0.00351	0.00323	0.01693
LDDT	0.20580	0.00152	0.47872	6.07454	0.00570	0.00525	0.01788
HDDV	0.12304	0.00426	2.47202	1.65242	0.05496	0.05057	0.06504
MC	3.22233	0.00193	0.54715	12.64378	0.02290	0.02026	0.05135

- Vehicle Exhaust & Worker Trips Greenhouse Gasses Emission Factors (grams/mile)

	CH_4	**N_2O**	**CO_2**	**CO_2e**
LDGV	0.01506	0.00514	346.03787	347.94148
LDGT	0.01548	0.00747	427.58921	430.19622
HDGV	0.05923	0.02786	951.90377	961.66618
LDDV	0.04271	0.00073	395.50643	396.79223
LDDT	0.03143	0.00108	447.56743	448.67639
HDDV	0.01995	0.16036	1266.81748	1315.09331
MC	0.11395	0.00333	391.06501	394.90588

2.2.4 Trenching / Excavating Phase Formula(s)

- Fugitive Dust Emissions per Phase

$PM10_{FD} = (20 * ACRE * WD) / 2000$

$PM10_{FD}$: Fugitive Dust PM_{10} Emissions (TONs)
20: Conversion Factor Acre Day to pounds (20 lb / 1 Acre Day)
ACRE: Total acres (acres)
WD: Number of Total Work Days (days)
2000: Conversion Factor pounds to tons

- Construction Exhaust Emissions per Phase

$CEE_{POL} = (NE * WD * H * HP * LF * EF_{POL} * 0.002205) / 2000$

CEE_{POL}: Construction Exhaust Emissions (TONs)
NE: Number of Equipment
WD: Number of Total Work Days (days)
H: Hours Worked per Day (hours)
HP: Equipment Horsepower
LF: Equipment Load Factor
EF_{POL}: Emission Factor for Pollutant (g/hp-hour)
0.002205: Conversion Factor grams to pounds
2000: Conversion Factor pounds to tons

- Vehicle Exhaust Emissions per Phase

$VMT_{VE} = (HA_{OnSite} + HA_{OffSite}) * (1 / HC) * HT$

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)

HA_{OnSite}: Amount of Material to be Hauled On-Site (yd^3)
$HA_{OffSite}$: Amount of Material to be Hauled Off-Site (yd^3)
HC: Average Hauling Truck Capacity (yd^3)
(1 / HC): Conversion Factor cubic yards to trips (1 trip / HC yd^3)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

$V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Vehicle Exhaust On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

- Worker Trips Emissions per Phase
$VMT_{WT} = WD * WT * 1.25 * NE$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
WD: Number of Total Work Days (days)
WT: Average Worker Round Trip Commute (mile)
1.25: Conversion Factor Number of Construction Equipment to Number of Works
NE: Number of Construction Equipment

$V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Worker Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

2.3 Building Construction Phase

2.3.1 Building Construction Phase Timeline Assumptions

- Phase Start Date
Start Month: 3
Start Quarter: 1
Start Year: 2025

- Phase Duration
Number of Month: 4
Number of Days: 0

2.3.2 Building Construction Phase Assumptions

- General Building Construction Information
Building Category: Commercial or Retail
Area of Building (ft^2): 8774
Height of Building (ft): 1
Number of Units: N/A

- Building Construction Default Settings

Default Settings Used: Yes
Average Day(s) worked per week: 5 (default)

- Construction Exhaust (default)

Equipment Name	Number Of Equipment	Hours Per Day
Cranes Composite	1	4
Forklifts Composite	2	6
Tractors/Loaders/Backhoes Composite	1	8

- Vehicle Exhaust
Average Hauling Truck Round Trip Commute (mile): 20 (default)

- Vehicle Exhaust Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

- Worker Trips
Average Worker Round Trip Commute (mile): 20 (default)

- Worker Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	50.00	50.00	0	0	0	0	0

- Vendor Trips
Average Vendor Round Trip Commute (mile): 40 (default)

- Vendor Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

2.3.3 Building Construction Phase Emission Factor(s)

- Construction Exhaust Criteria Pollutant Emission Factors (g/hp-hour) (default)

Cranes Composite [HP: 367] [LF: 0.29]						
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**
Emission Factors	0.20113	0.00487	1.94968	1.66287	0.07909	0.07277
Forklifts Composite [HP: 82] [LF: 0.2]						
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**
Emission Factors	0.26944	0.00487	2.55142	3.59881	0.13498	0.12418
Tractors/Loaders/Backhoes Composite [HP: 84] [LF: 0.37]						
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**
Emission Factors	0.19600	0.00489	2.00960	3.48168	0.07738	0.07119

- Construction Exhaust Greenhouse Gasses Pollutant Emission Factors (g/hp-hour) (default)

Cranes Composite [HP: 367] [LF: 0.29]				
	CH_4	**N_2O**	**CO_2**	**CO_2e**
Emission Factors	0.02140	0.00428	527.58451	529.39505
Forklifts Composite [HP: 82] [LF: 0.2]				
	CH_4	**N_2O**	**CO_2**	**CO_2e**
Emission Factors	0.02138	0.00428	527.10822	528.91712
Tractors/Loaders/Backhoes Composite [HP: 84] [LF: 0.37]				
	CH_4	**N_2O**	**CO_2**	**CO_2e**
Emission Factors	0.02149	0.00430	529.86270	531.68105

- Vehicle Exhaust & Worker Trips Criteria Pollutant Emission Factors (grams/mile)

	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	NH_3
LDGV	0.30440	0.00175	0.13290	4.77199	0.00371	0.00328	0.05325
LDGT	0.26083	0.00216	0.17973	4.20900	0.00418	0.00370	0.04444
HDGV	0.98518	0.00481	0.66400	11.99902	0.02092	0.01850	0.09582
LDDV	0.08914	0.00133	0.14951	6.42748	0.00351	0.00323	0.01693
LDDT	0.20580	0.00152	0.47872	6.07454	0.00570	0.00525	0.01788
HDDV	0.12304	0.00426	2.47202	1.65242	0.05496	0.05057	0.06504
MC	3.22233	0.00193	0.54715	12.64378	0.02290	0.02026	0.05135

- Vehicle Exhaust & Worker Trips Greenhouse Gasses Emission Factors (grams/mile)

	CH_4	N_2O	CO_2	CO_2e
LDGV	0.01506	0.00514	346.03787	347.94148
LDGT	0.01548	0.00747	427.58921	430.19622
HDGV	0.05923	0.02786	951.90377	961.66618
LDDV	0.04271	0.00073	395.50643	396.79223
LDDT	0.03143	0.00108	447.56743	448.67639
HDDV	0.01995	0.16036	1266.81748	1315.09331
MC	0.11395	0.00333	391.06501	394.90588

2.3.4 Building Construction Phase Formula(s)

- Construction Exhaust Emissions per Phase

$CEE_{POL} = (NE * WD * H * HP * LF * EF_{POL} * 0.002205) / 2000$

CEE_{POL}: Construction Exhaust Emissions (TONs)
NE: Number of Equipment
WD: Number of Total Work Days (days)
H: Hours Worked per Day (hours)
HP: Equipment Horsepower
LF: Equipment Load Factor
EF_{POL}: Emission Factor for Pollutant (g/hp-hour)
0.002205: Conversion Factor grams to pounds
2000: Conversion Factor pounds to tons

- Vehicle Exhaust Emissions per Phase

$VMT_{VE} = BA * BH * (0.32 / 1000) * HT$

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
BA: Area of Building (ft^2)
BH: Height of Building (ft)
(0.32 / 1000): Conversion Factor ft^3 to trips (0.32 trip / 1000 ft^3)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

$V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

- Worker Trips Emissions per Phase

VMT_{WT} = WD * WT * 1.25 * NE

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
WD: Number of Total Work Days (days)
WT: Average Worker Round Trip Commute (mile)
1.25: Conversion Factor Number of Construction Equipment to Number of Works
NE: Number of Construction Equipment

V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM) / 2000

V_{POL}: Vehicle Emissions (TONs)
VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

- Vender Trips Emissions per Phase
VMT_{VT} = BA * BH * (0.05 / 1000) * HT

VMT_{VT}: Vender Trips Vehicle Miles Travel (miles)
BA: Area of Building (ft^2)
BH: Height of Building (ft)
(0.05 / 1000): Conversion Factor ft^3 to trips (0.05 trip / 1000 ft^3)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

V_{POL} = (VMT_{VT} * 0.002205 * EF_{POL} * VM) / 2000

V_{POL}: Vehicle Emissions (TONs)
VMT_{VT}: Vender Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

3. Construction / Demolition

3.1 General Information & Timeline Assumptions

- Activity Location
County: Bay
Regulatory Area(s): NOT IN A REGULATORY AREA

- Activity Title: Project 2: Drone Runway Culvert Crossings - Alternative 1

- Activity Description:
Build four new crossing points over existing drainage channels at ends of Drone Runway. Each crossing point proposed is 20 feet wide, with compressed gravel and paved asphalt surface.

Activity Square Feet
Trenching - 2,600
Asphalt Paving - 2,600

- Activity Start Date
Start Month: 1
Start Month: 2025

- Activity End Date
Indefinite: False
End Month: 1
End Month: 2025

- Activity Emissions:

Pollutant	Total Emissions (TONs)
VOC	0.008380
SO_x	0.000150
NO_x	0.057747
CO	0.084273

Pollutant	Total Emissions (TONs)
PM 10	0.014993
PM 2.5	0.002027
Pb	0.000000
NH_3	0.000204

- Activity Emissions of GHG:

Pollutant	Total Emissions (TONs)
CH_4	0.000666
N_2O	0.000248

Pollutant	Total Emissions (TONs)
CO_2	16.979464
CO_2e	17.069943

- Global Scale Activity Emissions for SCGHG:

Pollutant	Total Emissions (TONs)
CH_4	0.000666
N_2O	0.000248

Pollutant	Total Emissions (TONs)
CO_2	16.979464
CO_2e	17.069943

3.1 Trenching/Excavating Phase

3.1.1 Trenching / Excavating Phase Timeline Assumptions

- Phase Start Date
Start Month: 1
Start Quarter: 1
Start Year: 2025

- Phase Duration
Number of Month: 0
Number of Days: 15

3.1.2 Trenching / Excavating Phase Assumptions

- General Trenching/Excavating Information
Area of Site to be Trenched/Excavated (ft^2): 2600
Amount of Material to be Hauled On-Site (yd^3): 578
Amount of Material to be Hauled Off-Site (yd^3): 0

- Trenching Default Settings
Default Settings Used: Yes
Average Day(s) worked per week: 5 (default)

- Construction Exhaust (default)

Equipment Name	Number Of Equipment	Hours Per Day
Excavators Composite	2	8

Off-Highway Trucks Composite	1	8
Other General Industrial Equipment Composite	1	8
Rollers Composite	1	8
Tractors/Loaders/Backhoes Composite	1	8

- Vehicle Exhaust
Average Hauling Truck Capacity (yd^3): 20 (default)
Average Hauling Truck Round Trip Commute (mile): 20 (default)

- Vehicle Exhaust Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

- Worker Trips
Average Worker Round Trip Commute (mile): 20 (default)

- Worker Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	50.00	50.00	0	0	0	0	0

3.1.3 Trenching / Excavating Phase Emission Factor(s)

- Construction Exhaust Criteria Pollutant Emission Factors (g/hp-hour) (default)

Excavators Composite [HP: 36] [LF: 0.38]						
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**
Emission Factors	0.40191	0.00542	3.44643	4.21104	0.10704	0.09848
Off-Highway Trucks Composite [HP: 376] [LF: 0.38]						
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**
Emission Factors	0.17748	0.00488	1.08595	1.17415	0.03850	0.03542
Other General Industrial Equipment Composite [HP: 35] [LF: 0.34]						
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**
Emission Factors	0.49122	0.00542	3.71341	4.67487	0.13603	0.12515
Rollers Composite [HP: 36] [LF: 0.38]						
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**
Emission Factors	0.56682	0.00541	3.67816	4.11298	0.16639	0.15308
Tractors/Loaders/Backhoes Composite [HP: 84] [LF: 0.37]						
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**
Emission Factors	0.19600	0.00489	2.00960	3.48168	0.07738	0.07119

- Construction Exhaust Greenhouse Gasses Pollutant Emission Factors (g/hp-hour) (default)

Excavators Composite [HP: 36] [LF: 0.38]				
	CH_4	**N_2O**	**CO_2**	**CO_2e**
Emission Factors	0.02382	0.00476	587.13772	589.15263
Off-Highway Trucks Composite [HP: 376] [LF: 0.38]				
	CH_4	**N_2O**	**CO_2**	**CO_2e**
Emission Factors	0.02144	0.00429	528.58735	530.40133
Other General Industrial Equipment Composite [HP: 35] [LF: 0.34]				
	CH_4	**N_2O**	**CO_2**	**CO_2e**
Emission Factors	0.02385	0.00477	588.02637	590.04433
Rollers Composite [HP: 36] [LF: 0.38]				
	CH_4	**N_2O**	**CO_2**	**CO_2e**
Emission Factors	0.02381	0.00476	586.90234	588.91644
Tractors/Loaders/Backhoes Composite [HP: 84] [LF: 0.37]				
	CH_4	**N_2O**	**CO_2**	**CO_2e**

Emission Factors	0.02149	0.00430	529.86270	531.68105

- Vehicle Exhaust & Worker Trips Criteria Pollutant Emission Factors (grams/mile)

	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	NH_3
LDGV	0.30440	0.00175	0.13290	4.77199	0.00371	0.00328	0.05325
LDGT	0.26083	0.00216	0.17973	4.20900	0.00418	0.00370	0.04444
HDGV	0.98518	0.00481	0.66400	11.99902	0.02092	0.01850	0.09582
LDDV	0.08914	0.00133	0.14951	6.42748	0.00351	0.00323	0.01693
LDDT	0.20580	0.00152	0.47872	6.07454	0.00570	0.00525	0.01788
HDDV	0.12304	0.00426	2.47202	1.65242	0.05496	0.05057	0.06504
MC	3.22233	0.00193	0.54715	12.64378	0.02290	0.02026	0.05135

- Vehicle Exhaust & Worker Trips Greenhouse Gasses Emission Factors (grams/mile)

	CH_4	N_2O	CO_2	CO_2e
LDGV	0.01506	0.00514	346.03787	347.94148
LDGT	0.01548	0.00747	427.58921	430.19622
HDGV	0.05923	0.02786	951.90377	961.66618
LDDV	0.04271	0.00073	395.50643	396.79223
LDDT	0.03143	0.00108	447.56743	448.67639
HDDV	0.01995	0.16036	1266.81748	1315.09331
MC	0.11395	0.00333	391.06501	394.90588

3.1.4 Trenching / Excavating Phase Formula(s)

- Fugitive Dust Emissions per Phase

$PM10_{FD} = (20 * ACRE * WD) / 2000$

$PM10_{FD}$: Fugitive Dust PM_{10} Emissions (TONs)
20: Conversion Factor Acre Day to pounds (20 lb / 1 Acre Day)
ACRE: Total acres (acres)
WD: Number of Total Work Days (days)
2000: Conversion Factor pounds to tons

- Construction Exhaust Emissions per Phase

$CEE_{POL} = (NE * WD * H * HP * LF * EF_{POL} * 0.002205) / 2000$

CEE_{POL}: Construction Exhaust Emissions (TONs)
NE: Number of Equipment
WD: Number of Total Work Days (days)
H: Hours Worked per Day (hours)
HP: Equipment Horsepower
LF: Equipment Load Factor
EF_{POL}: Emission Factor for Pollutant (g/hp-hour)
0.002205: Conversion Factor grams to pounds
2000: Conversion Factor pounds to tons

- Vehicle Exhaust Emissions per Phase

$VMT_{VE} = (HA_{OnSite} + HA_{OffSite}) * (1 / HC) * HT$

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
HA_{OnSite}: Amount of Material to be Hauled On-Site (yd^3)
$HA_{OffSite}$: Amount of Material to be Hauled Off-Site (yd^3)
HC: Average Hauling Truck Capacity (yd^3)
(1 / HC): Conversion Factor cubic yards to trips (1 trip / HC yd^3)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

$V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Vehicle Exhaust On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

- Worker Trips Emissions per Phase
$VMT_{WT} = WD * WT * 1.25 * NE$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
WD: Number of Total Work Days (days)
WT: Average Worker Round Trip Commute (mile)
1.25: Conversion Factor Number of Construction Equipment to Number of Works
NE: Number of Construction Equipment

$V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Worker Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

3.2 Paving Phase

3.2.1 Paving Phase Timeline Assumptions

- Phase Start Date
Start Month: 1
Start Quarter: 3
Start Year: 2025

- Phase Duration
Number of Month: 0
Number of Days: 11

3.2.2 Paving Phase Assumptions

- General Paving Information
Paving Area (ft^2): 2600

- Paving Default Settings
Default Settings Used: Yes
Average Day(s) worked per week: 5 (default)

- Construction Exhaust (default)

Equipment Name	Number Of Equipment	Hours Per Day
Cement and Mortar Mixers Composite	4	6
Pavers Composite	1	7

Rollers Composite	1	7
Tractors/Loaders/Backhoes Composite	1	7

- Vehicle Exhaust
Average Hauling Truck Round Trip Commute (mile): 20 (default)

- Vehicle Exhaust Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

- Worker Trips
Average Worker Round Trip Commute (mile): 20 (default)

- Worker Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	50.00	50.00	0	0	0	0	0

3.2.3 Paving Phase Emission Factor(s)

- Construction Exhaust Criteria Pollutant Emission Factors (g/hp-hour) (default)

Cement and Mortar Mixers Composite [HP: 10] [LF: 0.56]						
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**
Emission Factors	0.55317	0.00854	4.19957	3.25548	0.16367	0.15057
Pavers Composite [HP: 81] [LF: 0.42]						
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**
Emission Factors	0.24787	0.00486	2.64574	3.44523	0.13933	0.12819
Rollers Composite [HP: 36] [LF: 0.38]						
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**
Emission Factors	0.56682	0.00541	3.67816	4.11298	0.16639	0.15308
Tractors/Loaders/Backhoes Composite [HP: 84] [LF: 0.37]						
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**
Emission Factors	0.19600	0.00489	2.00960	3.48168	0.07738	0.07119

- Construction Exhaust Greenhouse Gasses Pollutant Emission Factors (g/hp-hour) (default)

Cement and Mortar Mixers Composite [HP: 10] [LF: 0.56]				
	CH_4	**N_2O**	**CO_2**	**CO_2e**
Emission Factors	0.02313	0.00463	570.17504	572.13174
Pavers Composite [HP: 81] [LF: 0.42]				
	CH_4	**N_2O**	**CO_2**	**CO_2e**
Emission Factors	0.02136	0.00427	526.53742	528.34436
Rollers Composite [HP: 36] [LF: 0.38]				
	CH_4	**N_2O**	**CO_2**	**CO_2e**
Emission Factors	0.02381	0.00476	586.90234	588.91644
Tractors/Loaders/Backhoes Composite [HP: 84] [LF: 0.37]				
	CH_4	**N_2O**	**CO_2**	**CO_2e**
Emission Factors	0.02149	0.00430	529.86270	531.68105

- Vehicle Exhaust & Worker Trips Criteria Pollutant Emission Factors (grams/mile)

	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	NH_3
LDGV	0.30440	0.00175	0.13290	4.77199	0.00371	0.00328	0.05325
LDGT	0.26083	0.00216	0.17973	4.20900	0.00418	0.00370	0.04444
HDGV	0.98518	0.00481	0.66400	11.99902	0.02092	0.01850	0.09582
LDDV	0.08914	0.00133	0.14951	6.42748	0.00351	0.00323	0.01693
LDDT	0.20580	0.00152	0.47872	6.07454	0.00570	0.00525	0.01788

HDDV	0.12304	0.00426	2.47202	1.65242	0.05496	0.05057	0.06504
MC	3.22233	0.00193	0.54715	12.64378	0.02290	0.02026	0.05135

- Vehicle Exhaust & Worker Trips Greenhouse Gasses Emission Factors (grams/mile)

	CH_4	N_2O	CO_2	CO_2e
LDGV	0.01506	0.00514	346.03787	347.94148
LDGT	0.01548	0.00747	427.58921	430.19622
HDGV	0.05923	0.02786	951.90377	961.66618
LDDV	0.04271	0.00073	395.50643	396.79223
LDDT	0.03143	0.00108	447.56743	448.67639
HDDV	0.01995	0.16036	1266.81748	1315.09331
MC	0.11395	0.00333	391.06501	394.90588

3.2.4 Paving Phase Formula(s)

- Construction Exhaust Emissions per Phase
$CEE_{POL} = (NE * WD * H * EF_{POL}) / 2000$

- Construction Exhaust Emissions per Phase
$CEE_{POL} = (NE * WD * H * HP * LF * EF_{POL} * 0.002205) / 2000$

CEE_{POL}: Construction Exhaust Emissions (TONs)
NE: Number of Equipment
WD: Number of Total Work Days (days)
H: Hours Worked per Day (hours)
HP: Equipment Horsepower
LF: Equipment Load Factor
EF_{POL}: Emission Factor for Pollutant (g/hp-hour)
0.002205: Conversion Factor grams to pounds
2000: Conversion Factor pounds to tons

- Vehicle Exhaust Emissions per Phase
$VMT_{VE} = PA * 0.25 * (1 / 27) * (1 / HC) * HT$

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
PA: Paving Area (ft^2)
0.25: Thickness of Paving Area (ft)
(1 / 27): Conversion Factor cubic feet to cubic yards (1 yd^3 / 27 ft^3)
HC: Average Hauling Truck Capacity (yd^3)
(1 / HC): Conversion Factor cubic yards to trips (1 trip / HC yd^3)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

$V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Vehicle Exhaust On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

- Worker Trips Emissions per Phase
$VMT_{WT} = WD * WT * 1.25 * NE$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)

WD: Number of Total Work Days (days)
WT: Average Worker Round Trip Commute (mile)
1.25: Conversion Factor Number of Construction Equipment to Number of Works
NE: Number of Construction Equipment

$V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Worker Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

- Off-Gassing Emissions per Phase
$VOC_P = (2.62 * PA) / 43560 / 2000$

VOC_P: Paving VOC Emissions (TONs)
2.62: Emission Factor (lb/acre)
PA: Paving Area (ft^2)
43560: Conversion Factor square feet to acre (43560 ft2 / acre)^2 / acre)
2000: Conversion Factor square pounds to TONs (2000 lb / TON)

4. Construction / Demolition

4.1 General Information & Timeline Assumptions

- Activity Location
County: Bay
Regulatory Area(s): NOT IN A REGULATORY AREA

- Activity Title: Project 3: Drone tow-way Fence - Alternative 1

- Activity Description:
Construct a 7-feet-tall welded-wire fence. Two alternatives proposed. Clear 10 feet of buffer area on either side of fence, and relocate existing utilities. Involves up to approximately 17,692 CY of soil disturbance and excavation

Activity Square Feet
Construction - 5,465
Grading - 218,600
Trenching - 51,720

- Activity Start Date
Start Month: 1
Start Month: 2025

- Activity End Date
Indefinite: False
End Month: 6
End Month: 2025

- Activity Emissions:

Pollutant	Total Emissions (TONs)
VOC	0.042408
SO_x	0.000749
NO_x	0.370031
CO	0.488017

Pollutant	Total Emissions (TONs)
PM 10	2.445514
PM 2.5	0.015143
Pb	0.000000
NH_3	0.000735

- Activity Emissions of GHG:

Pollutant	Total Emissions (TONs)
CH_4	0.003384
N_2O	0.000876

Pollutant	Total Emissions (TONs)
CO_2	84.326123
CO_2e	84.671657

- Global Scale Activity Emissions for SCGHG:

Pollutant	Total Emissions (TONs)
CH_4	0.003384
N_2O	0.000876

Pollutant	Total Emissions (TONs)
CO_2	84.326123
CO_2e	84.671657

4.1 Site Grading Phase

4.1.1 Site Grading Phase Timeline Assumptions

- Phase Start Date
Start Month: 1
Start Quarter: 1
Start Year: 2025

- Phase Duration
Number of Month: 1
Number of Days: 0

4.1.2 Site Grading Phase Assumptions

- General Site Grading Information
Area of Site to be Graded (ft^2): 218600
Amount of Material to be Hauled On-Site (yd^3): 0
Amount of Material to be Hauled Off-Site (yd^3): 607

- Site Grading Default Settings
Default Settings Used: Yes
Average Day(s) worked per week: 5 (default)

- Construction Exhaust (default)

Equipment Name	Number Of Equipment	Hours Per Day
Graders Composite	1	8
Other Construction Equipment Composite	1	8
Rubber Tired Dozers Composite	1	8
Tractors/Loaders/Backhoes Composite	2	7

- Vehicle Exhaust
Average Hauling Truck Capacity (yd^3): 20 (default)
Average Hauling Truck Round Trip Commute (mile): 20 (default)

- Vehicle Exhaust Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC

POVs	0	0	0	0	0	100.00	0

- Worker Trips

Average Worker Round Trip Commute (mile): 20 (default)

- Worker Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	50.00	50.00	0	0	0	0	0

4.1.3 Site Grading Phase Emission Factor(s)

- Construction Exhaust Criteria Pollutant Emission Factors (g/hp-hour) (default)

Graders Composite [HP: 148] [LF: 0.41]						
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**
Emission Factors	0.33951	0.00490	2.85858	3.41896	0.15910	0.14637
Other Construction Equipment Composite [HP: 82] [LF: 0.42]						
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**
Emission Factors	0.29762	0.00487	2.89075	3.51214	0.17229	0.15851
Rubber Tired Dozers Composite [HP: 367] [LF: 0.4]						
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**
Emission Factors	0.37086	0.00491	3.50629	2.90209	0.15396	0.14165
Tractors/Loaders/Backhoes Composite [HP: 84] [LF: 0.37]						
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**
Emission Factors	0.19600	0.00489	2.00960	3.48168	0.07738	0.07119

- Construction Exhaust Greenhouse Gasses Pollutant Emission Factors (g/hp-hour) (default)

Graders Composite [HP: 148] [LF: 0.41]				
	CH_4	**N_2O**	**CO_2**	**CO_2e**
Emission Factors	0.02155	0.00431	531.19419	533.01712
Other Construction Equipment Composite [HP: 82] [LF: 0.42]				
	CH_4	**N_2O**	**CO_2**	**CO_2e**
Emission Factors	0.02141	0.00428	527.74261	529.55369
Rubber Tired Dozers Composite [HP: 367] [LF: 0.4]				
	CH_4	**N_2O**	**CO_2**	**CO_2e**
Emission Factors	0.02159	0.00432	532.17175	533.99803
Tractors/Loaders/Backhoes Composite [HP: 84] [LF: 0.37]				
	CH_4	**N_2O**	**CO_2**	**CO_2e**
Emission Factors	0.02149	0.00430	529.86270	531.68105

- Vehicle Exhaust & Worker Trips Criteria Pollutant Emission Factors (grams/mile)

	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	NH_3
LDGV	0.30440	0.00175	0.13290	4.77199	0.00371	0.00328	0.05325
LDGT	0.26083	0.00216	0.17973	4.20900	0.00418	0.00370	0.04444
HDGV	0.98518	0.00481	0.66400	11.99902	0.02092	0.01850	0.09582
LDDV	0.08914	0.00133	0.14951	6.42748	0.00351	0.00323	0.01693
LDDT	0.20580	0.00152	0.47872	6.07454	0.00570	0.00525	0.01788
HDDV	0.12304	0.00426	2.47202	1.65242	0.05496	0.05057	0.06504
MC	3.22233	0.00193	0.54715	12.64378	0.02290	0.02026	0.05135

- Vehicle Exhaust & Worker Trips Greenhouse Gasses Emission Factors (grams/mile)

	CH_4	N_2O	CO_2	CO_2e
LDGV	0.01506	0.00514	346.03787	347.94148
LDGT	0.01548	0.00747	427.58921	430.19622
HDGV	0.05923	0.02786	951.90377	961.66618

LDDV	0.04271	0.00073	395.50643	396.79223
LDDT	0.03143	0.00108	447.56743	448.67639
HDDV	0.01995	0.16036	1266.81748	1315.09331
MC	0.11395	0.00333	391.06501	394.90588

4.1.4 Site Grading Phase Formula(s)

- Fugitive Dust Emissions per Phase
$PM10_{FD} = (20 * ACRE * WD) / 2000$

$PM10_{FD}$: Fugitive Dust PM_{10} Emissions (TONs)
20: Conversion Factor Acre Day to pounds (20 lb / 1 Acre Day)
ACRE: Total acres (acres)
WD: Number of Total Work Days (days)
2000: Conversion Factor pounds to tons

- Construction Exhaust Emissions per Phase
$CEE_{POL} = (NE * WD * H * HP * LF * EF_{POL} * 0.002205) / 2000$

CEE_{POL}: Construction Exhaust Emissions (TONs)
NE: Number of Equipment
WD: Number of Total Work Days (days)
H: Hours Worked per Day (hours)
HP: Equipment Horsepower
LF: Equipment Load Factor
EF_{POL}: Emission Factor for Pollutant (g/hp-hour)
0.002205: Conversion Factor grams to pounds
2000: Conversion Factor pounds to tons

- Vehicle Exhaust Emissions per Phase
$VMT_{VE} = (HA_{OnSite} + HA_{OffSite}) * (1 / HC) * HT$

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
HA_{OnSite}: Amount of Material to be Hauled On-Site (yd^3)
$HA_{OffSite}$: Amount of Material to be Hauled Off-Site (yd^3)
HC: Average Hauling Truck Capacity (yd^3)
(1 / HC): Conversion Factor cubic yards to trips (1 trip / HC yd^3)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

$V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Vehicle Exhaust On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

- Worker Trips Emissions per Phase
$VMT_{WT} = WD * WT * 1.25 * NE$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
WD: Number of Total Work Days (days)
WT: Average Worker Round Trip Commute (mile)
1.25: Conversion Factor Number of Construction Equipment to Number of Works

NE: Number of Construction Equipment

$V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

4.2 Trenching/Excavating Phase

4.2.1 Trenching / Excavating Phase Timeline Assumptions

- Phase Start Date
Start Month: 2
Start Quarter: 1
Start Year: 2025

- Phase Duration
Number of Month: 0
Number of Days: 15

4.2.2 Trenching / Excavating Phase Assumptions

- General Trenching/Excavating Information
Area of Site to be Trenched/Excavated (ft^2): 51720
Amount of Material to be Hauled On-Site (yd^3): 202
Amount of Material to be Hauled Off-Site (yd^3): 0

- Trenching Default Settings
Default Settings Used: Yes
Average Day(s) worked per week: 5 (default)

- Construction Exhaust (default)

Equipment Name	Number Of Equipment	Hours Per Day
Excavators Composite	2	8
Other General Industrial Equipment Composite	1	8
Tractors/Loaders/Backhoes Composite	1	8

- Vehicle Exhaust
Average Hauling Truck Capacity (yd^3): 20 (default)
Average Hauling Truck Round Trip Commute (mile): 20 (default)

- Vehicle Exhaust Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

- Worker Trips
Average Worker Round Trip Commute (mile): 20 (default)

- Worker Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC

POVs	50.00	50.00	0	0	0	0	0

4.2.3 Trenching / Excavating Phase Emission Factor(s)

- Construction Exhaust Criteria Pollutant Emission Factors (g/hp-hour) (default)

Excavators Composite [HP: 36] [LF: 0.38]						
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**
Emission Factors	0.40191	0.00542	3.44643	4.21104	0.10704	0.09848
Other General Industrial Equipment Composite [HP: 35] [LF: 0.34]						
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**
Emission Factors	0.49122	0.00542	3.71341	4.67487	0.13603	0.12515
Tractors/Loaders/Backhoes Composite [HP: 84] [LF: 0.37]						
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**
Emission Factors	0.19600	0.00489	2.00960	3.48168	0.07738	0.07119

- Construction Exhaust Greenhouse Gasses Pollutant Emission Factors (g/hp-hour) (default)

Excavators Composite [HP: 36] [LF: 0.38]				
	CH_4	**N_2O**	**CO_2**	**CO_2e**
Emission Factors	0.02382	0.00476	587.13772	589.15263
Other General Industrial Equipment Composite [HP: 35] [LF: 0.34]				
	CH_4	**N_2O**	**CO_2**	**CO_2e**
Emission Factors	0.02385	0.00477	588.02637	590.04433
Tractors/Loaders/Backhoes Composite [HP: 84] [LF: 0.37]				
	CH_4	**N_2O**	**CO_2**	**CO_2e**
Emission Factors	0.02149	0.00430	529.86270	531.68105

- Vehicle Exhaust & Worker Trips Criteria Pollutant Emission Factors (grams/mile)

	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**NH_3**
LDGV	0.30440	0.00175	0.13290	4.77199	0.00371	0.00328	0.05325
LDGT	0.26083	0.00216	0.17973	4.20900	0.00418	0.00370	0.04444
HDGV	0.98518	0.00481	0.66400	11.99902	0.02092	0.01850	0.09582
LDDV	0.08914	0.00133	0.14951	6.42748	0.00351	0.00323	0.01693
LDDT	0.20580	0.00152	0.47872	6.07454	0.00570	0.00525	0.01788
HDDV	0.12304	0.00426	2.47202	1.65242	0.05496	0.05057	0.06504
MC	3.22233	0.00193	0.54715	12.64378	0.02290	0.02026	0.05135

- Vehicle Exhaust & Worker Trips Greenhouse Gasses Emission Factors (grams/mile)

	CH_4	**N_2O**	**CO_2**	**CO_2e**
LDGV	0.01506	0.00514	346.03787	347.94148
LDGT	0.01548	0.00747	427.58921	430.19622
HDGV	0.05923	0.02786	951.90377	961.66618
LDDV	0.04271	0.00073	395.50643	396.79223
LDDT	0.03143	0.00108	447.56743	448.67639
HDDV	0.01995	0.16036	1266.81748	1315.09331
MC	0.11395	0.00333	391.06501	394.90588

4.2.4 Trenching / Excavating Phase Formula(s)

- Fugitive Dust Emissions per Phase

$PM10_{FD} = (20 * ACRE * WD) / 2000$

$PM10_{FD}$: Fugitive Dust PM 10 Emissions (TONs)
20: Conversion Factor Acre Day to pounds (20 lb / 1 Acre Day)
ACRE: Total acres (acres)

WD: Number of Total Work Days (days)
2000: Conversion Factor pounds to tons

- Construction Exhaust Emissions per Phase

$CEE_{POL} = (NE * WD * H * HP * LF * EF_{POL} * 0.002205) / 2000$

CEE_{POL}: Construction Exhaust Emissions (TONs)
NE: Number of Equipment
WD: Number of Total Work Days (days)
H: Hours Worked per Day (hours)
HP: Equipment Horsepower
LF: Equipment Load Factor
EF_{POL}: Emission Factor for Pollutant (g/hp-hour)
0.002205: Conversion Factor grams to pounds
2000: Conversion Factor pounds to tons

- Vehicle Exhaust Emissions per Phase

$VMT_{VE} = (HA_{OnSite} + HA_{OffSite}) * (1 / HC) * HT$

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
HA_{OnSite}: Amount of Material to be Hauled On-Site (yd^3)
$HA_{OffSite}$: Amount of Material to be Hauled Off-Site (yd^3)
HC: Average Hauling Truck Capacity (yd^3)
(1 / HC): Conversion Factor cubic yards to trips (1 trip / HC yd^3)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

$V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Vehicle Exhaust On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

- Worker Trips Emissions per Phase

$VMT_{WT} = WD * WT * 1.25 * NE$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
WD: Number of Total Work Days (days)
WT: Average Worker Round Trip Commute (mile)
1.25: Conversion Factor Number of Construction Equipment to Number of Works
NE: Number of Construction Equipment

$V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Worker Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

4.3 Building Construction Phase

4.3.1 Building Construction Phase Timeline Assumptions

- Phase Start Date
Start Month: 2
Start Quarter: 3
Start Year: 2025

- Phase Duration
Number of Month: 4
Number of Days: 0

4.3.2 Building Construction Phase Assumptions

- General Building Construction Information
Building Category: Office or Industrial
Area of Building (ft^2): 5465
Height of Building (ft): 1
Number of Units: N/A

- Building Construction Default Settings
Default Settings Used: Yes
Average Day(s) worked per week: 5 (default)

- Construction Exhaust (default)

Equipment Name	Number Of Equipment	Hours Per Day
Cranes Composite	1	4
Forklifts Composite	2	6
Tractors/Loaders/Backhoes Composite	1	8

- Vehicle Exhaust
Average Hauling Truck Round Trip Commute (mile): 20 (default)

- Vehicle Exhaust Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

- Worker Trips
Average Worker Round Trip Commute (mile): 20 (default)

- Worker Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	50.00	50.00	0	0	0	0	0

- Vendor Trips
Average Vendor Round Trip Commute (mile): 40 (default)

- Vendor Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

4.3.3 Building Construction Phase Emission Factor(s)

- Construction Exhaust Criteria Pollutant Emission Factors (g/hp-hour) (default)

Cranes Composite [HP: 367] [LF: 0.29]

	VOC	SO_x	NO_x	CO	PM 10	PM 2.5
Emission Factors	0.20113	0.00487	1.94968	1.66287	0.07909	0.07277
Forklifts Composite [HP: 82] [LF: 0.2]						
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**
Emission Factors	0.26944	0.00487	2.55142	3.59881	0.13498	0.12418
Tractors/Loaders/Backhoes Composite [HP: 84] [LF: 0.37]						
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**
Emission Factors	0.19600	0.00489	2.00960	3.48168	0.07738	0.07119

- Construction Exhaust Greenhouse Gasses Pollutant Emission Factors (g/hp-hour) (default)

Cranes Composite [HP: 367] [LF: 0.29]				
	CH_4	**N_2O**	**CO_2**	**CO_2e**
Emission Factors	0.02140	0.00428	527.58451	529.39505
Forklifts Composite [HP: 82] [LF: 0.2]				
	CH_4	**N_2O**	**CO_2**	**CO_2e**
Emission Factors	0.02138	0.00428	527.10822	528.91712
Tractors/Loaders/Backhoes Composite [HP: 84] [LF: 0.37]				
	CH_4	**N_2O**	**CO_2**	**CO_2e**
Emission Factors	0.02149	0.00430	529.86270	531.68105

- Vehicle Exhaust & Worker Trips Criteria Pollutant Emission Factors (grams/mile)

	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	NH_3
LDGV	0.30440	0.00175	0.13290	4.77199	0.00371	0.00328	0.05325
LDGT	0.26083	0.00216	0.17973	4.20900	0.00418	0.00370	0.04444
HDGV	0.98518	0.00481	0.66400	11.99902	0.02092	0.01850	0.09582
LDDV	0.08914	0.00133	0.14951	6.42748	0.00351	0.00323	0.01693
LDDT	0.20580	0.00152	0.47872	6.07454	0.00570	0.00525	0.01788
HDDV	0.12304	0.00426	2.47202	1.65242	0.05496	0.05057	0.06504
MC	3.22233	0.00193	0.54715	12.64378	0.02290	0.02026	0.05135

- Vehicle Exhaust & Worker Trips Greenhouse Gasses Emission Factors (grams/mile)

	CH_4	N_2O	CO_2	CO_2e
LDGV	0.01506	0.00514	346.03787	347.94148
LDGT	0.01548	0.00747	427.58921	430.19622
HDGV	0.05923	0.02786	951.90377	961.66618
LDDV	0.04271	0.00073	395.50643	396.79223
LDDT	0.03143	0.00108	447.56743	448.67639
HDDV	0.01995	0.16036	1266.81748	1315.09331
MC	0.11395	0.00333	391.06501	394.90588

4.3.4 Building Construction Phase Formula(s)

- Construction Exhaust Emissions per Phase

$CEE_{POL} = (NE * WD * H * HP * LF * EF_{POL} * 0.002205) / 2000$

CEE_{POL}: Construction Exhaust Emissions (TONs)
NE: Number of Equipment
WD: Number of Total Work Days (days)
H: Hours Worked per Day (hours)
HP: Equipment Horsepower
LF: Equipment Load Factor
EF_{POL}: Emission Factor for Pollutant (g/hp-hour)
0.002205: Conversion Factor grams to pounds
2000: Conversion Factor pounds to tons

- Vehicle Exhaust Emissions per Phase

$VMT_{VE} = BA * BH * (0.42 / 1000) * HT$

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
BA: Area of Building (ft^2)
BH: Height of Building (ft)
(0.42 / 1000): Conversion Factor ft^3 to trips (0.42 trip / 1000 ft^3)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

$V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

- Worker Trips Emissions per Phase

$VMT_{WT} = WD * WT * 1.25 * NE$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
WD: Number of Total Work Days (days)
WT: Average Worker Round Trip Commute (mile)
1.25: Conversion Factor Number of Construction Equipment to Number of Works
NE: Number of Construction Equipment

$V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

- Vender Trips Emissions per Phase

$VMT_{VT} = BA * BH * (0.38 / 1000) * HT$

VMT_{VT}: Vender Trips Vehicle Miles Travel (miles)
BA: Area of Building (ft^2)
BH: Height of Building (ft)
(0.38 / 1000): Conversion Factor ft^3 to trips (0.38 trip / 1000 ft^3)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

$V_{POL} = (VMT_{VT} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VT}: Vender Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

5. Construction / Demolition

5.1 General Information & Timeline Assumptions

- Activity Location
County: Bay
Regulatory Area(s): NOT IN A REGULATORY AREA

- Activity Title: Project 4: 7000 Area Improvements - Alternative 1

- Activity Description:
Construct fueling station, reinforced concrete slab or asphalt pavement parking area, an expanded access drive and parking area in the 7000 Area with utilities, lighting and security fence.
Total maximum soil disturbance and excavation = 37,444 Cubic Yards (CY).

Activity Square Feet
Construction - 573,647
Grading - 590,987
Trenching - 31,810
Paving Asphalt - 457,653

- Activity Start Date
Start Month: 1
Start Month: 2025

- Activity End Date
Indefinite: False
End Month: 10
End Month: 2025

- Activity Emissions:

Pollutant	Total Emissions (TONs)
VOC	0.170133
SO_x	0.002852
NO_x	1.319630
CO	1.752999

Pollutant	Total Emissions (TONs)
PM 10	8.998136
PM 2.5	0.050850
Pb	0.000000
NH_3	0.003258

- Activity Emissions of GHG:

Pollutant	Total Emissions (TONs)
CH_4	0.012484
N_2O	0.004094

Pollutant	Total Emissions (TONs)
CO_2	315.353907
CO_2e	316.885662

- Global Scale Activity Emissions for SCGHG:

Pollutant	Total Emissions (TONs)
CH_4	0.012484
N_2O	0.004094

Pollutant	Total Emissions (TONs)
CO_2	315.353907
CO_2e	316.885662

5.1 Site Grading Phase

5.1.1 Site Grading Phase Timeline Assumptions

- Phase Start Date

Start Month: 1
Start Quarter: 1
Start Year: 2025

- Phase Duration
Number of Month: 1
Number of Days: 15

5.1.2 Site Grading Phase Assumptions

- General Site Grading Information
Area of Site to be Graded (ft^2): 590987
Amount of Material to be Hauled On-Site (yd^3): 0
Amount of Material to be Hauled Off-Site (yd^3): 1642

- Site Grading Default Settings
Default Settings Used: Yes
Average Day(s) worked per week: 5 (default)

- Construction Exhaust (default)

Equipment Name	Number Of Equipment	Hours Per Day
Excavators Composite	1	8
Graders Composite	1	8
Other Construction Equipment Composite	1	8
Rubber Tired Dozers Composite	1	8
Scrapers Composite	2	8
Tractors/Loaders/Backhoes Composite	3	8

- Vehicle Exhaust
Average Hauling Truck Capacity (yd^3): 20 (default)
Average Hauling Truck Round Trip Commute (mile): 20 (default)

- Vehicle Exhaust Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

- Worker Trips
Average Worker Round Trip Commute (mile): 20 (default)

- Worker Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	50.00	50.00	0	0	0	0	0

5.1.3 Site Grading Phase Emission Factor(s)

- Construction Exhaust Criteria Pollutant Emission Factors (g/hp-hour) (default)

Excavators Composite [HP: 36] [LF: 0.38]						
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**
Emission Factors	0.40191	0.00542	3.44643	4.21104	0.10704	0.09848
Graders Composite [HP: 148] [LF: 0.41]						
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**
Emission Factors	0.33951	0.00490	2.85858	3.41896	0.15910	0.14637
Other Construction Equipment Composite [HP: 82] [LF: 0.42]						
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**

Emission Factors	0.29762	0.00487	2.89075	3.51214	0.17229	0.15851
Rubber Tired Dozers Composite [HP: 367] [LF: 0.4]						
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**
Emission Factors	0.37086	0.00491	3.50629	2.90209	0.15396	0.14165
Scrapers Composite [HP: 423] [LF: 0.48]						
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**
Emission Factors	0.20447	0.00489	1.90932	1.57611	0.07394	0.06803
Tractors/Loaders/Backhoes Composite [HP: 84] [LF: 0.37]						
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**
Emission Factors	0.19600	0.00489	2.00960	3.48168	0.07738	0.07119

- Construction Exhaust Greenhouse Gasses Pollutant Emission Factors (g/hp-hour) (default)

Excavators Composite [HP: 36] [LF: 0.38]				
	CH_4	**N_2O**	**CO_2**	**CO_2e**
Emission Factors	0.02382	0.00476	587.13772	589.15263
Graders Composite [HP: 148] [LF: 0.41]				
	CH_4	**N_2O**	**CO_2**	**CO_2e**
Emission Factors	0.02155	0.00431	531.19419	533.01712
Other Construction Equipment Composite [HP: 82] [LF: 0.42]				
	CH_4	**N_2O**	**CO_2**	**CO_2e**
Emission Factors	0.02141	0.00428	527.74261	529.55369
Rubber Tired Dozers Composite [HP: 367] [LF: 0.4]				
	CH_4	**N_2O**	**CO_2**	**CO_2e**
Emission Factors	0.02159	0.00432	532.17175	533.99803
Scrapers Composite [HP: 423] [LF: 0.48]				
	CH_4	**N_2O**	**CO_2**	**CO_2e**
Emission Factors	0.02146	0.00429	528.94235	530.75755
Tractors/Loaders/Backhoes Composite [HP: 84] [LF: 0.37]				
	CH_4	**N_2O**	**CO_2**	**CO_2e**
Emission Factors	0.02149	0.00430	529.86270	531.68105

- Vehicle Exhaust & Worker Trips Criteria Pollutant Emission Factors (grams/mile)

	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**NH_3**
LDGV	0.30440	0.00175	0.13290	4.77199	0.00371	0.00328	0.05325
LDGT	0.26083	0.00216	0.17973	4.20900	0.00418	0.00370	0.04444
HDGV	0.98518	0.00481	0.66400	11.99902	0.02092	0.01850	0.09582
LDDV	0.08914	0.00133	0.14951	6.42748	0.00351	0.00323	0.01693
LDDT	0.20580	0.00152	0.47872	6.07454	0.00570	0.00525	0.01788
HDDV	0.12304	0.00426	2.47202	1.65242	0.05496	0.05057	0.06504
MC	3.22233	0.00193	0.54715	12.64378	0.02290	0.02026	0.05135

- Vehicle Exhaust & Worker Trips Greenhouse Gasses Emission Factors (grams/mile)

	CH_4	**N_2O**	**CO_2**	**CO_2e**
LDGV	0.01506	0.00514	346.03787	347.94148
LDGT	0.01548	0.00747	427.58921	430.19622
HDGV	0.05923	0.02786	951.90377	961.66618
LDDV	0.04271	0.00073	395.50643	396.79223
LDDT	0.03143	0.00108	447.56743	448.67639
HDDV	0.01995	0.16036	1266.81748	1315.09331
MC	0.11395	0.00333	391.06501	394.90588

5.1.4 Site Grading Phase Formula(s)

- Fugitive Dust Emissions per Phase

$PM10_{FD}$ = (20 * ACRE * WD) / 2000

$PM10_{FD}$: Fugitive Dust PM_{10} Emissions (TONs)
20: Conversion Factor Acre Day to pounds (20 lb / 1 Acre Day)
ACRE: Total acres (acres)
WD: Number of Total Work Days (days)
2000: Conversion Factor pounds to tons

- Construction Exhaust Emissions per Phase
CEE_{POL} = (NE * WD * H * HP * LF * EF_{POL}* 0.002205) / 2000

CEE_{POL}: Construction Exhaust Emissions (TONs)
NE: Number of Equipment
WD: Number of Total Work Days (days)
H: Hours Worked per Day (hours)
HP: Equipment Horsepower
LF: Equipment Load Factor
EF_{POL}: Emission Factor for Pollutant (g/hp-hour)
0.002205: Conversion Factor grams to pounds
2000: Conversion Factor pounds to tons

- Vehicle Exhaust Emissions per Phase
VMT_{VE} = (HA_{OnSite} + $HA_{OffSite}$) * (1 / HC) * HT

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
HA_{OnSite}: Amount of Material to be Hauled On-Site (yd^3)
$HA_{OffSite}$: Amount of Material to be Hauled Off-Site (yd^3)
HC: Average Hauling Truck Capacity (yd^3)
(1 / HC): Conversion Factor cubic yards to trips (1 trip / HC yd^3)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM) / 2000

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Vehicle Exhaust On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

- Worker Trips Emissions per Phase
VMT_{WT} = WD * WT * 1.25 * NE

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
WD: Number of Total Work Days (days)
WT: Average Worker Round Trip Commute (mile)
1.25: Conversion Factor Number of Construction Equipment to Number of Works
NE: Number of Construction Equipment

V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM) / 2000

V_{POL}: Vehicle Emissions (TONs)
VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)

VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

5.2 Trenching/Excavating Phase

5.2.1 Trenching / Excavating Phase Timeline Assumptions

- Phase Start Date
Start Month: 2
Start Quarter: 3
Start Year: 2025

- Phase Duration
Number of Month: 0
Number of Days: 15

5.2.2 Trenching / Excavating Phase Assumptions

- General Trenching/Excavating Information
Area of Site to be Trenched/Excavated (ft^2): 31810
Amount of Material to be Hauled On-Site (yd^3): 234
Amount of Material to be Hauled Off-Site (yd^3): 0

- Trenching Default Settings
Default Settings Used: Yes
Average Day(s) worked per week: 5 (default)

- Construction Exhaust (default)

Equipment Name	Number Of Equipment	Hours Per Day
Excavators Composite	2	8
Other General Industrial Equipment Composite	1	8
Tractors/Loaders/Backhoes Composite	1	8

- Vehicle Exhaust
Average Hauling Truck Capacity (yd^3): 20 (default)
Average Hauling Truck Round Trip Commute (mile): 20 (default)

- Vehicle Exhaust Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

- Worker Trips
Average Worker Round Trip Commute (mile): 20 (default)

- Worker Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	50.00	50.00	0	0	0	0	0

5.2.3 Trenching / Excavating Phase Emission Factor(s)

- Construction Exhaust Criteria Pollutant Emission Factors (g/hp-hour) (default)

Excavators Composite [HP: 36] [LF: 0.38]						
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5
Emission Factors	0.40191	0.00542	3.44643	4.21104	0.10704	0.09848

Other General Industrial Equipment Composite [HP: 35] [LF: 0.34]						
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5
Emission Factors	0.49122	0.00542	3.71341	4.67487	0.13603	0.12515
Tractors/Loaders/Backhoes Composite [HP: 84] [LF: 0.37]						
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5
Emission Factors	0.19600	0.00489	2.00960	3.48168	0.07738	0.07119

- Construction Exhaust Greenhouse Gasses Pollutant Emission Factors (g/hp-hour) (default)

Excavators Composite [HP: 36] [LF: 0.38]				
	CH_4	N_2O	CO_2	CO_2e
Emission Factors	0.02382	0.00476	587.13772	589.15263
Other General Industrial Equipment Composite [HP: 35] [LF: 0.34]				
	CH_4	N_2O	CO_2	CO_2e
Emission Factors	0.02385	0.00477	588.02637	590.04433
Tractors/Loaders/Backhoes Composite [HP: 84] [LF: 0.37]				
	CH_4	N_2O	CO_2	CO_2e
Emission Factors	0.02149	0.00430	529.86270	531.68105

- Vehicle Exhaust & Worker Trips Criteria Pollutant Emission Factors (grams/mile)

	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	NH_3
LDGV	0.30440	0.00175	0.13290	4.77199	0.00371	0.00328	0.05325
LDGT	0.26083	0.00216	0.17973	4.20900	0.00418	0.00370	0.04444
HDGV	0.98518	0.00481	0.66400	11.99902	0.02092	0.01850	0.09582
LDDV	0.08914	0.00133	0.14951	6.42748	0.00351	0.00323	0.01693
LDDT	0.20580	0.00152	0.47872	6.07454	0.00570	0.00525	0.01788
HDDV	0.12304	0.00426	2.47202	1.65242	0.05496	0.05057	0.06504
MC	3.22233	0.00193	0.54715	12.64378	0.02290	0.02026	0.05135

- Vehicle Exhaust & Worker Trips Greenhouse Gasses Emission Factors (grams/mile)

	CH_4	N_2O	CO_2	CO_2e
LDGV	0.01506	0.00514	346.03787	347.94148
LDGT	0.01548	0.00747	427.58921	430.19622
HDGV	0.05923	0.02786	951.90377	961.66618
LDDV	0.04271	0.00073	395.50643	396.79223
LDDT	0.03143	0.00108	447.56743	448.67639
HDDV	0.01995	0.16036	1266.81748	1315.09331
MC	0.11395	0.00333	391.06501	394.90588

5.2.4 Trenching / Excavating Phase Formula(s)

- Fugitive Dust Emissions per Phase

$PM10_{FD}$ = (20 * ACRE * WD) / 2000

$PM10_{FD}$: Fugitive Dust PM_{10} Emissions (TONs)
20: Conversion Factor Acre Day to pounds (20 lb / 1 Acre Day)
ACRE: Total acres (acres)
WD: Number of Total Work Days (days)
2000: Conversion Factor pounds to tons

- Construction Exhaust Emissions per Phase

CEE_{POL} = (NE * WD * H * HP * LF * EF_{POL}* 0.002205) / 2000

CEE_{POL}: Construction Exhaust Emissions (TONs)
NE: Number of Equipment

WD: Number of Total Work Days (days)
H: Hours Worked per Day (hours)
HP: Equipment Horsepower
LF: Equipment Load Factor
EF_{POL}: Emission Factor for Pollutant (g/hp-hour)
0.002205: Conversion Factor grams to pounds
2000: Conversion Factor pounds to tons

- Vehicle Exhaust Emissions per Phase

$VMT_{VE} = (HA_{OnSite} + HA_{OffSite}) * (1 / HC) * HT$

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
HA_{OnSite}: Amount of Material to be Hauled On-Site (yd^3)
$HA_{OffSite}$: Amount of Material to be Hauled Off-Site (yd^3)
HC: Average Hauling Truck Capacity (yd^3)
(1 / HC): Conversion Factor cubic yards to trips (1 trip / HC yd^3)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

$V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Vehicle Exhaust On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

- Worker Trips Emissions per Phase

$VMT_{WT} = WD * WT * 1.25 * NE$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
WD: Number of Total Work Days (days)
WT: Average Worker Round Trip Commute (mile)
1.25: Conversion Factor Number of Construction Equipment to Number of Works
NE: Number of Construction Equipment

$V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Worker Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

5.3 Building Construction Phase

5.3.1 Building Construction Phase Timeline Assumptions

- Phase Start Date

Start Month: 3
Start Quarter: 1
Start Year: 2025

- Phase Duration

Number of Month: 4
Number of Days: 0

5.3.2 Building Construction Phase Assumptions

- General Building Construction Information
Building Category: Commercial or Retail
Area of Building (ft^2): 573647
Height of Building (ft): 0.5
Number of Units: N/A

- Building Construction Default Settings
Default Settings Used: Yes
Average Day(s) worked per week: 5 (default)

- Construction Exhaust (default)

Equipment Name	Number Of Equipment	Hours Per Day
Cranes Composite	1	7
Forklifts Composite	3	8
Generator Sets Composite	1	8
Tractors/Loaders/Backhoes Composite	3	7
Welders Composite	1	8

- Vehicle Exhaust
Average Hauling Truck Round Trip Commute (mile): 20 (default)

- Vehicle Exhaust Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

- Worker Trips
Average Worker Round Trip Commute (mile): 20 (default)

- Worker Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	50.00	50.00	0	0	0	0	0

- Vendor Trips
Average Vendor Round Trip Commute (mile): 40 (default)

- Vendor Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

5.3.3 Building Construction Phase Emission Factor(s)

- Construction Exhaust Criteria Pollutant Emission Factors (g/hp-hour) (default)

Cranes Composite [HP: 367] [LF: 0.29]						
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**
Emission Factors	0.20113	0.00487	1.94968	1.66287	0.07909	0.07277
Forklifts Composite [HP: 82] [LF: 0.2]						
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**
Emission Factors	0.26944	0.00487	2.55142	3.59881	0.13498	0.12418
Generator Sets Composite [HP: 14] [LF: 0.74]						

	VOC	SO_x	NO_x	CO	PM 10	PM 2.5
Emission Factors	0.54223	0.00793	4.34662	2.86938	0.17681	0.16267
Tractors/Loaders/Backhoes Composite [HP: 84] [LF: 0.37]						
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**
Emission Factors	0.19600	0.00489	2.00960	3.48168	0.07738	0.07119
Welders Composite [HP: 46] [LF: 0.45]						
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**
Emission Factors	0.49757	0.00735	3.67618	4.52476	0.11274	0.10373

- Construction Exhaust Greenhouse Gasses Pollutant Emission Factors (g/hp-hour) (default)

Cranes Composite [HP: 367] [LF: 0.29]				
	CH_4	**N_2O**	**CO_2**	**CO_2e**
Emission Factors	0.02140	0.00428	527.58451	529.39505
Forklifts Composite [HP: 82] [LF: 0.2]				
	CH_4	**N_2O**	**CO_2**	**CO_2e**
Emission Factors	0.02138	0.00428	527.10822	528.91712
Generator Sets Composite [HP: 14] [LF: 0.74]				
	CH_4	**N_2O**	**CO_2**	**CO_2e**
Emission Factors	0.02305	0.00461	568.32220	570.27253
Tractors/Loaders/Backhoes Composite [HP: 84] [LF: 0.37]				
	CH_4	**N_2O**	**CO_2**	**CO_2e**
Emission Factors	0.02149	0.00430	529.86270	531.68105
Welders Composite [HP: 46] [LF: 0.45]				
	CH_4	**N_2O**	**CO_2**	**CO_2e**
Emission Factors	0.02305	0.00461	568.30078	570.25105

- Vehicle Exhaust & Worker Trips Criteria Pollutant Emission Factors (grams/mile)

	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	NH_3
LDGV	0.30440	0.00175	0.13290	4.77199	0.00371	0.00328	0.05325
LDGT	0.26083	0.00216	0.17973	4.20900	0.00418	0.00370	0.04444
HDGV	0.98518	0.00481	0.66400	11.99902	0.02092	0.01850	0.09582
LDDV	0.08914	0.00133	0.14951	6.42748	0.00351	0.00323	0.01693
LDDT	0.20580	0.00152	0.47872	6.07454	0.00570	0.00525	0.01788
HDDV	0.12304	0.00426	2.47202	1.65242	0.05496	0.05057	0.06504
MC	3.22233	0.00193	0.54715	12.64378	0.02290	0.02026	0.05135

- Vehicle Exhaust & Worker Trips Greenhouse Gasses Emission Factors (grams/mile)

	CH_4	N_2O	CO_2	CO_2e
LDGV	0.01506	0.00514	346.03787	347.94148
LDGT	0.01548	0.00747	427.58921	430.19622
HDGV	0.05923	0.02786	951.90377	961.66618
LDDV	0.04271	0.00073	395.50643	396.79223
LDDT	0.03143	0.00108	447.56743	448.67639
HDDV	0.01995	0.16036	1266.81748	1315.09331
MC	0.11395	0.00333	391.06501	394.90588

5.3.4 Building Construction Phase Formula(s)

- Construction Exhaust Emissions per Phase

$CEE_{POL} = (NE * WD * H * HP * LF * EF_{POL} * 0.002205) / 2000$

CEE_{POL}: Construction Exhaust Emissions (TONs)
NE: Number of Equipment
WD: Number of Total Work Days (days)

H: Hours Worked per Day (hours)
HP: Equipment Horsepower
LF: Equipment Load Factor
EF_{POL}: Emission Factor for Pollutant (g/hp-hour)
0.002205: Conversion Factor grams to pounds
2000: Conversion Factor pounds to tons

- Vehicle Exhaust Emissions per Phase

$VMT_{VE} = BA * BH * (0.32 / 1000) * HT$

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
BA: Area of Building (ft^2)
BH: Height of Building (ft)
(0.32 / 1000): Conversion Factor ft^3 to trips (0.32 trip / 1000 ft^3)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

$V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

- Worker Trips Emissions per Phase

$VMT_{WT} = WD * WT * 1.25 * NE$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
WD: Number of Total Work Days (days)
WT: Average Worker Round Trip Commute (mile)
1.25: Conversion Factor Number of Construction Equipment to Number of Works
NE: Number of Construction Equipment

$V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

- Vender Trips Emissions per Phase

$VMT_{VT} = BA * BH * (0.05 / 1000) * HT$

VMT_{VT}: Vender Trips Vehicle Miles Travel (miles)
BA: Area of Building (ft^2)
BH: Height of Building (ft)
(0.05 / 1000): Conversion Factor ft^3 to trips (0.05 trip / 1000 ft^3)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

$V_{POL} = (VMT_{VT} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)

VMT_{VT}: Vender Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

5.4 Paving Phase

5.4.1 Paving Phase Timeline Assumptions

- Phase Start Date
Start Month: 7
Start Quarter: 1
Start Year: 2025

- Phase Duration
Number of Month: 4
Number of Days: 0

5.4.2 Paving Phase Assumptions

- General Paving Information
Paving Area (ft^2): 457653

- Paving Default Settings
Default Settings Used: Yes
Average Day(s) worked per week: 5 (default)

- Construction Exhaust (default)

Equipment Name	Number Of Equipment	Hours Per Day
Cement and Mortar Mixers Composite	4	6
Pavers Composite	1	8
Paving Equipment Composite	2	6
Rollers Composite	2	6
Tractors/Loaders/Backhoes Composite	1	7

- Vehicle Exhaust
Average Hauling Truck Round Trip Commute (mile): 20 (default)

- Vehicle Exhaust Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

- Worker Trips
Average Worker Round Trip Commute (mile): 20 (default)

- Worker Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	50.00	50.00	0	0	0	0	0

5.4.3 Paving Phase Emission Factor(s)

- Construction Exhaust Criteria Pollutant Emission Factors (g/hp-hour) (default)

Cement and Mortar Mixers Composite [HP: 10] [LF: 0.56]

	VOC	SO_x	NO_x	CO	PM 10	PM 2.5
Emission Factors	0.55317	0.00854	4.19957	3.25548	0.16367	0.15057
Pavers Composite [HP: 81] [LF: 0.42]						
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**
Emission Factors	0.24787	0.00486	2.64574	3.44523	0.13933	0.12819
Paving Equipment Composite [HP: 89] [LF: 0.36]						
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**
Emission Factors	0.20238	0.00487	2.21583	3.41771	0.08945	0.08229
Rollers Composite [HP: 36] [LF: 0.38]						
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**
Emission Factors	0.56682	0.00541	3.67816	4.11298	0.16639	0.15308
Tractors/Loaders/Backhoes Composite [HP: 84] [LF: 0.37]						
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**
Emission Factors	0.19600	0.00489	2.00960	3.48168	0.07738	0.07119

- Construction Exhaust Greenhouse Gasses Pollutant Emission Factors (g/hp-hour) (default)

Cement and Mortar Mixers Composite [HP: 10] [LF: 0.56]				
	CH_4	**N_2O**	**CO_2**	**CO_2e**
Emission Factors	0.02313	0.00463	570.17504	572.13174
Pavers Composite [HP: 81] [LF: 0.42]				
	CH_4	**N_2O**	**CO_2**	**CO_2e**
Emission Factors	0.02136	0.00427	526.53742	528.34436
Paving Equipment Composite [HP: 89] [LF: 0.36]				
	CH_4	**N_2O**	**CO_2**	**CO_2e**
Emission Factors	0.02141	0.00428	527.68636	529.49724
Rollers Composite [HP: 36] [LF: 0.38]				
	CH_4	**N_2O**	**CO_2**	**CO_2e**
Emission Factors	0.02381	0.00476	586.90234	588.91644
Tractors/Loaders/Backhoes Composite [HP: 84] [LF: 0.37]				
	CH_4	**N_2O**	**CO_2**	**CO_2e**
Emission Factors	0.02149	0.00430	529.86270	531.68105

- Vehicle Exhaust & Worker Trips Criteria Pollutant Emission Factors (grams/mile)

	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	NH_3
LDGV	0.30440	0.00175	0.13290	4.77199	0.00371	0.00328	0.05325
LDGT	0.26083	0.00216	0.17973	4.20900	0.00418	0.00370	0.04444
HDGV	0.98518	0.00481	0.66400	11.99902	0.02092	0.01850	0.09582
LDDV	0.08914	0.00133	0.14951	6.42748	0.00351	0.00323	0.01693
LDDT	0.20580	0.00152	0.47872	6.07454	0.00570	0.00525	0.01788
HDDV	0.12304	0.00426	2.47202	1.65242	0.05496	0.05057	0.06504
MC	3.22233	0.00193	0.54715	12.64378	0.02290	0.02026	0.05135

- Vehicle Exhaust & Worker Trips Greenhouse Gasses Emission Factors (grams/mile)

	CH_4	N_2O	CO_2	CO_2e
LDGV	0.01506	0.00514	346.03787	347.94148
LDGT	0.01548	0.00747	427.58921	430.19622
HDGV	0.05923	0.02786	951.90377	961.66618
LDDV	0.04271	0.00073	395.50643	396.79223
LDDT	0.03143	0.00108	447.56743	448.67639
HDDV	0.01995	0.16036	1266.81748	1315.09331
MC	0.11395	0.00333	391.06501	394.90588

5.4.4 Paving Phase Formula(s)

- Construction Exhaust Emissions per Phase
CEE_{POL} = (NE * WD * H * EF_{POL}) / 2000

- Construction Exhaust Emissions per Phase
CEE_{POL} = (NE * WD * H * HP * LF * EF_{POL}* 0.002205) / 2000

CEE_{POL}: Construction Exhaust Emissions (TONs)
NE: Number of Equipment
WD: Number of Total Work Days (days)
H: Hours Worked per Day (hours)
HP: Equipment Horsepower
LF: Equipment Load Factor
EF_{POL}: Emission Factor for Pollutant (g/hp-hour)
0.002205: Conversion Factor grams to pounds
2000: Conversion Factor pounds to tons

- Vehicle Exhaust Emissions per Phase
VMT_{VE} = PA * 0.25 * (1 / 27) * (1 / HC) * HT

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
PA: Paving Area (ft^2)
0.25: Thickness of Paving Area (ft)
(1 / 27): Conversion Factor cubic feet to cubic yards (1 yd^3 / 27 ft^3)
HC: Average Hauling Truck Capacity (yd^3)
(1 / HC): Conversion Factor cubic yards to trips (1 trip / HC yd^3)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM) / 2000

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Vehicle Exhaust On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

- Worker Trips Emissions per Phase
VMT_{WT} = WD * WT * 1.25 * NE

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
WD: Number of Total Work Days (days)
WT: Average Worker Round Trip Commute (mile)
1.25: Conversion Factor Number of Construction Equipment to Number of Works
NE: Number of Construction Equipment

V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM) / 2000

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Worker Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

- Off-Gassing Emissions per Phase

VOC_P = (2.62 * PA) / 43560 / 2000

VOC_P: Paving VOC Emissions (TONs)
2.62: Emission Factor (lb/acre)
PA: Paving Area (ft^2)
43560: Conversion Factor square feet to acre (43560 ft2 / acre)^2 / acre)
2000: Conversion Factor square pounds to TONs (2000 lb / TON)

6. Personnel

6.1 General Information & Timeline Assumptions

- Add or Remove Activity from Baseline?Remove

- Activity Location
County: Bay
Regulatory Area(s): NOT IN A REGULATORY AREA

- Activity Title: Project 4 – 7000 Area - Alternative 1 (reduction)

- Activity Description:
Government-owned vehicles (GOV) vehicles and equipment associated with the 7000 Area that are currently driving to the existing fuel station in the 400 Area on the northwestern end of the airfield will no longer be doing that. Commuting will decrease once fuel station is constructed.

Emissions reduction is estimated from operation of mostly heavy-duty trucks.
Assumed commute reduction equivalent to 15 personnel vehicles, each driving average of 6 roundtrip miles.

- Activity Start Date
Start Month: 1
Start Year: 2026

- Activity End Date
Indefinite: Yes
End Month: N/A
End Year: N/A

- Activity Emissions of Criteria Pollutants:

Pollutant	Emissions Per Year (TONs)
VOC	-0.007755
SO_x	-0.000051
NO_x	-0.003652
CO	-0.111269

Pollutant	Emissions Per Year (TONs)
PM 10	-0.000110
PM 2.5	-0.000098
Pb	0.000000
NH_3	-0.001193

- Global Scale Activity Emissions of Greenhouse Gasses:

Pollutant	Emissions Per Year (TONs)
CH_4	-0.000391
N_2O	-0.000161

Pollutant	Emissions Per Year (TONs)
CO_2	-10.054034
CO_2e	-10.111626

6.2 Personnel Assumptions

- Number of Personnel

Active Duty Personnel:	0
Civilian Personnel:	0
Support Contractor Personnel:	15
Air National Guard (ANG) Personnel:	0
Reserve Personnel:	0

- Default Settings Used: No

- Average Personnel Round Trip Commute (mile): 6

- Personnel Work Schedule

Active Duty Personnel:	5 Days Per Week
Civilian Personnel:	5 Days Per Week
Support Contractor Personnel:	5 Days Per Week
Air National Guard (ANG) Personnel:	4 Days Per Week
Reserve Personnel:	4 Days Per Month

6.3 Personnel On Road Vehicle Mixture

- On Road Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	37.55	60.32	0	0.03	0.2	0	1.9
GOVs	54.49	37.73	4.67	0	0	3.11	0

6.4 Personnel Emission Factor(s)

- On Road Vehicle Criteria Pollutant Emission Factors (grams/mile)

	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	NH_3
LDGV	0.26860	0.00172	0.11494	4.59156	0.00364	0.00322	0.05129
LDGT	0.22958	0.00212	0.14451	3.87645	0.00408	0.00361	0.04304
HDGV	0.88395	0.00483	0.59039	11.06281	0.01969	0.01741	0.09480
LDDV	0.08708	0.00132	0.14749	6.56557	0.00364	0.00335	0.01705
LDDT	0.15078	0.00150	0.41118	5.60763	0.00583	0.00536	0.01751
HDDV	0.10944	0.00419	2.34024	1.60034	0.04742	0.04363	0.06571
MC	3.20770	0.00193	0.54558	12.49470	0.02291	0.02026	0.05171

- On Road Vehicle Greenhouse Gasses Emission Factors (grams/mile)

	CH_4	N_2O	CO_2	CO_2e
LDGV	0.01351	0.00495	340.96759	342.77490
LDGT	0.01304	0.00715	419.83935	422.29139
HDGV	0.05499	0.02808	955.36623	965.09057
LDDV	0.04285	0.00073	393.05215	394.34113
LDDT	0.03067	0.00109	441.62237	442.71351
HDDV	0.01948	0.16187	1248.10200	1296.81517
MC	0.11230	0.00331	391.17366	394.96854

6.5 Personnel Formula(s)

- Personnel Vehicle Miles Travel for Work Days per Year

$VMT_P = NP * WD * AC$

VMT_P: Personnel Vehicle Miles Travel (miles/year)
NP: Number of Personnel

WD: Work Days per Year
AC: Average Commute (miles)

- Total Vehicle Miles Travel per Year
$VMT_{Total} = VMT_{AD} + VMT_{C} + VMT_{SC} + VMT_{ANG} + VMT_{AFRC}$

VMT_{Total}: Total Vehicle Miles Travel (miles)
VMT_{AD}: Active Duty Personnel Vehicle Miles Travel (miles)
VMT_{C}: Civilian Personnel Vehicle Miles Travel (miles)
VMT_{SC}: Support Contractor Personnel Vehicle Miles Travel (miles)
VMT_{ANG}: Air National Guard Personnel Vehicle Miles Travel (miles)
VMT_{AFRC}: Reserve Personnel Vehicle Miles Travel (miles)

- Vehicle Emissions per Year
$V_{POL} = (VMT_{Total} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{Total}: Total Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Personnel On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

7. Tanks

7.1 General Information & Timeline Assumptions

- Add or Remove Activity from Baseline? Add

- Activity Location
County: Bay
Regulatory Area(s): NOT IN A REGULATORY AREA

- Activity Title: Project 4 - Tank at 7000 Area - Alternative 1

- Activity Description:
The new fueling station would consist of a new aboveground storage tank for diesel.

Tank: 4,000 gallon Diesel
Throughput: 10,000 gal/year (assumed)

- Activity Start Date
Start Month: 1
Start Year: 2026

- Activity End Date
Indefinite: Yes
End Month: N/A
End Year: N/A

- Activity Emissions of Criteria Pollutants:

Pollutant	Emissions Per Year (TONs)

Pollutant	Emissions Per Year (TONs)

VOC	0.001263
SO_x	0.000000
NO_x	0.000000
CO	0.000000

PM 10	0.000000
PM 2.5	0.000000
Pb	0.000000
NH_3	0.000000

- Global Scale Activity Emissions of Greenhouse Gasses:

Pollutant	Emissions Per Year (TONs)
CH_4	0.000000
N_2O	0.000000

Pollutant	Emissions Per Year (TONs)
CO_2	0.000000
CO_2e	0.000000

7.2 Tanks Assumptions

- Chemical

Chemical Name: Fuel oil no. 2
Chemical Category: Petroleum Distillates
Chemical Density: 7.1
Vapor Molecular Weight (lb/lb-mole): 130
Stock Vapor Density (lb/ft^3): 0.000129553551395334
Vapor Pressure: 0.0055
Vapor Space Expansion Factor (dimensionless): 0.068

- Tank

Type of Tank: Horizontal Tank
Tank Length (ft): 24
Tank Diameter (ft): 5.33
Annual Net Throughput (gallon/year): 10000

7.3 Tank Formula(s)

- Vapor Space Volume

VSV = (PI / 4) * D^2 * L / 2

VSV: Vapor Space Volume (ft^3)
PI: PI Math Constant
D^2: Tank Diameter (ft)
L: Tank Length (ft)
2: Conversion Factor (Vapor Space Volume is assumed to be one-half of the tank volume)

- Vented Vapor Saturation Factor

VVSF = 1 / (1 + (0.053 * VP * L / 2))

VVSF: Vented Vapor Saturation Factor (dimensionless)
0.053: Constant
VP: Vapor Pressure (psia)
L: Tank Length (ft)

- Standing Storage Loss per Year

SSL_{VOC} = 365 * VSV * SVD * VSEF * VVSF / 2000

SSL_{VOC}: Standing Storage Loss Emissions (TONs)
365: Number of Daily Events in a Year (Constant)
VSV: Vapor Space Volume (ft^3)
SVD: Stock Vapor Density (lb/ft^3)
VSEF: Vapor Space Expansion Factor (dimensionless)

VVSF: Vented Vapor Saturation Factor (dimensionless)
2000: Conversion Factor pounds to tons

- Number of Turnovers per Year

NT = (7.48 * ANT) / ((PI / 4.0) * D * L)

NT: Number of Turnovers per Year
7.48: Constant
ANT: Annual Net Throughput
PI: PI Math Constant
D^2: Tank Diameter (ft)
L: Tank Length (ft)

- Working Loss Turnover (Saturation) Factor per Year

WLSF = (18 + NT) / (6 * NT)

WLSF: Working Loss Turnover (Saturation) Factor per Year
18: Constant
NT: Number of Turnovers per Year
6: Constant

- Working Loss per Year

WL_{VOC} = 0.0010 * VMW * VP * ANT * WLSF / 2000

0.0010: Constant
VMW: Vapor Molecular Weight (lb/lb-mole)
VP: Vapor Pressure (psia)
ANT: Annual Net Throughput
WLSF: Working Loss Turnover (Saturation) Factor
2000: Conversion Factor pounds to tons

C.1.7.2 Record of Air Analysis

Alternative 1

1. General Information: The Air Force's Air Conformity Applicability Model (ACAM) was used to perform a net change in emissions analysis to assess the potential air quality impact/s associated with the action. The analysis was performed in accordance with the Air Force Manual 32-7002, *Environmental Compliance and Pollution Prevention*; the *Environmental Impact Analysis Process* (EIAP, 32 CFR 989); the *General Conformity Rule* (GCR, 40 CFR 93 Subpart B); and the *USAF Air Quality Environmental Impact Analysis Process (EIAP) Guide*. This report provides a summary of the ACAM analysis.

Report generated with ACAM version: 5.0.23a

a. Action Location:
Base: TYNDALL AFB
State: Florida
County(s): Bay
Regulatory Area(s): NOT IN A REGULATORY AREA

b. Action Title: EA for Infrastructure Construction Projects at Tyndall AFB, Florida

c. Project Number/s (if applicable): N/A

d. Projected Action Start Date: 1 / 2025

e. Action Description:

The Proposed Action consists of four individual projects that are currently programmed for implementation between fiscal year (FY) 2024 and FY26. Individual projects are independent of the others and could be implemented separately from or concurrently with the other projects over the next 2 to 3 years. Some projects have alternatives that are also evaluated.

Four repair and construction projects are included with the Proposed Action:

1. Airfield Fence
Construct approximately 17,548 linear feet (LF) of welded-wire security fencing. Clear 10 feet of buffer area on either side of fence, and relocate existing utilities.
Total maximum soil disturbance and excavation = 28,406 Cubic Yards (CY).

2. Drone Runway Culvert Crossings
Build four new crossing points over existing drainage channels at ends of Drone Runway. Each crossing point proposed is 20 feet wide, with compressed gravel and paved asphalt surface,
Total crossing area for construction = 2600 Square Feet (SF)

3. Drone tow-way Fence
Construct a 7-feet-tall welded-wire fence. Two alternatives proposed. Clear 10 feet of buffer area on either side of fence, and relocate existing utilities.
Alternative 1 would involve up to approximately 17,692 CY of soil disturbance and excavation
Alternative 2 would involve up to approximately 16,632 CY of soil disturbance and excavation

4. 7000 Area Improvements
Construct fueling station, reinforced concrete slab or asphalt pavement parking area, an expanded access drive and parking area in the 7000 Area with utilities, lighting and security fence.
Total maximum soil disturbance and excavation = 37,444 Cubic Yards (CY).

f. Point of Contact:

Name: Radhika Narayanan
Title: Environmental Scientist
Organization: Versar
Email: rnarayanan@versar.com
Phone Number: N/A

2. Air Impact Analysis: Based on the attainment status at the action location, the requirements of the GCR are:

____ applicable
__X__ not applicable

Total reasonably foreseeable 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" (- SS, net gain/loss in emission stabilized and the action is fully implemented) emissions. The ACAM analysis uses 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 the proposed Action's potential impacts to local air quality. The insignificance indicators are trivial (*de minimis*) rate thresholds that have been demonstrated to have little to no impact to air quality. These insignificance indicators are the 250 ton/yr Prevention of Significant Deterioration (PSD) major source threshold and 25 ton/yr for lead for actions occurring in areas that are "Attainment" (not exceeding any National Ambient Air Quality Standard [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 pollutants is considered so insignificant that the action will not cause or contribute to an exceedance on one or more NAAQS. For further detail on insignificance indicators, refer to *Level II, Air Quality Quantitative Assessment, Insignificance Indicators*.

The action's net emissions for every year through achieving steady state were compared against the Insignificance Indicators and are summarized below.

Analysis Summary:

2025

Pollutant	Action Emissions (ton/yr)	INSIGNIFICANCE INDICATOR	
		Indicator (ton/yr)	Exceedance (Yes or No)
NOT IN A REGULATORY AREA			
VOC	0.276	250	No
NOx	2.220	250	No
CO	3.005	250	No
SOx	0.005	250	No
PM 10	15.780	250	No
PM 2.5	0.087	250	No
Pb	0.000	25	No
NH3	0.005	250	No

2026

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	-0.004	250	No
CO	-0.111	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	-0.001	250	No

2027 - (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	-0.004	250	No
CO	-0.111	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	-0.001	250	No

None of the estimated annual net emissions associated with this action are above the insignificance indicators; therefore, the action will not cause or contribute to emissions that exceed one or more NAAQSs and will have an insignificant impact on air quality. No further air assessment is needed.

Radhika Narayanan, Environmental Scientist — Feb 25 2024

Name, Title — **Date**

Alternative 2

1. General Information: The Air Force's ACAM was used to perform a net change in emissions analysis to assess the potential air quality impact/s associated with the action. The analysis was performed in accordance with the Air Force Manual 32-7002, *Environmental Compliance and Pollution Prevention*; the *Environmental Impact Analysis Process* (EIAP, 32 CFR 989); the *General Conformity Rule* (GCR, 40 CFR 93 Subpart B); and the *USAF Air Quality Environmental Impact Analysis Process (EIAP) Guide*. This report provides a summary of the ACAM analysis.

Report generated with ACAM version: 5.0.23a

a. Action Location:
Base: TYNDALL AFB
State: Florida
County(s): Bay
Regulatory Area(s): NOT IN A REGULATORY AREA

b. Action Title: EA for Infrastructure Construction Projects at Tyndall AFB, Florida

c. Project Number/s (if applicable): N/A

d. Projected Action Start Date: 1 / 2025

e. Action Description:

The Proposed Action consists of four individual projects that are currently programmed for implementation between fiscal year (FY) 2024 and FY26. Individual projects are independent of the others and could be implemented separately from or concurrently with the other projects over the next 2 to 3 years. Some projects have alternatives that are also evaluated.

Four repair and construction projects are included with the Proposed Action:

1. Airfield Fence
Construct approximately 17,548 linear feet (LF) of welded-wire security fencing. Clear 10 feet of buffer area on either side of fence, and relocate existing utilities.
Total maximum soil disturbance and excavation = 28,406 Cubic Yards (CY).

2. Drone Runway Culvert Crossings
Build four new crossing points over existing drainage channels at ends of Drone Runway. Each crossing point proposed is 20 feet wide, with compressed gravel and paved asphalt surface,
Total crossing area for construction = 2600 Square Feet (SF)

3. Drone tow-way Fence
Construct a 7-feet-tall welded-wire fence. Two alternatives proposed. Clear 10 feet of buffer area on either side of fence, and relocate existing utilities.
Alternative 1 would involve up to approximately 17,692 CY of soil disturbance and excavation
Alternative 2 would involve up to approximately 16,632 CY of soil disturbance and excavation

4. 7000 Area Improvements
Construct fueling station, reinforced concrete slab or asphalt pavement parking area, an expanded access drive and parking area near the 7000 Area with utilities, lighting and security fence.
Total maximum soil disturbance and excavation = 37,444 Cubic Yards (CY).

f. Point of Contact:

Name: Radhika Narayanan
Title: Environmental Scientist
Organization: Versar
Email: rnarayanan@versar.com
Phone Number: N/A

2. Air Impact Analysis: Based on the attainment status at the action location, the requirements of the GCR are:

____ applicable
__X__ not applicable

Total reasonably foreseeable 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” (SS, net gain/loss in emission stabilized and the action is fully implemented) emissions. The ACAM analysis uses 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 the proposed Action's potential impacts to local air quality. The insignificance indicators are trivial (*de minimis*) rate thresholds that have been demonstrated to have little to no impact to air quality. These insignificance indicators are the 250 ton/yr Prevention of Significant Deterioration (PSD) major source threshold and 25 ton/yr for lead for actions occurring in areas that are "Attainment" (not exceeding any National Ambient Air Quality Standard [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 pollutants is considered so insignificant that the action will not cause or contribute to emissions that exceed one or more NAAQS. For further detail on insignificance indicators, refer to *Level II, Air Quality Quantitative Assessment, Insignificance Indicators*.

The action's net emissions for every year through achieving steady state were compared against the Insignificance Indicators and are summarized below.

Analysis Summary:

2025

Pollutant	Action Emissions (ton/yr)	INSIGNIFICANCE INDICATOR	
		Indicator (ton/yr)	Exceedance (Yes or No)
NOT IN A REGULATORY AREA			
VOC	0.042	250	No
NOx	0.370	250	No
CO	0.488	250	No
SOx	0.001	250	No
PM 10	2.300	250	No
PM 2.5	0.015	250	No
Pb	0.000	25	No
NH3	0.001	250	No

2026

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

2027 - (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

None of the estimated annual net emissions associated with this action are above the insignificance indicators; therefore, the action will not cause or contribute to emissions that exceed one or more NAAQSs and will have an insignificant impact on air quality. No further air assessment is needed.

Radhika Narayanan, Environmental Scientist	Feb 25 2024
Name, Title	**Date**

C.1.7.3 Record of Social Cost of Greenhouse Gases ACAM Report

Alternative 1

1. General Information: The Air Force's ACAM was used to perform an analysis to estimate GHG emissions and assess the theoretical Social Cost of Greenhouse Gases (SC GHG) associated with the action. The analysis was performed 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 USAF Air Quality Environmental Impact Analysis Process (EIAP) Guide. This report provides a summary of GHG emissions and SC GHG analysis.

Report generated with ACAM version: 5.0.23a

a. Action Location:
Base: TYNDALL AFB
State: Florida
County(s): Bay
Regulatory Area(s): NOT IN A REGULATORY AREA

b. Action Title: EA for Infrastructure Construction Projects at Tyndall AFB, Florida

c. Project Number/s (if applicable): N/A

d. Projected Action Start Date: 1 / 2025

e. Action Description:

The Proposed Action consists of four individual projects that are currently programmed for implementation between fiscal year (FY) 2024 and FY26. Individual projects are independent of the others and could be implemented separately from or concurrently with the other projects over the next 2 to 3 years. Some projects have alternatives that are also evaluated.

Four repair and construction projects are included with the Proposed Action:

1. Airfield Fence
Construct approximately 17,548 linear feet (LF) of welded-wire security fencing. Clear 10 feet of buffer area on either side of fence, and relocate existing utilities.
Total maximum soil disturbance and excavation = 28,406 Cubic Yards (CY).

2. Drone Runway Culvert Crossings
Build four new crossing points over existing drainage channels at ends of Drone Runway. Each crossing point proposed is 20 feet wide, with compressed gravel and paved asphalt surface,
Total crossing area for construction = 2600 Square Feet (SF)

3. Drone Tow-Way Fence
Construct a 7-feet-tall welded-wire fence. Two alternatives proposed. Clear 10 feet of buffer area on either side of fence, and relocate existing utilities.
Alternative 1 would involve up to approximately 17,692 CY of soil disturbance and excavation
Alternative 2 would involve up to approximately 16,632 CY of soil disturbance and excavation

4. 7000 Area Improvements
Construct fueling station, reinforced concrete slab or asphalt pavement parking area, an expanded access drive and parking area in the 7000 Area with utilities, lighting and security fence.
Total maximum soil disturbance and excavation = 37,444 Cubic Yards (CY).

f. Point of Contact:

Name: Radhika Narayanan
Title: Environmental Scientist
Organization: Versar
Email: rnarayanan@versar.com
Phone Number: N/A

2. Analysis: Total combined direct and indirect GHG emissions associated with the action were estimated through ACAM on a calendar-year basis from the action start through the expected life cycle of the action. The life cycle for Air Force actions with "steady state" emissions (SS, net gain/loss in emission stabilized and the action is fully implemented) is assumed to be 10 years beyond the SS emissions year or 20 years beyond SS emissions year for aircraft operations related actions.

GHG Emissions Analysis Summary:

GHGs produced by fossil-fuel combustion are primarily carbon dioxide (CO_2), methane (CH_4), and nitrous oxide (NO_2). These three GHGs represent more than 97 percent of all U.S. GHG emissions. Emissions of GHGs are typically quantified and regulated in units of CO2 equivalents (CO2e). The CO2e takes into account the global warming potential (GWP) of each GHG. The GWP is the measure of a particular GHG's ability to absorb solar radiation as well as its residence time within the atmosphere. The GWP allows comparison of global warming impacts between different gases; the higher the GWP, the more that gas contributes to climate change in comparison to CO2. All GHG emissions estimates were derived from various emission sources using the methods, algorithms, emission factors, and GWPs from the most current Air Emissions Guide for Air Force Stationary Sources, Air Emissions Guide for Air Force Mobile Sources, and Air Emissions Guide for Air Force Transitory Sources.

The Air Force has adopted the Prevention of Significant Deterioration (PSD) threshold for GHG of 75,000 ton per year (ton/yr) of CO_2e (or 68,039 metric ton per year, mton/yr) as an indicator or "threshold of insignificance" for NEPA air quality impacts in all areas. This indicator does not define a significant impact; however, it provides a threshold to identify actions that are insignificant (*de minimis*, too trivial or minor to merit consideration). Actions with a net change in GHG (CO_2e) emissions below the insignificance indicator (threshold) are considered too insignificant on a global scale to warrant any further analysis. Note that actions with a net change in GHG (CO_2e) emissions above the insignificance indicator (threshold) are only considered potentially significant and require further assessment to determine if the action poses a significant impact. For further detail on insignificance indicators see Level II, Air Quality Quantitative Assessment, Insignificance Indicators (April 2023).

The following table summarizes the action-related GHG emissions on a calendar-year basis through the projected life cycle of the action.

Action-Related Annual GHG Emissions (mton/yr)						
YEAR	**CO2**	**CH4**	**N2O**	**CO2e**	**Threshold**	**Exceedance**
2025	480	0.01908556	0.00582813	482	68,039	No
2026	-9	-0.00035449	-0.00014597	-9	68,039	No
2027 [SS Year]	-9	-0.00035449	-0.00014597	-9	68,039	No
2028	-9	-0.00035449	-0.00014597	-9	68,039	No
2029	-9	-0.00035449	-0.00014597	-9	68,039	No
2030	-9	-0.00035449	-0.00014597	-9	68,039	No

2031	-9	-0.00035449	-0.00014597	-9	68,039	No
2032	-9	-0.00035449	-0.00014597	-9	68,039	No
2033	-9	-0.00035449	-0.00014597	-9	68,039	No
2034	-9	-0.00035449	-0.00014597	-9	68,039	No
2035	-9	-0.00035449	-0.00014597	-9	68,039	No
2036	-9	-0.00035449	-0.00014597	-9	68,039	No
2037	-9	-0.00035449	-0.00014597	-9	68,039	No

The following U.S. and state's GHG emissions estimates (next two tables) are based on a five-year average (2016 through 2020) of individual state-reported GHG emissions (Reference: State Climate Summaries 2022, NOAA National Centers for Environmental Information, National Oceanic and Atmospheric Administration. https://statesummaries.ncics.org/downloads/).

State's Annual GHG Emissions (mton/yr)				
YEAR	**CO2**	**CH4**	**N2O**	**CO2e**
2025	227,404,647	552,428	58,049	228,015,124
2026	227,404,647	552,428	58,049	228,015,124
2027 [SS Year]	227,404,647	552,428	58,049	228,015,124
2028	227,404,647	552,428	58,049	228,015,124
2029	227,404,647	552,428	58,049	228,015,124
2030	227,404,647	552,428	58,049	228,015,124
2031	227,404,647	552,428	58,049	228,015,124
2032	227,404,647	552,428	58,049	228,015,124
2033	227,404,647	552,428	58,049	228,015,124
2034	227,404,647	552,428	58,049	228,015,124
2035	227,404,647	552,428	58,049	228,015,124
2036	227,404,647	552,428	58,049	228,015,124
2037	227,404,647	552,428	58,049	228,015,124

U.S. Annual GHG Emissions (mton/yr)				
YEAR	**CO2**	**CH4**	**N2O**	**CO2e**
2025	5,136,454,179	25,626,912	1,500,708	5,163,581,798
2026	5,136,454,179	25,626,912	1,500,708	5,163,581,798
2027 [SS Year]	5,136,454,179	25,626,912	1,500,708	5,163,581,798
2028	5,136,454,179	25,626,912	1,500,708	5,163,581,798
2029	5,136,454,179	25,626,912	1,500,708	5,163,581,798
2030	5,136,454,179	25,626,912	1,500,708	5,163,581,798
2031	5,136,454,179	25,626,912	1,500,708	5,163,581,798
2032	5,136,454,179	25,626,912	1,500,708	5,163,581,798
2033	5,136,454,179	25,626,912	1,500,708	5,163,581,798
2034	5,136,454,179	25,626,912	1,500,708	5,163,581,798
2035	5,136,454,179	25,626,912	1,500,708	5,163,581,798
2036	5,136,454,179	25,626,912	1,500,708	5,163,581,798
2037	5,136,454,179	25,626,912	1,500,708	5,163,581,798

GHG Relative Significance Assessment:

A Relative Significance Assessment uses the rule of reason and the concept of proportionality along with consideration of the affected area (- global, national, and regional) and the degree (intensity) of the proposed action's effects. The Relative Significance Assessment provides real-world context and allows for a reasoned choice against alternatives through a relative comparison analysis. The analysis weighs each alternative's annual net change in GHG emissions proportionally against (or relative to) global, national, and regional emissions.

The action's surroundings, circumstances, environment, and background (context associated with an action) provide the setting for evaluating the GHG intensity (impact significance). From an air quality perspective, context of an action is the local area's ambient air quality relative to meeting the NAAQSs, expressed as attainment, nonattainment, or maintenance areas (this designation is considered the attainment status). GHGs are non-hazardous to health at normal ambient concentrations and, at a cumulative global scale, action-related GHG emissions can only potentially cause warming of the climatic system. Therefore, the action-related GHGs generally have an insignificant impact to local air quality.

However, the affected area (context) of GHG/climate change is global. Therefore, the intensity or degree of the proposed action's GHG/climate change effects are gauged through the quantity of GHG associated with the action as compared with a baseline of the state, U.S., and global GHG inventories. Each action (or alternative) has significance, based on their annual net change in GHG emissions, in relation to or proportionally to the global, national, and regional annual GHG emissions.

To provide real-world context to the GHG and climate change effects on a global scale, an action's net change in GHG emissions is compared relative to the state (where action will occur) and U.S. annual emissions. The following table provides a relative comparison of an action's net change in GHG emissions vs. state and U.S. projected GHG emissions for the same time period.

Total GHG Relative Significance (mton)					
		CO2	**CH4**	**N2O**	**CO2e**
2025-2037	State Total	2,956,260,412	7,181,560	754,635	2,964,196,607
2025-2037	U.S. Total	66,773,904,327	333,149,852	19,509,199	67,126,563,378
2025-2037	Action	371	0.014832	0.004077	372
Percent of State Totals		0.00001253%	0.00000021%	0.00000054%	0.00001255%
Percent of U.S. Totals		0.00000055%	0.00000000%	0.00000002%	0.00000055%

From a global context, the action's total GHG percentage of total global GHG for the same time period is: 0.00000007%.*

* Global value based on the U.S. emits 13.4% of all global GHG annual emissions (2018 Emissions Data, Center for Climate and Energy Solutions, accessed 7-6-2023, https://www.c2es.org/content/international-emissions).

Climate Change Assessment (as SC GHG):

On a global scale, the potential climate change effects of an action are indirectly addressed and put into context through providing the theoretical SC GHG associated with an action. The SC GHG is an administrative and theoretical tool intended to provide additional context to a GHG's potential impacts through approximating the long-term monetary damage that may result from GHG emissions effect on climate change. It is important to note that the SC GHG is a monetary quantification, in 2020 U.S. dollars, of the theoretical economic damages that could result from emitting GHGs into the atmosphere.

The SC GHG estimates are derived using the methodology and discount factors in the "Technical Support Document: Social Cost of Carbon, Methane, and Nitrous Oxide Interim Estimates under Executive Order

13990," released by the Interagency Working Group on Social Cost of Greenhouse Gases (IWG SC GHGs) in February 2021.

The speciated IWG Annual SC GHG Emission associated with an action (or alternative) are first estimated as annual unit cost (cost per metric ton, $/mton). Results of the annual IWG Annual SC GHG Emission Assessments are tabulated in the IWG Annual SC GHG Cost per Metric Ton table below:

IWG SC GHG Discount Factor: 2.5%

IWG Annual SC GHG Cost per Metric Ton ($/mton [In 2020 $])			
YEAR	**CO2**	**CH4**	**N2O**
2025	$83.00	$2,200.00	$30,000.00
2026	$84.00	$2,300.00	$30,000.00
2027 [SS Year]	$86.00	$2,300.00	$31,000.00
2028	$87.00	$2,400.00	$32,000.00
2029	$88.00	$2,500.00	$32,000.00
2030	$89.00	$2,500.00	$33,000.00
2031	$91.00	$2,600.00	$33,000.00
2032	$92.00	$2,600.00	$34,000.00
2033	$94.00	$2,700.00	$35,000.00
2034	$95.00	$2,800.00	$35,000.00
2035	$96.00	$2,800.00	$36,000.00
2036	$98.00	$2,900.00	$36,000.00
2037	$99.00	$3,000.00	$37,000.00

Action-related SC GHG were estimated by calendar-year for the projected action's lifecycle. Annual estimates were found by multiplying the annual emission for a given year by the corresponding IWG Annual SC GHG Emission value (see table above).

Action-Related Annual SC GHG ($K/yr [In 2020 $])				
YEAR	**CO2**	**CH4**	**N2O**	**GHG**
2025	$39.84	$0.04	$0.17	$40.06
2026	($0.77)	$0.00	$0.00	($0.77)
2027 [SS Year]	($0.78)	$0.00	$0.00	($0.79)
2028	($0.79)	$0.00	$0.00	($0.80)
2029	($0.80)	$0.00	$0.00	($0.81)
2030	($0.81)	$0.00	$0.00	($0.82)
2031	($0.83)	$0.00	$0.00	($0.84)
2032	($0.84)	$0.00	$0.00	($0.85)
2033	($0.86)	$0.00	($0.01)	($0.86)
2034	($0.87)	$0.00	($0.01)	($0.87)
2035	($0.88)	$0.00	($0.01)	($0.88)
2036	($0.89)	$0.00	($0.01)	($0.90)
2037	($0.90)	$0.00	($0.01)	($0.91)

The following two tables summarize the U.S. and State's Annual SC GHG by calendar-year. The U.S. and state's Annual SC GHG are in 2020 dollars and were estimated by each year for the projected action lifecycle. Annual SC GHG estimates were found by multiplying the U.S. and state's annual five-year average GHG emissions for a given year by the corresponding IWG Annual SC GHG Cost per Metric Ton value.

State's Annual SC GHG ($K/yr [In 2020 $])				
YEAR	**CO2**	**CH4**	**N2O**	**GHG**
2025	$18,874,585.70	$1,215,340.97	$1,741,465.95	$21,831,392.62

2026	$19,101,990.35	$1,270,583.74	$1,741,465.95	$22,114,040.04
2027 [SS Year]	$19,556,799.65	$1,270,583.74	$1,799,514.81	$22,626,898.20
2028	$19,784,204.29	$1,325,826.51	$1,857,563.68	$22,967,594.48
2029	$20,011,608.94	$1,381,069.28	$1,857,563.68	$23,250,241.90
2030	$20,239,013.59	$1,381,069.28	$1,915,612.54	$23,535,695.41
2031	$20,693,822.88	$1,436,312.06	$1,915,612.54	$24,045,747.48
2032	$20,921,227.53	$1,436,312.06	$1,973,661.41	$24,331,200.99
2033	$21,376,036.82	$1,491,554.83	$2,031,710.27	$24,899,301.92
2034	$21,603,441.47	$1,546,797.60	$2,031,710.27	$25,181,949.34
2035	$21,830,846.12	$1,546,797.60	$2,089,759.14	$25,467,402.85
2036	$22,285,655.41	$1,602,040.37	$2,089,759.14	$25,977,454.92
2037	$22,513,060.06	$1,657,283.14	$2,147,808.00	$26,318,151.20

U.S. Annual SC GHG ($K/yr [In 2020 $])				
YEAR	**CO2**	**CH4**	**N2O**	**GHG**
2025	$426,325,696.86	$56,379,205.70	$45,021,229.08	$527,726,131.63
2026	$431,462,151.04	$58,941,896.86	$45,021,229.08	$535,425,276.98
2027 [SS Year]	$441,735,059.39	$58,941,896.86	$46,521,936.72	$547,198,892.97
2028	$446,871,513.57	$61,504,588.03	$48,022,644.35	$556,398,745.96
2029	$452,007,967.75	$64,067,279.20	$48,022,644.35	$564,097,891.30
2030	$457,144,421.93	$64,067,279.20	$49,523,351.99	$570,735,053.12
2031	$467,417,330.29	$66,629,970.37	$49,523,351.99	$583,570,652.65
2032	$472,553,784.47	$66,629,970.37	$51,024,059.62	$590,207,814.46
2033	$482,826,692.83	$69,192,661.54	$52,524,767.26	$604,544,121.62
2034	$487,963,147.01	$71,755,352.70	$52,524,767.26	$612,243,266.97
2035	$493,099,601.18	$71,755,352.70	$54,025,474.90	$618,880,428.78
2036	$503,372,509.54	$74,318,043.87	$54,025,474.90	$631,716,028.31
2037	$508,508,963.72	$76,880,735.04	$55,526,182.53	$640,915,881.29

Relative Comparison of SC GHG:

To provide additional real-world context to the potential climate change impact associate with an action, a Relative Comparison of SC GHG Assessment is also performed. While the SC GHG estimates capture an indirect approximation of global climate damages, the Relative Comparison of SC GHG Assessment provides a better perspective from a regional and global scale.

The Relative Comparison of SC GHG Assessment uses the rule of reason and the concept of proportionality along with the consideration of the affected area (global, national, and regional) and the SC GHG as the degree (intensity) of the proposed action's effects. The Relative Comparison Assessment provides real-world context and allows for a reasoned choice among alternatives through a relative contrast analysis that weighs each alternative's SC GHG proportionally against (or relative to) existing global, national, and regional SC GHG. The below table provides a relative comparison between an action's SC GHG vs. state and U.S. projected SC GHG for the same time period:

Total SC-GHG ($K [In 2020 $])					
		CO2	**CH4**	**N2O**	**GHG**
2025-2037	State Total	$268,792,292.80	$18,561,571.18	$25,193,207.37	$312,547,071.36
2025-2037	U.S. Total	$6,071,288,839.58	$861,064,232.45	$651,307,114.02	$7,583,660,186.05
2025-2037	Action	$29.81	$0.03	$0.12	$29.96

Percent of State Totals	0.00001109%	0.00000017%	0.00000046%	0.00000959%
Percent of U.S. Totals	0.00000049%	0.00000000%	0.00000002%	0.00000040%

From a global context, the action's total SC GHG percentage of total global SC GHG for the same time period is: 0.00000005%.*

* Global value based on the U.S. emits 13.4% of all global GHG annual emissions (2018 Emissions Data, Center for Climate and Energy Solutions, accessed 7-6-2023, https://www.c2es.org/content/international-emissions).

Radhika Narayanan, Environmental Scientist — Feb 25 2024

Name, Title — **Date**

Alternative 2

1. General Information: The Air Force's ACAM was used to perform an analysis to estimate GHG emissions and assess the theoretical Social Cost of Greenhouse Gases (SC GHG) associated with the action. The analysis was performed 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 USAF Air Quality Environmental Impact Analysis Process (EIAP) Guide. This report provides a summary of GHG emissions and SC GHG analysis.

Report generated with ACAM version: 5.0.23a

a. Action Location:
Base: TYNDALL AFB
State: Florida
County(s): Bay
Regulatory Area(s): NOT IN A REGULATORY AREA

b. Action Title: EA for Infrastructure Construction Projects at Tyndall AFB, Florida

c. Project Number/s (if applicable): N/A

d. Projected Action Start Date: 1 / 2025

e. Action Description:

The Proposed Action consists of four individual projects that are currently programmed for implementation between fiscal year (FY) 2024 and FY26. Individual projects are independent of the others and could be implemented separately from or concurrently with the other projects over the next 2 to 3 years. Some projects have alternatives that are also evaluated.

Four repair and construction projects are included with the Proposed Action:

1. Airfield Fence
Construct approximately 17,548 linear feet (LF) of welded-wire security fencing. Clear 10 feet of buffer area on either side of fence, and relocate existing utilities.
Total maximum soil disturbance and excavation = 28,406 Cubic Yards (CY).

2. Drone Runway Culvert Crossings

Build four new crossing points over existing drainage channels at ends of Drone Runway. Each crossing point proposed is 20 feet wide, with compressed gravel and paved asphalt surface, Total crossing area for construction = 2600 Square Feet (SF)

3. Drone Tow-Way Fence
Construct a 7-feet-tall welded-wire fence. Two alternatives proposed. Clear 10 feet of buffer area on either side of fence, and relocate existing utilities.
Alternative 1 would involve up to approximately 17,692 CY of soil disturbance and excavation
Alternative 2 would involve up to approximately 16,632 CY of soil disturbance and excavation

4. 7000 Area Improvements
Construct fueling station, reinforced concrete slab or asphalt pavement parking area, an expanded access drive and parking area in the 7000 Area with utilities, lighting and security fence.
Total maximum soil disturbance and excavation = 37,444 Cubic Yards (CY).

f. Point of Contact:

Name: Radhika Narayanan
Title: Environmental Scientist
Organization: Versar
Email: rnarayanan@versar.com
Phone Number: N/A

2. Analysis: Total combined direct and indirect GHG emissions associated with the action were estimated through ACAM on a calendar-year basis from the action start through the expected life cycle of the action. The life cycle for Air Force actions with "steady state" emissions (SS, net gain/loss in emission stabilized and the action is fully implemented) is assumed to be 10 years beyond the SS emissions year or 20 years beyond SS emissions year for aircraft operations related actions.

GHG Emissions Analysis Summary:

GHGs produced by fossil-fuel combustion are primarily carbon dioxide (CO_2), methane (CH_4), and nitrous oxide (NO_2). These three GHGs represent more than 97 percent of all U.S. GHG emissions. Emissions of GHGs are typically quantified and regulated in units of CO2 equivalents (CO_2e). The CO_2e takes into account the global warming potential (GWP) of each GHG. The GWP is the measure of a particular GHG's ability to absorb solar radiation as well as its residence time within the atmosphere. The GWP allows comparison of global warming impacts between different gases; the higher the GWP, the more that gas contributes to climate change in comparison to CO2. All GHG emissions estimates were derived from various emission sources using the methods, algorithms, emission factors, and GWPs from the most current Air Emissions Guide for Air Force Stationary Sources, Air Emissions Guide for Air Force Mobile Sources, and Air Emissions Guide for Air Force Transitory Sources.

The Air Force has adopted the Prevention of Significant Deterioration (PSD) threshold for GHG of 75,000 ton per year (ton/yr) of CO_2e (or 68,039 metric ton per year, mton/yr) as an indicator or "threshold of insignificance" for NEPA air quality impacts in all areas. This indicator does not define a significant impact; however, it provides a threshold to identify actions that are insignificant (*de minimis*, too trivial or minor to merit consideration). Actions with a net change in GHG (CO_2e) emissions below the insignificance indicator (threshold) are considered too insignificant on a global scale to warrant any further analysis. Note that actions with a net change in GHG (CO_2e) emissions above the insignificance indicator (threshold) are only considered potentially significant and require further assessment to determine if the action poses a significant impact. For further detail on insignificance indicators see Level II, Air Quality Quantitative Assessment, Insignificance Indicators (April 2023).

The following table summarizes the action-related GHG emissions on a calendar-year basis through the projected life cycle of the action.

Action-Related Annual GHG Emissions (mton/yr)						
YEAR	**CO2**	**CH4**	**N2O**	**CO2e**	**Threshold**	**Exceedance**
2025	76	0.00306859	0.00078622	77	68,039	No
2026	0	0	0	0	68,039	No
2027 [SS Year]	0	0	0	0	68,039	No

The following U.S. and state's GHG emissions estimates (next two tables) are based on a five-year average (2016 through 2020) of individual state-reported GHG emissions (Reference: State Climate Summaries 2022, NOAA National Centers for Environmental Information, National Oceanic and Atmospheric Administration. https://statesummaries.ncics.org/downloads/).

State's Annual GHG Emissions (mton/yr)				
YEAR	**CO2**	**CH4**	**N2O**	**CO2e**
2025	227,404,647	552,428	58,049	228,015,124
2026	227,404,647	552,428	58,049	228,015,124
2027 [SS Year]	0	0	0	0

U.S. Annual GHG Emissions (mton/yr)				
YEAR	**CO2**	**CH4**	**N2O**	**CO2e**
2025	5,136,454,179	25,626,912	1,500,708	5,163,581,798
2026	5,136,454,179	25,626,912	1,500,708	5,163,581,798
2027 [SS Year]	0	0	0	0

GHG Relative Significance Assessment:

A Relative Significance Assessment uses the rule of reason and the concept of proportionality along with consideration of the affected area (global, national, and regional) and the degree (intensity) of the proposed action's effects. The Relative Significance Assessment provides real-world context and allows for a reasoned choice against alternatives through a relative comparison analysis. The analysis weighs each alternative's annual net change in GHG emissions proportionally against (or relative to) global, national, and regional emissions.

The action's surroundings, circumstances, environment, and background (context associated with an action) provide the setting for evaluating the GHG intensity (impact significance). From an air quality perspective, context of an action is the local area's ambient air quality relative to meeting the NAAQSs, expressed as attainment, nonattainment, or maintenance areas (this designation is considered the attainment status). GHGs are non-hazardous to health at normal ambient concentrations and, at a cumulative global scale, action-related GHG emissions can only potentially cause warming of the climatic system. Therefore, the action-related GHGs generally have an insignificant impact to local air quality.

However, the affected area (context) of GHG/climate change is global. Therefore, the intensity or degree of the proposed action's GHG/climate change effects are gauged through the quantity of GHG associated with the action as compared to a baseline of the state, U.S., and global GHG inventories. Each action (or alternative) has significance, based on their annual net change in GHG emissions, in relation to or proportionally to the global, national, and regional annual GHG emissions.

To provide real-world context to the GHG and climate change effects on a global scale, an action's net change in GHG emissions is compared relative to the state (where action will occur) and U.S. annual emissions. The following table provides a relative comparison of an action's net change in GHG emissions vs. state and U.S. projected GHG emissions for the same time period.

Total GHG Relative Significance (mton)					
		CO2	CH4	N2O	CO2e
2025-2037	State Total	454,809,294	1,104,855	116,098	456,030,247
2025-2037	U.S. Total	10,272,908,358	51,253,823	3,001,415	10,327,163,597
2025-2037	Action	76	0.003069	0.000786	77
Percent of State Totals		0.00001681%	0.00000028%	0.00000068%	0.00001683%
Percent of U.S. Totals		0.00000074%	0.00000001%	0.00000003%	0.00000074%

From a global context, the action's total GHG percentage of total global GHG for the same time period is: 0.00000010%.*

* Global value based on the U.S. emits 13.4% of all global GHG annual emissions (2018 Emissions Data, Center for Climate and Energy Solutions, accessed 7-6-2023, https://www.c2es.org/content/international-emissions).

Climate Change Assessment (as SC GHG):

On a global scale, the potential climate change effects of an action are indirectly addressed and put into context through providing the theoretical SC GHG associated with an action. The SC GHG is an administrative and theoretical tool intended to provide additional context to a GHG's potential impacts through approximating the long-term monetary damage that may result from GHG emissions effect on climate change. It is important to note that the SC GHG is a monetary quantification, in 2020 U.S. dollars, of the theoretical economic damages that could result from emitting GHGs into the atmosphere.

The SC GHG estimates are derived using the methodology and discount factors in the "Technical Support Document: Social Cost of Carbon, Methane, and Nitrous Oxide Interim Estimates under Executive Order 13990," released by the Interagency Working Group on Social Cost of Greenhouse Gases (IWG SC GHGs) in February 2021.

The speciated IWG Annual SC GHG Emission associated with an action (or alternative) are first estimated as annual unit cost (cost per metric ton, $/mton). Results of the annual IWG Annual SC GHG Emission Assessments are tabulated in the IWG Annual SC GHG Cost per Metric Ton table below:

IWG SC GHG Discount Factor: 2.5%

IWG Annual SC GHG Cost per Metric Ton ($/mton [In 2020 $])			
YEAR	CO2	CH4	N2O
2025	$83.00	$2,200.00	$30,000.00
2026	$84.00	$2,300.00	$30,000.00
2027 [SS Year]	$86.00	$2,300.00	$31,000.00

Action-related SC GHG were estimated by calendar-year for the projected action's lifecycle. Annual estimates were found by multiplying the annual emission for a given year by the corresponding IWG Annual SC GHG Emission value (see table above).

Action-Related Annual SC GHG ($K/yr [In 2020 $])				
YEAR	**CO2**	**CH4**	**N2O**	**GHG**
2025	$6.34	$0.01	$0.02	$6.37
2026	$0.00	$0.00	$0.00	$0.00
2027 [SS Year]	$0.00	$0.00	$0.00	$0.00

The following two tables summarize the U.S. and state's Annual SC GHG by calendar-year. The U.S. and state's Annual SC GHG are in 2020 dollars and were estimated by each year for the projected action lifecycle. Annual SC GHG estimates were found by multiplying the U.S. and state's annual five-year average GHG emissions for a given year by the corresponding IWG Annual SC GHG Cost per Metric Ton value.

State's Annual SC GHG ($K/yr [In 2020 $])				
YEAR	**CO2**	**CH4**	**N2O**	**GHG**
2025	$18,874,585.70	$1,215,340.97	$1,741,465.95	$21,831,392.62
2026	$19,101,990.35	$1,270,583.74	$1,741,465.95	$22,114,040.04
2027 [SS Year]	$0.00	$0.00	$0.00	$0.00

U.S. Annual SC GHG ($K/yr [In 2020 $])				
YEAR	**CO2**	**CH4**	**N2O**	**GHG**
2025	$426,325,696.86	$56,379,205.70	$45,021,229.08	$527,726,131.63
2026	$431,462,151.04	$58,941,896.86	$45,021,229.08	$535,425,276.98
2027 [SS Year]	$0.00	$0.00	$0.00	$0.00

Relative Comparison of SC GHG:

To provide additional real-world context to the potential climate change impact associate with an action, a Relative Comparison of SC GHG Assessment is also performed. While the SC GHG estimates capture an indirect approximation of global climate damages, the Relative Comparison of SC GHG Assessment provides a better perspective from a regional and global scale.

The Relative Comparison of SC GHG Assessment uses the rule of reason and the concept of proportionality along with the consideration of the affected area (global, national, and regional) and the SC GHG as the degree (intensity) of the proposed action's effects. The Relative Comparison Assessment provides real-world context and allows for a reasoned choice among alternatives through a relative contrast analysis which weighs each alternative's SC GHG proportionally against (or relative to) existing global, national, and regional SC GHG. The below table provides a relative comparison between an action's SC GHG vs. state and U.S. projected SC GHG for the same time period:

Total SC-GHG ($K [In 2020 $])					
		CO2	**CH4**	**N2O**	**GHG**
2025-2037	State Total	$37,976,576.06	$2,485,924.71	$3,482,931.90	$43,945,432.66
2025-2037	U.S. Total	$857,787,847.89	$115,321,102.56	$90,042,458.16	$1,063,151,408.61
2025-2037	Action	$6.34	$0.01	$0.02	$6.37
Percent of State Totals		0.00001670%	0.00000027%	0.00000068%	0.00001450%
Percent of U.S. Totals		0.00000074%	0.00000001%	0.00000003%	0.00000060%

From a global context, the action's total SC GHG percentage of total global SC GHG for the same time period is: 0.00000008%.*

* Global value based on the U.S. emits 13.4% of all global GHG annual emissions (2018 Emissions Data, Center for Climate and Energy Solutions, accessed 7-6-2023, https://www.c2es.org/content/international-emissions).

Radhika Narayanan, Environmental Scientist	Feb 25 2024
Name, Title	**Date**

APPENDIX D
USFWS OFFICIAL SPECIES LIST

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United States Department of the Interior

FISH AND WILDLIFE SERVICE
Florida Ecological Services Field Office
777 37th St
Suite D-101
Vero Beach, FL 32960-3559
Phone: (352) 448-9151 Fax: (772) 562-4288
Email Address: fw4flesregs@fws.gov
https://www.fws.gov/office/florida-ecological-services

In Reply Refer To: 07/05/2024 15:13:37 UTC
Project Code: 2024-0011111
Project Name: Tyndall AFB Security and Munitions

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 proposed and 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. 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 include your Project Code, listed at the top of this letter, in all subsequent correspondence regarding this project.** 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 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 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:

https://www.fws.gov/sites/default/files/documents/endangered-species-consultation-handbook.pdf

Migratory Birds: In addition to responsibilities to protect threatened and endangered species under the Endangered Species Act (ESA), there are additional responsibilities under the Migratory Bird Treaty Act (MBTA) and the Bald and Golden Eagle Protection Act (BGEPA) to protect native birds from project-related impacts. Any activity, intentional or unintentional, resulting in take of migratory birds, including eagles, is prohibited unless otherwise permitted by the U.S. Fish and Wildlife Service (50 C.F.R. Sec. 10.12 and 16 U.S.C. Sec. 668(a)). For more information regarding these Acts see https://www.fws.gov/program/migratory-bird-permit/what-we-do.

The MBTA has no provision for allowing take of migratory birds that may be unintentionally killed or injured by otherwise lawful activities. It is the responsibility of the project proponent to comply with these Acts by identifying potential impacts to migratory birds and eagles within applicable NEPA documents (when there is a federal nexus) or a Bird/Eagle Conservation Plan (when there is no federal nexus). Proponents should implement conservation measures to avoid or minimize the production of project-related stressors or minimize the exposure of birds and their resources to the project-related stressors. For more information on avian stressors and recommended conservation measures see https://www.fws.gov/library/collections/threats-birds.

In addition to MBTA and BGEPA, Executive Order 13186: *Responsibilities of Federal Agencies to Protect Migratory Birds*, obligates all Federal agencies that engage in or authorize activities that might affect migratory birds, to minimize those effects and encourage conservation measures that will improve bird populations. Executive Order 13186 provides for the protection of both migratory birds and migratory bird habitat. For information regarding the implementation of Executive Order 13186, please visit https://www.fws.gov/partner/council-conservation-migratory-birds.

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 Code in the header of this letter with any request for consultation or correspondence about your project that you submit to our office.

Attachment(s):

- Official Species List
- USFWS National Wildlife Refuges and Fish Hatcheries
- Bald & Golden Eagles
- Migratory Birds
- Marine Mammals
- Wetlands

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:

Florida Ecological Services Field Office
777 37th St
Suite D-101
Vero Beach, FL 32960-3559
(352) 448-9151

PROJECT SUMMARY

Project Code: 2024-0011111
Project Name: Tyndall AFB Security and Munitions
Project Type: Military Development
Project Description: The Proposed Action includes constructing installation security features, munitions support facilities, and other facilities and infrastructure to support airfield operations and safety at Tyndall Air Force Base, Florida. Projects are programmed for implementation between October 2024 and September 2027.
Project Location:

The approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/@30.062407049999997,-85.5535247931725,14z

Counties: Bay County, Florida

ENDANGERED SPECIES ACT SPECIES

There is a total of 11 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[1], 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
Tricolored Bat *Perimyotis subflavus* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/10515	Proposed Endangered
West Indian Manatee *Trichechus manatus* There is **final** critical habitat for this species. Your location does not overlap the critical habitat. ***This species is also protected by the Marine Mammal Protection Act, and may have additional consultation requirements.*** Species profile: https://ecos.fws.gov/ecp/species/4469 General project design guidelines: https://ipac.ecosphere.fws.gov/project/JMN7IZ2M7RB7JIS72PWLJHIQ4M/documents/generated/7281.pdf	Threatened

BIRDS

NAME	STATUS
Eastern Black Rail *Laterallus jamaicensis ssp. jamaicensis* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/10477	Threatened
Rufa Red Knot *Calidris canutus rufa* There is **proposed** critical habitat for this species. Species profile: https://ecos.fws.gov/ecp/species/1864	Threatened

REPTILES

NAME	STATUS
Alligator Snapping Turtle *Macrochelys temminckii* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/4658	Proposed Threatened
Eastern Indigo Snake *Drymarchon couperi* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/646	Threatened

FISHES

NAME	STATUS
Gulf Sturgeon *Acipenser oxyrinchus (=oxyrhynchus) desotoi* There is **final** critical habitat for this species. Your location does not overlap the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/651	Threatened

INSECTS

NAME	STATUS
Monarch Butterfly *Danaus plexippus*	Candidate

NAME	STATUS

No critical habitat has been designated for this species.
Species profile: https://ecos.fws.gov/ecp/species/9743

FLOWERING PLANTS

NAME	STATUS
Godfrey's Butterwort *Pinguicula ionantha*	Threatened

Population:
No critical habitat has been designated for this species.
Species profile: https://ecos.fws.gov/ecp/species/6805

Telephus Spurge *Euphorbia telephioides*	Threatened

Population:
No critical habitat has been designated for this species.
Species profile: https://ecos.fws.gov/ecp/species/5499

White Birds-in-a-nest *Macbridea alba*	Threatened

Population:
No critical habitat has been designated for this species.
Species profile: https://ecos.fws.gov/ecp/species/6291

CRITICAL HABITATS

THERE ARE NO CRITICAL HABITATS WITHIN YOUR PROJECT AREA UNDER THIS OFFICE'S JURISDICTION.

YOU ARE STILL REQUIRED TO DETERMINE IF YOUR PROJECT(S) MAY HAVE EFFECTS ON ALL ABOVE LISTED SPECIES.

USFWS NATIONAL WILDLIFE REFUGE LANDS AND FISH HATCHERIES

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 OR FISH HATCHERIES WITHIN YOUR PROJECT AREA.

BALD & GOLDEN EAGLES

Bald and golden eagles are protected under the Bald and Golden Eagle Protection Act[1] and the Migratory Bird Treaty Act[2].

Any person or organization who plans or conducts activities that may result in impacts to bald or golden eagles, or their habitats[3], should follow appropriate regulations and consider implementing appropriate conservation measures, as described in the links below. Specifically, please review the "Supplemental Information on Migratory Birds and Eagles".

1. The Bald and Golden Eagle Protection Act of 1940.
2. The Migratory Birds Treaty Act of 1918.
3. 50 C.F.R. Sec. 10.12 and 16 U.S.C. Sec. 668(a)

There are likely bald eagles present in your project area. For additional information on bald eagles, refer to Bald Eagle Nesting and Sensitivity to Human Activity

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to migratory birds on your list, see the PROBABILITY OF PRESENCE SUMMARY below to see when these birds are most likely to be present and breeding in your project area.

NAME	BREEDING SEASON
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

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 "Supplemental Information on Migratory Birds and Eagles", specifically the FAQ section titled "Proper Interpretation and Use of Your Migratory Bird Report" before using or attempting to interpret this report.

Probability of Presence (■)

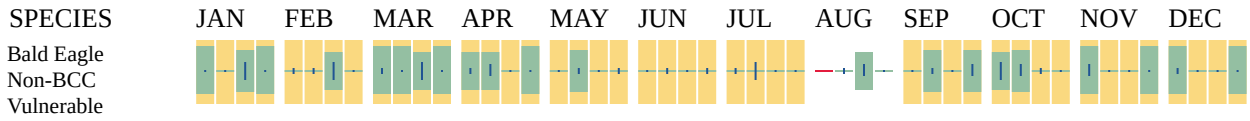
Green bars; the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during that week of the year.

Breeding Season (■)
Yellow bars; liberal estimate of the timeframe inside which the bird breeds across its entire range.

Survey Effort (|)
Vertical black lines; the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps.

No Data (–)
A week is marked as having no data if there were no survey events for that week.

■ probability of presence ■ breeding season | survey effort – no data



Additional information can be found using the following links:

- Eagle Management https://www.fws.gov/program/eagle-management
- Measures for avoiding and minimizing impacts to birds https://www.fws.gov/library/collections/avoiding-and-minimizing-incidental-take-migratory-birds
- Nationwide conservation measures for birds https://www.fws.gov/sites/default/files/documents/nationwide-standard-conservation-measures.pdf
- Supplemental Information for Migratory Birds and Eagles in IPaC https://www.fws.gov/media/supplemental-information-migratory-birds-and-bald-and-golden-eagles-may-occur-project-action

MIGRATORY BIRDS

Certain birds are protected under the Migratory Bird Treaty Act[1] and the Bald and Golden Eagle Protection Act[2].

Any person or organization who plans or conducts activities that may result in impacts to migratory birds, eagles, and their habitats[3] should follow appropriate regulations and consider implementing appropriate conservation measures, as described in the links below. Specifically, please review the "Supplemental Information on Migratory Birds and Eagles".

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1. The Migratory Birds Treaty Act of 1918.
2. The Bald and Golden Eagle Protection Act of 1940.
3. 50 C.F.R. Sec. 10.12 and 16 U.S.C. Sec. 668(a)

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to migratory birds on your list, see the PROBABILITY OF PRESENCE SUMMARY below to see when these birds are most likely to be present and breeding in your project area.

NAME	BREEDING SEASON
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

NAME	BREEDING SEASON
American Oystercatcher *Haematopus palliatus* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/8935	Breeds Apr 15 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
Brown-headed Nuthatch *Sitta pusilla* 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/9427	Breeds Mar 1 to Jul 15
Chimney Swift *Chaetura pelagica* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9406	Breeds Mar 15 to Aug 25
Chuck-will's-widow *Antrostomus carolinensis* 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/9604	Breeds May 10 to Jul 10
Gull-billed Tern *Gelochelidon nilotica* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9501	Breeds May 1 to Jul 31
Least Tern *Sternula antillarum antillarum* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/11919	Breeds Apr 25 to Sep 5
Lesser Yellowlegs *Tringa flavipes* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9679	Breeds elsewhere
Marbled Godwit *Limosa fedoa* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9481	Breeds elsewhere

NAME	BREEDING SEASON
Pectoral Sandpiper *Calidris melanotos* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9561	Breeds elsewhere
Prairie Warbler *Setophaga discolor* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9513	Breeds May 1 to Jul 31
Prothonotary Warbler *Protonotaria citrea* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9439	Breeds Apr 1 to Jul 31
Red-headed Woodpecker *Melanerpes erythrocephalus* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9398	Breeds May 10 to Sep 10
Ruddy Turnstone *Arenaria interpres morinella* 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/10633	Breeds elsewhere
Semipalmated Sandpiper *Calidris pusilla* 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/9603	Breeds elsewhere
Short-billed Dowitcher *Limnodromus griseus* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9480	Breeds elsewhere
Swallow-tailed Kite *Elanoides forficatus* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/8938	Breeds Mar 10 to Jun 30
Whimbrel *Numenius phaeopus hudsonicus* 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/11991	Breeds elsewhere
Willet *Tringa semipalmata* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/10669	Breeds Apr 20 to Aug 5

NAME	BREEDING SEASON
Wilson's Plover *Charadrius wilsonia* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9722	Breeds Apr 1 to Aug 20
Wood Thrush *Hylocichla mustelina* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9431	Breeds May 10 to Aug 31

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 "Supplemental Information on Migratory Birds and Eagles", specifically the FAQ section titled "Proper Interpretation and Use of Your Migratory Bird Report" before using or attempting to interpret this report.

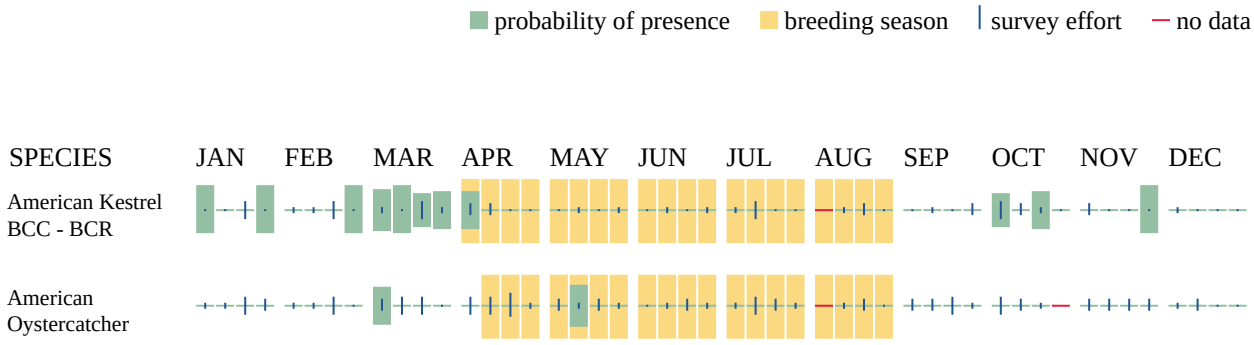
Probability of Presence (▪)

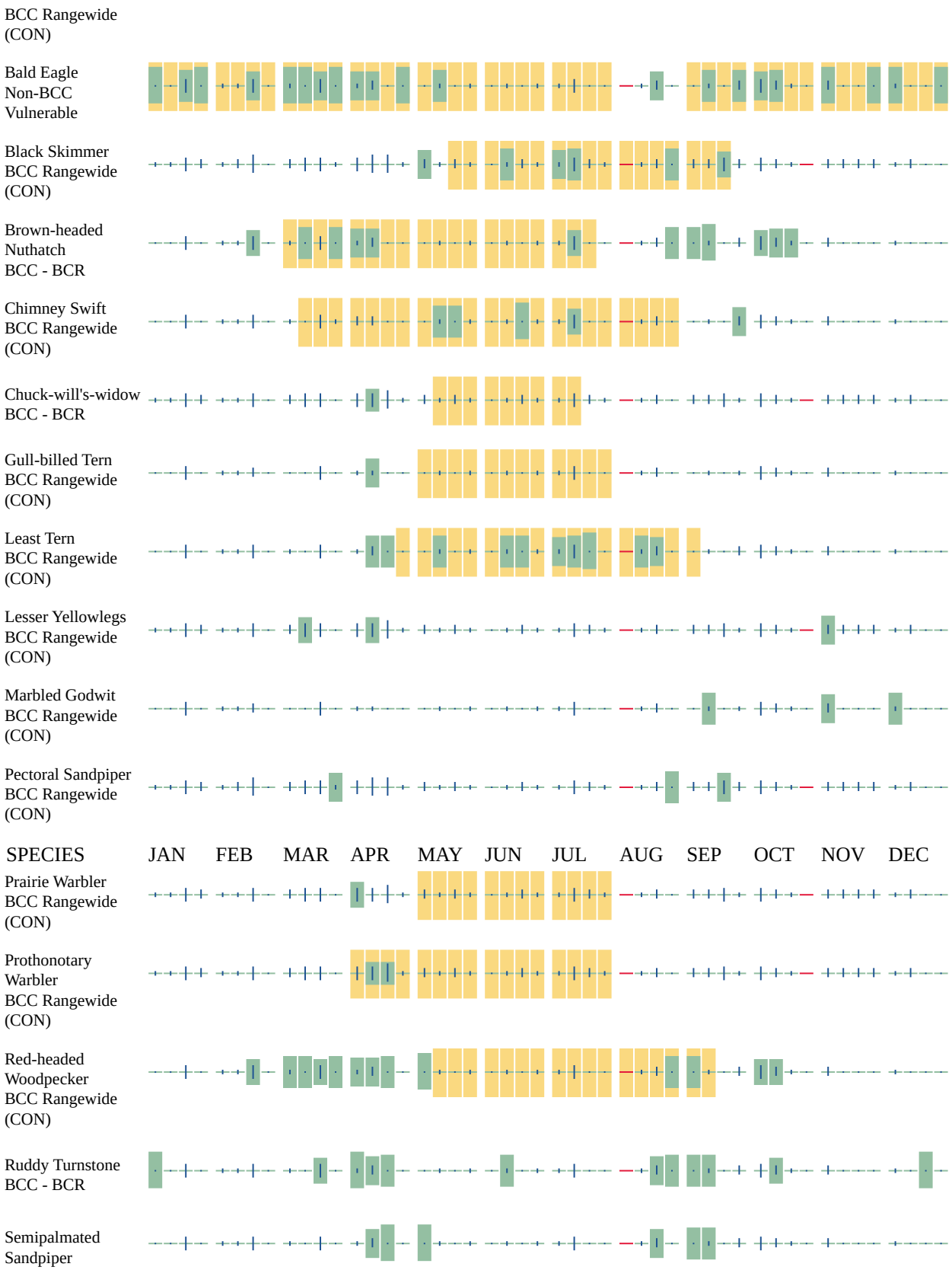
Green bars; the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during that week of the year.

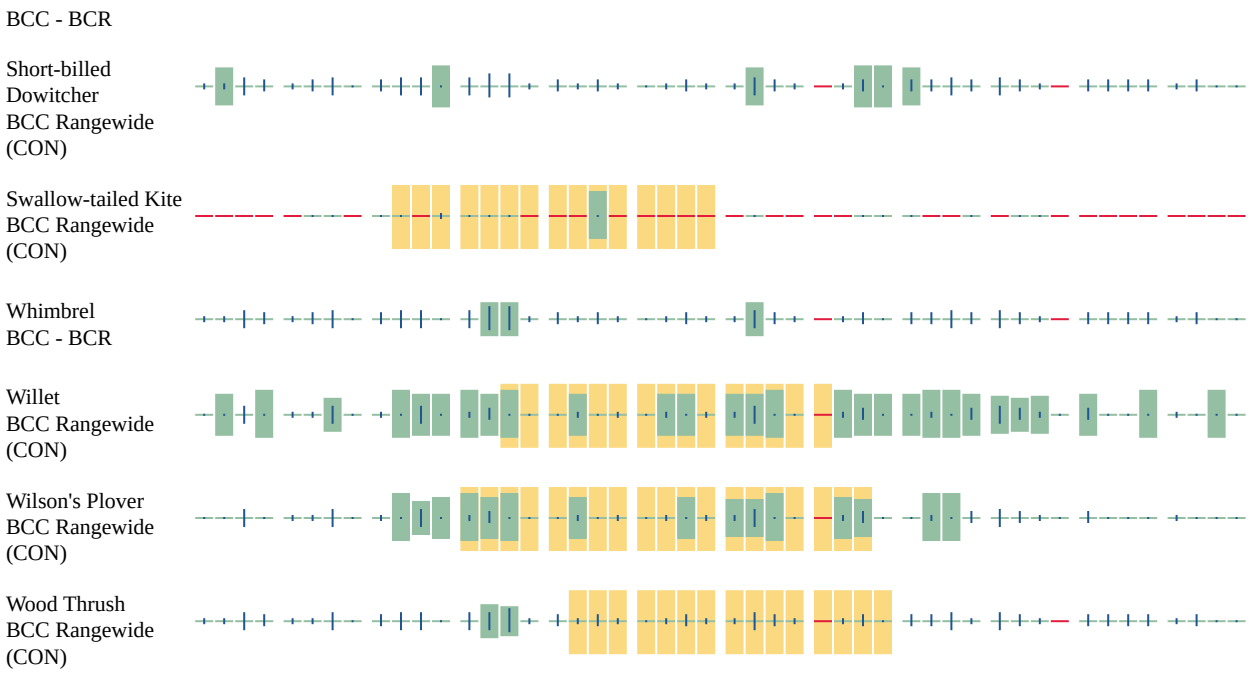
Breeding Season (▪)
Yellow bars; liberal estimate of the timeframe inside which the bird breeds across its entire range.

Survey Effort (|)
Vertical black lines; the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps.

No Data (–)
A week is marked as having no data if there were no survey events for that week.




BCC Rangewide (CON)
Bald Eagle Non-BCC Vulnerable
Black Skimmer BCC Rangewide (CON)
Brown-headed Nuthatch BCC - BCR
Chimney Swift BCC Rangewide (CON)
Chuck-will's-widow BCC - BCR
Gull-billed Tern BCC Rangewide (CON)
Least Tern BCC Rangewide (CON)
Lesser Yellowlegs BCC Rangewide (CON)
Marbled Godwit BCC Rangewide (CON)
Pectoral Sandpiper BCC Rangewide (CON)
SPECIES
JAN
FEB
MAR
APR
MAY
JUN
JUL
AUG
SEP
OCT
NOV
DEC
Prairie Warbler BCC Rangewide (CON)
Prothonotary Warbler BCC Rangewide (CON)
Red-headed Woodpecker BCC Rangewide (CON)
Ruddy Turnstone BCC - BCR
Semipalmated Sandpiper



Additional information can be found using the following links:

- Eagle Management https://www.fws.gov/program/eagle-management
- Measures for avoiding and minimizing impacts to birds https://www.fws.gov/library/collections/avoiding-and-minimizing-incidental-take-migratory-birds
- Nationwide conservation measures for birds https://www.fws.gov/sites/default/files/documents/nationwide-standard-conservation-measures.pdf
- Supplemental Information for Migratory Birds and Eagles in IPaC https://www.fws.gov/media/supplemental-information-migratory-birds-and-bald-and-golden-eagles-may-occur-project-action

MARINE MAMMALS

Marine mammals are protected under the Marine Mammal Protection Act. Some are also protected under the Endangered Species Act[1] and the Convention on International Trade in Endangered Species of Wild Fauna and Flora[2].

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[3] [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 of marine mammals and further coordination may be necessary for project evaluation. Please contact the U.S. Fish and Wildlife Service Field Office shown.

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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.

NAME

West Indian Manatee *Trichechus manatus*
Species profile: https://ecos.fws.gov/ecp/species/4469

WETLANDS

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.

FRESHWATER FORESTED/SHRUB WETLAND

- PFO4/SS3C
- PSS1/4C
- PSS3/4Cd
- PSS3/FO4C
- PFO4/SS3Cd
- PSS4/3C
- PFO1/4C
- PFO4/3C

FRESHWATER EMERGENT WETLAND

- PEM1Cx
- PEM1Fx
- PEM1Tx

ESTUARINE AND MARINE DEEPWATER

- E1UBLx

IPAC USER CONTACT INFORMATION

Agency: Private Entity
Name: Kenneth Erwin
Address: 1025 Vermont Ave. NW
Address Line 2: Suite 500
City: Washington, DC
State: DC
Zip: 20005
Email kerwin@versar.com
Phone: 7036426915

LEAD AGENCY CONTACT INFORMATION

Lead Agency: Department of Defense

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APPENDIX E
FEDERAL COASTAL CONSISTENCY DETERMINATION

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APPENDIX E – FEDERAL COASTAL CONSISTENCY DETERMINATION

The Department of the Air Force has determined that the Proposed Action would be consistent, to the maximum extent practicable, with the enforceable policies of the Florida Coastal Management Program (FCMP). **Table E-1** summarizes the Proposed Action's applicability to or consistency with each of the Florida statutes comprising the FCMP.

Table E-1 Summary of the Proposed Action's Consistency with or Applicability to the FCMP

Florida Statute	Legal Scope	Consistency or Applicability	Summary Analysis
Chapter 161, Beach and Shore Preservation	Authorizes the Bureau of Beaches and Coastal Systems within Florida Department of Environmental Protection jurisdiction to regulate construction on or seaward of the state's beaches.	N/A [1]	None of the projects included in the Proposed Action would be implemented on or seaward of any beach on Tyndall AFB or within the legal jurisdiction of the State of Florida.
Chapter 163, Part II, Growth Policy; County and Municipal Planning; Land Development Regulation	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.	N/A	The Proposed Action would occur entirely within the boundaries of Tyndall AFB and would have no potential to affect the planning policies, goals, or objectives expressed in local government comprehensive plans.
Chapter 186, State and Regional Planning	Details state level planning requirements. Requires the development of special statewide plans governing water use, land development, and transportation.	Consistent [2]	The DAF has coordinated with state agencies during the NEPA process for the Proposed Action evaluated in this Environmental Assessment and federal consistency determination.
Chapter 252, Emergency Management	Provides for planning and implementation of the state's response to, efforts to recover from, and the mitigation of natural and man-made disasters.	N/A	The Proposed Action would have no potential to affect the state's planning for and response to natural and man-made disasters.
Chapter 253, State Lands	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.	N/A	The Proposed Action would not involve or have the potential to affect uses and activities occurring on state lands.
Chapter 258, State Parks and Preserves	Addresses administration and management of state parks and preserves.	N/A	The Proposed Action would not involve or have the potential to affect activities occurring in state parks and preserves.

Table E-1 Summary of the Proposed Action's Consistency with or Applicability to the FCMP

Florida Statute	Legal Scope	Consistency or Applicability	Summary Analysis
Chapter 259, Land Acquisition for Conservation or Recreation	Authorizes acquisition of environmentally endangered lands and outdoor recreation lands.	N/A	The Proposed Action would not involve or have the potential to affect the acquisition of environmentally endangered lands and outdoor recreation lands.
Chapter 260, Recreational Trails System	Authorizes acquisition of land to create a recreational trails system and to facilitate management of the system.	N/A	The Proposed Actions would occur within Tyndall AFB and would not have an impact on acquisition of land to create a recreational trails system.
Chapter 267, Historical Resources	Addresses management and preservation of the state's archaeological and historical resources.	Consistent	The DAF is conducting National Historic Preservation Act Section 106 consultation for the Proposed Action in parallel with the National Environmental Policy Act process. The DAF has determined that the Proposed Action would have no adverse effects on historic properties on or outside Tyndall AFB. Concurrence with this determination by the Florida State Historic Preservation Officer is pending.
Chapter 288, Commercial Development and Capital Improvements	Provides the framework for promoting and developing the general business, trade, and tourism components of the state economy.	N/A	The Proposed Action would have no effect on the general business, trade, and tourism components of the state economy.
Chapter 334, Transportation Administration	Addresses the state's policy concerning transportation administration.	N/A	The Proposed Action would have no effect on the state's transportation administration policies.
Chapter 339, Transportation Finance and Planning	Addresses the finance and planning needs of the state's transportation system.	N/A	The Proposed Action would have no effect on the finance and planning needs of the state's transportation system.
Chapter 373, Water Resources	Addresses the state's policy concerning water resources.	Consistent	Potential impacts on water resources from the Proposed Action would not be significant. Construction and operation of the proposed projects would disturb approximately 23.12 acres of wetlands or other surface waters and approximately 16.5 acres of floodplains. Potential wetland impacts would be avoided, mitigated, or compensated through the Section 401/404 permitting process. The proposed projects would be designed and

Table E-1 Summary of the Proposed Action's Consistency with or Applicability to the FCMP

Florida Statute	Legal Scope	Consistency or Applicability	Summary Analysis
Chapter 373, Water Resources (continued)			built to minimize or avoid adverse impacts on water resources to the extent practicable. Increased volumes of stormwater resulting from new or additional impervious surface associated with the proposed projects would be managed in accordance with the requirements of Tyndall AFB's National Pollutant Discharge Elimination System permit and would not contribute to the increased turbidity, sedimentation, or pollution of receiving water bodies. None of the activities or operations associated with construction or operation of the proposed projects would have the potential to contribute to exceedances or violations of applicable water quality standards or regulations.
Chapter 375, Outdoor Recreation and Conservation Lands	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.	N/A	The Proposed Action would have no effect on the state's development or evaluation of multipurpose outdoor recreation plans.
Chapter 376, Pollutant Discharge Prevention and Removal	Regulates transfer, storage, and transportation of pollutants, and cleanup of pollutant discharges.	Consistent	Any accidental discharges of pollutants during construction or operation of the proposed projects would be contained, controlled, and cleaned up in accordance with the requirements of Tyndall AFB's *SPCC Plan* and any site- or project-specific SPCC plans, as applicable. Hazardous materials associated with construction and operation of the proposed projects would be used, handled, stored, transported, and disposed of in accordance with all applicable federal and state requirements, including those set forth in Tyndall AFB's *Hazard Waste Management Plan*. The proposed projects are not anticipated to increase the quantities or volumes of hazardous materials used or stored at Tyndall AFB, or hazardous waste generated at the installation.

Table E-1 Summary of the Proposed Action's Consistency with or Applicability to the FCMP

Florida Statute	Legal Scope	Consistency or Applicability	Summary Analysis
Chapter 377, Energy Resources	Addresses regulation, planning, and development of energy resources of the state.	N/A	The Proposed Action would have no effect on regulation, planning, and development of energy resources of the state.
Chapter 379, Fish and Wildlife Conservation	Addresses management and protection of fish and wildlife in the state.	Consistent	The Proposed Action would be implemented in a manner that minimizes adverse impacts on fish and wildlife to the extent possible.
Chapter 380, Land and Water Management	Establishes land and water management policies to guide and coordinate local decisions relating to growth and development.	Consistent	The Proposed Action would be implemented in accordance with applicable land and water management plans, policies, and permitting requirements.
Chapter 381, Public Health, General Provisions	Establishes public policy concerning the state's public health system.	N/A	The Proposed Action would have no potential to affect policies regarding the states' public health system.
Chapter 388, Mosquito Control	Addresses mosquito control efforts in the state.	N/A	The Proposed Action would not affect local mosquito control efforts or contribute to increased propagation of mosquitos.
Chapter 403, Environmental Control	Establishes public policy concerning environmental control in the state.	Consistent	Construction and operation of the Proposed Action would include project-specific best management practices and pollution prevention measures. The Proposed Action would not result in exceedances of applicable state water quality standards or have substantial and longer-term water quality impacts. Air pollutant emissions associated with construction of the Proposed Actions would not exceed Air Force significance thresholds or exceed air quality standards. Long-term increases of air pollutants would not be significant. Construction wastes and operational wastes would be collected, transported, recycled, and disposed of in compliance with applicable state and local regulations. The DAF would obtain and comply with all applicable permits as required by law.

Table E-1 Summary of the Proposed Action's Consistency with or Applicability to the FCMP

Florida Statute	Legal Scope	Consistency or Applicability	Summary Analysis
Chapter 553, Building Construction Standards	Provides a mechanism for the uniform adoption, updating, amendment, interpretation, and enforcement of a single, unified state building code, called the Florida Building Code. Obtain a permit from the appropriate enforcing agency.	Consistent	The proposed projects would be built, operated, and maintained in accordance with all applicable DoD, DAF, and other federal, state, and local facility and construction requirements. The DAF would obtain and adhere to construction permits for the proposed projects, as applicable.
Chapter 582, Soil and Water Conservation	Provides for the control and prevention of soil erosion.	Consistent	Construction contractors would develop and adhere to project-specific Stormwater Pollution Prevention Plans and applicable best management practices to prevent or minimize the erosion of exposed soils and the sedimentation of receiving water bodies. All areas within the project sites not paved or otherwise developed by the proposed projects would be revegetated with native species to prevent ongoing soil erosion. The Proposed Action would not affect soils or farmland within a Soil and Water Conservation District and would not convert prime farmland.
Chapter 597, Aquaculture	Establishes public policy concerning the cultivation of aquatic organisms.	N/A	The Proposed Action would have no potential to affect aquaculture programs or activities in the state.

Notes:
[1] N/A indicates that the Enforceable Policy is not applicable to activities included in the Proposed Action.
[2] Consistent means the Proposed Action would be consistent with the Enforceable Policy to the maximum extent practicable.
AFB = Air Force Base; DAF = Department of the Air Force; FCMP = Florida Coastal Management Program; SPCC = Spill Prevention, Control, and Countermeasures

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APPENDIX F
UMAM ASSESSMENT

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APPENDIX F – UMAM ASSESSMENT

METHODOLOGY

Uniform Mitigation Assessment Method (UMAM)

The UMAM (62-345, Florida Administrative Code) was developed by the Florida Department of Environmental Protection and Florida's Water Management Districts to determine the amount of mitigation needed to offset adverse impacts on wetlands. The methodology was designed to assess functions provided by wetlands, the loss of functions provided by wetlands, and the amount of mitigation necessary to offset the proposed functional losses. This method is also used to determine the degree of improvement in ecological value that would be created by mitigation activities.

The UMAM Assessment includes a Qualitative Characterization (Part I) as well as a Quantitative Assessment and Scoring (Part II). The Qualitative Assessment is a basic descriptor of the site being evaluated and includes the following:

- significant nearby features
- water classifications
- assessment area size
- hydrology and relationship to contiguous off-site wetlands
- uniqueness of the assessment area
- functions of the assessment area
- wildlife utilization

The Quantitative Assessment provides a score of the assessment area in both the current condition and "with impact" condition. The assessment scoring evaluates the following parameters:

- location and landscape support
- water environment
- vegetative community

MITIGATION ASSESSMENT

Anticipated Wetlands Mitigation Requirements

The majority of wetlands potentially impacted by the Proposed Action are highly disturbed and altered due to hurricane damage and timber harvest/salvage operations. A formal Jurisdictional Determination of the wetlands would be conducted during the state and federal permitting process. During design and permitting, efforts would be made to minimize impacts to wetlands to the greatest extent practicable. A UMAM Assessment was conducted for those wetlands that are considered state and/or federally jurisdictional and therefore requiring mitigation. Approximately 21.88 acres of wetlands were evaluated using the UMAM Assessment **(Table F-1)**.

Table F-1 Summary of Potential Federally and State-Regulated Wetland Features Delineated at the Proposed Project Sites

Feature	Quantity	Area (acres)
Potential Waters of the United States	11	3.20
Potential Waters of the State	14	18.68
Total	**25**	**21.88**

Source: DAF, 2024

UMAM scores were developed for each wetland area affected by the Proposed Action **(Table F-2)**. Functional loss units were calculated by using the difference between the existing condition (i.e., current) scores and the proposed condition scores for individual wetland features and multiplying them by the

acreage of potential impact to establish the estimated lost value of wetland functions to fish and wildlife resulting from the Proposed Action. The estimated functional loss value to fish and wildlife as a result of the Proposed Action is 13.01 units. The completed UMAM data sheets are provided at the end of this appendix. The UMAM scores and values presented in **Table F-2** are approximate and will be further refined during the permitting process and formal jurisdiction approval.

Table F-2 UMAM Assessment

Project	Wetland Feature ID [1]	Score (Delta)	Acres of Impact	Functional Loss (Units)
1. Airfield Fence	WT-1	0.667	0.08	0.053
1. Airfield Fence	WT-2	0.600	0.04	0.024
1. Airfield Fence	WT-3	0.467	0.29	0.135
1. Airfield Fence	WT-4	0.433	2.30	0.997
1. Airfield Fence	WT-5	0.700	0.29	0.203
1. Airfield Fence	WT-6	0.700	0.01	0.007
1. Airfield Fence	WT-7	0.700	0.01	0.007
1. Airfield Fence	WT-8	0.500	0.69	0.345
1. Airfield Fence	WT-9	0.500	2.79	1.395
		Subtotal	**6.50**	**3.166**
2. Drone Runway Culvert Crossings	WT-18	0.433	0.04	0.017
2. Drone Runway Culvert Crossings	WT-19	0.433	0.04	0.017
2. Drone Runway Culvert Crossings	WT-20	0.433	0.03	0.013
2. Drone Runway Culvert Crossings	WT-21	0.433	0.07	0.030
2. Drone Runway Culvert Crossings	WT-22	0.433	0.04	0.017
2. Drone Runway Culvert Crossings	WT-23	0.433	0.05	0.022
2. Drone Runway Culvert Crossings	WT-24	0.433	0.04	0.017
2. Drone Runway Culvert Crossings	WT-25	0.433	0.08	0.035
		Subtotal	**0.390**	**0.168**
3. Drone Tow-Way Fence Alternative 1	WT-14	0.600	2.04	1.22
		Subtotal	**2.04**	**1.22**
3. Drone Tow-Way Fence Alternative 2	WT-15	0.500	0.98	0.490
3. Drone Tow-Way Fence Alternative 2	WT-16	0.400	0.1	0.040
3. Drone Tow-Way Fence Alternative 2	WT-17	0.400	0.16	0.064
		Subtotal	**1.24**	**0.594**
4. 7000 Area Improvements	WT-10	0.367	1.34	0.491
4. 7000 Area Improvements	WT-11	0.800	1.15	0.920
4. 7000 Area Improvements	WT-12	0.700	3.49	2.44
4. 7000 Area Improvements	WT-13	0.700	5.73	4.011
		Subtotal	**11.71**	**7.862**
		Total	**21.88**	**13.01**

Source: DAF, 2024

REFERENCES

DAF. 2024. Final Wetland Delineation Report for the Proposed Construction of Installation Security Features and Munitions Support Facilities. Tyndall AFB, Florida. February.

PART I – Qualitative Description
(See Section 62-345.400, F.A.C.)

Site/Project Name	Application Number	Assessment Area Name or Number
Wetland Delineation at Tyndall Air Force Base, Florida		WT-1 (Airfield Fence)

FLUCCs code	Further classification (optional)	Impact or Mitigation Site?	Assessment Area Size
441 - Coniferous Plantation	PEM1 (Freshwater Emergent Wetland)	Direct Impact	0.08 Acres

Basin/Watershed Name/Number	Affected Waterbody (Class)	Special Classification (i.e.OFW, AP, other local/state/federal designation of importance)
HUC Basin 03140101/St. Andrew St. Joseph Bays	Class III	None

Geographic relationship to and hydrologic connection with wetlands, other surface water, uplands

The AA is located in a low lying area at a location where a dredged canal meets Fred Bayou. Service roads are located north east of the AA. The elevation near the AA becomes greater as you move east. The airfied is located south across the dredged canal. There is a concrete production facility located across the AA. Both Freshwater Emergent Wetland and Estuarine and Marine Deepwater occur in the area.

Assessment area description

The AA is located above the waterline, next to the dredged canal and Fred Bayou. The sandy soil east of the AA has been reworked by heavy equipment. Tracks are still visible in the area. The vegetation observed in and around the AA consisted of *Morella cerifera, Chrysoma pauciflosculosa, Polygonella* sp.*, Cladonia evansii, Juncus roemerianus* and *Chrysopsis* sp.

Significant nearby features	Uniqueness (considering the relative rarity in relation to the regional landscape.)
Airfield, access roads, dredged canal, spoil bank, Fred Bayou, East Bay, concrete production facility	Not unique

Functions	Mitigation for previous permit/other historic use
Water quality improvements, groundwater recharge, plant habitat, and wildlife habitat for nesting, breeding, and denning.	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, and mammals such as rodents, deer, opossums, and raccoons	None

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):
Arnaud Kerisit, Kenneth Erwin, Don Spires	11/29/2023

PART II – Quantification of Assessment Area (impact or mitigation)
(See Sections 62-345.500 and .600, F.A.C.)

Site/Project Name	Application Number	Assessment Area Name or Number
Tyndall Air Force Base, Florida		WT-1 (Airfield Fence)
Impact or Mitigation	**Assessment conducted by:**	**Assessment date:**
Impact	A. Kerisit, K.Erwin, D. Spires	29-Nov-23

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 waterfunctions	Minimal level of support of wetland/surface water functions	Condition is insufficient to provide wetland/surface water functions

			w/o pres or current	with
.500(6)(a) Location and Landscape Support	a. Support to Wildlife by outside habitats			
	b. Invasive plnat species in proximity of AA			
	c. Wildlife access to and from AA (proximity and barrier)			
	d.Downstream benefits provided to fish and wildlife			
	e. Impact of land uses outside AA to fish and wildlife			
	f.Benefits to downstream or other hydrologically connected areas			
	g. Benefits to downstream habitats from discharges			
	h.Protection of wetland functions by upland mitigation AA		6	
	Additional Notes: Habitats outside of the AA includes developped and undeveloppped habitats. Some habitats could fulfill the life history requirement of wildlife present in the area. Wildlife habitat limited due to the close proximity of airfield operations. Heavy equipment is frequently used in the area to clear vegetation and areas north of AA was impacted by the removal of vegetaion. Wildife access to and from minimally limited by dredged canal.			
.500(6)(b)Water Environment (n/a for uplands)	a. Water levels and flows			
	b. Water level indicators			
	c. Soil moisture			
	d. Soil erosion and deposition			
	e. Evidence of fire history			
	f. Vegetation - community zonation			
	g. Vegetation - hydrologic stress			
	h. Use by animal species with specific hydrological requirements			
	i.Plant community composition associated with water quality			
	j. Direct observation of standing water			
	k. Existing water quality data			
	l. Water depth, energy, and currents		7	
	Additional Notes: AA is located near Fred bayou which connects to East Bay, and an adjacent dredged canal. Water in the area likely come from groundwater and stormwater from the nearby airfield drainage system which drains into the dredged canal, and higher elevation areas. Wildlife with hydrological requirements could use the area as part of their life histroy requirement.			
.500(6)(c)Community structure	I.Appropriate/desirable species			
	II.Invasive/exotic plant species			
	III.Regeneration/recruitment			
	IV.Age, size, distribution			
1. Vegetation and/or 2. Benthic Community	V.Snags, den, cavities			
	VI.Plant's condition			
	VII.Land management practices			
	VIII.Topographic features (refugisa, channels, hummocks)			
	IX. Submerged vegetation			
	X. Upland assessment area		7	
	Additional Notes: Majority of the vegetation in all strata are appropriate for the habitats at the AA with minimal invasive exotic species. Vegetation is healthy and not stressed. Vegetation in the area seems to be cleared frequently. Some erosion (wind, rain) in area likely to occur.			

Score = sum of above scores/30 (if uplands, divide by 20)	current or w/o pres	with
	0.66667	

If preservation as mitigation,
Preservation adjustment factor =
Adjusted mitigation delta =

For impact assessment areas
FL = delta x acres = 0.053

Delta = [with-current]
0.66667

If mitigation
Time lag (t-factor) =
Risk factor =

For mitigation assessment areas
RFG = delta/(t-factor x risk) =

PART I – Qualitative Description
(See Section 62-345.400, F.A.C.)

Site/Project Name	Application Number	Assessment Area Name or Number
Wetland Delineation Tyndall Air Force Base, Florida		WT-2 (Airfield Fence)

FLUCCs code	Further classification (optional)	Impact or Mitigation Site?	Assessment Area Size
322 - Coastal Scrub	PEM1 Freshwater Emergent Wetland	Direct Impact	0.04

Basin/Watershed Name/Number	Affected Waterbody (Class)	Special Classification (i.e.OFW, AP, other local/state/federal designation of importance)
HUC Basin 03140101/St. Andrew St. Joseph Bays	Class III	None

Geographic relationship to and hydrologic connection with wetlands, other surface water, uplands

The AA is located on a sandy spoil bank. A dredged canal runs adajcent to the AA. This canal is part of a drainage system that services the airfield. The airfield is located south of the AA. The canal empties into Fred Bayou and then East Bay.The AA is located slightly above the canal. Going northeast, the area continues to gain in elevation. Nearby wetlands consist of Estuarine and Marine Deepwater wetlands, Freshwater

Assessment area description

The AA is located on a spoil bank. Part of the AA is slightly depressional and collects water from the surrounding area. The spoil bank was created when the canal was dredged. Some heavy equipment tracks are still present in the area.The vegetation observed in the AA and surrounding areas consisted of *Morella cerifera, Chrysoma pauciflosculosa, Polygonella sp., Cladonia evansii, Juncus roemerianus* and *Chrysopsis* sp.

Significant nearby features	Uniqueness (considering the relative rarity in relation to the regional landscape.)
Airfield, access roads, dredged canal, spoil bank, Fred Bayou, East Bay	Not unique

Functions	Mitigation for previous permit/other historic use
Water quality improvements, groundwater recharge, plant habitat, and wildlife habitat for breeding, nesting, and denning	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, and mammals such as rodents, deer, opossums, and raccoons	None

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):
Arnaud Kerisit, Kenneth Erwin, Don Spires	11/29/2023

PART II – Quantification of Assessment Area (impact or mitigation)
(See Sections 62-345.500 and .600, F.A.C.)

Site/Project Name	Application Number	Assessment Area Name or Number
Tyndall Air Force Base		WT-2 (Airfiedl Fence)
Impact or Mitigation	**Assessment conducted by:**	**Assessment date:**
Impact or Mitigation	A.Kerisit, K. Erwin, D. Spires	11/29/2023

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 waterfunctions	Minimal level of support of wetland/surface water functions	Condition is insufficient to provide wetland/surface water functions

			w/o pres or current	with
.500(6)(a) Location and Landscape Support	a. Support to Wildlife by outside habitats			
	b. Invasive plnat species in proximity of AA			
	c. Wildlife access to and from AA (proximity and barrier)			
	d.Downstream benefits provided to fish and wildlife			
	e. Impact of land uses outside AA to fish and wildlife			
	f.Benefits to downstream or other hydrologically connected areas			
	g. Benefits to downstream habitats from discharges			
	h.Protection of wetland functions by upland mitigation AA			
	Additional Notes:Habitats outside of the AA includes developped and undevelopped habitats. Some habitats could fulfill the life history requirement of wildlife present in the area. Wildlife habitat limited due to the close proximity of airfield operations. Heavy equipment is frequently used in the area to clear vegetation. Wildife access to and from minimally limited by dredged canal.		6	
.500(6)(b)Water Environment (n/a for uplands)	a. Water levels and flows			
	b. Water level indicators			
	c. Soil moisture			
	d. Soil erosion and deposition			
	e. Evidence of fire history			
	f. Vegetation - community zonation			
	g. Vegetation - hydrologic stress			
	h. Use by animal species with specific hydrological requirements			
	i.Plant community composition associated with water quality			
	j. Direct observation of standing water			
	k. Existing water quality data			
	l. Water depth, energy, and currents			
	Additional Notes: The AA is located at a lower elevation than most of its surroundings and is depressional. Water colletcts in the area. Water level is not distinct in the area and the drainage pattern has been affected by the clearing and reworking of the soil in the area.		6	
.500(6)(c)Community structure 1. Vegetation and/or 2. Benthic Community	I.Appropriate/desirable species			
	II.Invasive/exotic plant species			
	III.Regeneration/recruitment			
	IV.Age, size, distribution			
	V.Snags, den, cavities			
	VI.Plant's condition			
	VII.Land management practices			
	VIII.Topographic features (refugisa, channels, hummocks)			
	IX. Submerged vegetation			
	X. Upland assessment area			
	Additional Notes:Majority of the vegetation in all strata are appropriate for the habitats at the AA with minimal invasive exotic species. Vegetation in the area seems to be cleared frequently. Some erosion (wind, rain) in area likely to occur due to the open nature of the vegetation in the area.		6	

Score = sum of above scores/30 (if uplands, divide by 20)	
current or w/o pres	with
0.6	

If preservation as mitigation,
Preservation adjustment factor =
Adjusted mitigation delta =

For impact assessment areas
FL = delta x acres = 0.024

Delta = [with-current]
0.6

If mitigation
Time lag (t-factor) =
Risk factor =

For mitigation assessment areas
RFG = delta/(t-factor x risk) =

PART I – Qualitative Description
(See Section 62-345.400, F.A.C.)

Site/Project Name	Application Number	Assessment Area Name or Number
Wetland Delineation Tyndall Air Force Base, Florida		WT-3 (Airfield Fence)

FLUCCs code	Further classification (optional)	Impact or Mitigation Site?	Assessment Area Size
322 - Coastal Scrub	PEM1 (Freshwater Emergent Wetland)	Direct Impact	0.29

Basin/Watershed Name/Number	Affected Waterbody (Class)	Special Classification (i.e.OFW, AP, other local/state/federal designation of importance)
HUC Basin 03140101/St. Andrew St. Joseph Bays	Class III	None

Geographic relationship to and hydrologic connection with wetlands, other surface water, uplands

The AA is located just north of the airfield. A service road runs directly south of the AA, and another one runs east of the AA and leads to a building. A dredged canal, part of the drainage system which service the airfield, is directly located to the northwestern part of the AA. This canal is connected to Fred Bayou, and then East Bay.

Assessment area description

Most of the vegetation in the AA is kept low due to the nearby airfield and related activities. The eastern part of the AA is slightly depressional and may collect water. The northwestern portion of the AA had denser and taller vegetation. Water was present in this area at the time of the site visit.The vegetation present in the AA and its surroundings consisted of *Ilex myrtirfolia, Morella cerifera, Rhynchospora filifolia, Cirsium horridulum, Setaria parviflora, Schizachyrium scoparium, Rubus* sp., *Smilax bona-nox,* and *Vitis rotundifolia.*

Significant nearby features	Uniqueness (considering the relative rarity in relation to the regional landscape.)
Airfield, service roads, buildings, dredged canal, Fred Bayou, East Bay	Not unique

Functions	Mitigation for previous permit/other historic use
Water quality improvements, groundwater recharge, plant habitat, and wildlife habitat for nesting and breeding, denning	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.	None

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):
Arnaud Kerisit, Kenneth Erwin, Don Spires	11/29/2023

Form 62-345.900(1), F.A.C. [effective date 02-04-2004]

PART II – Quantification of Assessment Area (impact or mitigation)
(See Sections 62-345.500 and .600, F.A.C.)

Site/Project Name	Application Number	Assessment Area Name or Number
Tyndall Air Force Base		WT-3 (Airfield Fence)
Impact or Mitigation	**Assessment conducted by:**	**Assessment date:**
Impact or Mitigation	A. Kerisit, K. Erwin, D. Spires	11/29/2023

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 waterfunctions	Minimal level of support of wetland/surface water functions	Condition is insufficient to provide wetland/surface water functions

.500(6)(a) Location and Landscape Support	a. Support to Wildlife by outside habitats		
	b. Invasive plantt species in proximity of AA		
	c. Wildlife access to and from AA (proximity and barrier)		
	d.Downstream benefits provided to fish and wildlife		
	e. Impact of land uses outside AA to fish and wildlife		
	f.Benefits to downstream or other hydrologically connected areas		
w/o pres or current	g. Benefits to downstream habitats from discharges		with
	h.Protection of wetland functions by upland mitigation AA		
5	Additional Notes: Habitats includes heavily developed habitats and some undeveloped habitats. Wildlife habitat is limited by clearing of habitats and airfield operations. Most of the habitats in the area do not provide the minimum requirements to fulfill the life history of wildlife. Some land uses outtside of the AA have only minor to moderate adverse impacts to wildlife.		
.500(6)(b)Water Environment (n/a for uplands)	a. Water levels and flows		
	b. Water level indicators		
	c. Soil moisture		
	d. Soil erosion and deposition		
	e. Evidence of fire history		
	f. Vegetation - community zonation		
	g. Vegetation - hydrologic stress		
	h. Use by animal species with specific hydrological requirements		
w/o pres or current	i.Plant community composition associated with water quality		with
	j. Direct observation of standing water		
	k. Existing water quality data		
	l. Water depth, energy, and currents		
4	Additional Notes: The AA is somewhat depressional in nature. The source of the hydrology comes from groundwater and water collection from the surrounding roads, facilities and airfield. The AA retains water after rain events and is isolated from nearby wetalnds (roads, spoil bank), and surface waters. Some water is present in the AA.		
.500(6)(c)Community structure	I.Appropriate/desirable species		
	II.Invasive/exotic plant species		
	III.Regeneration/recruitment		
	IV.Age, size, distribution		
1. Vegetation and/or 2. Benthic Community	V.Snags, den, cavities		
	VI.Plant's condition		
	VII.Land management practices		
w/o pres or current	VIII.Topographic features (refugisa, channels, hummocks)		with
	IX. Submerged vegetation		
	X. Upland assessment area		
5	Additional Notes: The AA is regularly mowed due to the direct proximity of the airfield. The vegetation is kept as low as possible, thus limiting habitat diversity and complexity in the soutern portion of AA. Nortern portion of AA has slighlty more complex habitat with the potential to harbor more wildlife.		

Score = sum of above scores/30 (if uplands, divide by 20)	
current or w/o pres	with
0.46667	

If preservation as mitigation,
Preservation adjustment factor =
Adjusted mitigation delta =

For impact assessment areas
FL = delta x acres = 0.1353343

Delta = [with-current]
0.46667

If mitigation
Time lag (t-factor) =
Risk factor =

For mitigation assessment areas
RFG = delta/(t-factor x risk) =

PART I – Qualitative Description
(See Section 62-345.400, F.A.C.)

Site/Project Name	Application Number	Assessment Area Name or Number
Wetland Delineation Tyndall Airforce Base, Florida		WT-4 (Airfield Fence)

FLUCCs code	Further classification (optional)	Impact or Mitigation Site?	Assessment Area Size
322 - Coastal Scrub / 411 - Pine Flatwoods / 625 - Hydric Pine Flatwoods	PFO1 (Freshwater Forested/Shrub Wetland)	Direct Impact	2.3

Basin/Watershed Name/Number	Affected Waterbody (Class)	Special Classification (i.e.OFW, AP, other local/state/federal designation of importance)
HUC Basin 03140101/St. Andrew St. Joseph Bays	Class III	None

Geographic relationship to and hydrologic connection with wetlands, other surface water, uplands

The AA is located right next to the airfield which is located to its west and south. A few hangars are located near the AA. An underground tank is situated directly underneath the AA, and a buidling is situated nearby. The southernmost part of the AA is located next to a dredged canal which is connected to East Bay. The AA is adjacent to Freshwater Forested/Shrub Wetland, Freshwater Emergent Wetland, and although not directly

Assessment area description

The easternmost portion of the AA, close to the dredged canal, was severely impacted by trees and debris removal. Numerous heavy equipment ruts are present in the area. The vegetation is kept as low as possible due to the nearby airfield operations. The eastern portion of the AA had standing water in some areas. The vegetation consisted of *Hypericum brachyphyllum, Morella cerifera, Rhynchospora filifolia, Schizachyrium scoparium, Rhynchospora fascicularis, Euthamia caroliniana, Aster* sp.*, Dichanthelium* sp.*, Xyris* sp.*, and Syntrichia ruralis.*

Significant nearby features	Uniqueness (considering the relative rarity in relation to the regional landscape.)
Airfield, hangars, buidilng, underground tank, Access Road, dredged canal, East Bay	Not unique

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	None

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):
Arnaud Kerisit, Kenneth Erwin, Don Spires	11/29/2023

Form 62-345.900(1), F.A.C. [effective date 02-04-2004]

PART II – Quantification of Assessment Area (impact or mitigation)
(See Sections 62-345.500 and .600, F.A.C.)

Site/Project Name	Application Number	Assessment Area Name or Number
Tyndall Air Force Base		WT-4 (Airfield Fence)
Impact or Mitigation	**Assessment conducted by:**	**Assessment date:**
Impact or Mitigation	A. Kerisit, K. Erwin, D. Spires	11/29/2023

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 waterfunctions	Minimal level of support of wetland/surface water functions	Condition is insufficient to provide wetland/surface water functions

			w/o pres or current	with
.500(6)(a) Location and Landscape Support	a. Support to Wildlife by outside habitats			
	b. Invasive plnat species in proximity of AA			
	c. Wildlife access to and from AA (proximity and barrier)			
	d.Downstream benefits provided to fish and wildlife			
	e. Impact of land uses outside AA to fish and wildlife			
	f.Benefits to downstream or other hydrologically connected areas			
	g. Benefits to downstream habitats from discharges			
	h.Protection of wetland functions by upland mitigation AA			
	Additional Notes: Habitats outside of the AA include both developed and undeveloped habitats. Habitats north of the AA were impacted by clearing operations and the vast majority of trees are missing. This area could support minimal requirement for some wildlife life history. The area south of the AA does not support wildlife lihistory. The vegetation height is stricly kept to its lowest.		4	
.500(6)(b)Water Environment (n/a for uplands)	a. Water levels and flows			
	b. Water level indicators			
	c. Soil moisture			
	d. Soil erosion and deposition			
	e. Evidence of fire history			
	f. Vegetation - community zonation			
	g. Vegetation - hydrologic stress			
	h. Use by animal species with specific hydrological requirements			
	i.Plant community composition associated with water quality			
	j. Direct observation of standing water			
	k. Existing water quality data			
	l. Water depth, energy, and currents			
	Additional Notes: The source of hydrology is from the groundwater and surrounding airfield drainage. Water level is sufficient to support plant community. Wildlife with hydrological requirements could be using the area as part of their life cycle.		5	
.500(6)(c)Community structure 1. Vegetation and/or 2. Benthic Community	I.Appropriate/desirable species			
	II.Invasive/exotic plant species			
	III.Regeneration/recruitment			
	IV.Age, size, distribution			
	V.Snags, den, cavities			
	VI.Plant's condition			
	VII.Land management practices			
	VIII.Topographic features (refugisa, channels, hummocks)			
	IX. Submerged vegetation			
	X. Upland assessment area			
	Additional Notes: The AA is regularly mowed and the vegetation is kept as low as possible. The area's vegetation is kept as low as possible due to airfield operations taking place in the dircet vicinity. The lack of habitat complexity due to land management practices likely results in low land usage by wildlife.		4	

Score = sum of above scores/30 (if uplands, divide by 20)	current or w/o pres	with
	0.43333	

If preservation as mitigation,
Preservation adjustment factor =
Adjusted mitigation delta =

For impact assessment areas
FL = delta x acres = 0.9966665

Delta = [with-current]
0.43333

If mitigation
Time lag (t-factor) =
Risk factor =

For mitigation assessment areas
RFG = delta/(t-factor x risk) =

PART I – Qualitative Description
(See Section 62-345.400, F.A.C.)

Site/Project Name	Application Number	Assessment Area Name or Number
Wetland Delineation Tyndall Air Force Base, Florida		WT-5 (Airfield Fence)

FLUCCs code	Further classification (optional)	Impact or Mitigation Site?	Assessment Area Size
625 - Hydric Pine Flatwoods	PFO1 (Freshwater Forested/Shrub Wetland)	Direct Impact	0.01

Basin/Watershed Name/Number	Affected Waterbody (Class)	Special Classification (i.e.OFW, AP, other local/state/federal designation of importance)
HUC Basin 03140101/St. Andrew St. Joseph Bays	Class III	None

Geographic relationship to and hydrologic connection with wetlands, other surface water, uplands

The AA is located in a Freshwater Forested/Shrub Wetland. There is a dredged canal, north of the AA, which is connected to East Bay. There is a stock pond located to the east of the AA. There is an access road located south of the AA and a large open area to its north.

Assessment area description

Part of the AA is located in dense vegetation with many down trees. Standing water was present on part of the northern portion of the AA. There is a small berm which prevent water from running into cleared area adjacent to the dredged canal.The northern most portion of the AA consist of a heavily disturbed area due to the removal of debris. Thee AA ends on the dredged canal edge.The vegetation observed in the AA and surroundings consisted of *Cliftonia monophylla, Ilex glabra, Lyonia lucida, Nyssa biflora, Ilex vomitoria, serenoa repens, Dichanthelium sp.,* and *Alnus serrulata.*

Significant nearby features	Uniqueness (considering the relative rarity in relation to the regional landscape.)
Airfield, dredged canal, access road, stock pond, East bay	Not unique

Functions	Mitigation for previous permit/other historic use
Water quality improvements, groundwater recharge, plant habitat, and wildlife habitat for nesting and breeding, denning	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	None

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):
Arnaud Kerisit, Kenneth Erwin, Don Spires	11/29/2023

PART II – Quantification of Assessment Area (impact or mitigation)
(See Sections 62-345.500 and .600, F.A.C.)

Site/Project Name	Application Number	Assessment Area Name or Number
Tyndall Air Force Base, Florida		WT-5 (Airfield Fence)
Impact or Mitigation	**Assessment conducted by:**	**Assessment date:**
Imapct	A. Kerisit, K. Erwin, D. Spires	11/29/2023

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 waterfunctions	Minimal level of support of wetland/surface water functions	Condition is insufficient to provide wetland/surface water functions

.500(6)(a) Location and Landscape Support	a. Support to Wildlife by outside habitats	
	b. Invasive plnat species in proximity of AA	
	c. Wildlife access to and from AA (proximity and barrier)	
	d.Downstream benefits provided to fish and wildlife	
	e. Impact of land uses outside AA to fish and wildlife	
	f.Benefits to downstream or other hydrologically connected areas	
	g. Benefits to downstream habitats from discharges	
	h.Protection of wetland functions by upland mitigation AA	
w/o pres or current: 7 / with:	Additional Notes:Habitats outside of the AA includes developped and undevelopped habitats. Some habitats could fulfill the life history requirement of wildlife present in the area. Wildlife habitat limited to some extent due to the close proximity of airfield operations. Heavy equipment is used in the area to clear vegetation. Wildife access to and from minimally limited by airfield area to the south and dredged canal to the north.	
.500(6)(b)Water Environment (n/a for uplands)	a. Water levels and flows	
	b. Water level indicators	
	c. Soil moisture	
	d. Soil erosion and deposition	
	e. Evidence of fire history	
	f. Vegetation - community zonation	
	g. Vegetation - hydrologic stress	
	h. Use by animal species with specific hydrological requirements	
	i.Plant community composition associated with water quality	
w/o pres or current: 7 / with:	j. Direct observation of standing water	
	k. Existing water quality data	
	l. Water depth, energy, and currents	
	Additional Notes: Standing water in the AA is somewhat contained in an area by what seems to be a small man-made berm to its west, and an access road to its south. The area is connected to a larger wetland to the east. The source of water in the area is primarily from groundwater. Wildlife having hydrological requirements could be using the area.	
.500(6)(c)Community structure	I.Appropriate/desirable species	
	II.Invasive/exotic plant species	
	III.Regeneration/recruitment	
	IV.Age, size, distribution	
1. Vegetation and/or 2. Benthic Community	V.Snags, den, cavities	
	VI.Plant's condition	
	VII.Land management practices	
	VIII.Topographic features (refugisa, channels, hummocks)	
w/o pres or current: 7 / with:	IX. Submerged vegetation	
	X. Upland assessment area	
	Additional Notes: the vast majority of the AA has been cleared of debris and fallen trees. The vegetation is very dense in some area and some fallen trees are present. The vegetation in the area seems healthy and recruitment and regeneration is observable.	

Score = sum of above scores/30 (if uplands, divide by 20)		
current or w/o pres: 0.7	with:	

If preservation as mitigation,
Preservation adjustment factor =
Adjusted mitigation delta =

For impact assessment areas
FL = delta x acres = 0.203

Delta = [with-current]
0.7

If mitigation
Time lag (t-factor) =
Risk factor =

For mitigation assessment areas
RFG = delta/(t-factor x risk) =

PART I – Qualitative Description
(See Section 62-345.400, F.A.C.)

Site/Project Name	Application Number	Assessment Area Name or Number
Wetland Delineation Tyndall Air Force Base		WT-6 (Airfield Fence)

FLUCCs code	Further classification (optional)	Impact or Mitigation Site?	Assessment Area Size
625 - Hydric Pine Flatwoods	PFO1 (Freshwater Forested/Shrub Wetland)	Direct Imapct	0.01

Basin/Watershed Name/Number	Affected Waterbody (Class)	Special Classification (i.e.OFW, AP, other local/state/federal designation of importance)
HUC Basin 03140101/St. Andrew St. Joseph Bays	Class III	None

Geographic relationship to and hydrologic connection with wetlands, other surface water, uplands

The AA is surrounded by access roads which were used to remove debris from the area. There is a stock pond to the east, and a dreged canal to the north of the AA which is connected to East Bay. A small stream emerges from a culvert located under the nearby access road. The AA has Freshwater Forested/Shrub Wetland to its west and east, and Estuarine and Marine Deepwater habitat to its north.

Assessment area description

The AA is depressional by nature. The area was heavily impacted by debris removal . Numerous trees are down. Numerous ruts are present due to the use of heavy equipment in the area.The vegetation present in the AA and surroundings consisted of *Quercus virginiana, Ilex glabra, Euthamia caroliniana, Dichanthelium sp, Rubus sp, smilax auriculata, smilax bona nox, Smilax laurifolia, Vitis rotundifolia, Pinus palustris,* and *Magnolia virginiana.*

Significant nearby features	Uniqueness (considering the relative rarity in relation to the regional landscape.)
Aifield, dreged canal, stock pond, access roads, Ammo Road	Not unique

Functions	Mitigation for previous permit/other historic use
Water quality improvements, groundwater recharge, plant habitat, and wildlife habitat for nesting, 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	None

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):
Arnaud Kerisit, Kenneth Erwin, Don Spires	11/28/2023

PART II – Quantification of Assessment Area (impact or mitigation)
(See Sections 62-345.500 and .600, F.A.C.)

Site/Project Name	Application Number	Assessment Area Name or Number
Tyndall Air Force Base, Florida		WT-6 (Airfield Fence)
Impact or Mitigation	**Assessment conducted by:**	**Assessment date:**
Impact	A. Kerisit, K. Erwin, D. Spires	11/28/2023

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 waterfunctions	Minimal level of support of wetland/surface water functions	Condition is insufficient to provide wetland/surface water functions

.500(6)(a) Location and Landscape Support	a. Support to Wildlife by outside habitats		
	b. Invasive plnat species in proximity of AA		
	c. Wildlife access to and from AA (proximity and barrier)		
	d.Downstream benefits provided to fish and wildlife		
	e. Impact of land uses outside AA to fish and wildlife		
	f.Benefits to downstream or other hydrologically connected areas		
w/o pres or current	g. Benefits to downstream habitats from discharges		with
	h.Protection of wetland functions by upland mitigation AA		
7	Additional Notes:Habitats outside of the AA includes developped and undevelopped habitats. Some habitats could fulfill the life history requirement of wildlife present in the area. Wildlife habitat limited to some extent due to the close proximity of airfield operations. Heavy equipment is used in the area to clear vegetation. Wildlife access to and from minimally limited by airfield area to the south and dredged canal to the west.		
.500(6)(b)Water Environment (n/a for uplands)	a. Water levels and flows		
	b. Water level indicators		
	c. Soil moisture		
	d. Soil erosion and deposition		
	e. Evidence of fire history		
	f. Vegetation - community zonation		
	g. Vegetation - hydrologic stress		
	h. Use by animal species with specific hydrological requirements		
w/o pres or current	i.Plant community composition associated with water quality		with
	j. Direct observation of standing water		
	k. Existing water quality data		
	l. Water depth, energy, and currents		
7	Additional Notes: The area is deppressional in nature. A small stream runs underneath an access road directly west of the AA. The source of the water is both from groundwater and stormwater runoff form the airfield. The stormwater collects on the south side of the access road and moves through the area in the form of a small stream which then flows via a culvert under the access road and into the AA. The stream is then diverted to the northwest due to the presence of another access road to it north. Some wildlife with specific hydrological requirements may use the area.		
.500(6)(c)Community structure	I.Appropriate/desirable species		
	II.Invasive/exotic plant species		
	III.Regeneration/recruitment		
	IV.Age, size, distribution		
1. Vegetation and/or 2. Benthic Community	V.Snags, den, cavities		
	VI.Plant's condition		
	VII.Land management practices		
w/o pres or current	VIII.Topographic features (refugisa, channels, hummocks)		with
	IX. Submerged vegetation		
	X. Upland assessment area		
7	Additional Notes: The vegetation in the area indicates regeneration and recruitment. The AA offers habitat complexicity and thus provides habitat for wildlife.		

Score = sum of above scores/30 (if uplands, divide by 20)		
current or w/o pres		with
0.7		

If preservation as mitigation,
Preservation adjustment factor =
Adjusted mitigation delta =

For impact assessment areas
FL = delta x acres = 0.007

Delta = [with-current]
0.7

If mitigation
Time lag (t-factor) =
Risk factor =

For mitigation assessment areas
RFG = delta/(t-factor x risk) =

Form 62-345.900(2), F.A.C. [effective date 02-04-2004]

PART I – Qualitative Description
(See Section 62-345.400, F.A.C.)

Site/Project Name	Application Number	Assessment Area Name or Number
Wetland Delineation Tyndall Air Force Base, Florida		WT-7 (Airfield Fence)

FLUCCs code	Further classification (optional)	Impact or Mitigation Site?	Assessment Area Size
625 - Hydric Pine Flatwoods	PFO1 (Freshwater Forested/Shrub Wetland)	Direct Impact	0.01

Basin/Watershed Name/Number	Affected Waterbody (Class)	Special Classification (i.e.OFW, AP, other local/state/federal designation of importance)
HUC Basin 03140101/St. Andrew St. Joseph Bays	Class III	None

Geographic relationship to and hydrologic connection with wetlands, other surface water, uplands

The AA is located in a partially isolated Freshwater Forested/Shrub Wetland. Access roads are surrounding the AA. To the south, an access road was created to remove debris from the area. There is also an access road to the north, which leads to the airfield to the west, and to a stock pond to the east of the AA. There is a dredged canal north of the AA which is connected to East Bay. the airfield is located southwest of the AA.

Assessment area description

The AA was heavily impacted by debris removal activities. Numerous ruts are present in the area due to the use of heavy machinery. Numerous trees are still down and the vegetation is very thick. A small stream runs throught the AA and under the access road through a culvert. Water was present at the time of the site visit.The vegetation observed in the AA and surrounding area consisted of *Pinus palustris, Magnolia virginiana, Ilex glabra,* and *Smilax laurifolia* .

Significant nearby features	Uniqueness (considering the relative rarity in relation to the regional landscape.)
Airfield, dredged canal, access road, Ammo Road, stock pond, East Bay	Not unique

Functions	Mitigation for previous permit/other historic use
Water quality improvements, groundwater recharge, plant habitat, and wildlife habitat for nesting and breeding, denning	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	None

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):
Arnaud Kerisit, Kenneth Erwin, Don Spires	11/28/2023

PART II – Quantification of Assessment Area (impact or mitigation)
(See Sections 62-345.500 and .600, F.A.C.)

Site/Project Name	Application Number	Assessment Area Name or Number
Tyndall Air Force Base, Florida		WT-7 (Airfield Fence)
Impact or Mitigation	**Assessment conducted by:**	**Assessment date:**
Impact or Mitigation	A. Kerisit, K. Erwin, D. Spires	11/28/2023

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 waterfunctions	Minimal level of support of wetland/surface water functions	Condition is insufficient to provide wetland/surface water functions

.500(6)(a) Location and Landscape Support	a. Support to Wildlife by outside habitats		
	b. Invasive plnat species in proximity of AA		
	c. Wildlife access to and from AA (proximity and barrier)		
	d.Downstream benefits provided to fish and wildlife		
	e. Impact of land uses outside AA to fish and wildlife		
	f.Benefits to downstream or other hydrologically connected areas		
w/o pres or current	g. Benefits to downstream habitats from discharges		with
	h.Protection of wetland functions by upland mitigation AA		
7	Additional Notes:Habitats outside of the AA includes developped and undevelopped habitats. Some habitats could fulfill the life history requirement of wildlife present in the area. Wildlife habitat limited to some extent due to the close proximity of airfield operations. Heavy equipment is used in the area to clear vegetation. Wildlife access to and from minimally limited by airfield area to the south and dredged canal to the west.		
.500(6)(b)Water Environment (n/a for uplands)	a. Water levels and flows		
	b. Water level indicators		
	c. Soil moisture		
	d. Soil erosion and deposition		
	e. Evidence of fire history		
	f. Vegetation - community zonation		
	g. Vegetation - hydrologic stress		
	h. Use by animal species with specific hydrological requirements		
w/o pres or current	i.Plant community composition associated with water quality		with
	j. Direct observation of standing water		
	k. Existing water quality data		
	l. Water depth, energy, and currents		
7	Additional Notes: The area is depressional in nature. A small stream runs north into the AA. The source of the water is both from groundwater and stormwater runoff form the airfield. The stormwater collects on the south side of the AA and exit the AA to the north via a culvert. Wildlife with hydrolgical requirements may use the area.		
.500(6)(c)Community structure	I.Appropriate/desirable species		
	II.Invasive/exotic plant species		
	III.Regeneration/recruitment		
	IV.Age, size, distribution		
1. Vegetation and/or 2. Benthic Community	V.Snags, den, cavities		
	VI.Plant's condition		
	VII.Land management practices		
w/o pres or current	VIII.Topographic features (refugisa, channels, hummocks)		with
	IX. Submerged vegetation		
	X. Upland assessment area		
7	Additional Notes:The vegetation in the area indicates regeneration and recruitment. The AA offers habitat complexicity and thus provides suitable habitat for wildlife.		

Score = sum of above scores/30 (if uplands, divide by 20)		
current or w/o pres		with
0.7		

If preservation as mitigation,
Preservation adjustment factor =
Adjusted mitigation delta =

For impact assessment areas
FL = delta x acres = 0.007

Delta = [with-current]
0.7

If mitigation
Time lag (t-factor) =
Risk factor =

For mitigation assessment areas
RFG = delta/(t-factor x risk) =

PART I – Qualitative Description
(See Section 62-345.400, F.A.C.)

Site/Project Name	Application Number	Assessment Area Name or Number
Wetland Delineation tyndall Air Force Base, Florida		WT-8 (Airfield Fence)

FLUCCs code	Further classification (optional)	Impact or Mitigation Site?	Assessment Area Size
625 - Hydric Pine Flatwoods	PFO1 (Freshwater Forested/Shrub Wetland)	Direct Impact	0.69

Basin/Watershed Name/Number	Affected Waterbody (Class)	Special Classification (i.e.OFW, AP, other local/state/federal designation of importance)
HUC Basin 03140101/St. Andrew St. Joseph Bays	Class III	None

Geographic relationship to and hydrologic connection with wetlands, other surface water, uplands

AA is located directly on the edge of airfield. Ammo Road runs parallel to the AA. A building is located near the southeastern portion of the AA. Freshwater Forested/Shrub Wetland are located on the northern side of the AA. A drainage system is located across the Ammo Road. Estuarine and Marine Deepwater habitat is present north of the AA, in the form of a dredged canal. This canal is connected to East Bay.

Assessment area description

The AA has been heavily impacted by clearing activities. Numerous trees were cut and cleared which created open areas. An access road was created to help with debris removal. The northern most portion of the AA has a higher elevation than the surrounding areas. The western side of the AA is regularily mowed due to airfield activities. Some water present duringh the site visit. The vegetation observed in the AA, and surroundings, consisted of *Ilex glabra, Cyrilla racemiflora, Serenoa repens, Hypericum sp., Schizachyrium scoparium, Xyris sp., and Distichlis spicata.*

Significant nearby features	Uniqueness (considering the relative rarity in relation to the regional landscape.)
Airfield, Ammo Road, access road, Building, Dredged canal	Not unique

Functions	Mitigation for previous permit/other historic use
Water quality improvements, groundwater recharge, plant habitat, and wildlife habitat for nesting and breeding, and denning	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	None

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):
Arnaud Kerisit, Kenneth Erwin, Don Spires	11/28/2023

Form 62-345.900(1), F.A.C. [effective date 02-04-2004]

PART II – Quantification of Assessment Area (impact or mitigation)
(See Sections 62-345.500 and .600, F.A.C.)

Site/Project Name	Application Number	Assessment Area Name or Number
Tyndall Air Force Base, Florida		WT-8 (Airfield Fence)
Impact or Mitigation	**Assessment conducted by:**	**Assessment date:**
Impact or Mitigation	A. Kerisit, K. Erwin, D. Spires	11/28/2023

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 waterfunctions	Minimal level of support of wetland/surface water functions	Condition is insufficient to provide wetland/surface water functions

.500(6)(a) Location and Landscape Support	a. Support to Wildlife by outside habitats		
	b. Invasive plnat species in proximity of AA		
	c. Wildlife access to and from AA (proximity and barrier)		
	d.Downstream benefits provided to fish and wildlife		
	e. Impact of land uses outside AA to fish and wildlife		
	f.Benefits to downstream or other hydrologically connected areas		
w/o pres or current	g. Benefits to downstream habitats from discharges		with
	h.Protection of wetland functions by upland mitigation AA		
5	Additional Notes: Habitats outside the AA includes both developed and undeveloped habitats. Wildlife habitat is severely limited due to clearing activities by heavy equipment and mostly by airfield activities. AA is directly bordered by airfield and associated buldings, and access roads. Most lands on outside of the AA have been adversely impacted. Some cleared area and access road are present on the north side of the AA. Sand material is piled up at the end of the AA		
.500(6)(b)Water Environment (n/a for uplands)	a. Water levels and flows		
	b. Water level indicators		
	c. Soil moisture		
	d. Soil erosion and deposition		
	e. Evidence of fire history		
	f. Vegetation - community zonation		
	g. Vegetation - hydrologic stress		
	h. Use by animal species with specific hydrological requirements		
w/o pres or current	i.Plant community composition associated with water quality		with
	j. Direct observation of standing water		
	k. Existing water quality data		
	l. Water depth, energy, and currents		
5	Additional Notes: Little to no water is present on the west portion of AA due to slightly higher elevation. Water is present along the northern boundary of the AA and to its east. Water source is from groundwater and stormwater coming from the airfield.		
.500(6)(c)Community structure	I.Appropriate/desirable species		
	II.Invasive/exotic plant species		
	III.Regeneration/recruitment		
	IV.Age, size, distribution		
1. Vegetation and/or 2. Benthic Community	V.Snags, den, cavities		
	VI.Plant's condition		
	VII.Land management practices		
w/o pres or current	VIII.Topographic features (refugisa, channels, hummocks)		with
	IX. Submerged vegetation		
	X. Upland assessment area		
5	Additional Notes: The vegetation on the south side of the AA is kept very low due to airfield operation requirements. The AA has been cleared by heavy equipment and the vast majority of the vegetation is relatively low and not dense. The AA provides little habitat to wildlife.		

Score = sum of above scores/30 (if uplands, divide by 20)		
current or w/o pres		with
0.5		

If preservation as mitigation,
Preservation adjustment factor =
Adjusted mitigation delta =

For impact assessment areas
FL = delta x acres = 0.345

Delta = [with-current]
0.5

If mitigation
Time lag (t-factor) =
Risk factor =

For mitigation assessment areas
RFG = delta/(t-factor x risk) =

PART I – Qualitative Description
(See Section 62-345.400, F.A.C.)

Site/Project Name	Application Number	Assessment Area Name or Number
Wetland Delineation Tyndall Air Force Base, Florida		WT-9 (Airfield Fence)

FLUCCs code	Further classification (optional)	Impact or Mitigation Site?	Assessment Area Size
625 - Hydric Pine Flatwoods	PFO1 (Freshwater Forested/Shrub Wetland)	Direct Impact	2.79

Basin/Watershed Name/Number	Affected Waterbody (Class)	Special Classification (i.e.OFW, AP, other local/state/federal designation of importance)
HUC Basin 03140101/St. Andrew St. Joseph Bays	Class III	None

Geographic relationship to and hydrologic connection with wetlands, other surface water, uplands

The AA is located near munition depot. The AA runs parallel to Munition Loop, to its east, and Munition Road and airfield to its south. AA is bordered to its west by Freshwater Forested/Shrub Wetland. AA is close to fresh emergent wetland near its northern most portion. Numerous buildings and paved areas are located in the northermost portion of the AA. Retention ponds are also present in the nearby area.

Assessment area description

The AA is depressional in nature and is part of a ditch which runs parallel to the Ammo Loop. Vegetation in the AA is mowed regularly as to keep the area clear of any type of obstructions. Area is severely impacted by heavy equipment and numerous ruts are present. Water was present in some locations at the time of the field visit.The vegetation observed in the AA and surroundings consisted of *Ilex glabra, Schizachyrium scoparium, Rubus sp, Cyrilla racemiflora, lycopodiella appressa, Chaptalia tomentosa, Xyris Caroliniana, and Morella serifera.*

Significant nearby features	Uniqueness (considering the relative rarity in relation to the regional landscape.)
Ammo loop, Ammo Road, Airfield, buildings, retention ponds, parking lot.	Not unique

Functions	Mitigation for previous permit/other historic use
Water quality improvements, groundwater recharge, plant habitat, breeding, nesting	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	None

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):
Arnaud Kerisit, Kenneth Erwin, Don Spires	11/28/2023

PART II – Quantification of Assessment Area (impact or mitigation)
(See Sections 62-345.500 and .600, F.A.C.)

Site/Project Name	Application Number	Assessment Area Name or Number
Tyndall Air Force Base, Florida		WT-9 (Airfield Fence)
Impact or Mitigation	**Assessment conducted by:**	**Assessment date:**
Impact	A. Kerisit, K. Erwin, D. Spires	11/28/2023

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 waterfunctions	Minimal level of support of wetland/surface water functions	Condition is insufficient to provide wetland/surface water functions

			w/o pres or current	with
.500(6)(a) Location and Landscape Support	a. Support to Wildlife by outside habitats			
	b. Invasive plnat species in proximity of AA			
	c. Wildlife access to and from AA (proximity and barrier)			
	d.Downstream benefits provided to fish and wildlife			
	e. Impact of land uses outside AA to fish and wildlife			
	f.Benefits to downstream or other hydrologically connected areas			
	g. Benefits to downstream habitats from discharges			
	h.Protection of wetland functions by upland mitigation AA		5	
Additional Notes: Habitats outide the AA consist of developed and undeveloped areas. Wildlife is limited by clearing of habitats . The northern side of the AA is bordered by wetlands that provides habitat for wildlife species that might be occuring in the area. The south side of the AA is heavily developed due to airfield operations. Vegetation is kept as low as possible.				
.500(6)(b)Water Environment (n/a for uplands)	a. Water levels and flows			
	b. Water level indicators			
	c. Soil moisture			
	d. Soil erosion and deposition			
	e. Evidence of fire history			
	f. Vegetation - community zonation			
	g. Vegetation - hydrologic stress			
	h. Use by animal species with specific hydrological requirements			
	i.Plant community composition associated with water quality			
	j. Direct observation of standing water			
	k. Existing water quality data			
	l. Water depth, energy, and currents		5	
Additional Notes: Water is present along and in the AA which is partly located into a ditch.. The water sources consist of groundwater and stormwater originating from the airfield and access road. Wildlife with hydrological rquirements may use the area.				
.500(6)(c)Community structure	I.Appropriate/desirable species			
	II.Invasive/exotic plant species			
	III.Regeneration/recruitment			
	IV.Age, size, distribution			
1. Vegetation and/or 2. Benthic Community	V.Snags, den, cavities			
	VI.Plant's condition			
	VII.Land management practices			
	VIII.Topographic features (refugisa, channels, hummocks)			
	IX. Submerged vegetation			
	X. Upland assessment area		5	
Additional Notes: Land management in the area consist of keeping the vegetation as low as possible on airfield side of the AA. This side is not conductive to wildlife life history requirements. The Wetland situated on oppossite side of the AA is conductive to the establishment of wildlife occuring in the area.				

Score = sum of above scores/30 (if uplands, divide by 20)	
current or w/o pres	with
0.5	

If preservation as mitigation,
Preservation adjustment factor =
Adjusted mitigation delta =

For impact assessment areas
FL = delta x acres = 1.395

Delta = [with-current]
0.5

If mitigation
Time lag (t-factor) =
Risk factor =

For mitigation assessment areas
RFG = delta/(t-factor x risk) =

PART I – Qualitative Description
(See Section 62-345.400, F.A.C.)

Site/Project Name	Application Number	Assessment Area Name or Number
Wetland Delineation tyndall Air Force Base, Florida		WT-10 (Munitions Storage Area Improvements)

FLUCCs code	Further classification (optional)	Impact or Mitigation Site?	Assessment Area Size
441 - Coniferous Plantations / 625 - Hydric Pine Flatwoods	PFO1 (Freshwater Forested/Shrub Wetland)	Direct Impact	1.34

Basin/Watershed Name/Number	Affected Waterbody (Class)	Special Classification (i.e.OFW, AP, other local/state/federal designation of importance)
HUC Basin 03140101/St. Andrew St. Joseph Bays	Class III	None

Geographic relationship to and hydrologic connection with wetlands, other surface water, uplands

AA is adjacent to Ammo loop to its west. Ammo Road and airfield are located south of the AA. Munition depot is located north of the AA. Construction area is located directly south of the AA. A dregded canal runs on the east side of the AA. The AA was heavily impacted by construction equipment. AA is located in disturbed Freshwater Forested/Shrub Wetland.

Assessment area description

The AA is part of an isolated wetland system which is surrounded by roads. The area was heavily impacted by construction activities. A large numbers of trees were cut down. Numerous ruts are present in the area due to the use of heavy machinery. Vegetation in the area is not representative of the surrounding wetlands.Vegetation observed in the area consisted of *Ilex glabra, Fuirena breviseta, Schizachyrium scoparium* , and *Andropogon* sp. Some water present in some of the ruts.

Significant nearby features	Uniqueness (considering the relative rarity in relation to the regional landscape.)
Airfield, Ammo Road, dredged canal, access road, munition depot, parking lot, building, retention pond	Not unique

Functions	Mitigation for previous permit/other historic use
Water quality improvements, groundwater recharge, plant habitat, wildlife habitat, breeding, nesting	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	None

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):
Arnaud Kerisit, Kenneth Erwin, Don Spires	11/27/2023

Form 62-345.900(1), F.A.C. [effective date 02-04-2004]

PART II – Quantification of Assessment Area (impact or mitigation)
(See Sections 62-345.500 and .600, F.A.C.)

Site/Project Name	Application Number	Assessment Area Name or Number
Tyndall Air Force Base, Florida		WT-10 (Munition Storage Area Improvements)
Impact or Mitigation	**Assessment conducted by:**	**Assessment date:**
Impact	A. Kerisit, K. Erwin, D. Spires	11/27/2023

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 waterfunctions	Minimal level of support of wetland/surface water functions	Condition is insufficient to provide wetland/surface water functions

.500(6)(a) Location and Landscape Support	a. Support to Wildlife by outside habitats	
	b. Invasive plnat species in proximity of AA	
	c. Wildlife access to and from AA (proximity and barrier)	
	d.Downstream benefits provided to fish and wildlife	
	e. Impact of land uses outside AA to fish and wildlife	
	f.Benefits to downstream or other hydrologically connected areas	
	g. Benefits to downstream habitats from discharges	
	h.Protection of wetland functions by upland mitigation AA	
w/o pres or current: 3 / with:	Additional Notes: The AA consists of a cleared area. Numerous ruts are present due to heavy machinery used to remove debris. A road runs directly adjacent to the AA. Part of AA is used as a temporary staging area for construction material. Wildlife movement is limited by airfield operation and construction of a new building to the south and a road to the west.	
.500(6)(b)Water Environment (n/a for uplands)	a. Water levels and flows	
	b. Water level indicators	
	c. Soil moisture	
	d. Soil erosion and deposition	
	e. Evidence of fire history	
	f. Vegetation - community zonation	
	g. Vegetation - hydrologic stress	
	h. Use by animal species with specific hydrological requirements	
	i.Plant community composition associated with water quality	
w/o pres or current: 4 / with:	j. Direct observation of standing water	
	k. Existing water quality data	
	l. Water depth, energy, and currents	
	Additional Notes: The source of the water in the area consists of ground water and stormwater from the nearby road and newly constructed building. A dredged canal to the southwest of AA provides drainage for the surrounding area.	
.500(6)(c)Community structure	I.Appropriate/desirable species	
	II.Invasive/exotic plant species	
	III.Regeneration/recruitment	
	IV.Age, size, distribution	
1. Vegetation and/or 2. Benthic Community	V.Snags, den, cavities	
	VI.Plant's condition	
	VII.Land management practices	
	VIII.Topographic features (refugisa, channels, hummocks)	
w/o pres or current: 4 / with:	IX. Submerged vegetation	
	X. Upland assessment area	
	Additional Notes: The AA has been recently cleared and the use of heavy machinery is still clearly visible. The vegetation in the vast majority of the AA is relatively low and do not provide adequate habitat to wildlife to support all of their wildlife requirements.	

Score = sum of above scores/30 (if uplands, divide by 20)	If preservation as mitigation,	For impact assessment areas
current or w/o pres: 0.36667 / with:	Preservation adjustment factor =	FL = delta x acres = 0.4913332
	Adjusted mitigation delta =	

Delta = [with-current]	If mitigation	For mitigation assessment areas
0.36667	Time lag (t-factor) =	RFG = delta/(t-factor x risk) =
	Risk factor =	

PART I – Qualitative Description
(See Section 62-345.400, F.A.C.)

Site/Project Name	Application Number	Assessment Area Name or Number
Wetland Delineation Tyndall Air Force Base, Florida		WT-11 (Munitions Storage Area Improvements)

FLUCCs code	Further classification (optional)	Impact or Mitigation Site?	Assessment Area Size
625 - Hydric Pine Flatwoods	PFO1 (Freshwater Forested/Shrub Wetland)	Direct Impact	1.15

Basin/Watershed Name/Number	Affected Waterbody (Class)	Special Classification (i.e.OFW, AP, other local/state/federal designation of importance)
HUC Basin 03140101/St. Andrew St. Joseph Bays	Class III	None

Geographic relationship to and hydrologic connection with wetlands, other surface water, uplands

The AA is located in an isolated Freshwater Forested/Shrub Wetland. There is a large retention pond north of the AA.At the time of the visit, construction of a new building and paved area was underway directly southwest of the AA. A sandy access road borders the northwestern part of the AA. A dredged canal runs parallele to the sandy access road. Airfield is south of the AA.

Assessment area description

The AA had standing water at the time of the visit. Some downed trees were observed in the area. The vegetation observed in the area and direct surroundings consisted of *Pinus palustris, Ilex glabra, Hypericum faciculatum, Fuirena breviseta, Schizachyrium scoparium* , and *Andropogon* sp.

Significant nearby features	Uniqueness (considering the relative rarity in relation to the regional landscape.)
Ammo road, Ammo loop, access road, airfield, retention pond, dredged canal, munition depot, buildings, East Bay	Not unique

Functions	Mitigation for previous permit/other historic use
Water quality improvements, groundwater recharge, plant habitat, and wildlife habitat for nesting, breeding, and denning	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	None

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):
Arnaud Kerisit, Kenneth Erwin, Don Spires	11/27/2023

Form 62-345.900(1), F.A.C. [effective date 02-04-2004]

PART II – Quantification of Assessment Area (impact or mitigation)
(See Sections 62-345.500 and .600, F.A.C.)

Site/Project Name	Application Number	Assessment Area Name or Number
Tyndall Air Force Base, Florida		WT-11 (Munition Storage Area Improvements)
Impact or Mitigation	**Assessment conducted by:**	**Assessment date:**
Impact	A. Kerisit, K. Erwin, D. Spires	11/27/2023

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 waterfunctions	Minimal level of support of wetland/surface water functions	Condition is insufficient to provide wetland/surface water functions

.500(6)(a) Location and Landscape Support	a. Support to Wildlife by outside habitats		
	b. Invasive plnat species in proximity of AA		
	c. Wildlife access to and from AA (proximity and barrier)		
	d.Downstream benefits provided to fish and wildlife		
	e. Impact of land uses outside AA to fish and wildlife		
	f.Benefits to downstream or other hydrologically connected areas		
w/o pres or current	g. Benefits to downstream habitats from discharges		with
	h.Protection of wetland functions by upland mitigation AA		
8	Additional Notes: The AA is located within an isolated wetland. An access road borders its northwestern side. The vegetation in the area is somewhat intact and provides numerous opportunities for existing wildlife to fulfill their life requirements. Wildlife movement is somewhat restricted due to the airfield operation and new building south of the AA.		
.500(6)(b)Water Environment (n/a for uplands)	a. Water levels and flows		
	b. Water level indicators		
	c. Soil moisture		
	d. Soil erosion and deposition		
	e. Evidence of fire history		
	f. Vegetation - community zonation		
	g. Vegetation - hydrologic stress		
	h. Use by animal species with specific hydrological requirements		
w/o pres or current	i.Plant community composition associated with water quality		with
	j. Direct observation of standing water		
	k. Existing water quality data		
	l. Water depth, energy, and currents		
8	Additional Notes: Water is present in the AA and is due to a high water table. Stormwater originating from the airfield could potentially be a source of water in the area. Wildlife with hydrological requirements likely occur in the area.		
.500(6)(c)Community structure	I.Appropriate/desirable species		
	II.Invasive/exotic plant species		
	III.Regeneration/recruitment		
	IV.Age, size, distribution		
1. Vegetation and/or 2. Benthic Community	V.Snags, den, cavities		
	VI.Plant's condition		
	VII.Land management practices		
w/o pres or current	VIII.Topographic features (refugisa, channels, hummocks)		with
	IX. Submerged vegetation		
	X. Upland assessment area		
8	Additional Notes: The AA did not display significant disturbances from clear cutting activities or debris removal associated with past storm events.. The majority of the area supports numerous habitats for local wildlife and looks relatively healthy.		

Score = sum of above scores/30 (if uplands, divide by 20)		
current or w/o pres		with
0.8		

If preservation as mitigation,
Preservation adjustment factor =
Adjusted mitigation delta =

For impact assessment areas
FL = delta x acres = 0.92

Delta = [with-current]
0.8

If mitigation
Time lag (t-factor) =
Risk factor =

For mitigation assessment areas
RFG = delta/(t-factor x risk) =

PART I – Qualitative Description
(See Section 62-345.400, F.A.C.)

Site/Project Name	Application Number	Assessment Area Name or Number
Wetland Delineation Tyndall Air Force Base, Florida		WT-12 (Munition Storage Area Improvements)

FLUCCs code	Further classification (optional)	Impact or Mitigation Site?	Assessment Area Size
625 - Hydric Pine Flatwoods	PFO1 (Freshwater Forested/Shrub Wetland)	Direct Impact	3.49

Basin/Watershed Name/Number	Affected Waterbody (Class)	Special Classification (i.e.OFW, AP, other local/state/federal designation of importance)
HUC Basin 03140101/St. Andrew St. Joseph Bays	Class III	None

Geographic relationship to and hydrologic connection with wetlands, other surface water, uplands

The AA is directlly situated south of the munition depot. Man-made structures near the AA include a set of building to the east and south, a parking lot, and a couple roads to the north and east. A large retention pond is situated north west of the AA, and a smaller retention pond to the east, across the parking lot. A dregded canal crosses the AA in its center. AA is connected to a ditch to its north.

Assessment area description

The area was impacted by Hurricane Michael and numerous trees were cut down and removed from the area. Heavy machinery tracks are visible. The portion of the AA situated south of the dredged canal was cleared following hurricane Michael, and the vegetation in this area was recently planted. The northern part of the AA has older trees and down trees. The vegetation observed in the AA and surroundings consisted of *Pinus palustris,Ilex glabra, Schizachyrium scoparium* , and *Andropogon* sp. The southern portion of the AA had water standing at the time of the site visit.

Significant nearby features	Uniqueness (considering the relative rarity in relation to the regional landscape.)
Munition depot, dregded canal, roads, buidlings, East Bay, airfield, ditch/culvert	Not unique

Functions	Mitigation for previous permit/other historic use
Water quality improvements, groundwater recharge, plant habitat, and wildlife habitat for nesting and breeding, denning	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	None

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):
Arnaud Kerisit, Kenneth Erwin, Don Spires	11/27/2023

Form 62-345.900(1), F.A.C. [effective date 02-04-2004]

PART II – Quantification of Assessment Area (impact or mitigation)
(See Sections 62-345.500 and .600, F.A.C.)

Site/Project Name	Application Number	Assessment Area Name or Number
Tyndall Air Force Base, Florida		WT-12 (Munition Storage Area Improvements)
Impact or Mitigation	**Assessment conducted by:**	**Assessment date:**
Impact	A. Kerisit, K. Erwin, D. Spires	11/27/2023

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 waterfunctions	Minimal level of support of wetland/surface water functions	Condition is insufficient to provide wetland/surface water functions

.500(6)(a) Location and Landscape Support	a. Support to Wildlife by outside habitats	
	b. Invasive plnat species in proximity of AA	
	c. Wildlife access to and from AA (proximity and barrier)	
	d.Downstream benefits provided to fish and wildlife	
	e. Impact of land uses outside AA to fish and wildlife	
	f.Benefits to downstream or other hydrologically connected areas	
	g. Benefits to downstream habitats from discharges	
	h.Protection of wetland functions by upland mitigation AA	
w/o pres or current: 7 / with:	Additional Notes: The AA is located south of the munition depot. Buildings are also present to its east and south. Wildlife movement is limited due to the presence of a fenced area top its north and east. The airfield to its south could also limited movements. A large retention pond is located to its east. Sign of clear cutting and debris removal are present in the area. Some down trees still present in the area. Trees were cleared and planted in sourthern portion of AA.	
.500(6)(b)Water Environment (n/a for uplands)	a. Water levels and flows	
	b. Water level indicators	
	c. Soil moisture	
	d. Soil erosion and deposition	
	e. Evidence of fire history	
	f. Vegetation - community zonation	
	g. Vegetation - hydrologic stress	
	h. Use by animal species with specific hydrological requirements	
	i.Plant community composition associated with water quality	
	j. Direct observation of standing water	
	k. Existing water quality data	
	l. Water depth, energy, and currents	
w/o pres or current: 7 / with:	Additional Notes: The AA is located in an isolated wetland. Water is present in the area. The AA is bisected by a dredged canal which drains the surrounding wetland. The water source is groundwater and stormwater runoff from the nearby airfield, and munition depot area. More water was present in the southern portion of the AA than the northern portion. Wildlife with hydrological requirements likely occur in the area.	
.500(6)(c)Community structure 1. Vegetation and/or 2. Benthic Community	I.Appropriate/desirable species	
	II.Invasive/exotic plant species	
	III.Regeneration/recruitment	
	IV.Age, size, distribution	
	V.Snags, den, cavities	
	VI.Plant's condition	
	VII.Land management practices	
	VIII.Topographic features (refugisa, channels, hummocks)	
	IX. Submerged vegetation	
	X. Upland assessment area	
w/o pres or current: 7 / with:	Additional Notes: The AA contains a younger population of planted trees in its southern portion but this area is not has dense as the northern portion which has older and denser vegetation. Sign of recruitement and regeneration are present in the AA and surrounding area. The AA provides habitat opportunities for numerous wildlife species occuring in the area.	

Score = sum of above scores/30 (if uplands, divide by 20)	If preservation as mitigation,	For impact assessment areas
current or w/o pres: 0.7 / with:	Preservation adjustment factor =	FL = delta x acres = 2.443
	Adjusted mitigation delta =	

Delta = [with-current]	If mitigation	For mitigation assessment areas
0.7	Time lag (t-factor) =	RFG = delta/(t-factor x risk) =
	Risk factor =	

PART I – Qualitative Description
(See Section 62-345.400, F.A.C.)

Site/Project Name	Application Number	Assessment Area Name or Number
Wetland Delineation Tyndall Air Force Base, Florida		WT-13 (Munitions Storage Area Improvements)

FLUCCs code	Further classification (optional)	Impact or Mitigation Site?	Assessment Area Size
625 - Hydric Pine Flatwoods/ 643 - Wet Prairies	PFO1 (Freshwater Forested/Shrub Wetland)	Direct Impact	5.73

Basin/Watershed Name/Number	Affected Waterbody (Class)	Special Classification (i.e.OFW, AP, other local/state/federal designation of importance)
HUC Basin 03140101/St. Andrew St. Joseph Bays	Class III	None

Geographic relationship to and hydrologic connection with wetlands, other surface water, uplands

The AA is located near a newly constructed service road. A parking lot and buildings are located farther up the road. Airfield is located southeast of the AA. The area is located in an isolated freshwater forested/shrub wetland. Estuarine and marine wetlands are located to the northeast of the AA and across the road. This isolated wetland complex was connected to East Bay via a small bayou running west to east, north of the AA. The

Assessment area description

The AA has been heavily impacted by Hurricane Michael and the construction of a nearby road. The area closest to the newly built road had numerous trees cut down and removed from the area. Heavy equipment tracks are present throughout the area. Numerous pine trees were planted in the AA and surrounding area.The vegetation observed in the AA and surrounding area consisted of *Ilex glabra, Bothriochloa ischaemum, Chrysopsis* sp,. *Rubus argutus, Smilax bona-nox, Pinus palustris, Ilex glabra, Ilex myrtirfolia,* and *Carex* sp.

Significant nearby features	Uniqueness (considering the relative rarity in relation to the regional landscape.)
Main flightline, Service road, Buildings, Munition depot, East Bay	Not unique

Functions	Mitigation for previous permit/other historic use
Water quality improvements, groundwater recharge, plant habitat, and wildlife habitat for breeding, nesting, denning	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	None

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):
Arnaud Kerisit, Kenneth Erwin, Don Spires	11/27/2023

PART II – Quantification of Assessment Area (impact or mitigation)
(See Sections 62-345.500 and .600, F.A.C.)

Site/Project Name	Application Number	Assessment Area Name or Number
Tyndall Air Force Base, Florida		WT-13 (Munition Storage Area Improvements)
Impact or Mitigation	**Assessment conducted by:**	**Assessment date:**
Impact	A. Kerisit, K. Erwin, D. Spires	11/27/2023

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 waterfunctions	Minimal level of support of wetland/surface water functions	Condition is insufficient to provide wetland/surface water functions

.500(6)(a) Location and Landscape Support	a. Support to Wildlife by outside habitats		
	b. Invasive plnat species in proximity of AA		
	c. Wildlife access to and from AA (proximity and barrier)		
	d.Downstream benefits provided to fish and wildlife		
	e. Impact of land uses outside AA to fish and wildlife		
	f.Benefits to downstream or other hydrologically connected areas		
w/o pres or current	g. Benefits to downstream habitats from discharges		with
	h.Protection of wetland functions by upland mitigation AA		
7	Additional Notes: The AA is located within an isolated wetland. An access road borders its southwestern side. The vegetation in the area is somewhat intact and provides numerous opportunities for existing wildlife to fulfill their life requirements. Wildlife movement is somewhat restricted due to the airfield operation and access road to the southwest of the AA. More than half of the trees in the AA appears to be new growth.		
.500(6)(b)Water Environment (n/a for uplands)	a. Water levels and flows		
	b. Water level indicators		
	c. Soil moisture		
	d. Soil erosion and deposition		
	e. Evidence of fire history		
	f. Vegetation - community zonation		
	g. Vegetation - hydrologic stress		
	h. Use by animal species with specific hydrological requirements		
w/o pres or current	i.Plant community composition associated with water quality		with
	j. Direct observation of standing water		
	k. Existing water quality data		
	l. Water depth, energy, and currents		
7	Additional Notes: Water is present in the AA and is due to a high water table. Stormwater originating from the airfield could potentially be a source of water in the area. . Wildlife with hydrological requirements likely occur in the area.		
.500(6)(c)Community structure	I.Appropriate/desirable species		
	II.Invasive/exotic plant species		
	III.Regeneration/recruitment		
	IV.Age, size, distribution		
1. Vegetation and/or 2. Benthic Community	V.Snags, den, cavities		
	VI.Plant's condition		
	VII.Land management practices		
w/o pres or current	VIII.Topographic features (refugisa, channels, hummocks)		with
	IX. Submerged vegetation		
	X. Upland assessment area		
7	Additional Notes:The AA displays some disturbances from clear cutting activities or debris removal associated with past storm events. The AA contains a younger population of planted trees in its southern portion. Sign of recruitement and regeneration are present in the AA and surrounding area. The AA provides habitat opportunities for numerous wildlife species occuring in the area.		

Score = sum of above scores/30 (if uplands, divide by 20)		
current or w/o pres		with
0.7		

If preservation as mitigation,
Preservation adjustment factor =
Adjusted mitigation delta =

For impact assessment areas
FL = delta x acres = 4.011

Delta = [with-current]
0.7

If mitigation
Time lag (t-factor) =
Risk factor =

For mitigation assessment areas
RFG = delta/(t-factor x risk) =

PART I – Qualitative Description
(See Section 62-345.400, F.A.C.)

Site/Project Name	Application Number	Assessment Area Name or Number
Wetland Delineation Tyndall Air Force Base, Florida		WT-14 (Drone Tow-Way Fence) Alt 1

FLUCCs code	Further classification (optional)	Impact or Mitigation Site?	Assessment Area Size
441 - Coniferous Plantations	PFO1 (Freshwater Forested/Shrub Wetland)	Direct Impact	2.04

Basin/Watershed Name/Number	Affected Waterbody (Class)	Special Classification (i.e.OFW, AP, other local/state/federal designation of importance)
HUC Basin 03140101/St. Andrew St. Joseph Bays	Class III	None

Geographic relationship to and hydrologic connection with wetlands, other surface water, uplands

AA is directly adjacent to "Drone Access Road" to its north and east. Highway 98 is located southwest of the AA. The AA is located at times in a deep ditch on the side of the road and at other times on the shoulder of the road.

Assessment area description

The AA is located in an area heavily impacted by Hurricane Michael and related mechanical clearing/harvesting of damaged and down trees. Heavy equipment impact is visible. The shoulders of the drone two-way road are well maintained and vegetation is kept extremely low to the ground. The ditch is 6-8 feet deep in some area. The ditch had a subsequent amount of water farther to the east and no water to its west. The vegetation consisted of *Ilex glabra, Morella cerifera, Rhus copallinum, Hypericum* sp., *Polytrichum commune,* and *Dichanthelium* sp.

Significant nearby features	Uniqueness (considering the relative rarity in relation to the regional landscape.)
Drone Access Road, Highway 98	Not unique

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	None

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):
Arnaud Kerisit, Kenneth Erwin, Don Spires	11/30/2023

PART II – Quantification of Assessment Area (impact or mitigation)
(See Sections 62-345.500 and .600, F.A.C.)

Site/Project Name	Application Number	Assessment Area Name or Number
Tyndall Air Force Base, Florida		WT-14 (Drone tow-way Fence) Alt 1
Impact or Mitigation	**Assessment conducted by:**	**Assessment date:**
Impact	A. Kerisit, K. Erwin, D. Spires	11/30/2023

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 waterfunctions	Minimal level of support of wetland/surface water functions	Condition is insufficient to provide wetland/surface water functions

.500(6)(a) Location and Landscape Support	a. Support to Wildlife by outside habitats		
	b. Invasive plnat species in proximity of AA		
	c. Wildlife access to and from AA (proximity and barrier)		
	d.Downstream benefits provided to fish and wildlife		
	e. Impact of land uses outside AA to fish and wildlife		
	f.Benefits to downstream or other hydrologically connected areas		
w/o pres or current	g. Benefits to downstream habitats from discharges		with
	h.Protection of wetland functions by upland mitigation AA		
6	Additional Notes: The AA is partially located on the shoulder of a drone tow-way road and in a water collection feature. The area directly situated on the west and south of the AA consist of a large open field that has been clear cut. The vegetation in this area is mowed regurlarly as to keep the vegetation low. Heavy equipment tracks are present in the area. The estern most portion of this open field has some forested area remnants.		
.500(6)(b)Water Environment (n/a for uplands)	a. Water levels and flows		
	b. Water level indicators		
	c. Soil moisture		
	d. Soil erosion and deposition		
	e. Evidence of fire history		
	f. Vegetation - community zonation		
	g. Vegetation - hydrologic stress		
	h. Use by animal species with specific hydrological requirements		
w/o pres or current	i.Plant community composition associated with water quality		with
	j. Direct observation of standing water		
	k. Existing water quality data		
	l. Water depth, energy, and currents		
6	Additional Notes: Water occurs in the AA and gets deeper once moving east. The source of the water is likely from groundwater and stormwater from the nearby road and higher elevation areas. The AA is connected to a large wetland at its eastern portion. Wildlife with hydrological requirements are likely to use the area.		
.500(6)(c)Community structure	I.Appropriate/desirable species		
	II.Invasive/exotic plant species		
	III.Regeneration/recruitment		
	IV.Age, size, distribution		
1. Vegetation and/or	V.Snags, den, cavities		
2. Benthic Community	VI.Plant's condition		
	VII.Land management practices		
w/o pres or current	VIII.Topographic features (refugisa, channels, hummocks)		with
	IX. Submerged vegetation		
	X. Upland assessment area		
6	Additional Notes: The vegetation in the AA is kept relatively low due to the clearance requirement needed for the adjacent drone access road. Vegetaion in the drainage area is regularily cut as to prevent any blockage that could prevent water from porperly flowing. The vegetation in the area and mainly on the eastern side of the AA provides enought complexity to provide some wildlife with various habitats to fulfill their life requirements.		

Score = sum of above scores/30 (if uplands, divide by 20)		
current or w/o pres		with
0.6		

If preservation as mitigation,
Preservation adjustment factor =
Adjusted mitigation delta =

For impact assessment areas
FL = delta x acres = 1.224

Delta = [with-current]
0.6

If mitigation
Time lag (t-factor) =
Risk factor =

For mitigation assessment areas
RFG = delta/(t-factor x risk) =

Form 62-345.900(2), F.A.C. [effective date 02-04-2004]

PART I – Qualitative Description
(See Section 62-345.400, F.A.C.)

Site/Project Name	Application Number	Assessment Area Name or Number
Wetland Delineation Tyndall Air Force Base, Florida		WT-15 (Drone Tow-Way Fence) Alt 2

FLUCCs code	Further classification (optional)	Impact or Mitigation Site?	Assessment Area Size
Coniferous Plantations	PFO1 (Freshwater Forested/Shrub Wetland)	Direct Impact	0.98

Basin/Watershed Name/Number	Affected Waterbody (Class)	Special Classification (i.e.OFW, AP, other local/state/federal designation of importance)
HUC Basin 03140101/St. Andrew St. Joseph Bays	Class III	None

Geographic relationship to and hydrologic connection with wetlands, other surface water, uplands

AA runs immedialtly parallele to Camp Eagle Road to its east. A large retention pond is located farther to the east. A fence/gate is located north of the AA. Highway 98 runs south of the AA. The AA is depressional in nature and collect water from the nearby road to its east. The area surrounding the consists of freshwater forested/shrub wetlands.

Assessment area description

The AA is located in an area which was heavily impacted by Hurricane Michael and related mechanical clearing and harvesting of both damaged and down trees. Heavy equipment impact is visible. The AA is regularily mowed and water was present due to the depresional nature of the area. *Rhynchospora filifolia, Centella erecta, Schizachyrium scoparium,* and *Bidens pilosa* were observed in the area.

Significant nearby features	Uniqueness (considering the relative rarity in relation to the regional landscape.)
Retention pond, Camp Eagle Road, Drone Runway, Highway 98, fenced area/gate, building/paved area	Not unique

Functions	Mitigation for previous permit/other historic use
Water quality improvements, groundwater recharge, plant habitat, 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	None

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):
Arnaud Kerisit, Kenneth Erwin, Don Spires	11/30/2023

PART II – Quantification of Assessment Area (impact or mitigation)
(See Sections 62-345.500 and .600, F.A.C.)

Site/Project Name	Application Number	Assessment Area Name or Number
Tyndall Air Force Base, Florida		WT-15 (Drone Tow-Way Fence) Alt 2
Impact or Mitigation	**Assessment conducted by:**	**Assessment date:**
Impact	A. Kerisit, K. Erwin, D. Spires	11/30/2023

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 waterfunctions	Minimal level of support of wetland/surface water functions	Condition is insufficient to provide wetland/surface water functions

.500(6)(a) Location and Landscape Support	a. Support to Wildlife by outside habitats	
	b. Invasive plnat species in proximity of AA	
	c. Wildlife access to and from AA (proximity and barrier)	
	d.Downstream benefits provided to fish and wildlife	
	e. Impact of land uses outside AA to fish and wildlife	
	f.Benefits to downstream or other hydrologically connected areas	
	g. Benefits to downstream habitats from discharges	
	h.Protection of wetland functions by upland mitigation AA	
w/o pres or current: 5 / with:	Additional Notes: The AA is located on the side of Eagle Camp Road in a depressed area. Some mature trees are still standing on the northern portion of the AA but as you move south trees were clear cut and debris was removed from the area. Heavy machinery was used as numerous deep ruts are present throughout the area. The vegetation in the AA is regularly cut and maintained low.	
.500(6)(b)Water Environment (n/a for uplands)	a. Water levels and flows	
	b. Water level indicators	
	c. Soil moisture	
	d. Soil erosion and deposition	
	e. Evidence of fire history	
	f. Vegetation - community zonation	
	g. Vegetation - hydrologic stress	
	h. Use by animal species with specific hydrological requirements	
	i.Plant community composition associated with water quality	
w/o pres or current: 5 / with:	j. Direct observation of standing water	
	k. Existing water quality data	
	l. Water depth, energy, and currents	
	Additional Notes: Water is present in the area and its source is likely from groundwater, and stormwater runoffs from the nearby road. Water is present long enough in the area to support hydrophitic vegetation. Wildlife with hydrological requirements may use the area.	
.500(6)(c)Community structure	I.Appropriate/desirable species	
	II.Invasive/exotic plant species	
	III.Regeneration/recruitment	
	IV.Age, size, distribution	
1. Vegetation and/or 2. Benthic Community	V.Snags, den, cavities	
	VI.Plant's condition	
	VII.Land management practices	
	VIII.Topographic features (refugisa, channels, hummocks)	
w/o pres or current: 5 / with:	IX. Submerged vegetation	
	X. Upland assessment area	
	Additional Notes: The vegetation in and around the AA has been severely impacted by clear cutting activities and debris removal. Numerous open areas occur in the AA and direct vivinity. This area does not provide various type of habitats and thus wildife usage is most likely limited.	

Score = sum of above scores/30 (if uplands, divide by 20)	If preservation as mitigation,	For impact assessment areas
current or w/o pres: 0.5 / with:	Preservation adjustment factor =	FL = delta x acres = 0.49
	Adjusted mitigation delta =	

Delta = [with-current]	If mitigation	For mitigation assessment areas
0.5	Time lag (t-factor) =	RFG = delta/(t-factor x risk) =
	Risk factor =	

PART I – Qualitative Description
(See Section 62-345.400, F.A.C.)

Site/Project Name	Application Number	Assessment Area Name or Number
Wetland delineation Tyndall Air Force Base, Florida		WT-16 (Drone Tow-Way Fence) Alt 2

FLUCCs code	Further classification (optional)	Impact or Mitigation Site?	Assessment Area Size
441 - Coniferous Plantations	PFO1 (Freshwater Forested/Shrub Wetland)	Direct Impact	0.1

Basin/Watershed Name/Number	Affected Waterbody (Class)	Special Classification (i.e.OFW, AP, other local/state/federal designation of importance)
HUC Basin 03140101/St. Andrew St. Joseph Bays	Class III	None

Geographic relationship to and hydrologic connection with wetlands, other surface water, uplands

AA runs immedialtly parallel to Camp Eagle Road to its east. A large retention pond is located farther to the east. A fence/gate is located north of the AA. US-98 runs directly south of the AA. A building and paved area were recently constructed next to the AA.The AA is slightly depressional and collectd water from the nearby road to its east and south. The surrounding area is freshwater forested/shrub wetlands.

Assessment area description

The AA is located in an area which was heavily impacted by Hurricane Michael and related mechanical clearing and harvesting of both damaged and down trees. Heavy equipment impact is visible. The AA is regularly mowed and some water is present due to the depressional nature of the area. The area closer to Highway 98 was higher in elevation due to the presence of piled up sandy material. *Rhynchospora filifolia, Centella erecta, Schizachyrium scoparium, Hydrocotyle bonariensis* , and *Phyla* sp. were observed in the area.

Significant nearby features	Uniqueness (considering the relative rarity in relation to the regional landscape.)
Highway 98, Camp Eagle Road, New building/paved area, retention pond, fenced area/gate	Not unique

Functions	Mitigation for previous permit/other historic use
Water quality improvements, groundwater recharge, plant habitat	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, and mammals such as rodents, deer, opossums, and raccoons	None

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):
Arnaud Kerisit, Kenneth Erwin, Don Spires	11/30/2023

PART II – Quantification of Assessment Area (impact or mitigation)
(See Sections 62-345.500 and .600, F.A.C.)

Site/Project Name	Application Number	Assessment Area Name or Number
Tyndall Iar Force Base		WT-16 (Drone Two-Way Fence) Alt 2
Impact or Mitigation	**Assessment conducted by:**	**Assessment date:**
Impact	A. Kerisit, K. Erwin, D. Spires	11/30/2023

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 waterfunctions	Minimal level of support of wetland/surface water functions	Condition is insufficient to provide wetland/surface water functions

.500(6)(a) Location and Landscape Support	a. Support to Wildlife by outside habitats		
	b. Invasive plnat species in proximity of AA		
	c. Wildlife access to and from AA (proximity and barrier)		
	d.Downstream benefits provided to fish and wildlife		
	e. Impact of land uses outside AA to fish and wildlife		
	f.Benefits to downstream or other hydrologically connected areas		
w/o pres or current	g. Benefits to downstream habitats from discharges		with
	h.Protection of wetland functions by upland mitigation AA		
4	Additional Notes: The AA is adjacent to Eagle Camp Road to its east and highway 98 to its south. A new constructed building and paved area are located west of the AA. The area is periodically mowed as to keep the vegetation low. The area was clear cut and sign of heavy equipment usage are still present in the area.		
.500(6)(b)Water Environment (n/a for uplands)	a. Water levels and flows		
	b. Water level indicators		
	c. Soil moisture		
	d. Soil erosion and deposition		
	e. Evidence of fire history		
	f. Vegetation - community zonation		
	g. Vegetation - hydrologic stress		
	h. Use by animal species with specific hydrological requirements		
w/o pres or current	i.Plant community composition associated with water quality		with
	j. Direct observation of standing water		
	k. Existing water quality data		
	l. Water depth, energy, and currents		
4	Additional Notes: Water accumulates in the AA and likely originates from groundwater and stormwater surface runoff from the nearby roads.		
.500(6)(c)Community structure	I.Appropriate/desirable species		
	II.Invasive/exotic plant species		
	III.Regeneration/recruitment		
	IV.Age, size, distribution		
1. Vegetation and/or 2. Benthic Community	V.Snags, den, cavities		
	VI.Plant's condition		
	VII.Land management practices		
w/o pres or current	VIII.Topographic features (refugisa, channels, hummocks)		with
	IX. Submerged vegetation		
	X. Upland assessment area		
4	Additional Notes: The AA has no complexity in terms of habitat. Wildlife movement in the area is likely impacted by Highway 98 traffic. Wildlife is not likely to use this areas.		

Score = sum of above scores/30 (if uplands, divide by 20)	
current or w/o pres	with
0.4	

If preservation as mitigation,
Preservation adjustment factor =
Adjusted mitigation delta =

For impact assessment areas
FL = delta x acres = 0.04

Delta = [with-current]
0.4

If mitigation
Time lag (t-factor) =
Risk factor =

For mitigation assessment areas
RFG = delta/(t-factor x risk) =

PART I – Qualitative Description
(See Section 62-345.400, F.A.C.)

Site/Project Name	Application Number	Assessment Area Name or Number
Wetland delineation Tyndall Air Force Base, Florida		WT-17 (Drone Tow-Way Fence) Alt 2

FLUCCs code	Further classification (optional)	Impact or Mitigation Site?	Assessment Area Size
441 - Coniferous Plantations	PFO1 (Freshwater Forested/Shrub Wetland)	Direct Imapct	0.16

Basin/Watershed Name/Number	Affected Waterbody (Class)	Special Classification (i.e.OFW, AP, other local/state/federal designation of importance)
HUC Basin 03140101/St. Andrew St. Joseph Bays	Class III	None

Geographic relationship to and hydrologic connection with wetlands, other surface water, uplands

AA is located directly north of highway 98. Area is slightly depressional and collects water from the nearby area. An access road is located at the eatern end of the AA. AA is located within freshwater forested/shrub wetland.

Assessment area description

The AA is located in an area which was heavily impacted by Hurricane Michael and related mechanical clearing and harvesting of both damaged and down trees. Heavy equipment impact is clearly visible and has changed the local topography. The AA is maintained so that vegetation stays low. Some water was present. *Baccharis halimifolia, Morella cerifera, Ilex glabra, Rhynchospora filifolia, Schizachyrium scoparium, Euthamia caroliniana, Aster* sp.*, Rubus* sp.*, Lyonia ferruginea* , *hypericum* sp. *Rhus copallinum Chrysopsis* sp., and *Pityopsis graminifolia* were observed.

Significant nearby features	Uniqueness (considering the relative rarity in relation to the regional landscape.)
Highway 98, access road	Not unique

Functions	Mitigation for previous permit/other historic use
Water quality improvements, groundwater recharge, plant habitat, breeding, nesting	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, and mammals such as rodents, deer, opossums, and raccoons	None

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):
Arnaud Kerisit, Kenneth Erwin, Don Spires	11/30/2023

PART II – Quantification of Assessment Area (impact or mitigation)
(See Sections 62-345.500 and .600, F.A.C.)

Site/Project Name	Application Number	Assessment Area Name or Number
Tyndall Air Force Base, Florida		WT-17 (Dronw Tow-Way Fence) Alt 2
Impact or Mitigation	**Assessment conducted by:**	**Assessment date:**
Impact	A. Kerisit, K. Erwin, D. Spires	11/30/2023

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 waterfunctions	Minimal level of support of wetland/surface water functions	Condition is insufficient to provide wetland/surface water functions

.500(6)(a) Location and Landscape Support	a. Support to Wildlife by outside habitats		
	b. Invasive plant species in proximity of AA		
	c. Wildlife access to and from AA (proximity and barrier)		
	d.Downstream benefits provided to fish and wildlife		
	e. Impact of land uses outside AA to fish and wildlife		
	f.Benefits to downstream or other hydrologically connected areas		
w/o pres or current	g. Benefits to downstream habitats from discharges		with
	h.Protection of wetland functions by upland mitigation AA		
4	Additional Notes: The AA is adjacent o highway 98. An access road is also located nearby. The area has been clear cut in the past and numerous deep ruts are present. Sign of heavy machinery are present. Vegetation is kept somewhat low.		
.500(6)(b)Water Environment (n/a for uplands)	a. Water levels and flows		
	b. Water level indicators		
	c. Soil moisture		
	d. Soil erosion and deposition		
	e. Evidence of fire history		
	f. Vegetation - community zonation		
	g. Vegetation - hydrologic stress		
	h. Use by animal species with specific hydrological requirements		
w/o pres or current	i.Plant community composition associated with water quality		with
	j. Direct observation of standing water		
	k. Existing water quality data		
	l. Water depth, energy, and currents		
4	Additional Notes: Water in the area likely originates from groundwater and stormater. Water is present in deep ruts.		
.500(6)(c)Community structure	I.Appropriate/desirable species		
	II.Invasive/exotic plant species		
	III.Regeneration/recruitment		
	IV.Age, size, distribution		
1. Vegetation and/or 2. Benthic Community	V.Snags, den, cavities		
	VI.Plant's condition		
	VII.Land management practices		
w/o pres or current	VIII.Topographic features (refugisa, channels, hummocks)		with
	IX. Submerged vegetation		
	X. Upland assessment area		
4	Additional Notes: The vegetation in the area is not dense and provide wildlife with few habitat opportunities. Wildlife movement is also limited due to the proximity of highway 98.		

Score = sum of above scores/30 (if uplands, divide by 20)		
current or w/o pres		with
0.4		

If preservation as mitigation,
Preservation adjustment factor =
Adjusted mitigation delta =

For impact assessment areas
FL = delta x acres = 0.064

Delta = [with-current]
0.4

If mitigation
Time lag (t-factor) =
Risk factor =

For mitigation assessment areas
RFG = delta/(t-factor x risk) =

PART I – Qualitative Description
(See Section 62-345.400, F.A.C.)

Site/Project Name	Application Number	Assessment Area Name or Number
Wetland Delineation Tyndall Air Force Base, Florida		WT-18 (Drone Runway Culvert Crossings)

FLUCCs code	Further classification (optional)	Impact or Mitigation Site?	Assessment Area Size
Surface Water Collection Feature	PEM1 (Freshwater Emergent Wetland)	Direct Impact	0.04

Basin/Watershed Name/Number	Affected Waterbody (Class)	Special Classification (i.e.OFW, AP, other local/state/federal designation of importance)
HUC Basin 03140101/St. Andrew St. Joseph Bays	Class III	None

Geographic relationship to and hydrologic connection with wetlands, other surface water, uplands

AA is located at the northwestern end of the drone runway which runs north-south; AA is in well maintained/mowed area. A series of small drainage channels are located to the west and north. Freshwater forested/shrub wetlands directly to west and north, and estuarine and marine wetlands are located to its northeast. AA is part of a man-man drainage which is connected to East Bay.

Assessment area description

Wetland extends to the west, south, and north of the AA. AA is depressional in nature and collects water from the nearby areas. AA and surrounding areas are mowed. Vegetation is kept to its lowest height due to nearby airfield operations. AA receives drainage from adjacent runaway's impervious surface and surrounding areas with slightly higher elevation. *Morella cerifera* is present in the AA along with *Rhynchospora filifolia, Schizachyrium scoparium Centella erecta Liatris spicata,* and *Eriocaulon* sp. Water was present in AA.

Significant nearby features	Uniqueness (considering the relative rarity in relation to the regional landscape.)
Drone Runway, East Bay, Retention pond, hangar/buildings/parking area, drainage channels	Not unique

Functions	Mitigation for previous permit/other historic use
Water quality improvement, groundwater recharge, plant habitat, and wildlife habitat for breeding, nesting	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, and mammals such as rodents, deer, opossums, and raccoons	None

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):
Arnaud Kerisit, Kenneth Erwin, Don Spires	11/29/2023

Form 62-345.900(1), F.A.C. [effective date 02-04-2004]

PART II – Quantification of Assessment Area (impact or mitigation)
(See Sections 62-345.500 and .600, F.A.C.)

Site/Project Name	Application Number	Assessment Area Name or Number
Tyndall Air Force Base, Florida		WT-18 (Drone Runway Culvert Crossings)
Impact or Mitigation	**Assessment conducted by:**	**Assessment date:**
Impact	A. Kerisit, K. Erwin, D. Spires	11/29/2023

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 waterfunctions	Minimal level of support of wetland/surface water functions	Condition is insufficient to provide wetland/surface water functions

.500(6)(a) Location and Landscape Support	a. Support to Wildlife by outside habitats		
	b. Invasive plnat species in proximity of AA		
	c. Wildlife access to and from AA (proximity and barrier)		
	d.Downstream benefits provided to fish and wildlife		
	e. Impact of land uses outside AA to fish and wildlife		
	f.Benefits to downstream or other hydrologically connected areas		
w/o pres or current: 4	g. Benefits to downstream habitats from discharges		
with:	h.Protection of wetland functions by upland mitigation AA		
	Additional Notes: The AA is located on the west side of the drone runway. Large wetlands occur directly north of the AA .Vegetation in and around the AA is regularly mowed as to keep the vegetaion low due to airfield operation requirements.		
.500(6)(b)Water Environment (n/a for uplands)	a. Water levels and flows		
	b. Water level indicators		
	c. Soil moisture		
	d. Soil erosion and deposition		
	e. Evidence of fire history		
	f. Vegetation - community zonation		
	g. Vegetation - hydrologic stress		
	h. Use by animal species with specific hydrological requirements		
w/o pres or current: 5	i.Plant community composition associated with water quality		
with:	j. Direct observation of standing water		
	k. Existing water quality data		
	l. Water depth, energy, and currents		
	Additional Notes: Water is present in the area and likely originate from the drainage channels system present in the area. Stormwater liley collect in the area due to the runway proximity. Wildlife with hydrological requirements are likely using the area as part of their life requirements.		
.500(6)(c)Community structure	I.Appropriate/desirable species		
	II.Invasive/exotic plant species		
	III.Regeneration/recruitment		
	IV.Age, size, distribution		
1. Vegetation and/or 2. Benthic Community	V.Snags, den, cavities		
	VI.Plant's condition		
	VII.Land management practices		
w/o pres or current: 4	VIII.Topographic features (refugisa, channels, hummocks)		
with:	IX. Submerged vegetation		
	X. Upland assessment area		
	Additional Notes: The AA 's vegetation is kept extremely low. Heavy machinery equipment is regularly use in the area and tracks are present. Habitat complexity is quasi inexistant due to the vegetation maintenance regime.		

Score = sum of above scores/30 (if uplands, divide by 20)	If preservation as mitigation,	For impact assessment areas
current or w/o pres: 0.43333	Preservation adjustment factor =	FL = delta x acres = 0.0173333
with:	Adjusted mitigation delta =	

Delta = [with-current]	If mitigation	For mitigation assessment areas
0.4333	Time lag (t-factor) =	RFG = delta/(t-factor x risk) =
	Risk factor =	

PART I – Qualitative Description
(See Section 62-345.400, F.A.C.)

Site/Project Name	Application Number	Assessment Area Name or Number
Wetland Delineation Tyndall Air Force Base, Florida		WT-19 (Drone Runway Culvert Crossings)

FLUCCs code	Further classification (optional)	Impact or Mitigation Site?	Assessment Area Size
Surface Water Collection Feature	PEM1 (Freshwater Emergent Wetland)	Direct Imapct	0.04

Basin/Watershed Name/Number	Affected Waterbody (Class)	Special Classification (i.e.OFW, AP, other local/state/federal designation of importance)
HUC Basin 03140101/St. Andrew St. Joseph Bays	Class III	None

Geographic relationship to and hydrologic connection with wetlands, other surface water, uplands

AA is located at the northwestern end of the drone runway which runs north-south; AA is in well maintained/mowed area. A series of small drainage channels are located to the west and north. Freshwater forested/shrub wetlands directly to west and north, and estuarine and marine wetlands are located to its northeast. AA is part of a man-man drainage which is connected to East Bay.

Assessment area description

Wetland extends to the west and north of the AA. AA is depressional in nature and collects water from the nearby areas. AA and surrounding areas are mowed. Vegetation is kept low due to airfield operations. AA receives drainage from adjacent runaway's impervious surface and surrounding areas with slightly higher elevation. *Morella cerifera* is present in the AA along with *Rhynchospora filifolia, Schizachyrium scoparium Centella erecta Liatris spicata* , and *Eriocaulon* sp. Water was present in AA.

Significant nearby features	Uniqueness (considering the relative rarity in relation to the regional landscape.)
Drone Runway, East Bay, Retention pond, hangar/buildings/parking area, drainage channels	Not unique

Functions	Mitigation for previous permit/other historic use
Water quality improvement, groundwater recharge, plant habitat, and wildlife habitat for breeding, nesting	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, and mammals such as rodents, deer, opossums, and raccoons	None

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):
Arnaud Kerisit, Kenneth Erwin, Don Spires	11/29/2023

Form 62-345.900(1), F.A.C. [effective date 02-04-2004]

PART II – Quantification of Assessment Area (impact or mitigation)
(See Sections 62-345.500 and .600, F.A.C.)

Site/Project Name	Application Number	Assessment Area Name or Number
Tyndall Air Force Base		WT-19 (Drone Runway Culvert Crossings)
Impact or Mitigation	**Assessment conducted by:**	**Assessment date:**
Impact	A. Kerisit, K. Erwin, D. Spires	11/29/2023

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 waterfunctions	Minimal level of support of wetland/surface water functions	Condition is insufficient to provide wetland/surface water functions

.500(6)(a) Location and Landscape Support	a. Support to Wildlife by outside habitats		
	b. Invasive plnat species in proximity of AA		
	c. Wildlife access to and from AA (proximity and barrier)		
	d.Downstream benefits provided to fish and wildlife		
	e. Impact of land uses outside AA to fish and wildlife		
	f.Benefits to downstream or other hydrologically connected areas		
w/o pres or current: 4	g. Benefits to downstream habitats from discharges		
with:	h.Protection of wetland functions by upland mitigation AA		
	Additional Notes: The AA is located on the west side of the drone runway. Large wetlands occur directly north of the AA .Vegetation in and around the AA is regularly mowed as to keep the vegetaion low due to airfield operation requirements.		
.500(6)(b)Water Environment (n/a for uplands)	a. Water levels and flows		
	b. Water level indicators		
	c. Soil moisture		
	d. Soil erosion and deposition		
	e. Evidence of fire history		
	f. Vegetation - community zonation		
	g. Vegetation - hydrologic stress		
	h. Use by animal species with specific hydrological requirements		
w/o pres or current: 5	i.Plant community composition associated with water quality		
with:	j. Direct observation of standing water		
	k. Existing water quality data		
	l. Water depth, energy, and currents		
	Additional Notes: Water is present in the area and likely originate from the drainage channels system present in the area. Stormwater liley collect in the area due to the runway proximity. Wildlife with hydrological requirements are likely using the area.		
.500(6)(c)Community structure	I.Appropriate/desirable species		
	II.Invasive/exotic plant species		
	III.Regeneration/recruitment		
	IV.Age, size, distribution		
1. Vegetation and/or 2. Benthic Community	V.Snags, den, cavities		
	VI.Plant's condition		
	VII.Land management practices		
w/o pres or current: 4	VIII.Topographic features (refugisa, channels, hummocks)		
with:	IX. Submerged vegetation		
	X. Upland assessment area		
	Additional Notes:The AA 's vegetation is kept extremely low. Heavy machinery equipment is regularly use in the area and tracks are present. Habitat complexity is quasi inexistant due to the vegetation maintenance regime.		

Score = sum of above scores/30 (if uplands, divide by 20)		
current or w/o pres: 0.43333	with:	

If preservation as mitigation,
Preservation adjustment factor =
Adjusted mitigation delta =

For impact assessment areas
FL = delta x acres = 0.0173333

Delta = [with-current]
0.4333

If mitigation
Time lag (t-factor) =
Risk factor =

For mitigation assessment areas
RFG = delta/(t-factor x risk) =

Form 62-345.900(2), F.A.C. [effective date 02-04-2004]

PART I – Qualitative Description
(See Section 62-345.400, F.A.C.)

Site/Project Name	Application Number	Assessment Area Name or Number
Wetland Delineation Tyndall Air Force Base, Florida		WT-20 (Drone Runway Culvert Crossings)

FLUCCs code	Further classification (optional)	Impact or Mitigation Site?	Assessment Area Size
190 - Open Land (Urban)	PEM1 (Freshwater Emergent Wetland)	Direct Imapct	0.03

Basin/Watershed Name/Number	Affected Waterbody (Class)	Special Classification (i.e.OFW, AP, other local/state/federal designation of importance)
HUC Basin 03140101/St. Andrew St. Joseph Bays	Class III	None

Geographic relationship to and hydrologic connection with wetlands, other surface water, uplands

AA is located at the northeastern end of the drone runway which runs north-south; A series of small drainage channels are located to the east and north. Freshwater forested/shrub wetlands directly to east and north, and estuarine and marine wetlands are located to its north east. AA is part of a man-man drainage which is connected to East Bay. Area is tidally influenced.

Assessment area description

Wetland extends to the east and north of the AA. AA is depressional in nature and collects water from the nearby areas. AA is in maintained area and periodically mowed. vegetation is kept low due to airfield operations. AA receives drainage from adjacent runaway's impervious surface and surrounding areas with slightly higher elevation. *Morella cerifera, Ilex vomitaria, Ilex glabra, juncus roemerianus* , and *Solidago* sp. were observed in the AA and surroundings. Standing water was oberserved in the AA and nearby drainage channels.

Significant nearby features	Uniqueness (considering the relative rarity in relation to the regional landscape.)
Drone Runway, East Bay, Retention pond, hangar/buildings/parking area, drainage channels	Not unique

Functions	Mitigation for previous permit/other historic use
Water quality improvement, groundwater recharge, plant habitat, and wildlife habitat for breeding, nesting	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 jay, and mammals such as rodents, deer, opossums, and raccoons	None

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):
Arnaud Kerisit, Kenneth Erwin, Don Spires	11/29/2023

Form 62-345.900(1), F.A.C. [effective date 02-04-2004]

PART II – Quantification of Assessment Area (impact or mitigation)
(See Sections 62-345.500 and .600, F.A.C.)

Site/Project Name	Application Number	Assessment Area Name or Number
Tyndall Air Force Base, Florida		WT-20 (Drone Runway Culvert Crossings)
Impact or Mitigation	**Assessment conducted by:**	**Assessment date:**
Impact	A. Kerisit, K. Erwin, D. Spires	11/29/2023

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 waterfunctions	Minimal level of support of wetland/surface water functions	Condition is insufficient to provide wetland/surface water functions

.500(6)(a) Location and Landscape Support	a. Support to Wildlife by outside habitats		
	b. Invasive plnat species in proximity of AA		
	c. Wildlife access to and from AA (proximity and barrier)		
	d.Downstream benefits provided to fish and wildlife		
	e. Impact of land uses outside AA to fish and wildlife		
	f.Benefits to downstream or other hydrologically connected areas		
w/o pres or current: 4	g. Benefits to downstream habitats from discharges		
with:	h.Protection of wetland functions by upland mitigation AA		
	Additional Notes:The AA is located on the east side of the drone runway. Large wetlands occur directly north of the AA .Vegetation in and around the AA is regularly mowed as to keep the vegetaion low due to airfield operation requirements.		
.500(6)(b)Water Environment (n/a for uplands)	a. Water levels and flows		
	b. Water level indicators		
	c. Soil moisture		
	d. Soil erosion and deposition		
	e. Evidence of fire history		
	f. Vegetation - community zonation		
	g. Vegetation - hydrologic stress		
	h. Use by animal species with specific hydrological requirements		
w/o pres or current: 5	i.Plant community composition associated with water quality		
with:	j. Direct observation of standing water		
	k. Existing water quality data		
	l. Water depth, energy, and currents		
	Additional Notes: Water is present in the area and likely originate from the drainage channels system present in the area. Stormwater liley collect in the area due to the runway proximity. Wildlife with hydrological requirementsare liklely to use the area.		
.500(6)(c)Community structure	I.Appropriate/desirable species		
	II.Invasive/exotic plant species		
	III.Regeneration/recruitment		
	IV.Age, size, distribution		
1. Vegetation and/or 2. Benthic Community	V.Snags, den, cavities		
	VI.Plant's condition		
	VII.Land management practices		
w/o pres or current: 4	VIII.Topographic features (refugisa, channels, hummocks)		
with:	IX. Submerged vegetation		
	X. Upland assessment area		
	Additional Notes:The AA 's vegetation is kept extremely low. Heavy machinery equipment is regularly use in the area and tracks are present in the area. Habitat complexity is quasi inexistant due to the vegetation maintenance regime.		

Score = sum of above scores/30 (if uplands, divide by 20)	If preservation as mitigation,	For impact assessment areas
current or w/o pres: 0.43333	Preservation adjustment factor =	FL = delta x acres = 0.0129999
with:	Adjusted mitigation delta =	

Delta = [with-current]	If mitigation	For mitigation assessment areas
0.4333	Time lag (t-factor) =	RFG = delta/(t-factor x risk) =
	Risk factor =	

PART I – Qualitative Description
(See Section 62-345.400, F.A.C.)

Site/Project Name	Application Number	Assessment Area Name or Number
Wetland Delineation Tyndall Air Force Base, Florida		WT-21 (Drone Runway Culvert Crossings)

FLUCCs code	Further classification (optional)	Impact or Mitigation Site?	Assessment Area Size
190 - Open Land (Urban)	PEM1 (Freshwater Emergent Wetland)	Direct Imapct	0.07

Basin/Watershed Name/Number	Affected Waterbody (Class)	Special Classification (i.e.OFW, AP, other local/state/federal designation of importance)
HUC Basin 03140101/St. Andrew St. Joseph Bays	Class III	None

Geographic relationship to and hydrologic connection with wetlands, other surface water, uplands

AA is located at the northeastern end of the drone runway which runs north-south; A series of small drainage channels are located to the east and north. Freshwater forested/shrub wetlands directly to east and north, and estuarine and marine wetlands are located to its north east. AA is part of a man-man drainage which is connected to East Bay.

Assessment area description

Wetland extends to the east and north of the AA. AA is depressional in nature and collects water from the nearby areas. AA is in maintained area although not periodically mowed. Heavy mowing equipment use is area is noticeable. AA receives drainage from adjacent runaway's impervious surface and surrounding areas with slightly higher elevation. *Morella cerifera* , *Ilex vomitaria* , *Ilex glabra* , *juncus roemerianus,* and *Solidago* sp. were observed in the AA and surroundings. Standing water was oberserved in the AA and nearby drainage channels.

Significant nearby features	Uniqueness (considering the relative rarity in relation to the regional landscape.)
Drone Runway, East Bay, Retention pond, hangar/buildings/parking area, drainage channels	Not unique

Functions	Mitigation for previous permit/other historic use
Water quality improvement, groundwater recharge, plant habitat, and wildlife habitat for breeding, nesting	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 jay, and mammals such as rodents, deer, opossums, and raccoons	None

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):
Arnaud Kerisit, Kenneth Erwin, Don Spires	11/29/2023

Form 62-345.900(1), F.A.C. [effective date 02-04-2004]

PART II – Quantification of Assessment Area (impact or mitigation)
(See Sections 62-345.500 and .600, F.A.C.)

Site/Project Name	Application Number	Assessment Area Name or Number
Tyndall Air Force a Base		WT-21 (Drone Runway Culvert Crossings)
Impact or Mitigation	**Assessment conducted by:**	**Assessment date:**
Impact	A. Kerisit, K. Erwin, D. Spires	11/29/2023

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 waterfunctions	Minimal level of support of wetland/surface water functions	Condition is insufficient to provide wetland/surface water functions

.500(6)(a) Location and Landscape Support	a. Support to Wildlife by outside habitats	
	b. Invasive plnat species in proximity of AA	
	c. Wildlife access to and from AA (proximity and barrier)	
	d.Downstream benefits provided to fish and wildlife	
	e. Impact of land uses outside AA to fish and wildlife	
	f.Benefits to downstream or other hydrologically connected areas	
	g. Benefits to downstream habitats from discharges	
	h.Protection of wetland functions by upland mitigation AA	
w/o pres or current: 4 / with:	Additional Notes:The AA is located on the east side of the drone runway. Large wetlands occur directly north of the AA .Vegetation in and around the AA is regularly mowed as to keep the vegetaion low due to airfield operation requirements.	
.500(6)(b)Water Environment (n/a for uplands)	a. Water levels and flows	
	b. Water level indicators	
	c. Soil moisture	
	d. Soil erosion and deposition	
	e. Evidence of fire history	
	f. Vegetation - community zonation	
	g. Vegetation - hydrologic stress	
	h. Use by animal species with specific hydrological requirements	
	i.Plant community composition associated with water quality	
w/o pres or current: 5 / with:	j. Direct observation of standing water	
	k. Existing water quality data	
	l. Water depth, energy, and currents	
	Additional Notes:Water is present in the area and likely originate from the drainage channels system present in the area. Stormwater liley collect in the area due to the runway proximity. Wildlife with hydrological requirements are likely using the area.	
.500(6)(c)Community structure	I.Appropriate/desirable species	
	II.Invasive/exotic plant species	
	III.Regeneration/recruitment	
	IV.Age, size, distribution	
1. Vegetation and/or 2. Benthic Community	V.Snags, den, cavities	
	VI.Plant's condition	
	VII.Land management practices	
	VIII.Topographic features (refugisa, channels, hummocks)	
w/o pres or current: 4 / with:	IX. Submerged vegetation	
	X. Upland assessment area	
	Additional Notes:The AA 's vegetation is kept extremely low. Heavy machinery equipment is regularly use in the area and tracks are present in the area. Habitat complexity is quasi inexistant due to the vegetation maintenance regime.	

Score = sum of above scores/30 (if uplands, divide by 20)		
current or w/o pres: 0.43333	with:	

If preservation as mitigation,
Preservation adjustment factor =
Adjusted mitigation delta =

For impact assessment areas
FL = delta x acres = 0.0303333

Delta = [with-current]
0.4333

If mitigation
Time lag (t-factor) =
Risk factor =

For mitigation assessment areas
RFG = delta/(t-factor x risk) =

Form 62-345.900(2), F.A.C. [effective date 02-04-2004]

PART I – Qualitative Description
(See Section 62-345.400, F.A.C.)

Site/Project Name	Application Number	Assessment Area Name or Number
Wetland Delineation Tyndall Air Force Base, Florida		WT-22 (Drone Runway Culvert Crossings)

FLUCCs code	Further classification (optional)	Impact or Mitigation Site?	Assessment Area Size
190 - Open Land (Urban)	PEM1 (Freshwater Emergent Wetland)	Direct Impact	0.04

Basin/Watershed Name/Number	Affected Waterbody (Class)	Special Classification (i.e.OFW, AP, other local/state/federal designation of importance)
HUC Basin 03140101/St. Andrew St. Joseph Bays	Class III	None

Geographic relationship to and hydrologic connection with wetlands, other surface water, uplands

AA is located in the southwestern portion of the drone runway which runs north-south; AA is in well maintained/mowed area. A series of small drainage channels are located to the west. A large retention pond is located to the northwest of the AA. Freshwater forested/shrub wetlands to the west and south, and accross from the runaway to the east. AA is part of a man-man drainage which is connected to East Bay.

Assessment area description

Wetland extends to the west of the AA. AA is depressional in nature and collects water from the nearby areas. AA and surrounding areas are regularily mowed. AA receives drainage from adjacent runaway's impervious surface and surrounding areas with slightly higher elevation. *Schizachyrium scoparium, Helenium amarum* , and *Spermacoce verticillata* were observed in the AA and surroundings. Water was present in AA.

Significant nearby features	Uniqueness (considering the relative rarity in relation to the regional landscape.)
Drone Runway, East Bay to the north, retention pond, and hangar/buildings/parking space, drainage channels	The AA is not unique compared to the surrounding landscape.

Functions	Mitigation for previous permit/other historic use
Water quality improvement, 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, birds of prey, such as hawks, owls and kites, songbird species (i.e., cardinals, mockingbirds, warblers, blue jays), and mammals such as rodents, deer, opossum, and raccoons.	Limited foraging potential for various wading birds

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):
Arnaud Kerisit, Kenneth Erwin, Don Spires	11/29/2023

Form 62-345.900(1), F.A.C. [effective date 02-04-2004]

PART II – Quantification of Assessment Area (impact or mitigation)
(See Sections 62-345.500 and .600, F.A.C.)

Site/Project Name	Application Number	Assessment Area Name or Number
Tyndall Air Force Base, Florida		WT-22 (Drone Runway Culvert Crossings)
Impact or Mitigation	**Assessment conducted by:**	**Assessment date:**
Impact	A. Kerisit, K. Erwin, D. Spires	11/29/2023

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 waterfunctions	Minimal level of support of wetland/surface water functions	Condition is insufficient to provide wetland/surface water functions

.500(6)(a) Location and Landscape Support	a. Support to Wildlife by outside habitats		
	b. Invasive plnat species in proximity of AA		
	c. Wildlife access to and from AA (proximity and barrier)		
	d.Downstream benefits provided to fish and wildlife		
	e. Impact of land uses outside AA to fish and wildlife		
	f.Benefits to downstream or other hydrologically connected areas		
w/o pres or current	g. Benefits to downstream habitats from discharges		with
	h.Protection of wetland functions by upland mitigation AA		
4	Additional Notes:The AA is located on the east side of the drone runway. Large wetlands occur directly north of the AA .Vegetation in and around the AA is regularly mowed as to keep the vegetaion low due to airfield operation requirements.		
.500(6)(b)Water Environment (n/a for uplands)	a. Water levels and flows		
	b. Water level indicators		
	c. Soil moisture		
	d. Soil erosion and deposition		
	e. Evidence of fire history		
	f. Vegetation - community zonation		
	g. Vegetation - hydrologic stress		
	h. Use by animal species with specific hydrological requirements		
w/o pres or current	i.Plant community composition associated with water quality		with
	j. Direct observation of standing water		
	k. Existing water quality data		
	l. Water depth, energy, and currents		
5	Additional Notes:Water is present in the area and likely originate from the drainage channels system present in the area. Stormwater liley collect in the area due to the runway proximity. Wildlife with hydrological requirements are likely using the area.		
.500(6)(c)Community structure	I.Appropriate/desirable species		
	II.Invasive/exotic plant species		
	III.Regeneration/recruitment		
	IV.Age, size, distribution		
1. Vegetation and/or 2. Benthic Community	V.Snags, den, cavities		
	VI.Plant's condition		
	VII.Land management practices		
w/o pres or current	VIII.Topographic features (refugisa, channels, hummocks)		with
	IX. Submerged vegetation		
	X. Upland assessment area		
4	Additional Notes:The AA 's vegetation is kept extremely low. Heavy machinery equipment is regularly use in the area and tracks are present in the area. Habitat complexity is quasi inexistant due to the vegetation maintenance regime.		

Score = sum of above scores/30 (if uplands, divide by 20)		
current or w/o pres		with
0.43333		

If preservation as mitigation,
Preservation adjustment factor =
Adjusted mitigation delta =

For impact assessment areas
FL = delta x acres = 0.017332

Delta = [with-current]
0.4333

If mitigation
Time lag (t-factor) =
Risk factor =

For mitigation assessment areas
RFG = delta/(t-factor x risk) =

PART I – Qualitative Description
(See Section 62-345.400, F.A.C.)

Site/Project Name	Application Number	Assessment Area Name or Number
Wetland Delineation Tyndall Air Force Base, Florida		WT-23 (Drone Runway Culvert Crossings)

FLUCCs code	Further classification (optional)	Impact or Mitigation Site?	Assessment Area Size
190 - Open Land (Urban)	PEM1 (Freshwater Emergent Wetland)	Direct Imapct	0.05

Basin/Watershed Name/Number	Affected Waterbody (Class)	Special Classification (i.e.OFW, AP, other local/state/federal designation of importance)
HUC Basin 03140101/St. Andrew St. Joseph Bays	Class III	None

Geographic relationship to and hydrologic connection with wetlands, other surface water, uplands

AA is located in the southwestern portion of the drone runway which runs north-south; AA is in well maintained/mowed area. A series of small drainage channels are located to the west. A large retention pond is located to the northwest of the AA. Freshwater forested/shrub wetlands also to the west and south, and accross from the runaway to the east. AA is part of a man-man drainage which is connected to East Bay.

Assessment area description

Wetland extends to the west of the AA. AA is depressional in nature and collects water from the nearby areas. AA and surrounding areas are mowed. AA receives drainage from adjacent runaway's impervious surface and surrounding areas with slightly higher elevation. *Schizachyrium scoparium, Helenium amarum,* and *Spermacoce verticillata* were observed in the AA and surroundings. Water was present in AA.

Significant nearby features	Uniqueness (considering the relative rarity in relation to the regional landscape.)
Drone Runway, East Bay to the north, retention pond, and hangar/buildings/parking space, drainage channels	Not unique

Functions	Mitigation for previous permit/other historic use
Water quality improvement, groundwater recharge, plant habitat, and wildlife habitat for breeding, nesting	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, birds of prey, such as hawks, owls and kites, songbird species (i.e., cardinals, mockingbirds, warblers, blue jays), and mammals such as rodents, deer, opossum, and raccoons	None

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):
Arnaud Kerisit, Kenneth Erwin, Don Spires	11/29/2023

Form 62-345.900(1), F.A.C. [effective date 02-04-2004]

PART II – Quantification of Assessment Area (impact or mitigation)
(See Sections 62-345.500 and .600, F.A.C.)

Site/Project Name	Application Number	Assessment Area Name or Number
Tyndall Air Force Base, Florida		WT-23 (Drone Runway Culvert Crossings)
Impact or Mitigation	**Assessment conducted by:**	**Assessment date:**
Impact	A. Kerisit, K. Erwin, D. Spires	11/29/2023

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 waterfunctions	Minimal level of support of wetland/surface water functions	Condition is insufficient to provide wetland/surface water functions

.500(6)(a) Location and Landscape Support	a. Support to Wildlife by outside habitats		
	b. Invasive plnat species in proximity of AA		
	c. Wildlife access to and from AA (proximity and barrier)		
	d.Downstream benefits provided to fish and wildlife		
	e. Impact of land uses outside AA to fish and wildlife		
	f.Benefits to downstream or other hydrologically connected areas		
w/o pres or current	g. Benefits to downstream habitats from discharges		with
	h.Protection of wetland functions by upland mitigation AA		
4	Additional Notes:The AA is located on the east side of the drone runway. Large wetlands occur directly north of the AA .Vegetation in and around the AA is regularly mowed as to keep the vegetaion low due to airfield operation requirements.		
.500(6)(b)Water Environment (n/a for uplands)	a. Water levels and flows		
	b. Water level indicators		
	c. Soil moisture		
	d. Soil erosion and deposition		
	e. Evidence of fire history		
	f. Vegetation - community zonation		
	g. Vegetation - hydrologic stress		
	h. Use by animal species with specific hydrological requirements		
w/o pres or current	i.Plant community composition associated with water quality		with
	j. Direct observation of standing water		
	k. Existing water quality data		
	l. Water depth, energy, and currents		
5	Additional Notes:Water is present in the area and likely originate from the drainage channels system present in the area. Stormwater liley collect in the area due to the runway proximity. Wildlife with hydrological requirements are likely to use the area.		
.500(6)(c)Community structure	I.Appropriate/desirable species		
	II.Invasive/exotic plant species		
	III.Regeneration/recruitment		
	IV.Age, size, distribution		
1. Vegetation and/or 2. Benthic Community	V.Snags, den, cavities		
	VI.Plant's condition		
	VII.Land management practices		
w/o pres or current	VIII.Topographic features (refugisa, channels, hummocks)		with
	IX. Submerged vegetation		
	X. Upland assessment area		
4	Additional Notes:The AA 's vegetation is kept extremely low. Heavy machinery equipment is regularly use in the area and tracks are present in the area. Habitat complexity is quasi inexistant due to the vegetation maintenance regime.		

Score = sum of above scores/30 (if uplands, divide by 20)		
current or w/o pres		with
0.43333		

If preservation as mitigation,
Preservation adjustment factor =
Adjusted mitigation delta =

For impact assessment areas
FL = delta x acres = 0.021665

Delta = [with-current]
0.4333

If mitigation
Time lag (t-factor) =
Risk factor =

For mitigation assessment areas
RFG = delta/(t-factor x risk) =

PART I – Qualitative Description
(See Section 62-345.400, F.A.C.)

Site/Project Name	Application Number	Assessment Area Name or Number
Wetland Delineation Tyndall Air Force Base, Florida		WT-24 (Drone Runway Culvert Crossings)

FLUCCs code	Further classification (optional)	Impact or Mitigation Site?	Assessment Area Size
190 - Open Land (Urban)	PEM1 (Freshwater Emergent Wetland)	Direct Imapct	0.04

Basin/Watershed Name/Number	Affected Waterbody (Class)	Special Classification (i.e.OFW, AP, other local/state/federal designation of importance)
HUC Basin 03140101/St. Andrew St. Joseph Bays	Class III	None

Geographic relationship to and hydrologic connection with wetlands, other surface water, uplands

AA is located in the southeastern portion of the drone runway which runs north-south; AA is in well maintained/mowed area. A series of small drainage channels are located to the east. Freshwater forested/shrub wetlands also to the east and south, and accross from the runaway to the west. AA is part of a man man drainage which is connected to East Bay.

Assessment area description

Wetland extends to the east of the AA. AA is depressional in nature and collects water from the nearby areas. AA and surrounding areas are mowed and vegetation is kept at its lowest due to airfield operations. AA receives drainage from adjacent runaway's impervious surface and surrounding areas with slightly higher elevation. *Cliftonia monophylla* , and *Hypericum* sp. were oberserved in the AA along with *Eragrostis* sp., *Rhynchospora scoparium, Schizachirium scoparium* , and *Sarracenia flava.* Water was present in AA.

Significant nearby features	Uniqueness (considering the relative rarity in relation to the regional landscape.)
Drone Runway, East Bay, Retention pond, hangar/buildings/parking area, drainage channels	Not unique

Functions	Mitigation for previous permit/other historic use
Water quality improvement, groundwater recharge, plant habitat, and wildlife habitat for breeding, nesting	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, and mammals such as rodents, deer, opossums, and raccoons	None

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):
Arnaud Kerisit, Kenneth Erwin, Don Spires	11/29/2023

Form 62-345.900(1), F.A.C. [effective date 02-04-2004]

PART II – Quantification of Assessment Area (impact or mitigation)
(See Sections 62-345.500 and .600, F.A.C.)

Site/Project Name	Application Number	Assessment Area Name or Number
Tyndall Air force Base, Florida		WT-24 (Drone Runway Culvert Crossings)
Impact or Mitigation	**Assessment conducted by:**	**Assessment date:**
Impact	A. Kerisit, K. Erwin, D. Spires	11/29/2023

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 waterfunctions	Minimal level of support of wetland/surface water functions	Condition is insufficient to provide wetland/surface water functions

.500(6)(a) Location and Landscape Support	a. Support to Wildlife by outside habitats		
	b. Invasive plnat species in proximity of AA		
	c. Wildlife access to and from AA (proximity and barrier)		
	d.Downstream benefits provided to fish and wildlife		
	e. Impact of land uses outside AA to fish and wildlife		
	f.Benefits to downstream or other hydrologically connected areas		
w/o pres or current	g. Benefits to downstream habitats from discharges		with
	h.Protection of wetland functions by upland mitigation AA		
4	Additional Notes:The AA is located on the east side of the drone runway. Large wetlands occur directly north of the AA .Vegetation in and around the AA is regularly mowed as to keep the vegetaion low due to airfield operation requirements.		
.500(6)(b)Water Environment (n/a for uplands)	a. Water levels and flows		
	b. Water level indicators		
	c. Soil moisture		
	d. Soil erosion and deposition		
	e. Evidence of fire history		
	f. Vegetation - community zonation		
	g. Vegetation - hydrologic stress		
	h. Use by animal species with specific hydrological requirements		
w/o pres or current	i.Plant community composition associated with water quality		with
	j. Direct observation of standing water		
	k. Existing water quality data		
	l. Water depth, energy, and currents		
5	Additional Notes:Water is present in the area and likely originate from the drainage channels system present in the area. Stormwater liley collect in the area due to the runway proximity. Wildlife with hydrological requirements are likely to use the area.		
.500(6)(c)Community structure	I.Appropriate/desirable species		
	II.Invasive/exotic plant species		
	III.Regeneration/recruitment		
	IV.Age, size, distribution		
1. Vegetation and/or 2. Benthic Community	V.Snags, den, cavities		
	VI.Plant's condition		
	VII.Land management practices		
w/o pres or current	VIII.Topographic features (refugisa, channels, hummocks)		with
	IX. Submerged vegetation		
	X. Upland assessment area		
4	Additional Notes:The AA 's vegetation is kept extremely low. Heavy machinery equipment is regularly use in the area and tracks are present in the area. Habitat complexity is quasi inexistant due to the vegetation maintenance regime.		

Score = sum of above scores/30 (if uplands, divide by 20)		
current or w/o pres		with
0.43333		

If preservation as mitigation,
Preservation adjustment factor =
Adjusted mitigation delta =

For impact assessment areas
FL = delta x acres = 0.017332

Delta = [with-current]
0.4333

If mitigation
Time lag (t-factor) =
Risk factor =

For mitigation assessment areas
RFG = delta/(t-factor x risk) =

PART I – Qualitative Description
(See Section 62-345.400, F.A.C.)

Site/Project Name	Application Number	Assessment Area Name or Number
Wetland Delineation Tyndall Air Force Base, Florida		WT-25 (Drone Runway Culvert Crossings)

FLUCCs code	Further classification (optional)	Impact or Mitigation Site?	Assessment Area Size
190 - Open Land (Urban)	PEM1 (Freshwater Emergent Wetland)	Direct Impact	0.08

Basin/Watershed Name/Number	Affected Waterbody (Class)	Special Classification (i.e.OFW, AP, other local/state/federal designation of importance)
HUC Basin 03140101/St. Andrew St. Joseph Bays	Class III	None

Geographic relationship to and hydrologic connection with wetlands, other surface water, uplands

AA is located east of the drone runway which runs north-south; AA is in well maintained/mowed area due to airfield proximity. A series of small drainage channels are located to the east. Freshwater forested/shrub wetlands also to the east and south, and accross from the runaway to the west. AA is part of a man-man drainage which is connected to East Bay to the north.

Assessment area description

Wetland extends to the east of the AA. AA is depressional in nature and collects water from the nearby areas. AA and surrounding areas are mowed but not as periodically as the area closer to the runway. AA receives drainage from adjacent runaway's impervious surface and surrounding areas with slightly higher elevation. *Cliftonia monophylla* , and *Hypericum* sp. were oberserved in the AA along with *Eragrostis* sp., *Rhynchospora scoparium* , *Schizachirium scoparium* , and *Sarracenia flava* . Water was present in AA.

Significant nearby features	Uniqueness (considering the relative rarity in relation to the regional landscape.)
Drone Runway, East Bay, Retention pond, hangar/buildings/parking area, Drainage channels	Not unique

Functions	Mitigation for previous permit/other historic use
Water quality improvement, groundwater recharge, plant habitat, and wildlife habitat for breeding, nesting.	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, and mammals such as rodents, deer, opossums, and raccoons	None

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):
Arnaud Kerisit, Kenneth Erwin, Don Spires	11/29/2023

PART II – Quantification of Assessment Area (impact or mitigation)
(See Sections 62-345.500 and .600, F.A.C.)

Site/Project Name	Application Number	Assessment Area Name or Number
Tyndall Air Force Base, Florida		WT-25 (Drone Runway Culvert Crossings)
Impact or Mitigation	**Assessment conducted by:**	**Assessment date:**
Impact	A. Kerisit, K. Erwin, D. Spires	11/29/2023

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 waterfunctions	Minimal level of support of wetland/surface water functions	Condition is insufficient to provide wetland/surface water functions

.500(6)(a) Location and Landscape Support	a. Support to Wildlife by outside habitats		
	b. Invasive plnat species in proximity of AA		
	c. Wildlife access to and from AA (proximity and barrier)		
	d.Downstream benefits provided to fish and wildlife		
	e. Impact of land uses outside AA to fish and wildlife		
	f.Benefits to downstream or other hydrologically connected areas		
w/o pres or current	g. Benefits to downstream habitats from discharges		with
	h.Protection of wetland functions by upland mitigation AA		
4	Additional Notes:The AA is located on the east side of the drone runway. Large wetlands occur directly north of the AA .Vegetation in and around the AA is regularly mowed as to keep the vegetaion low due to airfield operation requirements.		
.500(6)(b)Water Environment (n/a for uplands)	a. Water levels and flows		
	b. Water level indicators		
	c. Soil moisture		
	d. Soil erosion and deposition		
	e. Evidence of fire history		
	f. Vegetation - community zonation		
	g. Vegetation - hydrologic stress		
	h. Use by animal species with specific hydrological requirements		
w/o pres or current	i.Plant community composition associated with water quality		with
	j. Direct observation of standing water		
	k. Existing water quality data		
	l. Water depth, energy, and currents		
5	Additional Notes:Water is present in the area and likely originate from the drainage channels system present in the area. Stormwater liley collect in the area due to the runway proximity. Wildlife with hydrological requirements are likely to use the area.		
.500(6)(c)Community structure	I.Appropriate/desirable species		
	II.Invasive/exotic plant species		
	III.Regeneration/recruitment		
	IV.Age, size, distribution		
1. Vegetation and/or 2. Benthic Community	V.Snags, den, cavities		
	VI.Plant's condition		
	VII.Land management practices		
w/o pres or current	VIII.Topographic features (refugisa, channels, hummocks)		with
	IX. Submerged vegetation		
	X. Upland assessment area		
4	Additional Notes:The AA 's vegetation is kept extremely low. Heavy machinery equipment is regularly use in the area and tracks are present in the area. Habitat complexity is quasi inexistant due to the vegetation maintenance regime.		

Score = sum of above scores/30 (if uplands, divide by 20)		
current or w/o pres		with
0.43333		

If preservation as mitigation,
Preservation adjustment factor =
Adjusted mitigation delta =

For impact assessment areas
FL = delta x acres = 0.034664

Delta = [with-current]
0.4333

If mitigation
Time lag (t-factor) =
Risk factor =

For mitigation assessment areas
RFG = delta/(t-factor x risk) =