Draft

Environmental Assessment

Addressing Implementation of Proposed Actions in the MacDill Air Force Base Integrated Natural Resources Management Plan, Florida

MacDill Air Force Base (AFB), FL

Unique Identification No.:
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US Army Corps of Engineers ®

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Privacy Advisory

This Draft Environmental Assessment (EA) is provided for public comment in accordance with the National Environmental Policy Act, as amended by the Fiscal Responsibility Act of 2023 (42 U.S.C. 4321, et seq.).

The Environmental Impact Analysis Process (EIAP) provides an opportunity for public input on Department of the Air Force (DAF) decision-making, allows the public to offer inputs on alternative ways for DAF to accomplish what it is proposing, and solicits comments on DAF's analysis of environmental effects.

Public commenting allows 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. Private addresses will be compiled to develop a mailing list for those requesting copies of the EA. However, only the names of the individuals making comments and specific comments will be disclosed in the EA. Personal information, home addresses, phone numbers, and email addresses will not be published in the Final EA.

Electronic versions of this document are compliant with Section 508 of the Rehabilitation Act. This 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. The DAF developed this EA per the *Department of Defense's NEPA Implementing Procedures* (June 30, 2025). The breadth and depth of analysis in this EA is certified to have considered the factors mandated by NEPA; that the EA represents DoD's good-faith effort to prioritize documentation of the most important considerations required by the statute within the congressionally mandated page limits; that this prioritization reflects DoD's expert judgment; and that any considerations addressed briefly or left unaddressed were, in DoD's judgment, comparatively not of a substantive nature that meaningfully informed the consideration of environmental effects and the resulting decision on how to proceed.

ACRONYMS AND ABBREVIATIONS

°F	degrees Fahrenheit
6 ARW	6th Air Refueling Wing
AFB	Air Force Base
AFFF	Aqueous film forming foam
AMOP	Asbestos Management and Operations Plan
APE	area of potential effects
BGEPA	Bald and Golden Eagle Protection Act
BMP	best management practices
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
CO	carbon monoxide
CO_2	carbon dioxide
CZ	clear zone
CZMA	Coastal Zone Management Act
DAF	Department of the Air Force
DAFMAN	DAF Manual
dB	decibel
dBA	a-weighted decibel
DERP	Defense Environmental Restoration Program
DESR	Defense Explosives Safety Regulation
DNL	Day-night average sound level
DoD	Department of Defense
EA	Environmental Assessment
EFH	Essential Fish Habitat
EIAP	Environmental Impact Analysis Process
EIS	Environmental Impact Statement
EO	Executive Order
EOD	Explosive Ordnance Disposal
ESA	Endangered Species Act
ESCP	Erosion and Sediment Control Plan
ESQD	explosive safety quantity-distance
FAS	Floridan Aquifer System
FDEP	Florida Department of Environmental Protection
FGUA	Florida Governmental Utility Authority
FONPA	Finding of No Practicable Alternative
FONSI	Finding of No Significant Impact
FTA	Fire Training Area
FWC	Florida Fish and Wildlife Conservation Commission
GIS	geographic information system
GTCCA	Gopher Tortoise Candidate Conservation Agreement
HWMP	Hazardous Waste Management Plan
IC	institutional control
ICRMP	Integrated Cultural Resources Management Plan
INRMP	Integrated Natural Resources Management Plan
IPM	Integrated Pest Management
IRP	Installation Restoration Program
kV	kilovolt
LBP	lead-based paint
LBPMP	Lead-based Paint Management Plan
LQG	Large Quantity Generator
LUC	land use control
MBTA	Migratory Bird Treaty Act
MISO	Military Information Support Operations
MMPA	Marine Mammal Protection Act
MMRP	Military Munitions Response Program
MNA	monitored natural attenuation

MOU	Memorandum of Understanding
MRS	Munitions Response Site
MS4	Municipal separate storm sewer system
MSA	Magnuson-Stevens Fishery Conservation and Management Act
MSGP	Multi-Sector General Permit
MSL	mean sea level
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
NMFS	National Marine Fisheries Service
NO_X	nitrogen oxides
NOA	Notice of Availability
NOAA	National Oceanic and Atmospheric Association
NPDES	National Pollutant Discharge Elimination System
NRHP	National Register of Historic Places
NSR	Noise-sensitive receptors
OSH	Occupational Safety and Health
OSHA	Occupational Safety and Health Administration
PAH	polynuclear aromatic hydrocarbon
Pb	lead
PCB	polychlorinated biphenyls
PM_{10}	particulate matter less than or equal to 10 microns in diameter
$PM_{2.5}$	particulate matter less than or equal to 2.5 microns in diameter
PFAS	Per- and polyfluoroalkyl substance
PFBS	perfluorobutanesulfonic acid
PFOA	perfluorooctanoic acid
PFOS	perfluorooctane sulfonate
RCRA	Resource Conservation and Recovery Act
RI	Remedial Investigation
ROD	Record of Decision
ROI	Region of Influence
RSL	regional screening level
SAIA	Sikes Act Improvement Act
SF	Square feet (foot)
SHPO	State Historic Preservation Office
SI	State Inspection
SO_2	sulfur dioxide
SOP	Standard Operating Procedure
SPCC	Spill Prevention, Control and Countermeasure
SWIM	Surface Water Improvement and Management
SWPPP	Storm Water Pollution Prevention Plan
tpy	tons per year
U.S.	United States
USACE	United States Army Corps of Engineers
USC	United States Code
USEPA	United States Environmental Protection Agency
USFWS	United States Fish and Wildlife Service
USSCOM	United States Special Operations Command
VOC	volatile organic compounds

COVER SHEET

Draft Environmental Assessment Addressing Implementation of Proposed Actions in the MacDill Air Force Base Integrated Natural Resources Management Plan, Florida

Responsible Agency: Department of the Air Force.

Affected Location: MacDill Air Force Base.

Report Designation: Draft Environmental Assessment.

Abstract: The 6th Air Refueling Wing (6 ARW) at MacDill Air Force Base (AFB), Florida, has recently updated its Integrated Natural Resources Management Plan (INRMP) for the installation. The INRMP was prepared to assist the Installation Commander with the conservation and rehabilitation of natural resources consistent with the military mission of MacDill AFB for the next five years (2025–2030). The INRMP is consistent with the Sikes Act Improvement Act of 1997, as amended through 2010 (16 United States Code § 670a *et seq*.), which requires the preparation, implementation, update, and review of an INRMP for each military installation in the United States and its territories with significant natural resources. This Environmental Assessment (EA) analyzes the potential for environmental impacts associated with the Proposed Action and alternatives, including the No Action Alternative, and assists in determining whether a Finding of No Significant Impact can be prepared or an Environmental Impact Statement is required.

Resources addressed in this EA include air quality, noise, biological resources, water resources, geology and soils, cultural resources, hazardous materials and hazardous waste, and safety and occupational health.

Written comments and inquiries regarding this document should be directed to MacDill AFB 6 ARW Public Affairs, RE: MacDill AFB INRMP EA, 8208 Hangar Loop Drive, Suite 14, MacDill AFB, Florida 33621-5502; via email at 6.arw.pa@us.af.mil, including MacDill AFB INRMP EA in the subject line; or via phone at (813) 828-2217.

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1. Purpose of and Need for Action

1.1 Introduction

The 6th Air Refueling Wing (6 ARW) at MacDill Air Force Base (AFB), Florida, has recently updated its Integrated Natural Resources Management Plan (INRMP) (MacDill AFB 2024a) for the installation. The INRMP was prepared to assist the Installation Commander with the conservation and rehabilitation of natural resources consistent with the military mission of MacDill AFB for the next five years (2026–2031). The INRMP is consistent with the Sikes Act Improvement Act of 1997 (SAIA), as amended through 2010 (16 United States Code [USC] § 670a *et seq*.), which requires the preparation, implementation, update, and review of an INRMP for each military installation in the United States (U.S.) and its territories with significant natural resources. This Environmental Assessment (EA) was developed in compliance with the National Environmental Policy Act (NEPA), as amended by Public Law 118-5, the Fiscal Responsibility Act of 2023 (42 USC § 4321 *et seq*.); and the Department of Defense's (DoD) NEPA Implementing Procedures (June 30, 2025).

MacDill AFB comprises 5,696 acres at the southern tip of the Interbay Peninsula in Hillsborough County, Florida, within the city of Tampa (see **Figure 1-1**). MacDill AFB is home to the 6 ARW, which is composed of the 6th Operations Group, 6th Maintenance Group, 6th Mission Support Group, and 6th Medical Group. Within these groups are 28 associate units (e.g., 6th Force Support Squadron, 6th Security Forces Squadron). In addition to the 6 ARW, MacDill AFB hosts mission partners, including U.S. Central Command, U.S. Special Operations Command, and the 927th Air Refueling Wing. The presence of these mission partners creates a unique multi-service community at MacDill AFB, with all branches of the armed forces represented.

MacDill AFB was constructed on land with abundant wetlands, wildlife, forests, and other valuable natural resources. Through habitat conservation and restoration, prescribed burning, comprehensive endangered species protection, invasive plant control, water quality initiatives, and other programs, MacDill AFB is committed to the wellbeing of the environment and of its mission. The 2024 MacDill AFB INRMP represents the commitment by DAF to protect the integrity and values of the natural resources at MacDill AFB.

The information presented in this document 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 Environmental Impact Statement (EIS), or whether no significant impacts would occur, in which case a Finding of No Significant Impact (FONSI) would be appropriate. The Proposed Action area includes all of MacDill AFB.

Because implementation of some of the projects would involve "construction" in floodplains and wetlands per Executive Order (EO) 11988, *Floodplain Management*, and EO 11990, *Protection of Wetlands*, a Finding of No Practicable Alternative (FONPA) has been prepared in conjunction with the FONSI.

Data Source: World Street Map; World Ocean Base

Figure 1-1. Location of MacDill AFB

1.2 Purpose of Action

The purpose of implementing the INRMP is to direct, guide, and support the installation with the conservation, enhancement, and rehabilitation of natural resources consistent with the military mission at MacDill AFB.

1.3 Need for Action

The Proposed Action is needed to implement the natural resources management actions identified in the MacDill AFB INRMP. Implementation of the INRMP is required for compliance with federal laws and regulations (i.e., the SAIA), guidelines and policies for natural resources management (Department of the Air Force Manual [DAFMAN] 32-7003, *Environmental Conservation*), adaptive management strategies, and sustainment of the military training mission at MacDill AFB.

1.4 Interagency/Intergovernmental Coordination and Consultations

Per the requirements of EO 12372, *Intergovernmental Review of Federal Programs*, federal, state, and local agencies with jurisdiction that could be affected by the Proposed Action were notified during the development of this EA. **Appendix A** provides the list of agencies consulted during this analysis and copies of correspondence, including the list of stakeholders and tribes contacted.

National Historic Preservation Act (NHPA) implementing regulations at 36 CFR § 800 require federal agencies to consult with federally recognized tribes historically affiliated with the area of potential effects (APE) for the project to determine the presence of and resolve adverse effects to Traditional Cultural Properties. Consistent with EO 13175, *Consultation and Coordination with Indian Tribal Governments*; DoD Instruction 4710.02, *DoD Interactions with Federally Recognized Tribes*; and DAF Instruction 90-2002, *Department of the Air Force Interaction with Federally Recognized Tribes*, federally recognized tribes that are historically affiliated with the MacDill AFB geographic region are invited to consult on proposed undertakings included in this EA. These undertakings may have the potential to affect properties of cultural, historical, or religious significance to the tribes. Consultation with the tribes meets the requirements of Section 106 of the NHPA. The tribal consultation process is distinct from NEPA consultation or the interagency coordination process, and it requires separate notification of all relevant tribes. The timelines for tribal consultation are also distinct from those of other consultations. The MacDill AFB point-of-contact for Native American tribes is the Installation Commander. The Native American tribal governments with which the DAF is coordinating and consulting regarding these actions are listed in **Appendix A**.

Per the requirements of NHPA Section 106 and its implementing regulations, Section 7 of the Endangered Species Act (ESA) and its implementing regulations, the Marine Mammal Protection Act (MMPA), and the Coastal Zone Management Act of 1972 (CZMA; 16 USC §§ 1451–1465, as amended), findings of effect and requests for concurrence were transmitted to the Florida State Historic Preservation Officer (SHPO), the U.S. Fish and Wildlife Service (USFWS), National Marine Fisheries Service (NMFS), Florida Fish and Wildlife Conservation

Commission (FWC), and the Florida State Clearinghouse, respectively. Correspondence and determinations received on the Draft EA through these consultation processes will be included in **Appendix A**.

The federal Coastal Zone Management Program comprehensively addresses national coastal issues between the federal government and coastal states and territories. Authorized by the CZMA, the program aims to protect, restore, and responsibly develop the nation's diverse coastal communities and resources. The coastal zone refers to the coastal waters and the adjacent shorelines, including islands, transitional and intertidal areas, salt marshes, wetlands, and beaches. The National Oceanic and Atmospheric Administration administers the federal CZMA program. Section 307 of the CZMA, called the "federal consistency" provision, provides a state with input authority in federal agency decision-making for activities that may affect a state's coastal uses or resources. Federal agency activities must be consistent to the maximum extent practicable with the enforceable policies of a state's coastal management program. The Proposed Action would be consistent with the Florida Coastal Management Program. A Federal Consistency Determination (**Appendix D**) was prepared for Florida Department of Environmental Protection (FDEP) review, concurrent with the Draft EA public review period.

1.5 Public Participation

Because the Proposed Action area coincides with floodplains and wetlands, it is subject to the requirements and objectives of EOs 11988 and 11990. The DAF published an early notice that a portion of the Proposed Action would occur in floodplains and wetlands in the *Tampa Bay Times* on March 5, 2025. The notice solicited public comment on the Proposed Action and any practicable alternatives. The comment period for public and agency input on these projects ended on April 4, 2025, and no comments were received. A copy of the early public notice is provided in **Appendix B.**

A Notice of Availability (NOA) for the Draft EA and FONSI/FONPA will be published in the *Tampa Bay Times*. Copies of the Draft EA and FONSI/FONPA will be made available for review at the following location:

John F. Germany Public Library
900 North Ashley Drive
Tampa, FL 33602

Copies of the NOA and public and agency correspondences and comments received during the comment period will be provided in **Appendix B** of the Final EA.

2. Alternatives Including the Proposed Action

This section presents information on implementing the activities in the MacDill AFB INRMP. As discussed in **Section 1.1**, the NEPA process evaluates potential environmental consequences associated with a proposed action and considers alternative courses of action. Reasonable alternatives must satisfy the purpose of and need for a proposed action, which are defined in **Section 1.2**. While the No Action Alternative would not satisfy the purpose of or need for the Proposed Action, it provides a baseline against which potential effects can be compared and, therefore, is analyzed in detail in this EA.

2.1 Proposed Action Alternative

The DAF proposes to conduct integrated ecosystem management of natural resources under the MacDill AFB INRMP. The Proposed Action is the implementation of natural resources management activities outlined in the MacDill AFB INRMP (MacDill AFB 2024a), which is consistent with the SAIA. Although the SAIA specifies only that a formal review must be completed no less often than every five years, DoD policy requires installations to review INRMPs annually in cooperation with the other parties to the INRMP. Annual reviews facilitate "adaptive management" by providing an opportunity for the parties to review the goals and objectives of the plan, as well as establish a realistic schedule for undertaking proposed actions. Projects that are covered in the EA are from the 2024 Annual Review of the INRMP and include those planned in 2026–2031 (MacDill AFB 2024a). These actions were developed in response to issues and management concerns obtained from cooperating agencies (i.e., the USFWS and FDEP), the military mission, and other interested stakeholders.

2.1.1 Primary Management Goals

Goals are the primary focal points for the implementation of the INRMP over the 5-year planning period (2026–2031) and include primary and supportive goals. Primary goals are broad and overarching, developed to reach a desired future condition. Supportive goals are used to organize groupings of related quantifiable and measurable objectives. Each goal is supported by objectives that specifically state what will be done, how it will be done, and when it will be done. Each objective is comprised of specific projects planned for implementation for each year of the INRMP.

- **Goal 1:** Protect and improve the recovery of federally listed species and their associated habitats while ensuring mission sustainability.
- **Goal 2:** Manage invasive species to minimize impacts on federal- and state-protected species and their native ecosystems and to support mission sustainability.
- **Goal 3:** Provide management for native wildlife and state-protected species by promoting biodiversity, monitoring, and implementing actions to protect and enhance their survival.
- **Goal 4:** Manage natural resources with an adaptive ecosystem management framework to maintain, enhance, and restore natural habitat conditions and promote biodiversity.
- **Goal 5:** Seek opportunities to improve installation resilience and add ecological value using nature-based solutions.

- **Goal 6:** Manage and support the standardized DAF GeoBase (data collection, submittal, and integration) for the management of MacDill AFB natural resources.
- **Goal 7:** Provide consumptive and non-consumptive recreational and educational opportunities to enhance the morale and welfare of individuals on base.

A description of these goals, supporting goals, and objectives is discussed in the following text.

Goal 1: Protect and improve the recovery of federally listed species and their associated habitats while ensuring mission sustainability.

It is MacDill AFB's responsibility to ensure federally listed species and their associated habitats are not adversely impacted by MacDill AFB's operational mission to the greatest extent practicable. The ongoing implementation of MacDill AFB's INRMP and other supporting management plans and documents, along with the overarching ecosystem management process outlined in the INRMP, ensures the protection of species and habitats, enables the combination of tasks or projects to address management issues, and prevents conflicts in future planning of land or resource use.

Protection and improvement of the recovery of federally listed species and their habitats for the next five years is primarily based upon the following supporting objectives:

Objective 1.1: Conduct management of gopher tortoises (*Gopherus polyphemus*) and eastern indigo snakes (*Drymarchon couperi*) to achieve ESA requirements within the Species Recovery Plan for the eastern indigo snake and in accordance with the Gopher Tortoise Candidate Conservation Agreement (GTCCA).

Objective 1.2: Conduct management of the federally protected bald eagle (*Haliaeetus leucocephalus*) to ensure compliance with the Bald and Golden Eagle Protection Act (BGEPA) and eagle depredation and nest take permit requirements.

Objective 1.3: Conduct management of the ESA-threatened West Indian manatee (*Trichechus manatus*) in installation waters and the MacDill AFB-controlled Coastal Restricted Area to ensure its protection and recovery.

Objective 1.4: Conduct management of the ESA-endangered smalltooth sawfish (*Pristis pectinata*) in installation waters and the MacDill AFB-controlled Coastal Restricted Area to ensure its protection and recovery.

Objective 1.5: Conduct management of the ESA-endangered/threatened sea turtles in installation waters and the MacDill AFB-controlled Coastal Restricted Area to ensure their protection and recovery.

Objective 1.6: Conduct management of the ESA-endangered/threatened birds (red knot [*Calidris canutus*], piping plover [*Charadrius melodus*], wood stork [*Mycteria americana*], and eastern black rail [*Laterallus jamaicensis jamaicensis*]) to ensure their protection and recovery.

Objective 1.7: Conduct management of federally listed marine species not present but with the potential to access MacDill AFB waters, such as the ESA-threatened giant manta ray (*Mobula birostris*) and the ESA-threatened Gulf sturgeon (*Acipenser oxyrinchus desotoi*), to ensure their protection and recovery.

Objective 1.8: Work with installation partners to promote conservation measures that ensure habitat integrity, minimize impacts, and reduce human disturbance to ESA-listed species.

Goal 2: Manage invasive species to minimize impacts to federal and state-protected species and their native ecosystems and to support mission sustainability.

Invasive plant species are an ongoing problem on MacDill AFB, adversely affecting habitat for native fish and wildlife in wetlands and uplands, including habitat for threatened and endangered species. In turn, invasive species result in high ecological and economic costs, adversely impacting the installation's mission. Therefore, proper management of invasive plant species via an integrated pest management (IPM) approach is crucial and offers the highest overall benefit for installation resources and mission support.

Management of invasive species for the next five years is primarily based upon the following supporting objectives:

Objective 2.1: Control invasive plant species and monitor the effectiveness of treatment.

Objective 2.2: Manage invasive wildlife species and monitor potential impacts on protected species and their habitats.

Goal 3: Provide management for native wildlife and state-protected species by promoting biodiversity, monitoring, and implementing actions to protect and enhance their survival.

Similar to **Goal 1**, it is MacDill AFB's responsibility to ensure state-protected species and native wildlife are not adversely impacted by MacDill AFB's operational mission to the greatest extent practicable. The ongoing implementation of MacDill AFB's INRMP and other supporting management plans and documents, along with the overarching ecosystem management process outlined in the INRMP, ensures the protection of species and habitats, enables the combination of tasks or projects to address management issues, and prevents conflicts in future planning of land or resource use.

Management for native wildlife and state-protected species for the next five years is primarily based upon the following supporting objectives:

Objective 3.1: Conduct management of imperiled species.

Objective 3.2: Conduct management of herpetological species.

Objective 3.3: Conduct management of migratory birds.

Goal 4: Manage natural resources with an adaptive ecosystem management framework to maintain, enhance, and restore natural habitat conditions and promote biodiversity.

MacDill AFB uses an ecosystem management approach for the basis of natural resources management. Ecosystem management provides a holistic perspective to the lands and waters at MacDill AFB, encompassing the sustainability and biological diversity of terrestrial and aquatic ecosystems while supporting sustainable economies and communities. Adaptive management is a process by which implementing actions occurs simultaneously with the collection of data before, during, and after completion of the action. This helps identify changes that need to be developed and implemented to reduce uncertainty and help achieve desired goals.

Management of natural resources for the next five years is primarily based upon the following supporting objectives:

Objective 4.1: Protect, enhance, and restore coastal habitat systems through maintenance, enhancement, and/or restoration; monitoring; and collaboration.

Objective 4.2: Maintain, enhance, and restore wetlands to achieve a no-net loss of overall quantity and quality and promote better water quality in installation waters and the Coastal Restricted Area.

Objective 4.3: Maintain a wildland fire management program in accordance with the MacDill AFB Wildland Fire Management Plan to restore natural habitats by mimicking historic fire regimes, reduce wildfire threats, and enhance the sustainability of the military mission.

Goal 5: Seek opportunities to improve installation resilience and add ecological value using nature-based solutions.

The Tampa Bay region is highly vulnerable with respect to the effects and impacts of weather-related events. The prediction of increased frequency, intensity, and duration of severe storm events could lead to increased chances for flooding and direct impacts to installation facilities and infrastructure from wind and waves. MacDill AFB implements shoreline stabilization projects and nature-based solutions to combat coastal erosion from wave action on the southeastern coastline.

Improvement of installation resilience and ecological value for the next five years is primarily based upon the following supporting objective:

Objective 5.1: Coordinate with the U.S. Army Corps of Engineers (USACE) to evaluate opportunities to beneficially use dredged material generated during dredging of the shipping channels in Tampa and Hillsborough Bays.

Goal 6: Manage and support the standardized DAF GeoBase (data collection, submittal, and integration) for the management of MacDill AFB natural resources.

MacDill AFB is required to maintain all the installation's geospatial information within the DAF GeoBase system. The components of the installation geographic information system (GIS) database include information utilized to develop maps and tables for the INRMP and utilized to document ecosystem status during implementation of the INRMP. MacDill AFB continues to coordinate with its natural resources partners to ensure the GIS database is maintained as current as possible using the standardized GIS database and that any GIS data collection techniques are comparable with partners and others working on the same issues locally.

Management of the standardized DAF GeoBase for the next five years is primarily based upon the following supporting objectives:

Objective 6.1: Provide support and assistance for the standardization of Functional Data Sets.

Objective 6.2: Utilize natural resources data to support MacDill AFB decision-making.

Goal 7: Provide consumptive and non-consumptive recreational and educational opportunities to enhance the morale and welfare of individuals on base.

Outdoor recreational opportunities for personnel with access to MacDill AFB include, but are not limited to, fishing (with appropriate state license), hiking, biking (road and trail), kayaking, canoeing, golfing, birding, skeet-shooting, boating, disc golf, jogging, and swimming. These outdoor recreation opportunities are tied to the natural resources upon which they depend. It is important to ensure that the recreational use of MacDill AFB's natural resources is consistent with the ecosystem management philosophy.

Management of recreational and educational opportunities for the next five years is primarily based upon the following supporting objectives:

Objective 7.1: Conduct educational, volunteer, and public outreach activities to promote the involvement of base personnel in natural resource management.

Objective 7.2: Coordinate with the 6th Force Support Squadron and federal/state agencies to ensure proper implementation of consumptive recreational activities.

2.1.2 Proposed Projects

Table 2-1 and **Figure 2-1** identify and depict the larger proposed projects listed in the updated INRMP that would involve the most ground disturbance. Other projects identified in the INRMP include consultation efforts, coordination efforts, and other natural resources best management practices (BMPs) that would be implemented during daily operations on the installation. **Table C-1** of **Appendix C** identifies the collective proposed projects listed in the updated INRMP that are designed to meet the goals and objectives listed in **Section 2.1.1.**

Table 2-1. Larger INRMP Projects

INRMP Primary Management Goal	Project Name	Project Description
2	Invasive Species Management (Herbicide and Mechanical Treatment)	Terrestrial: MacDill AFB has a continuous invasive species management contract for the installation. Activities under the contract include implementation of one or more of the following methods to control the spread of invasive plants, including trees (both larger and smaller than 12-inch diameter at breast height), shrubs, vines, and ground cover: mechanical clearing, hack and squirt treatment, and foliar application of herbicides by backpack tank, hand-carried tank, or squirt bottle. Mechanical clearing may include the use of hand-held equipment, such as axes, machetes, chain saws, brush cutters, pulleys, chains, ladders, man lifts, small boats, or motorized equipment, such as drum head cutters, disk/fire plows, furrow plows, rotary cutters, and/or roller choppers. Herbicide treatments shall include stump cutting, basal bark, "hack and squirt"/stem injection, foliar, disking or furrow plowing with herbicide of rhizomes/roots, etc. General invasive species management control occurs across approximately 1,398 terrestrial and 1,467 aquatic/wetland acres of the installation, primarily in the southern portion of the installation and the golf course, using these methods. Access to the project areas may occur via ATV, UTV, tractor, truck, elevated swamp buggy, or boats outfitted with tanks, hoses, or reels, etc. Once treated, invasive vegetation will be monitored within 5 to 20 feet of the line, depending on the type of herbicide treatment, to ensure regrowth or new invasive vegetation are treated prior to becoming established. Invasive vegetation debris will either be transported to a state-approved disposal facility or incinerated using a burn box or air curtain trench burner. Open burning operations will be in compliance with FAC Chapter 5I-2 and the MacDill AFB Wildland Fire Management Plan. Aquatic: In 1987, the Florida Legislature created the SWIM Act to protect, restore, and maintain Florida's highly threatened surface water bodies. Under this act, the state's five water management districts identify a list of priority water bodies within their authority and implement plans to improve them. MacDill AFB collaborates cooperatively with the Southwest Florida Water Management District to execute SWIM projects on the installation, including wetland and floodplain management projects. This project includes herbicide treatment of invasive aquatic plant species within wetland mitigation sites, SWIM restoration

		areas, and other wetlands and surface water bodies. Personnel from the USFWS Welaka Office conduct the invasive species management work. The primary invasive species of concern are Brazilian pepper (*Schinus terebinthifolius*), melaleuca (*Melaleuca quinquenervia*), Australian pine (*Casuarina equisetifolia*), lead tree (*Leucaena leucocephala*), and cogon grass (*Imperata cylindrica*). Other invasive species being managed on the installation include water hyacinth (*Pontederia crassipes*), castor bean (*Ricinus communis*), muscadine grape (*Vitis rotundifolia*), rosary pea (*Abrus precatorius*), lantana (*Lantana camara*), rose natal grass (*Melinis repens*), Caesar weed (*Urena lobata*), Chinese tallow-tree (*Triadica sebifera*), Japanese climbing fern (*Lygodium japonicum*), old world climbing fern (*Lygodium microphyllum*), carrotwood (*Cupaniopsis anacardioides*), simpleleaf chastetree (*Vitex trifolia*), balsalmpear (*Momordica charantia*), and air potato (*Dioscorea bulbifera*). Control of invasive species on the installation reduces competition for native species and habitat homogeneity and improves native habitats, particularly those that are critical for threatened and endangered species, such as pine flatwoods habitat for the gopher tortoise (*Gopherus polyphemus*).
5	Oyster Reef/Living Shoreline	The eastern shoreline of MacDill AFB is susceptible to erosion due to the lack of vegetation and wave energy from ship traffic in Hillsborough Bay. MacDill AFB continuously participates in erosion mitigation projects to combat that excessive erosion, including construction and maintenance of oyster reefs along the southeastern shoreline to break up wave energy, trap sediment, and encourage the recruitment of vegetation, and construction of a limestone revetment along the eastern shoreline of Bayshore Boulevard. These efforts are meant to control erosion, restore the natural stabilizing coastal vegetation, and improve coast communities' habitat and marine habitat. Community volunteers from the Tampa Bay Watch place coir bags down in the designated marine project areas and then put bags of fossilized oyster shell or oyster reef balls, which are made of concrete, on top of the coir bags by hand. The oyster reef balls, which weigh approximately 150 to 200 pounds, are made from marine-friendly concrete that is mixed in a portable cement mixer onsite and then transported via wheelbarrow onto the pre-made wood and metal forms and are allowed to dry for 48 hours before all metal and wood pieces from the form are removed. Reef balls are loaded onto utility trailers at the staging site and transported as closely as possible to the project area. The oyster reef balls are then loaded onto utility trailers at the staging area and transported to the boat ramp, where they are loaded by hand or by forklifts onto a boat for delivery to the project footprint. The oyster reef balls are then gently lowered into the water and project footprint, that must be at least 5 feet from any seagrass area edges and devoid of

		any live hard bottom/oysters and are spaced every 75 or 100 feet to avoid entrapment of marine mammals or other animals (Tampa Bay Watch 2024). Between the oyster reefs and the shoreline, plugs or seedlings of saltmarsh cordgrass (*Spartina alterniflora*) are planted by hand by volunteers to re-establish salt marsh for further wave attenuation and flooding protection. Approximately 9 acres of living shoreline, including oyster reefs and tidal salt marsh, has been completed at the installation. This project has provided optimal conditions for the settlement and reintroduction of coastal marsh, mangroves, and upland species and created coastal marshes landward of the hard bottom habitats (DoD 2024a). These oyster reefs/living shorelines are supplemented every few years with the addition of oyster domes and new oyster spat, as needed. Additionally, MacDill AFB has designated approximately 226 acres of shoreline and offshore areas along the eastern and southwestern boundaries of the installation as potential areas for future oyster reefs and living shorelines.
4	Mangrove Habitat Management	Mangroves line the stormwater canals and occupy a large swath of the MacDill AFB campus in the southwestern portion of the installation, for a total of approximately 551 acres. Mosquito canal excavation occurred in the 1940s to 1970s to reduce mosquitoes, which resulted in large sediment mounds called spoil mounds that lined the canals and impeded tidal flow. Hydroblasting occurs under a co-op agreement on the installation to remove these spoil mounds and restore natural tidal flow in these canals and ditches. Hydroblasting uses a fire hose and small water pump to blast the spoil mounds with pressurized water, dispersing the sediment and reducing mound height. Approximately two spoil mounds can be treated in a day. Hydroblasting efforts, which cover approximately 19 acres, are currently being conducted and mangrove habitat management on MacDill AFB is an ongoing process (DoD 2024b; USFWS, 6 CES, and Ecosphere Restoration Inc. 2023).
1	Freshwater Wetland Restoration Project (High Marsh Creation Project for Eastern Black Rail)	The purpose of this project is to remove disturbed upland habitat and replace it with an approximately 5-acre functional wetland area that could provide habitat for the federally threatened eastern black rail (*Laterallus jamaicensis jamaicensis*). The proposed project would occur in an area used previously as a debris landfill that has been colonized by invasive species. The existing area would be excavated to remove the invasive species and regraded to provide a shallow water basin, which would be filled via the raising and lowering of sluice gates at each of two ditch connections to the tidal ditch to the north of the project footprint and a previously created tidal wetland to the south. High marsh plan species would be planted at the appropriate elevations within the project footprint. This project would create additional tidal surge

		flooding capacity on base by the excavation of approximately four acres of disturbed upland, which would be restored as part of this project. Intra-service Section 7 consultation with USFWS has been completed previously for this project (**Appendix A**), and project work is anticipated to occur in late 2025.
4	Annual Prescribed Burns	Prescribed burning benefits native wildlife, maintains fire-dependent native plant assemblages, provides a tool for restoration activities, and supports threatened and endangered species. MacDill AFB annually implements prescribed burns in accordance with the MacDill AFB Wildland Fire Management Plan in potential or current gopher tortoise habitat for managing invasive species and maintaining native communities. Pre-burn site preparation consists of refreshing existing disk lines, mechanically cutting brush ignition strips, applying road signage, and implementing hydrant setup as a water source. Post burn-closure actions include hydrant demobilization, sign removal, disk line rehabilitation, and post burn map production showing the perimeter of the burned area with respective acreage and fire intensity. Areas on MacDill AFB suitable for burning encompass approximately 838 acres, and approximately 100 acres are proposed to be burned annually on a 3- to 5-year fire return interval. April to June prescribed burns are preferred, but prescribed burning may occur year-round to accomplish this annual target (MacDill AFB 2024c).

Source: MacDill AFB 2024a

Key: AFB = Air Force Base; DoD = Department of Defense; FAC = Florida Administrative Code; SWIM = Surface Water Improvement and Management; USFWS = United States Fish and Wildlife Service

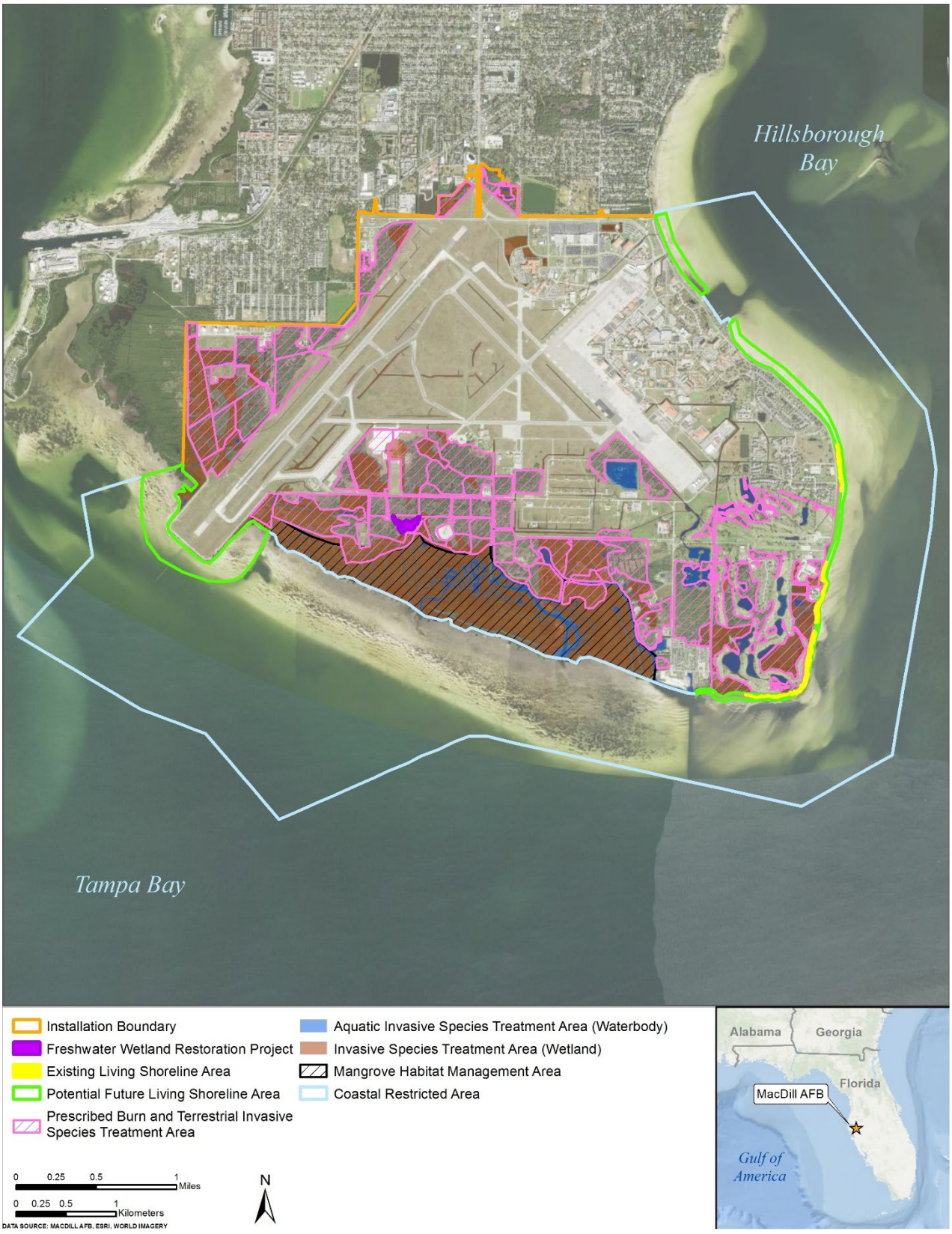

Figure 2-1. Larger INRMP Projects on MacDill AFB

2.2 No Action Alternative

Under the No Action Alternative, management of natural resources would continue as characterized in previous versions of the MacDill AFB INRMP, including those projects that are recurring and ongoing. This alternative represents the status quo.

The No Action Alternative would not meet the purpose of and need for the Proposed Action because the management goals, objectives, and projects from the previous versions of the MacDill AFB INRMP do not consider current conditions. Key differences between the No Action Alternative and the Proposed Action are that the latter reflects enhanced agency engagement and coordination and the most current available scientific and installation-specific information. This alternative is carried forward for analysis as a baseline against which the impacts of the Proposed Action and the potential action alternatives can be evaluated.

2.3 Selections Standards and Criteria

The following overarching goals of the INRMP guided DAF's selection of reasonable alternatives to meet the project purpose and need:

- **Mission Readiness:** Provide a natural resources management program that supports MacDill AFB's vital military mission to the maximum extent.
- **Environmental Stewardship:** Manage natural resources to assure good stewardship of public lands entrusted to the care of MacDill AFB.
- **Quality of Life:** Provide outdoor recreational opportunities that promote the mental, physical, and social well-being of installation personnel.
- **Compliance:** Protect and improve the quality of water, land, and biological resources present on MacDill AFB, thereby complying with pertinent regulations.
- **Integration:** Promote cooperative relationships with outside agencies, organizations, and interested parties and integrate elements of natural resources management into a single program.

2.4 Alternatives Eliminated

Under NEPA, reasonable alternatives must be considered in the EA. Considering alternatives helps to avoid unnecessary impacts and allows an analysis of reasonable ways to achieve the proposed action and satisfy the stated purpose and need. A reasonable alternative must be capable of implementation and meet the selection standards.

During the development of the MacDill AFB INRMP, the installation consulted with natural resources professionals at USFWS to formulate specific goals and objectives for the conservation and protection of natural resources on the installation. Following the development of goals and objectives, various natural resources management activities that could be implemented to meet these goals and objectives were discussed and analyzed, which led to the development of a specific list of projects that would be carried forward in the INRMP as the best alternative to conserve and rehabilitate natural resources at MacDill AFB within the military mission context. The Proposed Action described in **Section 2.1** reflects this alternative.

Other alternatives considered during INRMP development either did not meet the goals, were considered ineffective, could only be implemented in specific locations, or were removed from the INRMP. As a result, these alternatives were eliminated from further detailed analysis.

Implementation of the final approved INRMP is required per the statutory provisions of the SAIA. As such, the Proposed Action for this assessment consists of the implementation of the natural resource activities outlined in the INRMP (listed in **Table 2-1** and **Table C-1** in **Appendix C**). The only other alternative to the Proposed Action carried forward for further analysis is the No Action Alternative.

3. Affected Environment and Environmental Consequences

3.1 Introduction

This section describes the natural and human environment that could be affected by implementation of the Proposed Action and alternatives, including the No Action Alternative. In compliance with guidelines established by NEPA, the description of the affected environment focuses on only those aspects of the resource potentially subject to impacts. The affected environment description is limited to MacDill AFB and adjacent land and marine spaces in Tampa, Florida.

Sections 3.2 through **3.9** provide the affected environment discussions and impacts analyses for the following resources: air quality, noise, biological resources, water resources, geology and soils, cultural resources, hazardous materials and hazardous waste, and safety and occupational health.

3.1.1 Resources Not Carried Forward for Detailed Analysis

No impacts or negligible impacts would be expected on the resource areas in **Table 3-1** from implementation of the Proposed Action and Alternatives, and as such, they were found to not be significant and are not being carried forward for detailed analysis in this EA.

Table 3-1. Resources Not Carried Forward for Detailed Analysis

Resource	Rationale
Land Use	The Proposed Action would achieve goals and objectives included in the INRMP to conserve, enhance, and rehabilitate MacDill AFB natural resources. Because all proposed projects would be compatible and permitted within their respective land use planning districts, no adverse impacts would be expected.
Airspace Management	Under the Proposed Action, no changes to current airspace configurations, ongoing intermittent flight activities on or near the installation, or flight training would occur. Similarly, the No Action Alternative would not change any current airspace features or flight patterns for aircraft in the area. Therefore, no impacts on airspace management are anticipated.
Socioeconomics	The Proposed Action would result in the continuation of existing construction work. Because tax revenue from hired contractors in the local area would remain unchanged and the Proposed Action would not result in any changes to population levels, employment rates, cost or availability of housing, income levels, characteristics in race or ethnicity, or spending activities on the installation, no adverse impacts would be expected.
Infrastructure, Utilities, and Transportation	The Proposed Action would not require the construction of facilities or result in an increase in personnel. The projects are limited to unimproved areas of MacDill AFB, and as a result, no adverse impacts on infrastructure, utilities, or transportation would be expected.

3.1.3 Reasonably Foreseeable Effects

Reasonably foreseeable effects can result from individually minor but collectively significant actions taking place over a period of time. Past actions are those actions, and their associated impacts, that have shaped the current environmental conditions of the project area. Therefore, the impacts of past actions are now part of the existing environment and are included in the affected environment described in **Sections 3.2** through **3.9**. This INRMP EA considers present and reasonably foreseeable actions at MacDill AFB that could have a causal relationship to the Proposed Action and may result in reasonably foreseeable impacts. These present and reasonably foreseeable actions are listed in **Table 3-2**. The reasonably foreseeable effects on the environment that would result from the incremental impacts of the Proposed Action, when combined with the potential impacts of the present and reasonably foreseeable actions, are discussed qualitatively in the respective impacts section of each resource area in **Sections 3.2** through **3.9**.

Table 3-2. Past, Present, and Reasonably Foreseeable Future Actions Considered

Project Name	Timeframe	Description
Installation Projects		
Installation Development Plan Projects	2026–2028	The DAF is planning to implement nine installation development projects selected from the 2019 MacDill AFB Installation Development Plan. These projects include initiatives for facility construction, infrastructure construction and repair, and demolition. The DAF has initiated an EA to evaluate impacts from its proposal. The Proposed Projects include constructing a Joint Communication Support Element Joint Operations and Logistics Maintenance Facility, reconstructing Bayshore Gate, replacing the Joint Communication Support Element RUBB Facility; widening Zemke Avenue; installing Apron Flood Lighting; constructing the Northern Boundary Fence; extending the Deployed Unit Complex ramp; repairing and replacing four culverts; and demolishing Building 82.
Pipeline Replacement	2024–2026	MacDill AFB proposes to replace an existing pipeline from Chevron to the Defense Fuel Supply Point facility (DAF 2021).
USSOCOM MISO Facility	2024–2026	USSOCOM has constructed temporary MISO facilities and planned for permanent MISO facilities on the installation. The location previously selected for the MISO permanent facility has been changed, so NEPA must be conducted for the new proposed MISO facility location at MacDill AFB (MacDill AFB 2019a).
USSOCOM Special Operations Forces Operations Integration Facility	2024–2026	The National Security Council has directed a USSOCOM mission to operate at MacDill AFB. Offices within USSOCOM Headquarters at MacDill AFB have been remodeled to create 50 additional seats for personnel to begin the assigned mission. USSOCOM, however, needs a secure and segregated facility with secure network access for 180–190 personnel at a time to operate to accomplish the assigned mission. A permanent facility is being planned and would be constructed to support this mission in 2025. The temporary building serves as facilities for USSOCOM until the permanent facility can be constructed. The modular and permanent facilities would be located just north of the USSOCOM Central compound in the location of the current ground maintenance facilities. The grounds maintenance facilities currently at the proposed facility site would be relocated.
FGUA Sanitary Sewer Effluent Deep Injection Well	2024–2027	FGUA's wastewater permit currently allows for land application reuse on the golf courses, with two additional sprayfields and a wet weather storage pond, but not National Pollutant Discharge Elimination System discharge. FGUA applied for a deep injection well for disposing of the sanitary sewer effluent, and this project is currently under construction.
FGUA Sanitary Sewer Expansion to West Side	2024–2027	FGUA proposed to expand the sanitary sewer system to the western side of the runway, which was served by septic systems. The expansion extends from the new U.S. Army Reserve lift station to the airfield control tower and will expand the system to the north and south (MacDill AFB 2022b). This project is currently under construction.

Project Name	Timeframe	Description
Energy Resilience and Conservation Investment Program Project – Convert Overhead Electrical Distribution to Underground	2026–2028	The Energy Resilience and Conservation Investment Program Project would recapitalize 31,600 linear feet of primary overhead electrical distribution systems to below ground. The Proposed Action would include installation of underground cables jacketed in Linear Low-Density Polyethylene into underground conduit encased in concrete, pad-mounted transformers elevated above the 100-year floodplain, below-ground cable junction boxes, distribution panels, switchgear and associated support equipment, and streetlights mounted on new poles. Construction would include a combination of directional boring, trenching, and excavation; dewatering of the excavated trench/bored hole; backfill; compaction; disposal of spoils in excess; temporary soil stockpiling; 4-inch topsoil placement in areas; and reseeding/replanting of the disturbed ground within the project area. Work for this project is underway.
Energy Resilience and Conservation Investment Program – Energy Resilience Transmission and Substations System	2023–2026	This action would improve the installation's energy resilience by upgrading and adding redundancy to the electrical distribution system. Proposed improvements include upgrading the switchgear capacity at the Tanker Way Gate electrical substation from 25 kV to 35 kV. Additionally, a total of 22,100 linear feet of new 15-kV electrical distribution lines would be installed to interconnect the Tanker Way Gate substation with the Dale Mabry Gate, the MacDill Avenue Gate, and a new 2,037-SF switching station to be constructed near the south flight apron. A 768-SF electric power station building would be constructed at the Tanker Way Gate. The 15-kV, below-ground, electrical distribution line would be housed in high-density polyethylene conduit, which would be encased in concrete. Installation of the electrical line would be accomplished primarily through direct burial with directional boring used, as needed, to avoid impacts on roadways, taxiways, drainage ditches, and archaeological sites.
Fuels Operations Facility	Future	MacDill AFB proposes construction of a new 3,580-SF fuels operation facility in the parking lot east of Building 1062. Once complete, Building 1062 would be demolished, and a 4,296-SF parking lot would be constructed in its place (MacDill AFB 2020a).
Marina Channel Maintenance Dredging	2027–2028	The purpose of this action is to maintain the required width and depth of the marina channel. This action is accomplished, on average, every 10 years. Maintenance dredging enables security forces to safely access the marina basin, Coon Creek basin, and Tampa Bay during all tidal levels throughout the year via two connecting channels. These channels are located within the same area on the southern portion of the installation (MacDill AFB 2016).
Fire Station	2025– Future	This action includes construction of a new, approximately 16,000-SF fire station located south of Florida Keys Avenue, west of Oleander Place, and north of Administration Avenue, adjacent to the intersection of Florida Keys and Administration Avenues (MacDill AFB 2020a).
Logistics Readiness Squadron Vehicle Maintenance Complex	2026/2027–Future	This action includes construction of a two-story, 32,000 SF consolidated Logistics Readiness Squadron Vehicle Maintenance Facility between Hangar Loop Drive and Marina Bay Drive. Demolition of Buildings 500 and 510 would be required to create space for the proposed facility,

Project Name	Timeframe	Description
		including removal of building components, concrete foundations, and portions of the asphalt parking area (MacDill AFB 2020a).
KC-46A Main Operating Base #6 Beddown	2024–2030	The Proposed Action would base 24 KC-46A aircraft at MacDill AFB for the KC-46A Main Operating Base #6 beddown. To support the beddown of the aircraft, facility renovations, construction, and facility and airfield improvements would be included in the action. These facility and infrastructure projects include renovation of the air transportable galley/lavatory storage building, mission planning center/aircrew flight equipment facility, active duty air refueling squadron facilities, Air Force Reserve Command operations support squadron facility, fuselage training facility, and washracks and bird bath; construction of a new DASH-21 facility and high bay supply/bulk storage warehouse; and addition to/alteration of the aerospace ground equipment facility, jack testing pad in maintenance building, education center/airmen leadership school, corrosion control hangar 1, general purpose maintenance hangars 2 through 4, fuel cell hangar 5, wheel and tire shop, boom operator training building, aircraft maintenance unit building, fuselage training parking, and apron and hydrant fueling pits. These facility and infrastructure projects would result in approximately 16 acres of ground disturbance during construction and an approximately 9-acre increase in impervious surface on the installation (DAF 2023).
State and Local Actions		
Environmental Land Acquisition and Protection Program Storm Water Improvements – South Tampa	2022–Future	A series of stormwater improvement projects are planned for the South Tampa area to better deal with surface water runoff during the rainy season. This project includes infrastructure improvements and biological stormwater treatment in a created wetland system (City of Tampa 2024).
Wastewater Pump Station Rehabilitations	2025–Future	Rehabilitations would occur for several pump stations near MacDill AFB and would involve replacement of aging equipment to ensure continued reliability of the stations (City of Tampa 2024).

Key: DAF = Department of the Air Force; FGUA = Florida Governmental Utility Authority; kV = kilovolt; MISO = Military Information Support Operations; NEPA = National Environmental Policy Act; SF = square foot; USSOCOM = United States Special Operations Command

3.2 Air Quality

3.2.1 Existing Conditions

The region of influence (ROI) for the analysis of effects on air quality comprises Hillsborough County and the West Central Florida Intrastate Air Quality Control Region.

3.2.1.1 AIR QUALITY CONTROL REGION

MacDill AFB is within Hillsborough County, Florida, which is within the West Central Florida Intrastate Air Quality Control Region (40 CFR § 81.96). The U.S. Environmental Protection Agency (USEPA) Region 4 and FDEP regulate air quality in Florida. The USEPA has designated two areas of Hillsborough County as maintenance for the 2010 sulfur dioxide (SO_2) National Ambient Air Quality Standard and one area of the county as maintenance for the 2008 lead National Ambient Air Quality Standard. MacDill AFB is between 0.3 and 22 miles outside of these maintenance areas (FDEP 2019a, 2019b, 2020). As such, the General Conformity Rule is not applicable to federal actions that occur within the boundary of the installation, including the natural resources management activities in the INRMP. The most recent annual air emissions inventory for Hillsborough County is shown in **Table 3-3**.

Table 3-3. 2020 Emissions Inventory for Hillsborough County

NO_X (tpy)	VOC (tpy)	CO (tpy)	SO_2 (tpy)	PM_{10} (tpy)	$PM_{2.5}$ (tpy)	Pb (tpy)
18,569	49,930	143,370	3,114	12,045	6,670	0.813

Source: USEPA 2023

Key: CO = Carbon Monoxide; NO_x = Nitrogen Oxide; Pb = Lead; $PM_{2.5}$ = suspended particulate matter (measured less than or equal to 2.5 microns in diameter); PM_{10} = suspended particulate matter (measured less than or equal to 10 microns in diameter); SO_2 = Sulfur dioxide; tpy = tone per year; VOC = volatile organic compounds

3.2.1.2 REGULATORY/PERMITTING OVERVIEW

MacDill AFB is considered a synthetic minor source of air emissions, meaning the installation has the potential to emit criteria pollutants in exceedance of major source thresholds (i.e., 100 tpy for criteria pollutants, 10 tons per year (tpy) for individual hazardous air pollutants, or 25 tpy for any combination of hazardous air pollutants) but implements limitations to keep emissions below the thresholds. As such, MacDill AFB is not subject to the Title V Operating Permit Program under the Clean Air Act. The installation's minor source operating permit (No. 0570141-031-AO), issued by the Hillsborough County Environmental Protection Commission, expires May 19, 2028 (EPC 2023). Permitted sources of air emissions include emergency internal combustion engines (i.e., emergency power generators and emergency fire pump engines), and exempt sources include natural gas-fired external combustion heating units, fuel storage tanks, parts washers, woodworking activities, painting, and enclosed blasting operations. MacDill AFB facility-wide air emissions from permitted sources are summarized in **Table 3-4**. Florida does not require permitting of mobile source emissions (e.g., lawn and landscaping equipment, vehicles).

The larger INRMP projects are concentrated on the southern portion and perimeter of the installation, while most of the permitted sources of air emissions are within the northeast and

central east portion of the installation. There are no permitted air emissions sources within the larger INRMP project areas; however, one diesel-fired emergency generator at the Main Gate, three diesel-fired emergency generators south of the airfield, and one fire pump engine east of the airfield are adjacent to the invasive species management and annual prescribed burn project areas. Mobile sources of air emissions at MacDill AFB include aircraft operations, maintenance equipment, and vehicles.

Table 3-4. 2023 Emissions Inventory for MacDill AFB

Source	NO_X (tpy)	VOC (tpy)	CO (tpy)	SO_2 (tpy)	PM_{10} (tpy)	$PM_{2.5}$ (tpy)	Pb (tpy)
MacDill AFB Stationary Sources[1]	2.7	0.06	0.33	0.11	0.11	0.11	Not reported
MacDill AFB Potential to Emit[2]	24.14	3.90	6.61	0.23	2.47	2.30	Not reported

Sources: MacDill AFB 2024b; FDEP 2025

Key: AFB = Air Force Base; CO = carbon monoxide; NO_x = nitrogen oxide; Pb = lead; $PM_{2.5}$ = suspended particulate matter (measured less than or equal to 2.5 microns in diameter); PM_{10} = suspended particulate matter (measured less than or equal to 10 microns in diameter); SO_2 = Sulfur dioxide; tpy = tone per year; VOC = volatile organic compounds

Notes: [1] Represents the facility's actual emissions in 2023, as reported to FDEP. [2] Represents the maximum capacity, as of 2022, of all the facility's stationary sources to emit according to their physical and operational design.

Air emissions are produced from current INRMP activities at MacDill AFB, such as from annual prescribed burns, invasive species management, and mangrove habitat management. Prescribed burns generate emissions of criteria pollutants directly from the combustion of vegetation. Emissions from invasive species management and mangrove habitat management occur from vehicle and equipment use, minor earth-moving activities, and herbicide use. The use of herbicides for invasive species management results in negligible quantities of volatile organic compound (VOC) emissions. The VOC emissions are a function of the vapor pressure of the active ingredient of the herbicide and the vapor control efficiency of the applicator. The potential to emit VOC from installation-wide herbicide/pesticide application is approximately 0.25 tpy (MacDill AFB 2024b).

3.2.1.3 WEATHER TRENDS

The west-central region of Florida, which includes MacDill AFB, experiences a typical tropical climate, with hot, humid summers and warm winters. Between 1991 and 2020, the Tampa Bay area had an average temperature of 82.4 degrees Fahrenheit (°F) in the hottest month of August, with high temperatures that exceeded 90°F, and an average temperature of 61.2°F in the coldest month of January, with low temperatures that reached 50°F. The average annual temperature was 73.1°F. The annual average precipitation during the same time period was 53.59 inches. The wettest month of the year was August, with an average rainfall of 8.79 inches (NOAA 2025). The region experiences periodic tropical storms, hurricanes, and tornadoes, generally from June through November.

Florida is experiencing rising seas and retreating shores; increased storm intensity; increased precipitation; decreased crop productivity; disruption of natural ecosystems; effects on threatened and endangered species; and human health effects. MacDill AFB is facing sea level

rise and increases in the frequency and intensity of hurricanes and tropical storms, which can lead to intensified flooding and disruption of shorelines. The DoD ranks MacDill AFB in the top ten of DAF installations most susceptible to coastal erosion. Exposure to sea level rise is projected to reduce the installation area by 6.7 to 9.2 percent by 2035, with impacts concentrated on the western and southern coasts of the installation, which is dominated by mangrove forest. The projected 20-year storm surge is estimated to inundate between 61.9 and 77.7 percent of the installation by 2035 (MacDill AFB 2024a).

Coastal erosion, particularly on the east side of the installation, results from higher storm surges, recurrent flooding, and general sea level rise and tidal changes, which threaten roadways and other key infrastructure. To combat continued erosion of the installation's shoreline, MacDill AFB implements shoreline stabilization measures and has developed an Ecosystem Restoration Management Plan. In 2007, approximately three miles of the eastern shoreline were stabilized with a revetment constructed of limestone boulders. Other shoreline stabilization systems have been implemented, including sea walls, riprap, and living shorelines along the eastern and southern portion of the installation to protect against vulnerabilities due to flooding and sea level rise (MacDill AFB 2024a).

Recent weather trends at MacDill AFB include higher air temperatures, which can cause adverse health effects such as heat stroke and dehydration and can affect cardiovascular and nervous systems, especially in vulnerable populations (i.e., children, elderly, and infirmed populations). Prior to 2005, Hillsborough County experienced an average of 5 days per year with maximum temperatures greater than 95°F, which is expected to increase to up to 70 days per year by 2065 and up to 131 days per year by the end of the century (CMRA 2025). Warmer air also can increase the formation of ground-level ozone, which has a variety of health effects, including aggravation of lung diseases and increased risk of death from heart or lung disease (USEPA 2016, Hoffman et al. 2023). MacDill AFB is considered at risk from future increases in extreme heat and is predicted to face more than four times more extreme heat days (days where the heat index exceeds 100°F) by 2050 (ASP 2021, Dahl et al. 2019). Rising temperatures have the potential to disrupt the development of threatened and endangered species (e.g., sex determination for sea turtle species, hatchling size for loggerhead sea turtles) and hydrological conditions of wetlands. In addition, sea level rise could reduce the available habitat for protected species (MacDill AFB 2024a). See **Section 3.3.1** for details on the vulnerable populations and sensitive receptors within the project area.

3.2.2 Environmental Consequences

This air quality analysis estimates the impacts on air quality that would result from the Proposed Action and the No Action Alternative. Significant impacts on air quality would occur if emissions from INRMP projects were to result in exposure to ambient air that does not meet the standards established under the Clean Air Act or interfere with Florida's ability to implement or adhere to a State Implementation Plan.

Impacts on sensitive receptors would be considered significant if they affect vulnerable populations (i.e., children, elderly, and infirmed populations) compared to the general population, including per EO 13045, *Protection of Children from Environmental Health Risks and*

Safety Risks. Significant impacts on sensitive receptors could include a substantial increase in air emissions during a Proposed Action. Impacts on vulnerable communities are considered significant if they would increase exposure to health or safety risks of those communities.

3.2.2.1 PROPOSED ACTION

Emissions. Long-term but intermittent, negligible, adverse impacts on air quality would occur from the Proposed Action. Equipment use, land disturbance, and prescribed fire would produce air emissions temporarily while projects are occurring. Emissions of criteria pollutants would be directly produced from operation of vegetation management equipment such as chainsaws, stump grinders, landscaping equipment, water pumps, and other gasoline- or diesel-powered machinery; chemical spraying equipment; vehicles hauling restoration materials and vegetation debris to and from project areas; natural resources management personnel commuting to and from the project areas; and ground disturbance. All such emissions would be temporary in nature and produced only when the natural resources management activities are occurring. Emissions would be staggered over a five-year period from 2026 to 2031, minimizing the potential for exceedances of annual emissions thresholds for any one year. It is expected that the Proposed Action would generate air emissions at negligible levels such that quantitative analysis would not be required.

Many criteria pollutants are produced from internal combustion engines such as those found in the gasoline- or diesel-powered equipment that would be used for INRMP projects. Particulate matter, such as fugitive dust, could be produced from earth-moving activities and vehicles and equipment traveling over paved and unpaved roads. BMPs and environmental control measures (e.g., reducing equipment idling times, using diesel particulate filters in vehicles and equipment) would be implemented to minimize fugitive dust and other criteria pollutant emissions.

The use of herbicides for invasive species management results in negligible quantities of VOC emissions. VOC emissions are a function of the vapor pressure of the active ingredient of the herbicide and the vapor control efficiency of the applicator. Air emissions would be concentrated at the location of herbicide application and would disperse rapidly through the atmosphere. Overall herbicide use would not exceed the installation-wide herbicide/pesticide potential to emit 0.25 tpy of VOCs. Per the IPM Plan, the use of non-chemical control efforts is given priority prior to using chemical herbicides, reducing the potential for VOC emissions from herbicide application (MacDill AFB 2024c).

Habitat management projects, such as those to remove invasive terrestrial and aquatic species or manage mangrove habitat, and prescribed burns would be a continuation of existing activities. Therefore, emissions from such activities would be consistent with the ambient air environment described in **Section 3.2.1**. Prescribed burns would occur annually on up to approximately 100 acres per year, over a total area of 838 acres. Per the Wildland Fire Management Plan, prescribed burns require Individual Prescribed Fire Plans that specify conditions required for burning that minimize impacts to air quality from fire, including compliance with the requirements of state and local air quality regulatory agencies (MacDill AFB 2024d). Per the INRMP, timing of prescribed burns would depend on several factors, with

wind direction being the most critical factor. Prescribed burns would be conducted when the wind direction is away from the city of Tampa and the installation to ensure smoke does not adversely affect visibility on the runway, airfield, control tower, or restrict other critical operations. Prescribed burns may be conducted throughout the year, but most will take place in the dry winter season when cold fronts bring consistent north winds (MacDill AFB 2024a).

Air emissions from the natural resources management activities would not increase the installation's potential to emit above major source thresholds, and no new sources of stationary emissions are proposed; therefore, the Proposed Action would not result in a permitting classification for MacDill AFB to major source status. As such, no long-term, adverse, significant impacts on air quality would occur. Existing stationary sources of air emissions at the installation would not be affected by the INRMP projects.

Ongoing and recent weather trends in Florida are described in **Section 3.2.1.3**. The oyster reef/living shoreline project would help adapt MacDill AFB to the effects of these weather trends, resulting in long-term, beneficial impacts. Improved shoreline stability would improve site resiliency against global weather trends, such as increasing frequency and severity of storm surges and flooding. Shoreline protections would protect the installation against increased rates of erosion that result from wave action and flooding. Protecting the shoreline also protects inland habitat areas, such as wetlands, that play an important role in managing floodwaters and reducing the vulnerability of built infrastructure (e.g., roadways, utilities, buildings, and airfields) on the installation. In addition, the freshwater wetland restoration project would create an additional approximately 4 acres of tidal surge flooding capacity, which would result in further beneficial effects on the climate resiliency of the installation. Prescribed fires remove excess vegetation and reduce the overall vegetation fuel load, reducing the risk of wildfires, which could increase in frequency and severity due to rising temperatures and drought conditions.

Ongoing effects of recent weather trends are unlikely to affect DAF's ability to implement the Proposed Action. The stressors with the greatest potential to affect the Proposed Action are retreating shores, increased storm intensity, and increased precipitation, which can lead to coastal erosion. However, as described above, the natural resources projects would improve the installation's resiliency against these weather trends.

3.2.2.2 NO ACTION ALTERNATIVE

Under the No Action Alternative, management of natural resources would continue as characterized in previous versions of the MacDill AFB INRMP, including those projects that are recurring and ongoing, and the existing conditions discussed in **Section 3.2.1** would remain unchanged. Therefore, no impacts on air quality from new air emissions would be anticipated. Without the oyster reef/living shoreline and freshwater wetland restoration projects, increased flooding, sea level rise, storm surges, and tidal changes may escalate rates of shoreline and inland habitat erosion over time, increasing the potential for failure of the built infrastructure at MacDill AFB. As such, the No Action Alternative may result in long-term, adverse impacts from the ongoing effects of weather trends.

3.2.2.3 REASONABLY FORESEEABLE EFFECTS

Air emissions would be produced from reasonably foreseeable actions including maintenance actions, construction projects, and utility upgrades. The Proposed Action would result in short-term, negligible, adverse impacts on air quality from natural resources management projects. Reasonably foreseeable construction actions that coincide with the INRMP actions between 2026 and 2031 would produce emissions of criteria pollutants beyond those that would be produced by the Proposed Action alone, resulting in short-term, minor, adverse, reasonably foreseeable impacts. Emissions reduction measures would be implemented to minimize air emissions from reasonably foreseeable future actions and reduce the potential for reasonably foreseeable impacts on air quality. All such occurrences of additive air emissions would be temporary in nature and are not expected to be significant.

3.3 Noise

3.3.1 Existing Conditions

The ROI for the analysis of effects on the noise environment comprises the installation and the adjacent off-installation area north of the installation boundary. The main source of noise on MacDill AFB is from aircraft noise. Other sources of noise include vehicle traffic; heating, ventilation, and air conditioning systems; military unit physical training; lawn maintenance; and construction activities.

Aircraft Activity. For DAF NEPA documents, day-night average sound level (DNL) is the primary noise metric for aircraft noise. DNL is the average sound energy in a 24-hour period with a weighting added to the nighttime "A"-weighted decibel (dBA) sound levels. The 65-dBA DNL is the noise level below which all land uses are generally compatible with noise from aircraft operations. **Figure 3-1** shows the existing DNL contours plotted in 5 decibel (dB) increments ranging from 65- to 85-dBA DNL. The noise contours depict 2021 operational conditions at MacDill AFB.

Table 3-5 provides a general overview of recommended noise limits from aircraft operations for land use planning purposes.

Ground Activity. Ongoing noise from ground-based activity on the installation comes primarily from vehicular traffic, daily human activities, training exercises, and construction.

Noise-Sensitive Receptors. **Table 3-6** lists the on- and off-installation noise-sensitive receptors (NSRs) that would be located near one or more proposed projects. Proximity to the installation's existing operational DNL noise contours is noted, as applicable.

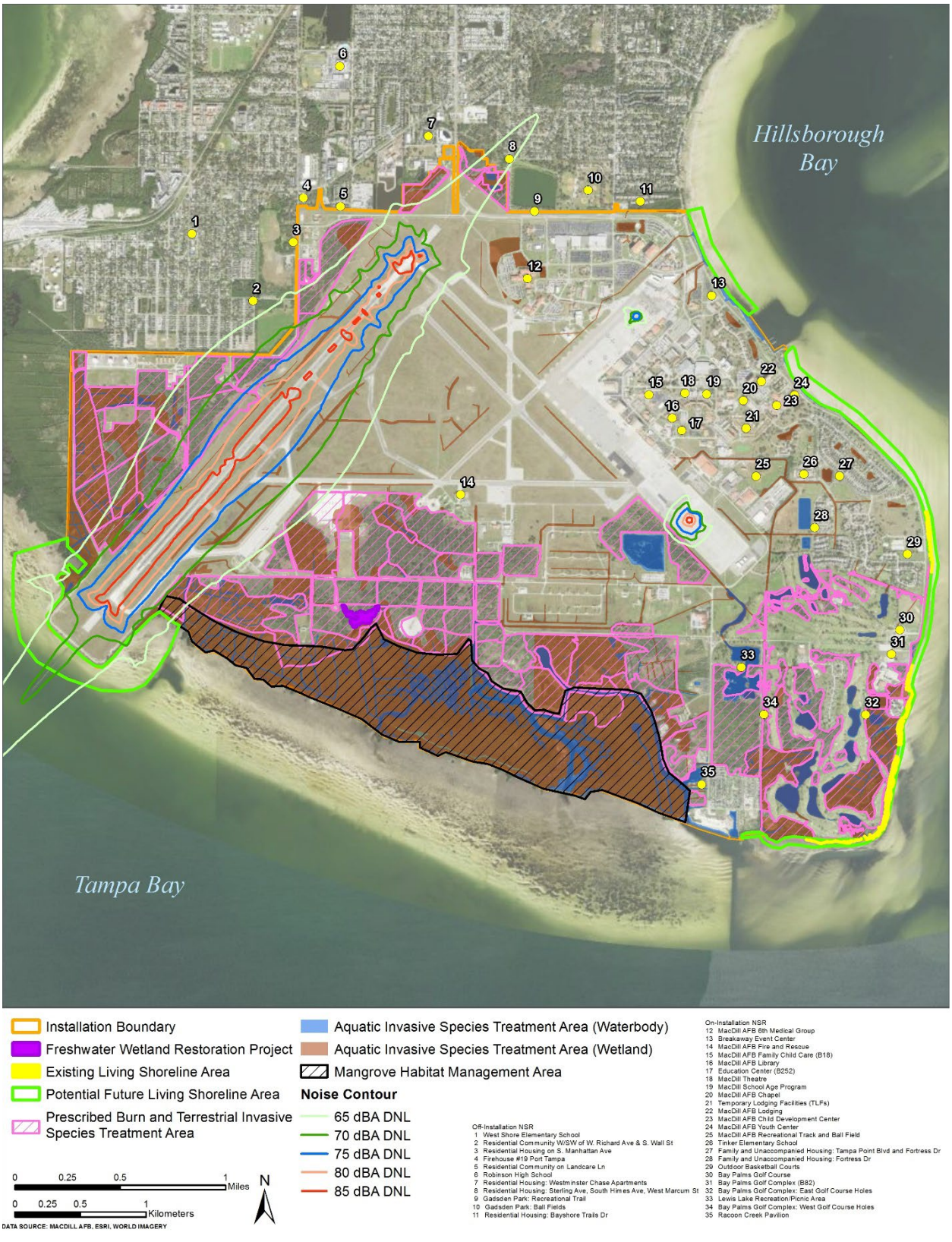

Figure 3-1. Location of Nearest Noise Sensitive Receptors and Noise Contours

Table 3-5. Recommended Noise Limits for Land Use Planning

General Level of Noise	Percent Highly Annoyed	Aircraft Noise (DNL)	General Recommended Uses
Low	<12	<65 dBA	Noise-sensitive land uses acceptable
Moderate	12–36	65–75 dBA	Noise-sensitive land uses normally not recommended
High	>36	>75 dBA	Noise-sensitive land uses not recommended

Source: DAF 2017

Key: DNL = day-night average sound level; dBA = "A"-weighted decibel

Table 3-6. Noise Sensitive Receptors and Locations Relative to the Proposed Action

Noise-Sensitive Receptor	Location Details relative to Proposed Project Sites [1]
Off-Installation Receptors	
Gadsden Park: Ball Fields	Recreational ballpark located north, adjacent to North Boundary Boulevard, and west, adjacent to South MacDill Avenue; approximately 2,100 feet west of the invasive species management and annual prescribed burn project areas.
Gadsden Park: Recreational Trails	Nearest recreational trails are located approximately 130 feet east of the invasive species management and annual prescribed burn project areas.
Firehouse #19, Port Tampa	Fire rescue station located north, adjacent to Interbay Boulevard and west of South Manhattan Avenue; approximately 700 feet north of the invasive species management and annual prescribed burn project areas.
Residential Housing: South Manhattan Avenue	Located west of and parallel to South Manhattan Avenue; nearest houses on South Manhattan Avenue are located 50 feet west of the invasive species management and annual prescribed burn project areas.
Residential Housing: Community West/Southwest of West Richard Avenue and South Wall Street	Located north, adjacent to West Richardson Avenue, and west, adjacent to South Wall Street; the nearest houses on South Wall Street are located 1,100 feet west of the invasive species management and annual prescribed burn project areas.
Residential Housing: Landcare Lane	Located north, adjacent to Landcare Lane, and west, adjacent to Frog Pocket Place; nearest homes on Landcare Lane are located 50 feet north of the invasive species management and annual prescribed burn project areas.
Residential Housing: Sterling Avenue, South Himes Avenue, and West Marcum Street	Located east of and parallel to Highway 573, the nearest houses on South Himes Avenue and West Marcum Street are located 1,000 feet north of the invasive species management and annual prescribed burn project areas. These residences underlie the installation's 65 dBA contour.

Noise-Sensitive Receptor	Location Details relative to Proposed Project Sites [1]
Residential Housing: Westminster Chase Apartments	Located west of Highway 573, approximately 1,000 feet northwest of the invasive species management and annual prescribed burn project areas.
Residential Housing: Bayshore Trails Drive	Located west, adjacent to Bayshore Drive, and immediately north of Northern Boundary Boulevard; approximately 900 feet northwest of the potential future oyster reef/living shoreline project areas.
Robinson High School	Located approximately 3,600 feet northwest of the invasive species management and annual prescribed burn project areas.
West Shore Elementary School	Located south of West Loughman Street and west of South Fitzgerald Street; approximately 2,500 feet west of the invasive species management and annual prescribed burn project areas.
On-Installation Receptors	
MacDill AFB Library	Located approximately 2,200 feet north of the invasive species management and annual prescribed burn project areas.
MacDill AFB Recreational Track and Ball Field	Located approximately 2,300 feet northeast of the invasive species management and annual prescribed burn project areas.
Tinker K-8 School	Located approximately 1,900 feet north of the invasive species management and annual prescribed burn project areas and approximately 1,900 feet west of the potential future oyster reef/living shoreline project areas.
MacDill School Age Program Facility	Located approximately 2,000 feet west of the potential future oyster reef/living shoreline project areas.
MacDill AFB 6th Medical Group	Located approximately 1,700 feet southeast of the invasive species management and annual prescribed burn project areas.
MacDill AFB Child Development Center	Located approximately 600 feet east of the potential future oyster reef/living shoreline project areas.
MacDill AFB Youth Center	Located approximately 125 feet west of the potential future oyster reef/living shoreline project areas.
MacDill AFB Chapel	Located approximately 1,200 feet west of the potential future oyster reef/living shoreline project areas.
MacDill AFB Education Center	Located parallel to Hanger Loop Drive and approximately 2,000 feet northeast of the invasive species management and annual prescribed burn project areas.
MacDill AFB Family Child Care	Located between Florida Keys Avenue and Seminole Indian Place, approximately 2,700 feet north of the invasive species management and annual prescribed burn project areas.
MacDill AFB Lewis Lake Recreation/Park Area	Located approximately 5 feet east of the invasive species management and annual prescribed burn project areas.

Noise-Sensitive Receptor	Location Details relative to Proposed Project Sites [1]
MacDill AFB Outdoor Basketball Courts	Located approximately 500 feet north of the invasive species management and annual prescribed burn project areas and approximately 500 feet west of the potential future oyster reef/living shoreline project areas.
MacDill AFB Racoon Creek Pavilion	Located approximately 220 feet east of the invasive species management and annual prescribed burn project areas.
MacDill AFB Temporary Lodging Facilities	Located approximately 1,700 feet west of the potential future oyster reef/living shoreline project areas.
MacDill AFB Theatre	Located approximately 2,400 feet west of the potential future oyster reef/living shoreline project areas.
Family and Unaccompanied Housing: Fortress Drive	Nearest family residences on Fortress Drive are located approximately 750 feet north of the invasive species management and annual prescribed burn project areas and 2,800 feet from the potential future oyster reef/living shoreline project areas.
Family Housing: Tampa Point Boulevard and Fortress Drive	Nearest family residences at the intersection of Tampa Point Boulevard and Fortress Drive are located approximately 2,200 feet north of the invasive species management and annual prescribed burn project areas and 2,200 feet west of the potential future oyster reef/living shoreline project areas.
MacDill AFB Lodging	Located approximately 500 feet west of the potential future oyster reef/living shoreline project areas.
MacDill AFB Fire and Rescue	Located approximately 600 feet north of the invasive species management and annual prescribed burn project areas.
Breakaway Event Center	Located approximately 300 feet west of the potential future oyster reef/living shoreline project areas.
Bay Palms Golf Complex	Nearest buildings are within 540 feet of the invasive species management and annual prescribed burn project areas, and Building 82 is within 475 feet. East golf course holes are within 150 feet of the invasive species management and annual prescribed burn project areas, and west golf course holes are within 75 feet.

Key: AFB = Air Force Base; dBA = "A"-weighted decibel

Note: [1] Location details and distances estimated using Google Earth imagery and measurements.

3.3.2 Environmental Consequences

Analysis of potential noise impacts is based on changes to the ambient noise environment or potential changes to land compatibility from noise caused by implementation of a proposed action. Impacts on noise would be considered significant if they were to (1) violate applicable federal or local noise regulations; (2) create appreciable areas of incompatible land use outside the installation boundary; and/or (3) create noise that would negatively affect the health of the community.

This noise impact analysis considers proximity to NSRs, natural resources management activities and opportunities for abatement, and the location of each proposed project relative to the existing operational DNL noise contours.

3.3.2.1 PROPOSED ACTION

Short-term, minor, adverse noise impacts would be expected due to the operation of heavy and handheld equipment, trucks, and boats; increased construction-related traffic along the main routes to transport work crews and materials to the project sites; proposed construction or maintenance activities at each project site; and from hauling debris to local landfills. The anticipated noise effects would not violate applicable noise regulations, create noise incompatible with land uses on or off the installation, or result in noise-related negative effects on public health. **Table 3-7** lists the highest estimated project-related noise levels that may be experienced at the nearest NSR location(s). Because these estimates conservatively assume concurrent operation of the same numbers and types of equipment, tools, and vehicles for every project, noise levels are overestimated for projects affecting smaller areas or involving phased use of individual types of equipment or tools.

All construction activities would occur within the installation's boundary, where aircraft and other types of military operational noise are typical, and all related noise impacts would cease upon project completion. Operation of construction vehicles to transport equipment, materials, and debris to and from the installation would temporarily add to existing traffic noise and be anticipated on and off the installation. Noise controls would be used to the extent practicable to manage noise reduction. Noise-reducing measures, such as exhaust mufflers, can reduce the noise level by as much as 10 dBA (USEPA 1971). It is expected that different types of construction equipment would be operated intermittently and for short durations at the various project sites.

Individuals working or recreating outside at locations near a proposed project area may notice or be bothered by the noise. The perceived loudness of construction activities would decrease with distance and if individuals are inside buildings, so that construction-related noise may not be perceptible to some NSRs. Anticipated noise levels at receptor locations were estimated per the *2018 Occupational Safety and Health Administration (OSHA) Technical Manual* (OSHA 2018), and calculations conservatively assume a median noise level (83 dB) for operation of equipment and construction activities at 50 feet per USEPA-reported dB levels (in USEPA 1971) for types of equipment that would be operated at the site(s). At receptor distances of 450 feet or greater from a proposed project, noise levels would be less than 65 dBA. At approximately 1,320 feet (roughly one-quarter of a mile), anticipated noise levels would be around 55 dBA, which would not be appreciably different from ambient noise levels in a relatively quiet area. Therefore, NSRs located beyond this distance were not considered further in this analysis.

Table 3-7. Highest Estimated Project-Related Noise Levels at the Nearest Noise-Sensitive Receptors Locations

Nearest Noise-Sensitive Receptors	Distance (Feet)[1]	Highest Estimated Noise Level at the Receptor (dBA) [2]
Invasive Species Management and Annual Prescribed Burns		
Bay Palms Golf Course	540	62
Bay Palms Golf Course: B82	475	63
Bay Palms Golf Course: East Golf Course Holes	150	73
Bay Palms Golf Course: West Golf Course Holes	75	79
Family and Unaccompanied Housing: Fortress Drive	750	59
Firehouse #19 Port Tampa	700	60
Gadsden Park: Recreational Trail	130	75
MacDill AFB Fire and Rescue	600	61
MacDill AFB Lewis Lake Recreation/Picnic Area	5	103
MacDill AFB Outdoor Basketball Courts	500	63
MacDill AFB Racoon Creek Pavilion	220	70
Residential Housing: South Manhattan Avenue	50	83
Residential Housing: Community West/Southwest of West Richard Avenue and South Wall Street	1100	56
Residential Housing: Landcare Lane	350	66
Residential Housing: Sterling Avenue, South Himes Avenue, West Marcum Street	1000	57
Residential Housing: Westminster Chase Apartments	950	57
Existing Oyster Reef/Living Shoreline		
Bay Palms Golf Course	575	62
Bay Palms Golf Course: B82	575	62
Bay Palms Golf Course: East Golf Course Holes	900	58
Breakaway Event Center	200	71
MacDill AFB Chapel	1200	55
MacDill AFB Child Development Center	600	61
MacDill AFB Lodging	500	63
MacDill AFB Outdoor Basketball Courts	500	63
MacDill AFB Youth Center	125	75
Residential Housing: Bayshore Trails Drive	900	58
Mangrove Habitat Management		
MacDill AFB Racoon Creek Pavilion	475	63
Freshwater Wetland Restoration Project		
No nearby NSR	N/A	N/A

Key: AFB = Air Force Base; dBA = "A"-weighted decibel; B = Building; N/A = not applicable; NSR = noise-sensitive receptors
Notes:

[1] Noise-Sensitive Receptors distances from project sites was estimated using Google Earth measurement tools.

[2] Estimated noise levels calculated per the 2018 OSHA Technical Manual Section III: Chapter 5 – Noise (OSHA 2018). Noise levels at the receptor locations assumed the median noise level (83 dB) for construction activities at 50 feet per USEPA-reported (in USEPA 1971) dB levels for types of equipment that would be operated at the project site(s). Calculation of the median noise level conservatively assumed concurrent operation of the same numbers and types of equipment at every project site. Values rounded to the nearest whole number.

As shown in **Table 3-7**, most NSRs would be located at distances far enough from construction activities that they would not be appreciably, if at all, affected by the associated construction noise. Noise generated during mangrove habitat management and the freshwater wetland restoration activities would be within an acceptable dB range for the identified nearby NSRs and land uses at MacDill AFB.

Noise generated during activities for the invasive species management, oyster reef/living shoreline, and annual prescribed burns would adversely affect NSRs at nearby recreational areas, residences, and an event center educational facility on MacDill AFB.

The nearest NSR to the invasive species management project area are in the west portion of the Bay Palms Golf Course, MacDill AFB Lewis Lake Recreation/Picnic Area, and residential housing on South Manhattan Avenue. The Bay Palms Golf Course and MacDill AFB Lewis Lake Recreation/Picnic Area NSR are located within the installation's boundary and are likely to already experience increased noise levels from ongoing operations at the installation. The estimated noise levels experienced by nearby NSRs would range between approximately 49 and 75 dBA, resulting in temporary, negligible to minor adverse impacts from operation of equipment onsite and activities (truck transport of materials).

The nearest NSR to the oyster reef/living shoreline project area are the MacDill AFB Youth Center and Breakaway Event Center, and the nearest NSR to the annual prescribed burn project area are the MacDill AFB Lewis Lake Recreation/Picnic Area, the west portion of the Bay Palms Golf Course, and residential housing on South Manhattan Avenue. All receptor locations, with the exception of residential housing on South Manhattan Avenue, are located within the installation's boundary and are likely to already experience increased noise levels from ongoing operations at the installation. NSRs located within 0.5 mile of the oyster reef/living shoreline project and the annual prescribed burn may experience construction-related noise levels ranging between 49 to 79 dBA, resulting in temporary, negligible to minor noise impacts.

Because construction would be limited to business days and during daylight hours (7:00 am to 5:00 pm), and appropriate noise controls would be implemented, sleep disturbance in residential areas from construction-related activities would not occur. Additionally, no long-term noise impacts are expected from operation of the projects and infrastructure post-construction at any project location. **Section 3.4** discusses noise impacts on biological resources.

3.3.2.2 NO ACTION ALTERNATIVE

Under the No Action Alternative, management of natural resources would continue as characterized in previous versions of the MacDill AFB INRMP, including those projects that are

recurring and ongoing, and the existing noise conditions described in **Section 3.3.1** would remain unchanged. Therefore, no new noise impacts would be anticipated.

3.3.2.3 REASONABLY FORESEEABLE EFFECTS

If construction of any of the reasonably foreseeable actions identified in **Table 3-2** were to be implemented concurrently with any of the proposed projects under the Proposed Action, noise impacts resulting from heavy equipment use and construction traffic would be minor to moderate but temporary and intermittent. The existing ambient noise levels and the types of noise would not be expected to change under the Proposed Action. Therefore, only short-term, moderate, reasonably foreseeable impacts would be expected from the Proposed Actions in combination with the reasonably foreseeable actions.

3.4 Biological Resources

3.4.1 Existing Conditions

The ROI for the analysis of effects on biological resources includes the entire installation and proposed larger INRMP project areas (see **Figure 2-1**) to account for potential disturbances and impacts to species from invasive species management, oyster reef/living shoreline, mangrove habitat management, freshwater wetland restoration project, and annual prescribed burns.

3.4.1.1 VEGETATION

MacDill AFB vegetation communities and land cover types include 33 vegetation alliances/communities based on the U.S. National Vegetation Classification (Version 2.03) (see **Figure 3-2**) (MacDill AFB 2024a). Out of the 33 vegetation communities across the installation, 10 predominant vegetation communities are located within the proposed larger INRMP project areas (**Table E-3** in **Appendix E**). Predominant vegetation communities include those communities comprising greater than five percent coverage.

The proposed oyster reef/living shoreline project areas contain approximately 132 acres of seagrass coverage. Future oyster reef sites would be located in unvegetated soft bottom habitats at least 5 feet from any seagrass area edges and devoid of any live hard bottom/oysters.

3.4.1.2 WILDLIFE

MacDill AFB is mostly urban with small tracts of wildlands, which limits its use by animals that require large home ranges. Native wildlife habitat quality has been degraded because of historic fire protection measures and non-native plant invasion. According to the 1992 MacDill AFB Base Wildlife Survey, six wildlife habitat types are present on the installation: (1) paved runways and taxiways and mowed lawn areas; (2) slash pine plantations; (3) pine flatwoods; (4) mixed pine and oak woodlands; (5) creeks, bays, and lagoons and dredged channels; and (6) mangroves and high marsh (MacDill AFB 2024a). The habitat within the semi-improved grasslands, marsh, and waterbody areas within or adjacent to the project areas provides ample food and cover for commonly occurring animals such as gray squirrels (*Sciurus carolinensis*), marsh rabbits (*Sylvilagus palustris*), long-nosed armadillos (*Dasypus novemcinctus*), raccoons (*Procyon lotor*), and Virginia opossums (*Didelphis virginiana*) (MacDill AFB 2024a).

Figure 3-2. MacDill AFB Vegetation

3.4.1.3 SPECIAL STATUS SPECIES

Special status species include federally and state-protected threatened and endangered species; federal candidate, proposed, or species under review for federal listing; as well as species protected under the MMPA, BGEPA, Magnuson-Stevens Fishery Conservation and Management Act (MSA), and Migratory Bird Treaty Act (MBTA) that occur on or near the installation. The list of special status species was developed based on data provided in the MacDill AFB INRMP, 2019 and 2024 threatened and endangered species surveys, the USFWS Information for Planning and Consultation report generated for the installation, the USFWS MBTA list, and information obtained from the FWC and Florida Department of Agriculture and Consumer Services (MacDill AFB 2019, 2025, 2024e; FWC 2022; FDACS 2023; USFWS 2023a, 2024a).

Of the 72 special status species with the potential to occur at MacDill AFB (**Table E-4** in **Appendix E**), 34 species have been documented on or around the installation.

Species documented at or surrounding MacDill AFB include:

- Nine federally-listed threatened species: American alligator (*Alligator mississippiensis*), eastern black rail, loggerhead sea turtle (*Caretta caretta*), green sea turtle (*Chelonia mydas*), piping plover, rufa red knot, West Indian manatee (also MMPA-protected), eastern indigo snake, and the wood stork.
- Four species pending federal protections: the proposed endangered tricolored bat (*Perimyotis subflavus*), the proposed threatened monarch butterfly (*Danaus plexippus*), and two species under review for federal protections, the gopher frog (*Lithobates capito*) and eastern diamondback rattlesnake (*Crotalus adamanteus*).
- 12 state-listed threatened species: American oystercatcher (*Haematopus palliatus*), black skimmer (*Rynchops niger*), Florida burrowing owl (*Athene cunicularia floridana*), Florida sandhill crane (*Grus canadensis pratensis*), gopher tortoise, least tern (*Sternula antillarum*), little blue heron (*Egretta caerulea*), piping plover, reddish egret (*Egretta rufescens*), roseate spoonbill (*Platalea ajaja*), Southeastern American kestrel (*Falco sparverius paulus*), and tricolored heron (*Egretta tricolor*).
- One MMPA-protected species: the Northern Gulf of America Bay, Sound, and Estuary Stocks of common bottlenose dolphin (*Tursiops truncatus*).
- One BGEPA and MBTA-protected species: the bald eagle *(Haliaeetus leucocephalus)*;
- Five MBTA-protected species: American white ibis (*Eudocimus albus*), brown pelican (*Pelecanus occidentalis*), cattle egret (*Bubulcus ibis*), great egret (*Ardea alba*), and snowy egret (*Egretta thula*).
- Two Florida statute-protected species: the sea grape (*Coccoloba uvifera*) and sea oats (*Uniola paniculata*) (Urian et al. 2009; MacDill AFB 2019a, 2024a; FWC 2022; FDACS 2023; USFWS 2023a, 2023b, 2024a; State of Florida 2024).

While most of the protected bird species are associated with shoreline areas and the mangrove community, it is likely there are birds associated with the wetlands and waterbodies across the installation (see **Figure 3-3** and the habitat column in **Table E-4** in **Appendix E**). All bird species occurring on MacDill AFB are protected under the MBTA and EO 13186, Responsibilities of

Federal Agencies to Protect Migratory Birds, except for nonnative species (i.e., rock pigeon [*Columba livia*], European starling [Sturnus vulgaris], and house sparrow [*Passer domesticus*]) (FWC 2022). The installation maintains an annual Depredation Activity permit, number MB673438 (USFWS 2024b).

During 2023/2024 species surveys, there were 12 observations (acoustic and visual) of southeastern American kestrels across the installation and 1,315 species observations between eight federally and State-protected species (wood stork, American oystercatcher, black skimmer, least tern, little blue heron, reddish egret, roseate spoonbill, and tricolored heron) (MacDill AFB 2025a). There were no documented occurrences of the piping plover during the 2023/2024 species surveys; however, this species was documented twice in the southern portion of the installation during 2019 surveys (**Figure 3-3**) (MacDill AFB 2019, 2025a). Annual surveys conducted by USFWS and MacDill AFB, detected one eastern black rail individual on the southern aspect of the installation in April 2024 (**Figure 3-3** and **Figure 3-4**) (MacDill AFB 2024a).

There are three active bald eagle nests and one inactive nest currently documented on MacDill AFB (see **Figure 3-3**) (MacDill AFB 2025c). The installation monitors bald eagle nesting activities and maintains a bald eagle depredation permit, number MB77529A (USFWS 2021).

The majority of monarch butterfly observations are assumed to be migrating individuals; however, it is possible there is a small resident monarch butterfly population as well. Incidental observations by MacDill environmental personnel over the last five years have generally occurred in November. Approximately 50 individuals were observed feeding on largeflower Mexican clover (*Richardia grandiflora*), and singular observations of the monarch butterfly have occurred along the northern and one along the eastern aspects of the installation (**Figure 3-3**) (MacDill AFB 2025b). Weather fronts may force migrating monarch butterflies to the area.

There have been documented observations of non-native milkweed, most likely tropical milkweed (*Asclepias curassavica*), scattered throughout the installation, but no monarch butterfly larvae or instars have been observed.

The tricolored bat was documented acoustically during 2019 surveys using the USFWS range-wide Indiana bat survey guidelines methodology. Additionally, MacDill AFB detected the tricolored bat along the northwestern aspect of the installation detections during 2023 fall and winter North American Bat Monitoring Program surveys (MacDill AFB 2023b, MacDill AFB 2024e). See **Figure 3-4** for the acoustic survey locations. Because there is tricolored bat habitat scattered throughout MacDill AFB, including around the wooded edges surrounding the installation's developed areas, it is likely that foraging bats range all over the installation. Therefore, tricolored bats could be present or use any of the project areas. No tricolored bat roosts or maternity colonies have been documented on the installation (TTU 2019; MacDill AFB 2024a).

Figure 3-3. MacDill AFB Special Status Species Observations

Figure 3-4. Protected Species Survey Areas on MacDill AFB

The following species could occur in burrows adjacent to the project areas: Florida burrowing owl, eastern indigo snake, gopher tortoise, gopher frog, Florida pinesnake (*Pituophis melanoleucus mugitu*), eastern indigo snake, and short-tailed snake. Only the Florida burrowing owl, gopher tortoise, and gopher frog have been recently documented on the installation. However, the eastern indigo snake was documented over 25 years ago (MacDill AFB 2019a, 2024a).

The Florida burrowing owl is considered a resident on MacDill AFB. There are 52 potentially occupied Florida burrowing owl burrows, 37 of which were occupied during active surveys; 53 individuals were documented. All burrowing owl burrows were confined to the MacDill AFB mowed grass areas in the airfield (see **Figure 3-3**) (MacDill AFB 2025a).

Bird aircraft strike hazard data over the last 18 years was analyzed and, with the exception of singular occurrences of an individual rufa red knot and wood stork instances in 2015, there have been no documented bird aircraft strike hazard instances involving any special status species (MacDill AFB 2005-2023).

The gopher tortoise is also a resident of MacDill AFB. During 2024 herpetofauna surveys, 159 tortoises and 372 gopher tortoise burrows were detected; only 300 burrows were intact. The installation's projected population size is approximately 1,020 tortoises with continuous recruitment (ARC 2024).

The gopher frog was first documented on MacDill AFB in 1994; however, this species was not documented during 2019 or 2023/2024 surveys. Since this species prefers xeric habitats, it is unlikely to be present within any project areas (MacDill AFB 2019a, 2025a).

American alligators are occasionally found on the installation and are removed by FWC-licensed trappers and/or relocated by installation personnel to natural areas of the installation (MacDill AFB 2024a).

The threatened West Indian manatee, MMPA-protected common bottlenose dolphin, and threatened green and loggerhead sea turtles have been documented in the waters surrounding MacDill AFB. The West Indian manatee and common bottlenose dolphin have frequently been documented around the installation (MacDill AFB 2024a). The 2023-2024 threatened and endangered species study did not observe any West Indian manatees. This species is a common visitor to MacDill AFB, with frequent observations through the years and have been observed near the marina, in tidal canals, and within the waters of the Coastal Restricted Area (**Figure 3-5**) (MacDill AFB 2024a, 2025a). No West Indian manatee deaths have occurred as a result of installation activities. To prevent West Indian manatees from entering and becoming stranded in tidally connected culverts, the installation is adding manatee grates to tidally-connected culverts that are being repaired or replaced.

There is no designated critical habitat on MacDill AFB or in the CRA. In 2024, USFWS proposed a revision to the West Indian manatee (*Trichechus manatus*) subspecies, Antillean manatee (*Trichechus manatus manatu*s) and the Florida manatee (*Trichechus manatus latirostri*). MacDill AFB lands are exempted from West Indian manatee critical habitat designation because the

DoD has an approved INRMP for this area that provides benefits to the manatee and its habitat (89 *Federal Register* 78134).

MacDill AFB is surrounded by Essential Fish Habitat (EFH) for various life stages of two categories of EFH species: Highly Migratory Species EFH and Gulf of America EFH. There are no Habitat Areas of Particular Concern near the project areas; the one closest is located approximately 100 miles northwest of the mouth of Tampa Bay.

The MacDill AFB shoreline hosts sea oats and sea grapes, protected under Florida Statutes 161.242. These are sporadically located along the eastern shore of the base as individual or small clusters low in density above the mean high waterline.

3.4.1 Environmental Consequences

The biological resources analysis discusses impacts from a proposed action on vegetation, wildlife, and special status species. Impacts on biological resources would be considered significant if species or special habitats were adversely affected over large areas or if disturbance were to cause population size or distribution reductions of a species of concern.

3.4.1.1 PROPOSED ACTION

Vegetation

Invasive Species Management: Short-term, minor to moderate, adverse impacts on vegetation would occur from vegetation disturbance (e.g., mechanical invasive species removal) and the use of motorized and mechanical equipment used to conduct activities. The Proposed Action includes herbicide treatment of invasive aquatic plant species within wetland mitigation sites, Surface Water Improvement and Management (SWIM) restoration areas, and other wetlands and surface water bodies. The use of herbicides for both aquatic and terrestrial invasive species management could adversely impact native vegetation if improperly applied/managed. All herbicides are on the DoD Armed Forces Pest Management Board-approved pesticide list and would be applied by a State-certified applicator. Herbicides would be selected based on the safest and most effective option to treat the targeted invasive plant species, considering native vegetation.

There would be long-term, moderate, beneficial impacts from terrestrial and aquatic herbicide usage with the reduction of invasive plant species and growth of native vegetation. Removal of invasive species increases biodiversity and allows for regeneration of native and protected species.

Oyster Reef/Living Shoreline: Short-term, negligible, adverse impacts would occur from vessel operation engine propulsion systems that could inadvertently disturb seagrass beds and other aquatic plants that surround the installation. These impacts are minimized using pontoon-style boats, following navigable channels, remaining outside exclusion zones until in proximity of the project area, and reducing speeds when approaching the shoreline. When possible, project areas would be accessed by land. Additionally, to avoid disrupting seagrass habitat, a 5-foot buffer zone from seagrass bed edges would be maintained for oyster reef ball placement.

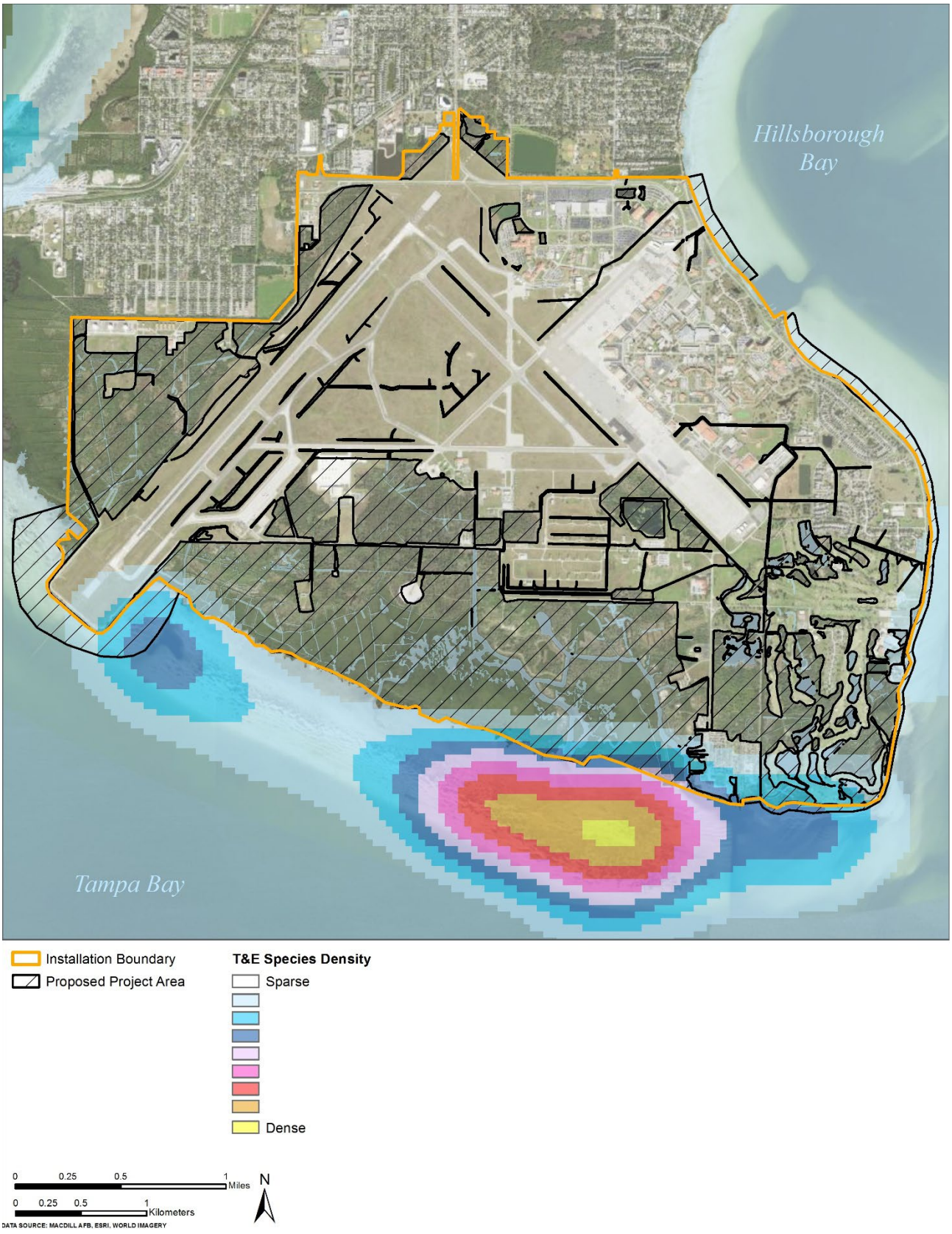

Figure 3-5. West Indian Manatee Observation Density Projections on MacDill AFB

There would be long-term, moderate, beneficial impacts from erosion control, such as decreased wave energy and sediment, that would encourage the recruitment of vegetation.

Mangrove Habitat Management Activities: Short-term, minor, adverse impacts on vegetation would occur from hydroblasting. Stormwater runoff and sedimentation that could disturb vegetation would be minimized with the implementation of BMPs and Standard Operating Procedures (SOPs). Compliance with the installation's National Pollutant Discharge Elimination System (NPDES) Permit (including its Stormwater Pollution Prevention Plan [SWPPP] and Erosion and Sediment Control Plan [ESCP]) during project activities would reduce potential adverse impacts.

There would be long-term, moderate, beneficial impacts from removal of associated detritus and excess materials that would improve ecological habitat.

Freshwater Wetland Restoration Activities: Short-term, minor, adverse impacts on vegetation would occur from vegetation disturbance and excavation for wetland creation. Stormwater runoff and sedimentation that could disturb vegetation would be minimized with the implementation of BMPs and SOPs. Implementation of the installation's NPDES Permit (including SWPPP and ESCP) would reduce potential adverse impacts.

There would be long-term, moderate, beneficial impacts from establishment of wetland habitat that would promote native wetland plant species growth.

Prescribed Burn Activities: There would be short-term, minor, adverse impacts from prescribed burn activities that would eliminate above-ground vegetation within the prescribed burn area. Stormwater runoff and sedimentation that could disturb vegetation would be minimized with the implementation of BMPs and SOPs. Compliance with the installation's NPDES Permit (including its SWPPP and ESCP) during project activities would reduce potential adverse impacts.

There would be long-term, moderate, beneficial impacts from the reduction of invasive plant species, growth of native vegetation and fire-dependent native plant assemblages, recycling of nutrients into the soil, and reduction of disease and pests.

Additionally, restoration of bay bottom habitat, creation of barrier islands, and beneficial use of dredged material (see **Table C-1** of **Appendix C**) would promote growth of native submerged aquatic vegetation surrounding the installation. Other on-installation habitat and/or wetland restoration projects under the INRMP could also promote growth of native terrestrial vegetation.

Wildlife

Invasive Species Management: Short-term, minor impacts on wildlife would be expected from noise harassment, distraction from normal activities, decreased foraging capacity and prey availability, and increased potential for vehicle/vessel collisions during the proposed invasive species management activities.

An increase in the frequency or intensity of noise from heavy equipment use and increased human presence could temporarily displace wildlife or cause changes in normal behavior. Wildlife would be expected to avoid areas or temporarily move away from noise sources to adjacent suitable habitat during the activities, and it is unlikely the short-term noise would cause any adverse impacts to wildlife. Increased traffic and motorized vehicle or vessel operations could result in collisions with wildlife. Wildlife would however be expected to move away, reducing the likelihood of collision. Compaction of soils from heavy equipment use could increase the potential for stormwater runoff. Increased stormwater runoff combined with trace amounts of herbicide or fuel/contaminant spills from motorized and mechanical equipment could adversely impact water quality. Water quality impacts and the removal of invasive terrestrial and aquatic plants that may provide prey habitat could temporarily decrease prey availability. All herbicides would be used according to label instructions, and most aquatic herbicides are designed for low toxicity to wildlife when diluted properly. Any potential fuel or contaminant spills would be reported and cleaned up immediately in accordance with the installation's Spill Prevention, Control, and Countermeasure (SPCC) Plan, and compliance with the installation's NPDES Permit (including its SWPPP and ESCP) during project activities would reduce potential adverse impacts. Additionally, adjacent habitat supporting prey development would supplement short-term decreased prey availability. Therefore, anticipated adverse impacts would be minor.

To minimize potential adverse impacts, companies contracted for invasive species management are required to have a staff biologist conduct wildlife surveys prior to mechanical or herbicide treatment.

Long-term, moderate, beneficial impacts from the removal of invasive species would be expected by creating native habitat, increasing food sources, and providing clearings for foraging and movement for wildlife.

Oyster Reef/Living Shoreline: Short-term, minor impacts on wildlife would be expected from noise harassment, distraction from normal activities, increased potential for vehicle/vessel collisions, and increased turbidity and suspended sediments during the proposed oyster reef/living shoreline activities.

Impacts from an increase in the frequency or intensity of noise from vehicle traffic, boating operations, and human presence would be similar to those described in the *Invasive Species Management* subsection.

Boat captains and staff contracted for the oyster reef/living shoreline project would be on the lookout for marine animals and maneuver accordingly to avoid contact. When approaching the shoreline, vessel speeds would be reduced to idle to minimize impacts on water quality from increased turbidity while within shallow water. Once within the project area, oyster reef balls would be spaced every 75 to 100 feet to avoid entrapment.

Long-term, moderate, beneficial impacts on wildlife from the Proposed Action would be expected from erosion control activities that would help to stabilize the shoreline, restore natural vegetation, and improve habitat.

Mangrove Habitat Management Activities: Short-term, minor impacts on wildlife would be expected from noise harassment and distraction from normal activities due to vehicle traffic, increased human presence, and hydroblasting activities. Impacts would be similar to those described in the *Invasive Species Management* subsection.

Hydroblasting would increase the potential for sedimentation in stormwater runoff, which could have temporary adverse impacts on water quality. Decreased water quality in areas that may provide habitat for wildlife or that may provide prey habitat could result in a temporary decrease in suitable habitat and decreased prey availability for wildlife. The BMPs and SOPs identified in the installation's NPDES Permit (including its SWPPP and ESCP) would be implemented and would reduce potential adverse impacts on wildlife.

Long-term, moderate, beneficial impacts from hydrological flow restoration under the mangrove management project's improvement of the saltern environment that supports the existing mangrove forest would inadvertently improve quality habitat for wildlife and protected bird species associated with shoreline areas and the mangrove community. Additionally, there would be beneficial impacts from the removal of associated detritus and excess materials, improving ecological habitat and enhancing protected species recovery.

Freshwater Wetland Restoration Activities: Short-term, minor impacts on wildlife would be expected from noise harassment, distraction from normal activities, and increased potential for vehicle/vessel collisions during the proposed invasive species management activities.

Impacts on wildlife from an increase in the frequency or intensity of noise from vehicle traffic, heavy equipment, and increased human presence would be similar to those described in the *Invasive Species Management* subsection.

Compaction of soils from heavy equipment use could increase the potential for stormwater runoff. Increased stormwater runoff combined with the potential for fuel/contaminant spills from motorized and mechanical equipment could adversely impact water quality. Decreased water quality in areas that may provide habitat for wildlife or that may provide prey habitat could result in decreased suitable habitat and decreased prey availability for wildlife. Any potential fuel or contaminant spills would be reported and cleaned up immediately in accordance with the installation's SPCC Plan, and compliance with the installation's NPDES Permit (including its SWPPP and ESCP) during project activities would reduce potential adverse impacts; therefore, reduced water quality impacts on available habitat and prey are unlikely.

Long-term, moderate, beneficial impacts would occur from the development of a functional wetland area providing quality habitat for wildlife and increased biodiversity. Beneficial impacts would occur from the development of a functional wetland area providing suitable habitat for the federally threatened eastern black rail.

Prescribed Burn Activities: Prescribed burning could cause short-term, minor to moderate, adverse impact on wildlife from noise harassment, distraction from normal activities, decreased foraging capacity and prey availability, smoke disruption, and loss of available habitat.

An increase in the frequency or intensity of noise from vehicle traffic, heavy equipment, and increased human presence could temporarily displace wildlife. If individuals are present in the vicinity of the activities, changes in normal behavior may occur. Wildlife would be expected to avoid areas with increased noise and temporarily move away from noise sources to adjacent suitable habitat during the activities, and it is unlikely the short-term noise would cause any adverse impacts to wildlife.

Smoke can have direct impacts on the respiratory health of wildlife and could impact breathing or vision. Individual foraging success may be reduced when smoke is aloft. Smoke settles in low-lying areas (e.g., bodies of water), which can alter water chemistry and reduce light penetration. Smoke particulate (e.g., ash) impacts insect development and population dynamics, impacting both the individual's ability to hunt or fly and the prey's ability to reproduce. It is assumed that impacted individuals would move to adjacent suitable habitat and that, because only up to 100 acres are planned to be burned annually, it is anticipated that burn durations and smoke production would be short, creating less of an overall impact from smoke effects.

To minimize potential impacts, smoke mitigation BMPs that address impacts on wildlife would be implemented.

Long-term, moderate, beneficial impacts from the prescribed burning would be expected by creating native habitat, increasing food sources, and providing clearings for foraging and movement for wildlife.

Special Status Species

With the exception of prescribed burns on the proposed endangered tricolored bat, proposed threatened monarch butterfly, and EFH impacts, Proposed Action impacts on special status species and BMPs and SOPs used to minimize impacts would be similar to those described in the ***Wildlife*** subsection.

The tricolored bat has been documented via acoustic monitoring at MacDill AFB; however, it is unknown how many individuals may inhabit the installation or how they use the landscape. No tricolored bat DNA has been documented in bird aircraft strike hazard data since 2005 (MacDill AFB 2005-2023).

Prescribed burn activities could potentially result in short-term significant adverse impacts to the tricolored bat from loss of habitat, noise, prey availability, and smoke that would be reduced to less than significant from implementation of mitigation measures. Anticipated effects on the tricolored bat include a temporary reduction in prey abundance from loss of habitat supporting prey, reduction of short-term feeding success, and overall fitness of individuals. There are other sources of prey available in the vicinity that the tricolored bat could consume. Additionally, smoke and ash from burning activities could impact the health of the tricolored bat and nearby water that tricolored bat individuals consume. Because only up to 100 acres are planned to be burned annually, it is anticipated that potential habitat impacted, burn durations, and smoke production would be short, creating less of an overall impact. Noise impacts would be similar to those described in the ***Wildlife*** subsection.

Implementation of recommended mitigation, minimization, and avoidance measures would include:

- Compliance with minimum conservation measures outlined in the *Northern Long-eared Bat and Tricolored Bat Voluntary Environmental Review Process for Development Projects* (Version 1.0), including:
  - Avoid removing known roost trees and suitable roost trees within 0.25 mile of a known tricolored bat maternity roost during the pup season.
  - Avoid removing suitable roost trees within 1.5 miles of a tricolored bat capture or acoustic record during the pup season.
  - Conduct a voluntary presence/absence survey following the USFWS Guidelines or assume presence and avoid removing suitable roost trees during the pup season (USFWS 2024c).
- Prescribed burn activities would not be conducted between May 1 and July 15, during tricolored bat pupping season.
- Pre-activity bat surveys, either at dawn the day of or dusk the night before, may be conducted prior to any prescribed burn activities.
- Burning of more than 30 percent of potential habitat in one burn period would be avoided.
- Developing a burn plan that is expected to result in a heterogeneous burn mosaic of the landscape to increase the structural diversity of the forest. This plan should include a section on smoke management that addresses mitigating smoke impacts to sensitive or protected species.
- When practicable, the burn plan would consider fuel moisture and weather conditions in such a manner that the fire would not completely consume snags and other suitable forest structures that could be used for roosting.
- Minimize felling standing dead snags post-fire to the extent practicable.
- Avoid new firebreak development in tricolored bat preferred habitat to minimize habitat fragmentation.

Prescribed burn activities could potentially result in short-term, minor, adverse impacts to the monarch butterfly from decreased habitat availability, reduction of short-term feeding success, and overall fitness of individuals. Additionally, smoke and ash from burning activities could impact the health of individuals. Because only up to 100 acres are planned to be burned annually, it is anticipated that potential habitat impacted, burn durations, and smoke production would be short, creating less of an overall impact.

Additionally, long-term, beneficial impacts on special status species would be expected from continued collection and maintenance of species location data, monitoring efforts, annual reporting, usage of temporary signage during nesting seasons, and continuous coordination with FDEP, NOAA-NMFS, and USFWS during installation construction, training, and operations under the INRMP. Coastal cleanups, protections' enforcement, and other erosion control projects discussed in the INRMP would provide additional protections for native flora and fauna on the installation (see **Table C-1** of **Appendix C**).

Short-term, minor, adverse impacts on EFH may occur from an increase in turbidity and suspended sediments during in-water work. Due to the implementation of appropriate BMPs, the relative quantity and quality of existing EFH within the proposed project area, and the size and scale of anticipated effects, the Proposed Action is not expected to appreciably diminish habitat value over the long term. Therefore, the Proposed Action is not likely to adversely impact EFH.

Long-term, moderate, beneficial impact on EFH from the Proposed Action would be expected from erosion control activities that would help to stabilize the shoreline, restore natural vegetation, and improve habitat.

In compliance with Section 7 of the ESA, MacDill AFB initiated formal consultation with USFWS on May 27, 2025, a programmatic Biological Opinion is anticipated by October 11, 2025. Additionally, MacDill AFB initiated informal consultation, including EFH analysis, with NMFS on April 28, 2025. MacDill AFB received concurrence from NMFS on the EFH analysis on April 28, 2025, that no further EFH consultation was required. MacDill AFB is awaiting concurrence from NMFS on the informal Section 7 analysis letter and were informed that no further consultation was required. See consultation correspondence and documents in **Appendix A**.

3.4.1.2 NO ACTION ALTERNATIVE

Under the No Action Alternative, management of natural resources would continue as characterized in previous versions of the MacDill AFB INRMP, including those projects that are recurring and ongoing, and the existing conditions discussed in **Section 3.4.1** would remain unchanged. No significant impacts on biological resources would be expected.

3.4.1.3 REASONABLY FORESEEABLE EFFECTS

Reasonably foreseeable impacts on biological resources could be associated with the reasonably foreseeable actions identified in **Table 3-2**. Those construction, renovation, and demolition projects could impact vegetation, decrease available habitat, and create short-term noise that could disturb wildlife and special status species. Past, present, and reasonably foreseeable future actions would have less than significant adverse impacts, as would the implementation of proposed activities. Reasonably foreseeable effects would be less than significant because impacts from the reasonably foreseeable actions occur primarily in developed areas where few native wildlife and no protected species have been documented.

3.5 Water Resources

3.5.1 Existing Conditions

The ROI for the analysis of effects on water resources includes the entire installation and the surrounding bays.

3.5.1.1 GROUNDWATER

MacDill AFB in general has three aquifer systems, including (in descending order): a shallow, surficial aquifer system; an intermediate aquifer system/intermediate confining unit; and the Floridan Aquifer System (FAS) that underlies all of Florida (FDEP 2023). The surficial aquifer

system is composed of sand, clayey sand, and shell; is approximately 20 feet thick; and is underlain by heterogeneous calcareous clays and limestone with varying permeability. This surficial aquifer is used for small irrigation systems off-installation and is not used by MacDill AFB. The top of this shallow aquifer ranges from the surface to approximately 5 feet below the ground surface at inland locations and is highly susceptible to groundwater contamination, primarily due to shallow water table depth and highly permeable sediments. MacDill AFB underground storage tanks, landfills, and golf courses (i.e., through fertilizer applications) are known sources of contamination for the surficial aquifer. Recharge of the surficial aquifer primarily occurs through precipitation percolation (MacDill AFB 2024a).

The intermediate aquifer system/intermediate confining unit overlies and confines the FAS. At MacDill AFB, this confining unit is generally less than 100 feet thick. The FAS spans an area of approximately 100,000 square miles, ranges from 100 to 3,000 feet in thickness, and is underlain with continuous sequences of carbonate rocks (USGS 2021). The Floridan aquifer is not substantially recharged from the surface at MacDill AFB. The installation is primarily a discharge zone for the FAS due to an upward flow of groundwater in the vicinity. This aquifer has slight contamination but is not contaminated to the extent that remediation is required (MacDill AFB 2024a).

3.5.1.2 SURFACE WATER

MacDill AFB is within the Tampa Bay (middle) watershed, spanning approximately 410 square miles in west-central Florida (USF 2024). The installation is surrounded by Hillsborough Bay to the northeast, Tampa Bay to the south, and Old Tampa Bay to the northwest. Raccoon Hammock and Broad Creek are the main natural drainage features on MacDill AFB, and both are located on the southern portion of the installation within the invasive species management, annual prescribed burns, and mangrove habitat management project areas. Surface water flows on the installation are primarily stormwater runoff. MacDill AFB is crisscrossed with drainage canals, and a large area of mangrove swamps is located along the southern portion of the installation within the mangrove habitat management project area. Most of these canals are interconnected and influenced by tides. The nearest designated waters of the United States to MacDill AFB are Hillsborough Bay to the east and Tampa Bay to the west and south (USGS 2024).

Measures are in place at MacDill AFB to improve surface water health as well as stormwater runoff quality. A project currently diverts stormwater from major drainage canals through a series of ponds, increasing contact time with vegetation and decreasing flow rate. This project is part of the SWIM program, which has aided in restoring wetland habitats and creating new wetlands in southwestern Florida. In conjunction with the SWIM, invasive species management treats invasive vegetation in the stormwater conveyances, treatment ponds, and other surface water bodies across the installation; approximately 260 acres of waterbodies are treated with support from the 6th Civil Engineer Squadron, USFWS, and installation Habitat Restoration contractor to improve water quality (MacDill AFB 2013, 2020a).

Florida Administrative Code 62-302.40 classifies all surface waters according to their designated use. Tampa Bay is a Class III water, with portions of the bay south and southwest of MacDill AFB

classified as Class II waters. Class III is designated for fish consumption, recreation, propagation, and maintenance of a healthy, well-balanced population of fish and wildlife. Class II is designated for the same uses as Class III and includes shellfish propagation or harvesting. The Lower Hillsborough Bay, in the Tampa Bay watershed, is listed as impaired due to the presence of mercury in fish tissue (USEPA 2024a). The oyster reef/living shoreline project would occur within Tampa and Hillsborough Bay.

3.5.1.3 FLOODPLAINS

Approximately 93 percent of MacDill AFB is within the 100-year floodplain, which is included in the 500-year floodplain. According to Federal Emergency Management Agency Flood Insurance Rate Map Numbers 12057C0456J, 12057C0457J, 12057C0458J, 12057C0459J, 2057C0476J, and 12057C0478J, all effective June 2024, all the INRMP project areas are within the 100- and 500-year floodplains (FEMA 2024).

3.5.1.4 STORMWATER

The stormwater discharge and collection system at MacDill AFB consists of drainage ditches, culverts, and storage ponds that connect to tidal creeks and canals or directly into Tampa Bay and Hillsborough Bay. The drainage system is composed of approximately 24 miles of culverts and 56 miles of open ditches and canals. Two large stormwater impoundments occur on the installation, Lake McClelland and Lewis Lake (totaling approximately 20 acres), situated on the eastern side of the installation. Another 35 acres of small, unnamed impoundments occur throughout the installation, 14 of which are located on the north and south golf courses (MacDill AFB 2024a). The installation receives an average of 48 inches of rainfall per year, which then either absorbs into the soil in undeveloped areas or flows off impervious surfaces into the stormwater drainage system. Stormwater runoff is treated on-installation and eventually discharged into Tampa or Hillsborough Bay (MacDill AFB 2019b, 2020b).

Surface water drainage on the installation flows from drainage basins (sub-watersheds) based on flow patterns and conveyance systems on MacDill AFB. The storm sewer system is permitted as an FDEP Phase II municipal separate storm sewer systems (MS4s) and consists of inlets, drainage pipes, swales, and canals that support drainage areas that discharge to “internal” outfalls, defined as outfalls discharging into the installation’s MS4, and “final” outfalls, which discharge into Tampa or Hillsborough Bay. There are eight tidal canals located on MacDill AFB, six of which are final outfalls (MacDill AFB 2020b).

MacDill AFB has two NPDES permits: a Multi-Sector General Permit (MSGP) for stormwater discharge associated with industrial activity (Permit No. FLR05E128; effective March 19, 2021, through March 18, 2026) (FDEP 2021) and a Phase II MS4 general stormwater permit (Permit No. FLR04E059). The MSGP primarily covers flightline areas, such as runway and airfield aprons, at MacDill AFB, including activities such as aircraft refueling, vehicle maintenance, and materials handling. As a component of the MSGP, MacDill AFB maintains and follows a SWPPP that documents existing stormwater management practices and guides personnel who are responsible for ensuring that potential stormwater pollution is minimized. MacDill AFB also maintains multiple documents, such as SPCC plans and an Integrated Contingency Plan, that

provide guidance for handling hazardous materials appropriately and detailed procedures to follow in the event of a spill.

The stormwater discharge and collection system at MacDill AFB has been updated over the years; however, there are some areas that remain outdated. The problematic areas exist in the less developed portions of the installation. Construction projects are reviewed by the 6th Civil Engineer Squadron/Civil, Environmental, and Infrastructure Engineering to determine which stormwater pollution prevention measures should be implemented to maintain sediment and erosion control.

3.5.1.5 WETLANDS

Approximately 20 percent of MacDill AFB is covered by wetlands, with contiguous acres of mangroves along the southern coastline of the installation. The 1,195 acres of wetlands include 880 acres of estuarine scrub/shrub emergent wetlands, 115 acres of needle-leaved forested wetlands, and 200 acres of palustrine wetlands (MacDill AFB 2019a, 2024a). Terrestrial and aquatic invasive species treatment would continue within all installation wetlands; approximately 1,200 acres of wetland would be treated.

Mangroves line the stormwater canals and occupy a large swath of the MacDill AFB campus in the southwestern portion of the installation, for a total of approximately 765 acres. Mangrove habitat management would take place within the approximately 550 acres of the installation's mangrove habitat.

3.5.2 Environmental Consequences

Criteria for evaluating impacts related to water resources associated with the Proposed Action are water quality, groundwater recharge, and adherence to applicable regulations. Impacts on water resources would be significant if they were to: (1) substantially affect water quality or endanger public health by creating or worsening adverse health hazard conditions; (2) threaten or damage unique hydrologic characteristics; or (3) violate established laws or regulations that have been adopted to protect or manage the water resources of an area.

3.5.2.1 PROPOSED ACTION

The Proposed Action would have short-term, minor, adverse impacts and long-term, beneficial, impacts on water resources.

Groundwater. Water resources could be negatively affected by ground-disturbing activities, including mechanical invasive species removal, prescribed burning, excavation for wetland creation, and hydroblasting. Additionally, the use of herbicides could adversely impact groundwater quality.

Short-term, negligible to minor, adverse impacts on the surficial aquifer at MacDill AFB could occur under the Proposed Action. The top of the surficial aquifer at MacDill AFB ranges from the surface to 5 feet below ground surface at inland locations. Shallow depth and high permeability may cause this shallow aquifer to be vulnerable to activities associated with

ground clearing and excavation. Incidental contaminant discharges (e.g., fuel, lubricants) from construction equipment may potentially reach the surficial aquifer.

Groundwater recharge to the surficial aquifer system could be impacted by ground-disturbing activities and associated erosion and sedimentation from stormwater runoff. Use of stormwater management practices outlined in Section 438 of the Energy Independence and Security Act, such as revegetation, would decrease the severity of impacts that stormwater runoff would have on this aquifer. Specific BMPs to decrease sedimentation and soil erosion could include silt fencing, outlet protection, erosion control blankets, and level spreaders.

The use of herbicides for invasive species management could adversely impact groundwater quality if improperly applied/managed. All herbicide application would be from the most current DoD Armed Forces Pest Management Board-approved pesticide list and would be applied by a State-certified applicator. The applicator would adhere to all federal, state, county, and local regulations governing the application, transportation, storage, use, and disposal of products utilized. These regulations include the Insecticide Fungicide and Rodenticide Act; 29 CFR § 1910, *Hazardous Waste Operations and Response*; OSHA's General Industry Standards; and Chapter 487 of the Florida Statutes.

Per- and Polyfluoroalkyl substances (PFAS) contamination at MacDill AFB, specifically Aqueous Film Forming Foam (AFFF) Area 9 surrounding the installation golf course, overlaps with the invasive species management and annual prescribed burn project areas (see **Figure 3-6**). Ground disturbance in this area could cause PFAS to leach into the groundwater. While PFAS was detected above the USEPA detection levels in three of the installation's groundwater wells, there are no surface water to groundwater or groundwater pathways that can reach off-installation drinking water wells. Groundwater flow is to the west, south, and southeast into Hillsborough Bay, and off-installation drinking water wells are located upgradient from the groundwater flow pathway to the north-northwest of MacDill AFB (MacDill AFB 2021a). See **Section 3.8** for more information about PFAS contamination and petroleum products at MacDill AFB.

Surface Water and Stormwater. Short-term, minor, adverse impacts on surface water at MacDill AFB would occur due to increased erosion and sedimentation associated with ground-disturbing activities. Activities resulting in ground disturbance would be conducted in accordance with the applicable stormwater discharge permit to control erosion and prevent sediment, debris, or other pollutants from entering the stormwater system and, thereby, surface waters. Erosion and sediment controls and stormwater management practices, such as the use of silt fences, would be implemented to minimize the potential for adverse impacts associated with stormwater runoff, erosion, and sedimentation on surface water quality. All areas where ground disturbance would occur will be revegetated with native vegetation, and Section 438 of the Energy Independence and Security Act requirements would be followed to maintain or restore, to the maximum extent practical, the hydrology of the property with regard to rate, volume, and flow duration.

Short-term, negligible, adverse impacts on the stormwater management system would be expected from potential increases in sedimentation and erosion from ground-disturbing activities. Adverse impacts could be minimized through the implementation of BMPs, which would include installing temporary stormwater controls to minimize the volume and velocity of stormwater flow; however, these impacts would be temporary and cease once disturbed areas are revegetated.

Stormwater discharge from MacDill AFB does not likely cause significant changes in the quality of Hillsborough Bay; it is already listed as impaired due to the presence of mercury in fish tissue. Adverse impacts on water quality in Tampa Bay may occur due to stormwater discharge and from potential increases in sedimentation and erosion from ground-disturbing activities. Tampa Bay is classified as Class III waters, which are designated for fish consumption, recreation, and maintaining a healthy, well-balanced population of fish and wildlife. Measures implemented in accordance with the installation and project-specific SWPPPs and ESCPs would avoid or minimize the potential adverse effects related to stormwater runoff and sedimentation, including into Tampa Bay.

Short-term, negligible, adverse, and long-term, beneficial impacts on surface waters would be expected as a result of invasive species management. Impacts from the use of herbicides for terrestrial and aquatic invasive species management would be similar to those described in **Groundwater**.

Aquatic invasive species management may require the use of a small boat within the installation's waterbodies. Incidental contaminant discharges (e.g., fuel, lubricants, exhaust) from boating could occur; however, most hydrocarbons are volatile, quickly disperse, and would contribute a negligible volume of pollutant. Additionally, propeller contact and turbulence from the propulsion system may cause sediment resuspension, disturbance to fish and wildlife, and/or destruction of aquatic plants. Slow speeds are maintained in shallow areas to reduce turbidity. Therefore, adverse impacts from water vehicle operations on water clarity and water quality would be minor.

Invasive plant species can reproduce aggressively and can take over large areas of aquatic habitat. Excessive invasive aquatic plant growth can impair recreational activities, reduce oxygen levels, and impede water flow. Proper management and reduction of these invasive species would beneficially impact water quality within MacDill AFB surface waters.

Long-term, beneficial impacts on water resources would be expected from the oyster reef/living shoreline and mangrove habitat management projects. Natural solutions, like mangroves and hard-bottom oyster reefs, can slow shoreline erosion and provide protection from coastal erosion that results in impeded water quality. Additionally, hydrological flow restoration under the mangrove management project supports tidal flow into estuarine wetlands and would increase sheet flow, improving the saltern environment that supports the existing mangrove forest. Construction of oyster reefs and protection of the mangrove forest provide support for water quality improvement in Tampa and Hillsborough Bays.

When the locations for oyster reef placement cannot be accessed by land, a shallow-water vessel may be required. Incidental contaminant discharges (e.g., fuel, lubricants, exhaust) from boating could occur; however, most hydrocarbons are volatile, quickly disperse, and would contribute a negligible volume of pollutant. Additionally, propeller contact and turbulence from the propulsion system may cause sediment resuspension, disturbance to fish and wildlife, and/or destruction of aquatic plants. Boating operations follow navigable channels and remain outside exclusion zones until in proximity of the project area. When approaching the shoreline, speeds are reduced to idle to minimize impacts within shallow water. Boat captains and staff remain on the lookout for any marine animals and will maneuver accordingly to avoid contact. Therefore, adverse impacts from vessel operations would be temporary and minor.

Additional long-term, beneficial impacts on stormwater and surface water would be expected as a result of other erosion control projects and coastal cleanups to be conducted under the INRMP, which would improve water quality on the installation (see **Table C-1** in **Appendix C**).

Floodplains. Short-term, minor, adverse impacts on the surrounding floodplain would be expected from an increase in flooding potential and an increased erosion rate associated with ground-disturbing activities. The majority of MacDill AFB is within the 100- and 500-year coastal floodplains, meaning all runoff and discharge occurs within a floodplain. BMPs would be used to reduce stormwater runoff where possible, including adhering to the project-specific and installation SWPPPs and ESCPs. These impacts would be temporary and cease once disturbed areas are revegetated.

Long-term, minor, beneficial impacts on floodplains would occur due to improved coastal resilience from the INRMP projects. Healthy mangrove systems reduce the wind velocity and storm surge that can penetrate inland and aboveground prop roots. Reducing erosion from wave energy and oyster reefs can slow shoreline erosion and, therefore, reduce the potential for flooding.

Wetlands. Short-term, negligible to minor, adverse and long-term, beneficial impacts on wetlands would be expected as a result of the Proposed Action.

Impacts from the use of herbicides for invasive species management would be similar to those described in **Groundwater**.

Incidental contaminant discharges (e.g., fuel, lubricants, exhaust) from the use of motorized equipment (i.e. ATV, UTV, tractor, truck, or elevated swamp buggy) and mechanical equipment (i.e. drum-head masticator/cutter/chopper, brontosaurus, forestry mulcher Hydro-Ax, skid steer) could occur. Additionally, accessing wetlands through the use of motorized equipment could cause destruction of wetland vegetation. Contractors would be trained on the installation's SPCC Plans, Integrated Contingency Plan, and Hazardous Waste Management Plan (HWMP). Additionally, the contractor would adhere to all federal, state, county, and local regulations, including Hazardous Waste Operations and Response (29 CFR § 1910) and the USEPA Hazardous Waste Requirements (40 CFR §§ 260–270). Therefore, adverse impacts from motorized and mechanical equipment would be minor. See **Section 3.8** for more information on Hazardous Materials and Hazardous Waste impacts.

Short-term, negligible to minor adverse impacts on wetlands would occur from increased sedimentation into wetlands that could occur during vegetation removal and ground-disturbing activities. These activities would be conducted in a manner that would minimize impacts on wetlands to the maximum extent practical. Consultation with FDEP and USACE, as appropriate, would be conducted to minimize wetland impacts and identify potential avoidance, minimization, and conservation measures.

Invasive plant species can reproduce aggressively and can take over large areas of wetland habitat. Proper management and reduction of these invasive species will beneficially impact the overall health of the installation wetlands. The freshwater wetland restoration project would remove disturbed upland habitat overgrown with invasive species and replace it with an approximately 5-acre functional wetland area that could provide habitat for the federally threatened eastern black rail and create additional tidal surge flooding capacity. Additional wetland restoration efforts conducted under INRMP guidance (see **Table C-1** in **Appendix C**) would improve water quality and reduce flooding impacts on the installation.

3.5.2.2 NO ACTION ALTERNATIVE

Under the No Action Alternative, management of natural resources would continue as characterized in previous versions of the MacDill AFB INRMP, including those projects that are recurring and ongoing, and the existing conditions discussed in **Section 3.5.1** would remain unchanged. No significant impacts on water resources would be expected.

3.5.2.3 REASONABLY FORESEEABLE EFFECTS

If any of the proposed projects were to occur concurrently with construction for any of the reasonably foreseeable actions identified in **Table 3-2**, short- and long-term, minor to moderate, adverse, reasonably foreseeable impacts on water resources would be expected. Ground disturbance during construction and demolition and increased impervious surface areas under the reasonably foreseeable actions would result in increased erosion and sedimentation potential and pollutant loading and increased stormwater runoff, which could increase flooding potential in the area. Reasonably foreseeable impacts would be minimized with the implementation of proper stormwater management controls, including stormwater BMPs, to prevent flooding, erosion, sedimentation, and pollutant loading into local surface and groundwater.

3.6 Geology and Soils

3.6.1 Existing Conditions

The ROI for the analysis of effects on geology and soils includes the entire installation.

3.6.1.1 TOPOGRAPHY

MacDill AFB, located in southwest Florida, is in the Gulf Coastal Lowlands physiographic region of the U.S. The installation is located on the Palmico Terrace, a marine terrace topographic feature that gradually rises from the Gulf of America coastline to approximately 25 feet above mean sea level (MSL) inland. Elevations on the installation range from sea level at the southern

edge to approximately 15 feet above MSL in the northern portions; however, much of the installation is less than five feet above MSL (MacDill AFB 2024a).

3.6.1.2 GEOLOGY

The terrain of MacDill AFB is generally flat and sandy, consistent with the region of southwest Florida. The surficial geology of MacDill AFB consists of unconsolidated sand, clay, and marl. Sands in this unit range from 5 to 20 feet thick with clay layers up to 40 feet thick. The surficial layer is very thin to absent on the eastern side of the installation, and underlying limestone formations may outcrop in this area. Underlying the surficial layer are the Tampa and Suwannee limestones, which range from 250 to 500 feet thick (MacDill AFB 2024a).

3.6.1.3 SOILS

According to the U.S. Department of Agriculture Natural Resource Conservation Service, the primary soil groups identified across MacDill AFB include Arents, Immokalee, Malabar, Myakka, Pomella, Quartzipsamments, St. Augustine, Tavares, and Wabasso. Additionally, over 35 percent of the land within the installation boundary is classified as Urban land. Urban land is defined as space where existing development has altered or obscured the original soils beyond identification (USDA NRCS 2025).

Invasive species management, annual prescribed burns, and the freshwater wetland restoration project are anticipated to cause soil disturbance. **Table E-5** in **Appendix E** outlines the types, properties, and total coverage of soils across these three project areas.

Within the INRMP project areas, 14 soil types are present. The three most prevalent soil types are Myakka fine sand, Myakka fine sand (frequently flooded), and Malabar fine sand, all of which are hydric and therefore have jurisdictional wetland implications. Occurring primarily within the mangrove habitat present on the installation, mainly along the shoreline, the Myakka fine sand (frequently flooded) soils are poorly drained and are subject to tidal flooding and account for approximately 22 percent of the combined project areas. Malabar fine sand, which covers 21 percent of the project areas, is generally adjacent to the Myakka fine sand and is poorly drained (USDA NRCS 2025). Myakka fine sand (0 to 2 percent slopes) covers 19 percent. Soils with Urban land as the primary component make up 3 percent of the project areas, while six additional soil types include a partial Urban land component (USDA NRCS 2025). The remaining soil types present make up 12 percent of the project areas and consist of Arents, Pomello fine sand, Quartzipsamments, and Wabasso fine sand. Prime and unique farmlands are not present on the installation (MacDill AFB 2024a).

3.6.1.4 GEOLOGIC HAZARDS

The most common geologic hazard on MacDill AFB is erosion, particularly evident on the eastern shoreline of the installation due to lack of vegetation and increased traffic from the Port of Tampa (MacDill AFB 2024a). MacDill AFB continuously participates in erosion mitigation projects to combat excessive erosion issues.

Sinkholes, while common throughout the Hillsborough County area, are rare on MacDill AFB due to overlying impervious layers of clay, limited groundwater recharge, and the presence of a slow discharge zone for the Floridian aquifer.

MacDill AFB is at a minimal risk from earthquakes as Florida lies on a passive continental margin with a stable transition between continental and oceanic crust.

3.6.2 Environmental Consequences

Protection of unique geological features and minimization of soil erosion and loss of productivity are considered when evaluating potential effects of a proposed action on geological resources. Generally, adverse effects can be avoided or minimized if proper construction techniques, erosion-control measures, and structural engineering design are incorporated into project development. Impacts on geology and soils would be considered significant if there were (1) substantial soil erosion; (2) substantial changes in elevation; and/or (3) substantial effects on or alteration of soil or function.

3.6.2.1 PROPOSED ACTION

Topography. Long-term, minor, adverse impacts would be expected on the natural topography as a result of site preparation (i.e., digging) and vegetation removal/restoration. The areas subject to impacts are relatively flat, however, and disturbance of these areas would not appreciably change the local topography.

Geology. The Proposed Action would not alter geological structures or features and would not have impacts on the regional geology.

Soils. Short-term, minor, adverse impacts on soils would be expected under the Proposed Action due to ground disturbance and associated erosion and sedimentation. Approximately 2,000 acres could be disturbed under the Proposed Action. The primary impacts include soil compaction, disturbance, and erosion. Soil stabilization techniques would be implemented as a part of the site preparation during project implementation.

Compaction of soils during natural resources management activities would disturb and modify the soil structure. Soil productivity, which is the capacity of the soil to produce vegetative biomass, would temporarily decline in disturbed areas. Loss of soil structure due to compaction from foot and vehicle traffic could change drainage patterns.

The DAF would implement specific erosion and sediment controls to manage stormwater runoff and soil disturbance. These BMPs could include soil stabilization methods where heavy foot traffic would be expected, silt fencing, berms and swales, check dams, vegetated channels, basins and traps, outlet protection, erosion control blankets, and level spreaders. These measures would reduce soil compaction and loss of soil productivity and would minimize the risk of erosion and sedimentation.

Long-term, beneficial impacts on soils would be expected as a result of reduced erosion and improved soil productivity under the Proposed Action. Restoring native vegetation through invasive species management, annual prescribed burns, and the freshwater wetland restoration

project would improve soil stability and productivity in the project areas. Reduced flooding and wave action during storm events from the oyster reef/living shoreline project would provide shoreline protection and minimize erosion.

Geologic Hazards. The Proposed Action would not be expected to negatively contribute to or increase the risk of geological hazards. Implementation of the oyster reef/living shoreline project is anticipated to have long-term, beneficial impacts through increased shoreline stability and reduced erosion, particularly from flooding and wave action during storm events. Continuous erosion monitoring efforts and control measures, such as the creation of sacrificial beach buffers and barrier islands, under the INRMP (see **Table C-1** in **Appendix C**) would result in less erosion on the installation and improved shoreline and soil stability.

3.6.2.2 NO ACTION ALTERNATIVE

Under the No Action Alternative, management of natural resources would continue as characterized in the previous version of the MacDill AFB INRMP, including those projects that would be recurring and ongoing, and the existing conditions discussed in **Section 3.6.2** would remain unchanged. Therefore, no new impacts on geological resources would be anticipated.

3.6.2.3 REASONABLY FORESEEABLE EFFECTS

The Proposed Action could have long-term and short-term, minor, and adverse impacts on geology and soils at MacDill AFB. The projects associated with the Proposed Action, when combined with other reasonably foreseeable actions, could result in soil disturbance, minor changes in topography, and the potential for soil erosion and sedimentation. Implementation of erosion and sediment-control BMPs and environmental protection measures would be expected to limit potentially adverse reasonably foreseeable effects. Therefore, implementation of the Proposed Action when combined with the identified reasonably foreseeable projects, would not result in significant impacts on geology and soils.

3.7 Cultural Resources

3.7.1 Existing Conditions

The ROI for cultural resources is the same as the APE under Section 106 of the NHPA, as amended, which includes the five project areas for the subject larger INRMP projects.

3.7.1.1 ARCHITECTURAL RESOURCES

The Integrated Cultural Resources Management Plan (ICRMP) summarizes the results of multiple architectural inventories that have been conducted on MacDill AFB since the first historic structures investigation at the installation was completed in 1993. Past architectural resources surveys at MacDill AFB have identified two historic districts and 28 facilities (buildings or structures) that are eligible for listing in the National Register of Historic Places (NRHP) either as individual properties or contributing elements within a historic district. Thirteen structures have been determined individually eligible for listing in the NRHP, and 15 are considered contributing resources. None of the five larger INRMP project areas overlap an NRHP-eligible structure or historic district.

3.7.1.2 ARCHAEOLOGICAL RESOURCES

The ICRMP for MacDill AFB is the guidance document for considering archaeological resources during planning and implementing proposed activities at the installation. The ICRMP summarizes the results of the archaeological studies that have taken place at MacDill AFB, including two installation-wide studies conducted in 1986 and 2017–2019. Archaeological surveys at MacDill AFB have identified 50 archaeological sites. Of these 50 archaeological sites, 41 are considered not eligible for listing in the NRHP; three have been determined eligible for listing in the NRHP; and six require additional evaluation to determine their NRHP eligibility. One of the NRHP-eligible archaeological sites contains ancestral remains (see below for more information).

Of the five larger INRMP project areas, portions of the invasive species management and annual prescribed burn project areas overlap the boundaries of 47 previously recorded archaeological sites. The three NRHP-eligible archaeological sites are among the 47 archaeological sites that overlap those project areas. The other 44 archaeological sites are not NRHP-eligible. The invasive species management and annual prescribed burn project areas also overlap the boundaries of four areas previously identified as cemeteries. Two of the areas designated as a cemetery overlap different NRHP-eligible archaeological sites; the other two cemetery areas t do not overlap a previously surveyed archaeological site. The cemeteries have not been evaluated for NRHP eligibility as individual cultural resources, per the current ICRMP (MacDill AFB 2021a).

3.7.1.3 TRADITIONAL RESOURCES

MacDill AFB regularly consults with four federally recognized Native American tribes with ancestral ties to the installation lands as part of the NEPA and Section 106 processes. Those tribes are the Seminole Tribe of Florida, the Miccosukee Tribe of Indians of Florida, the Seminole Nation of Oklahoma, and the Muscogee (Creek) Nation. MacDill AFB is consulting with these tribes for the Proposed Action (see **Appendix A**).

Ancestral remains have been found at two locations at MacDill AFB (MacDill AFB 2021a). One of those locations is within the boundaries of an archaeological site determined NRHP-eligible under Criterion D; however, the site has not been evaluated for significance as a Traditional Cultural Property. No other tribal sacred sites or properties of traditional religious or cultural importance have been identified on MacDill AFB during previous consultations.

3.7.2 Environmental Consequences

Under Section 106 of the NHPA and its implementing regulations, an adverse effect is found when an undertaking (or action) may alter, directly or indirectly, any of the characteristics of a historic property that qualify it for NRHP eligibility in a manner that would diminish the property's historic integrity of location, setting, feeling, association, design, materials, or workmanship. Examples of adverse effects on cultural resources under Section 106 can include physically altering, damaging, or destroying all or part of a resource; altering characteristics of the surrounding environment that contribute to the resource's significance; introducing visual or auditory elements that are out of character with the property or that alter 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 legally enforceable restrictions or conditions to ensure preservation of the property's historic significance.

Adverse effects determined under Section 106 may or may not be considered significant impacts under NEPA. Considerations include the type, duration, and severity of the impacts as well as mitigation measures developed through Section 106 consultation. Impacts on historic properties may be considered significant if they would result in the loss of the property's NRHP eligibility, usually by compromising the property's historic integrity, which is the ability of a property to convey its significance.

3.7.2.1 PROPOSED ACTION

Architectural Resources. None of the NRHP-eligible facilities or historic districts identified at MacDill AFB are located in the APE. There would be no adverse effects to these historic properties under Section 106 of the NHPA. Under NEPA, the aboveground historic properties at MacDill AFB may experience temporary, negligible atmospheric (visual and noise) impacts during the implementation phases of the proposed activities. No long-term effects on architectural historic properties are anticipated. Consultation with the Florida SHPO under Section 106 of the NHPA was initiated on August 11, 2025, with a 30-day review period. Prior to the end of the review period, the Florida SHPO requested additional information which was provided. This consultation is ongoing. and correspondences received for the Florida SHPO and federally recognized Tribes under Section 106 will be provided in **Appendix A** and updated in the Final EA.

Archaeological Resources. The invasive species management and annual prescribed burn project areas overlap the boundaries of 47 archaeological sites, including three that have been determined eligible for listing in the NRHP (one of which includes ancestral remains). The boundaries of four cemeteries overlap the invasive species management and annual prescribed burn project areas.

MacDill AFB has protocols in place that consider potential impacts to cultural resources during invasive species management activities. Personnel and contractors are advised that ground-disturbing invasive vegetation treatment or vegetation removal techniques, such as mechanical methods that could damage subsurface deposits, are not permitted where known cultural resources (archaeological sites and cemeteries) are located, which accounts for approximately 69 acres of the terrestrial invasive species management project area. Only handheld herbicide spraying is approved at the location of known archaeological sites, which includes all archaeological sites on the installation, regardless of NRHP-eligibility status. If ground-disturbing activities cannot be avoided as part of the vegetation treatment or removal processes above a known archaeological site, consultation with the SHPO and Tribes is required prior to ground disturbance.

Should any inadvertent discovery occur during invasive vegetation treatment or removal (or other activities) at MacDill AFB, the SOPs for inadvertent discoveries of archaeological resources outlined in the installation's ICRMP would be implemented.

The protocols described above, if properly implemented, limit the possibility of disturbance to all known archaeological sites, including those that are considered historic properties, in the invasive species management and annual prescribed burn project areas. Under NEPA, no adverse impacts, either temporary or long-term, on archaeological or historic properties are anticipated as a result of the proposed activities.

Traditional Resources. No known traditional cultural resources or sacred sites have been identified within the APE through consultation with the tribes. The DAF is continuing to consult with the federally recognized tribes over the course of the Section 106 and NEPA processes. A summary of tribal communications for the Proposed Action is included in **Table A-4** in **Appendix A**.

3.7.2.2 NO ACTION ALTERNATIVE

Under the No Action Alternative, management of natural resources would continue as characterized in previous versions of the MacDill AFB INRMP, including those projects that are recurring and ongoing, and the existing conditions discussed in **Section 3.7.1** would remain unchanged. Therefore, no new impacts on cultural resources would be anticipated.

3.7.2.3 REASONABLY FORESEEABLE EFFECTS

The reasonably foreseeable actions identified in **Table 3-2** that have the potential to interact with the Proposed Action to impact cultural resources consist of the reasonably foreseeable actions that would require ground-disturbing activities and/or introduce new buildings and/or structures to the installation that could result in visual impacts to historic properties. The potential for adverse effects under Section 106 would be analyzed for each individual project.

Given the extent of archaeological survey previously completed on MacDill AFB, it is likely that potential adverse effects under Section 106 would be specific to architectural resources and could be successfully mitigated in consultation with the Florida SHPO through the development and implementation of an agreement document. The Proposed Action would contribute negligibly with the other identified reasonably foreseeable actions that would, together, result in long-term, minor to moderate effects on cultural resources at MacDill AFB.

3.8 Hazardous Materials and Hazardous Waste

3.8.1 Existing Conditions

The ROI for the analysis of effects on Hazardous Materials and Hazardous Waste includes the entire installation.

3.8.1.1 HAZARDOUS MATERIALS AND PETROLEUM PRODUCTS

MacDill AFB stores and uses hazardous materials and petroleum products such as liquid fuel, organic solvents, freon, paints and paint thinners, oils, lubricants, compressed gases, pesticides

and herbicides, nitrates, and chlorine. The use, storage, and tracking of hazardous materials throughout the installation is managed by the 6th Civil Engineer Squadron/Civil, Environmental, and Infrastructure Engineering in accordance with the installation's Hazardous Materials Program (MacDill AFB 2019b, 2021d). Additional documents used to manage hazardous materials and petroleum products at MacDill AFB include the SWPPP and SPCC Plan. The SWPPP contains procedures to prevent discharges to stormwater from industrial operations and to minimize the risk of industrial stormwater pollution in drainage areas within the installation boundaries (MacDill AFB 2021d). The SPCC Plan provides provisions for oil spill prevention based on the types and quantities of petroleum products present and the conditions of storage and use. The SPCC Plan also provides oil spill prevention measures associated with accidental releases (MacDill AFB 2021c). The petroleum, oil, and lubricants (POL) farm is in the northwestern portion of the installation. Liquid fuels are stored in three tanks in the northwest corner of the installation and two tanks on the north apron. The aboveground liquid fuel pipeline that runs between the POL farm and the two tanks on the north apron falls within the invasive species management and annual prescribed burn project areas (MacDill AFB 2019b).

3.8.1.2 HAZARDOUS AND PETROLEUM WASTES

MacDill AFB's HWMP outlines management and procedures for all installation personnel who generate, interact, or are exposed to hazardous and petroleum wastes (MacDill AFB 2021b). MacDill AFB is classified as a RCRA Large Quantity Generator (LQG) (Waste Registration No. FL6570024582) for hazardous waste and is a Universal Waste Handler for pesticides, bulbs, and batteries. RCRA LQGs generate 1,000 kilograms or more of hazardous waste per month, or more than 1 kilogram of acutely hazardous waste a month. Hazardous waste generated at MacDill AFB includes solvents, fuels, lubricants, stripping materials, waste oils, waste paint-related materials, and other hazardous and petroleum wastes. The hazardous waste accumulation time limit for LQGs is 90 days. Hazardous waste is stored at the 90-day accumulation site and at multiple satellite points across the installation. There are no hazardous or petroleum waste storage areas within or immediately adjacent to the proposed project areas (MacDill AFB 2019b).

3.8.1.3 DEFENSE ENVIRONMENTAL RESTORATION PROGRAM

There are 71 sites and 14 Military Munitions Response Program (MMRP) sites present on the installation. Of the 71 Installation Restoration Program (IRP) sites, 43 have been granted no further action, 2 are under cleanup, 10 are under study, and 16 are under long-term management. These sites include known or suspected soil and groundwater contamination associated with landfills, oil/water separators, drainage areas, septic systems, fire training areas, and spill areas. Of the 14 MMRP sites, 9 are closed, 3 are under study, and 2 are under long-term management (MacDill AFB 2024f). **Figure 3-6** presents the active IRP and MMRP sites on the installation. Portions of the invasive species management and annual prescribed burn project areas occur within or in the immediate vicinity of numerous IRP sites and MMRP Sites GR972, TG285, and TG285a; the oyster reef/living shoreline project areas occur within and in the immediate vicinity of IRP Sites LF011, SS061, and ST025 and MMRP Sites TG284, TG284A, TG285, and TG285a; the mangrove habitat management project area occurs within the

immediate vicinity of IRP Site LF077; and the freshwater wetland restoration area occurs within the immediate vicinity of IRP Site LF-008 (see **Figure 3-6**). There are no groundwater monitoring wells within or immediately adjacent to the proposed project areas (USACE 2024). **Table 3-8** provides the site information for the IRP and MMRP sites that occur within or adjacent to the project areas. All active IRP sites within or adjacent to the project areas are under land use controls and/or monitored natural attenuation except for DA568 and GR972. GR972 is currently undergoing a Remedial Investigation, and DA568 is programmed for one in 2025.

3.8.1.4 SPECIAL HAZARDS

3.8.1.4.1 PER- AND POLYFLUOROALKYL SUBSTANCES

There are nine active PFAS sites, identified as AFFF areas, at MacDill AFB (see **Figure 3-6**). **Table 3-9** provides the site information for the five PFAS sites that occur within or in the immediate vicinity of the project areas. In AFFF Areas 1, 2, and 8 perfluorooctane sulfonate (PFOS), perfluorooctanoic acid (PFOA), and PFOS+PFOA was detected above USEPA detection levels, and below perfluorobutanesulfonic acid (PFBS) USEPA detection levels in groundwater samples. PFOS was detected in AFFF Area 7 below regional screening levels (RSLs) in soil samples, however, PFOS, PFOA, and PFOS+PFOA was detected below the USEPA detection levels in the groundwater samples. In AFFF Area 9, groundwater samples detected PFOS and PFOS+PFOA above the USEPA detection levels, and PFBS below the USEPA RSL in all five groundwater wells sampled and below the USEPA detection levels in two of the groundwater wells sampled.

3.8.1.4.2 TOXIC SUBSTANCES

The Asbestos Management and Operations Plan (AMOP), which is updated annually, outlines how asbestos-related projects are handled on the installation. The AMOP assigns responsibilities, establishes inspection and repair capabilities, and provides repair procedures and personnel protection instructions (MacDill AFB 2020c). Lead-based paint (LBP) is managed in accordance with the installation's Lead-Based Paint Management Plan (LBPMP), providing specific procedures and policies for the prevention, control, and handling of LBP (MacDill AFB 2015). Similar to the AMOP, the LBPMP designates specific departments and individuals to manage and respond to LBP. Because none of the projects described under the Proposed Action are expected to disturb or demolish existing structures, it is not anticipated that toxic substances, including asbestos-containing materials, LBP, or PCBs, would be encountered during project activities. Therefore, toxic substances are not discussed further in this EA.

3.8.1.5 RADON

USEPA classifies Hillsborough County, Florida, as Radon Zone 2. Counties in Zone 2 have a predicted average indoor radon screen level between 2 and 4 picocuries per liter (USEPA 2024b, 2024c). Because none of the projects described under the Proposed Action would occur within closed areas, it is not anticipated that radon would be encountered during project activities. Therefore, radon is not discussed further in this EA.

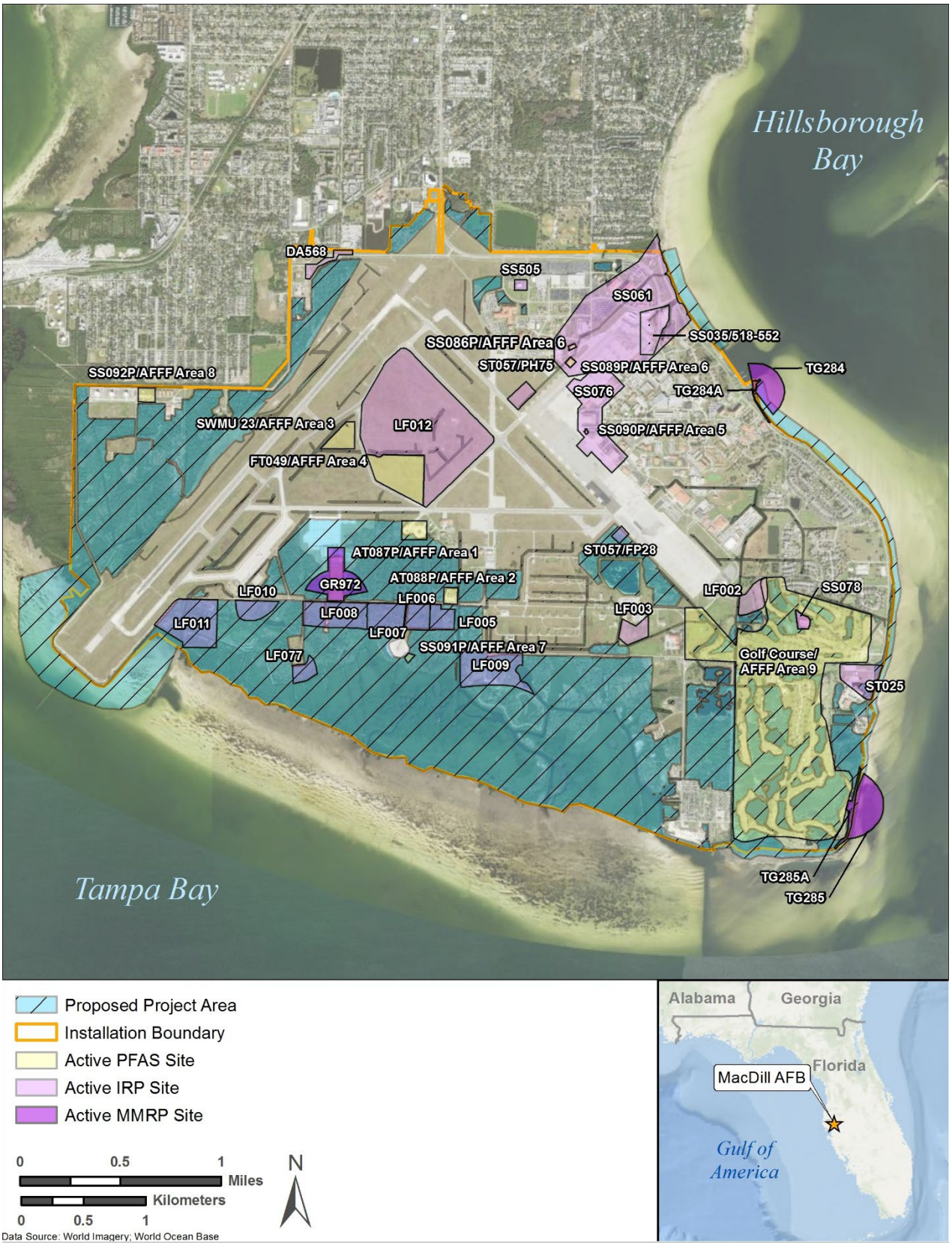

Figure 3-6. Active IRP, MMRP, and PFAS Sites within the Vicinity of the Proposed Action

Table 3-8. IRP and MMRP Sites Within or Adjacent to the Project Areas

Site Name	Description	Relationship to Proposed Actions
IRP Sites		
DA568, Former Railroad Line	The site consists of approximately 2.3 acres. The former railroad line was identified during the Environmental Baseline Survey for a Tampa Electric Company lease. Contaminants of concern are PAHs and suspected arsenic in the soils. This site is programmed for an RI in 2025.	DA568 is immediately adjacent to the invasive species management and annual prescribed burn project areas.
LF002, Former Landfill at the Golf Course	The site consists of approximately 11.3 acres. The former landfill received concrete rubble and general refuse from approximately 1940 to 1950, and trees killed during a frost in 1965 or 1966. No known industrial or hazardous wastes were disposed of at LF002. At deactivation, the landfill was covered with native soil and graded level. In 2006, implementation of LUCs with groundwater use restrictions was selected as the site remedy. LUC inspections are conducted annually.	LF002 is within the invasive species management and annual prescribed burn project areas.
LF003, Former Landfill at the Dog Kennel	The site consists of approximately 9 acres. The former landfill received municipal-type refuse and construction debris from 1950 to 1959. No written documentation exists about specific materials deposited in the landfill. In 2007, MNA for groundwater, groundwater use restrictions, and nonresidential LUCs were selected as the site remedy. LUC inspections are conducted annually.	LF003 is immediately adjacent to the invasive species management and annual prescribed burn project areas.
LF005, Former Landfill at the Civil Engineering Washrack	The site consists of approximately 8.9 acres. The former landfill received general rubbish from 1959 to 1962. During that time, major industrial activities were in operation at the installation; therefore, industrial or hazardous wastes could have been disposed of at the landfill. Landfill operations may have included open burning of rubbish, a practice discontinued in the mid-1960s. No written documentation exists about specific materials or volumes deposited in the landfill. At deactivation, the landfill was covered with native soil. In 2007, the site was fenced, topped with 3-strand barbed wire, and signs were posted warning of potential hazards at the site. In 2007, MNA for groundwater, groundwater use restrictions, surface water monitoring, and nonresidential LUCs were selected as the site remedy. LUC inspections are conducted annually.	LF005 is within the invasive species management and annual prescribed burn project areas.
LF006, Former Landfill at the Explosive Ordnance Disposal East	The site consists of approximately 9.6 acres. The former landfill received general rubbish from 1962 to 1963. During that time, major industrial activities were in operation at the installation; therefore, industrial or hazardous wastes could have been disposed of at the landfill. Landfill operations may have included open burning of rubbish, a practice discontinued in the mid-1960s. No formal documentation exists regarding the type and quantities of materials disposed of in the landfill. At deactivation, the landfill was covered with native soil. In 2007, MNA for groundwater, groundwater use restrictions, and nonresidential LUCs were selected as the site remedy. LUC inspections are conducted annually.	LF006 is within the invasive species management and annual prescribed burn project areas.

LF007, Former Landfill at the Explosive Ordnance Disposal West	The site consists of approximately 16 acres. The former landfill received general rubbish from 1963 to 1965. During that time, major industrial activities were in operation at the installation; therefore, industrial or hazardous wastes could have been disposed of at the landfill. Landfill operations may have included open burning of rubbish, a practice discontinued in the mid-1960s. No formal documentation exists regarding the type and quantities of materials disposed of at the landfill. At deactivation, the landfill was covered with native soil. In 2007, MNA for groundwater, groundwater use restrictions, surface water monitoring, and LUCs were selected as the site remedy. LUC inspections are conducted annually.	LF007 is within the invasive species management and annual prescribed burn project areas.
LF008, Former Landfill West	The site consists of approximately 26 acres. The former landfill received general rubbish from 1965 to 1973. During that time, major industrial activities were in operation at the installation; therefore, industrial or hazardous wastes could have been disposed of at the landfill. Landfill operations may have included open burning of rubbish, a practice discontinued in the mid-1960s. No formal documentation exists regarding the type and quantities of materials disposed of in the landfill. At deactivation, the landfill was covered with native soil. In 2007, MNA for groundwater, groundwater use restrictions, surface water monitoring, and nonresidential LUCs were selected as the site remedy. LUC inspections are conducted annually.	Portions of LF008 are within the invasive species management, annual prescribed burn, and freshwater wetland restoration project areas.
LF009, Current Landfill (Former Landfill/Transfer Area)	The site consists of approximately 36 acres. The former landfill received general rubbish from 1973 to 1985. Other waste materials, including solvents, waste oil, paints, thinners, pesticides, herbicides, PCB capacitors, batteries, and tires in small quantities, may have been disposed of at the former landfill. In 2007, MNA for groundwater, groundwater use restrictions, surface water monitoring, and nonresidential LUCs were selected as the site remedy. LUC inspections are conducted annually.	LF009 is within the invasive species management and annual prescribed burn project areas.
LF010, Former Rubble Landfill	The site consists of approximately 13.5 acres. The site, which was not a traditionally engineered landfill, was reportedly used intermittently between 1950 and 1967. Documentation does not exist regarding the type and quantities of materials disposed of at the site; however, wood and concrete rubble from the demolition of the old chemical warfare agent storage and training area (SS018) were reportedly buried at the site. In 2007, MNA for groundwater, groundwater use restrictions, groundwater and surface water monitoring, and nonresidential LCUs were selected as the site remedy. LUC inspections are conducted annually.	LF010 is within the invasive species management and annual prescribed burn project areas.
LF011, Chemical Munitions Landfill	The site consists of approximately 37.4 acres. Although the site was never a traditionally engineered landfill, chemicals from the former chemical agent storage area (SS018) were reportedly buried there between 1950 and 1955. No formal documentation exists regarding the type and quantities of materials disposed of in the landfill. In 2007, implementation of LUCs with MNA for groundwater, groundwater use restrictions, and nonresidential LUCs was selected as the site remedy. The site is restricted to non-residential land use, and the use of groundwater from the site is prohibited. LUC inspections are conducted annually.	Portions of LF011 are within the invasive species management and annual prescribed burn project areas and immediately adjacent to the oyster reef/living shoreline project areas.

LF077, Explosive Ordnance Disposal (EOD) Landfill South	Explosive ordnance was disposed of at the site; however, no records exist noting when the disposal occurred. The area was investigated because ordnance debris was protruding from numerous soil piles, which are assumed to be dredge materials from adjacent canals. In 2007, LUCs with groundwater use restricted were selected as the site remedy. LUC inspections are conducted annually.	LF077 is within the invasive species management and annual prescribed burn project areas and immediately adjacent to the mangrove habitat management project area.
SS061, Chlorinated Solvent Plume	The site consists of a contaminated groundwater plume near the northeastern corner of the installation. The plume primarily exists in the basal portion of the surficial aquifer system, approximately 10 to 30 feet below the ground surface. The site is used to maintain, fuel, and operate cargo aircraft and scientific observation equipment. Groundwater plumes from several IRP sites have been incorporated into the SS061 groundwater plume. In 2007, MNA with ICs and LUCs with groundwater use restrictions were selected as the site remedy. Overall, chlorinated VOC concentrations have continued to decrease. With concurrence from FDEP, groundwater is sampled every 1 to 2 years, dependent on the well and past results, and LUC inspections are conducted annually.	SS061 is immediately adjacent to the oyster reef/living shoreline project areas.
SS078, Golf Course Maintenance Area	The golf course maintenance area contains the golf course maintenance offices, fertilizer and seed equipment shed; chemical storage and equipment rinse area; pesticide storage shed (including a rinse station and pesticide load station); additional maintenance garage and storage buildings; and uncovered areas designated for equipment storage. The rinse station and pesticide loading stations had concrete floors sloped to a central drain cap. From approximately 1948 until the 1980s, all pesticide wash and rinse water was discharged to a septic tank; however, it is possible that some material was discharged to the surface. In 2007, implementation of LUCs was selected as the site remedy. The site is restricted to nonresidential use, and the use of groundwater from the site is prohibited. LUC inspections are conducted annually.	SS078 is located within the immediate vicinity of the invasive species management and annual prescribed burn project areas.
ST025, Detachment 1 (Facility 82/83) Former Aboveground Storage Tanks	The site consists of approximately 15.8 acres and was an active missile warning facility from 1960 to 1985. Diesel fuel was pumped from three ASTs through subsurface piping to generators in Building 83. The ASTs were removed in 1991. Additionally, an abandoned underground storage tank was possibly present in the area south of Building 82. In 2014, LUCs with groundwater use restrictions were implemented. In October 2022, a Remedial Action Plan to treat residual groundwater contamination consisting of naphthalene and chlorinated VOCs was approved by FDEP. Remediation will be followed with post-active remediation monitoring until the site is granted NFA. LUC inspections are conducted annually.	Portions of ST025 are within the invasive species management and annual prescribed burn project areas and immediately adjacent to the oyster reef/living shoreline project areas.
ST057/FP28, Flightline Fuel System Fuel Pit 28	FP28 is a component of ST057, the flightline refueling system, on the South Apron, which is a large impervious area with concrete and asphalt used for jet and airplane movement and parking. The site is currently designated for industrial use, and groundwater is not used as a source of potable water. In 2011, the site was granted NFA for groundwater and NFA with LUCs and ICs for soils. The site is not	ST057/FP28 is within the invasive species management and annual prescribed burn project areas.

	scheduled for remediation and will remain in the LUC surveillance program until the current land use changes. LUC inspections are conducted annually.	
MMRP Sites		
GR972, Former Grenade/Skeet Range	The site consists of approximately 24.7 acres. The former grenade/skeet range was active from 1990 to 2017, when the range was closed for construction of a UH-60 helicopter beddown facility. Potential contaminant sources are clay targets and ammunition. The MRS is currently undergoing RI.	Portions of GR972 are within the invasive species management and annual prescribed burn project areas.
TG284, Skeet Range North (Water Portion)	The site consists of approximately 14.8 acres of Hillsborough Bay. The MRS was used for over-water, recreational skeet target shooting during the 1940s. Clay targets were thrown out over the waters of Hillsborough Bay during firing operations. The MRS is undergoing RI, and closure of the MRS was recently approved by FDEP. The NFA and ROD are being prepared.	Portions of TG284 are within the oyster reef/living shoreline project areas.
TG284a, Skeet Range North (Shoreline Portion)	This site consists of approximately 1.5 acres. The MRS is along the shoreline of Hillsborough Bay and was used for recreational skeet target shooting during the 1940s. Clay targets were thrown out over the water of Hillsborough Bay, with the former firing point being in the northwestern portion of the MRS. In 2014, ICs with annual monitoring and debris removal, as needed, were selected as the site remedy. IC inspections are conducted annually.	TG284a is immediately adjacent to the oyster reef/living shoreline project areas.
TG285, Skeet Range South (Water Portion)	The site consists of approximately 15.6 acres of Hillsborough Bay. The MRS was used for over-water, recreational skeet target shooting during the 1940s. Based on historical aerial photographs, the MRS includes the footprint of two former skeet ranges. Clay targets were thrown out over the water of Hillsborough Bay during firing operations. The MRS is undergoing RI, and closure of the MRS was recently approved by FDEP. The NFA and ROD are being prepared.	TG285 is immediately adjacent to the invasive species management, annual prescribed burn, and oyster reef/living shoreline project areas.
TG285a, Skeet Range South (Shoreline Portion)	The site consists of approximately 3.4 acres. The MRS is along the shoreline of Hillsborough Bay and was used for recreational skeet target shooting during the 1940s. Clay targets were thrown out over the water of Hillsborough Bay, with the former firing point being on the western portion of the MRS. In 2014, ICs with annual monitoring and debris removal, as needed, were selected as the site remedy. IC inspections are conducted annually.	TG285a is within the invasive species management, annual prescribed burn, and oyster reef/living shoreline project areas.

Sources: MacDill AFB 2023a; USACE 2023a, 2023b, 2023c, 2024; AFCEC 2024

Key: FDEP = Florida Department of Environmental Protection; IC = institutional controls; LUC = land use controls; MNA = monitored natural attenuation; MRS = Munitions Response Site; NFA = No Further Action; PAH = polynuclear aromatic hydrocarbons; RI = Remedial Investigation; ROD = Record of Decision; VOC = Volatile Organic Compound

Table 3-9. PFAS Sites Within or Adjacent to the Project Areas

PFAS Site	Description	Relationship to Proposed Actions
AFFF Area 1/ AT087P, FTA	The site consists of the current FTA and an active fire station on the installation consisting of a lined burn pit containing a mock aircraft used for training and in operation since 2001. Approximately 80 gallons of AFFF were released during each test. During a 2017 SI, surface and subsurface soil and groundwater samples detected PFOS, PFOA, and PFBS below RSLs in the soil samples; PFOS, PFOA, and PFOS+PFOA detected above USEPA detection levels; and PFBS detected below USEPA detection levels in groundwater samples.	AFFF Area 1 is in the immediate vicinity of the invasive species management and annual prescribed burn project areas.
AFFF Area 2/ AT088P Facility 1188 (Former FTA)	The site consists of a former lined burn pit, vehicle training area, and fire training tower. Approximately 50,000 gallons of AFFF were used for fire training activities from 1987 to 2001. During a 2017 SI, surface and subsurface soil samples and groundwater samples detected PFOS, PFOA, and PFBS below RSLs in the soil samples; PFOS, PFOA, and PFOS+PFOA above the USEPA detection levels; and PFBS was detected below the USEPA detection levels in the groundwater samples.	AFFF Area 2 is within the invasive species management and annual prescribed burn project areas.
AFFF Area 7/ SS091P, EOD Range Fire	Approximately 130 gallons of AFFF were released to extinguish a brush fire on the southeastern portion of the EOD range in 2009. Surface and subsurface soil samples and groundwater samples collected during the 2017 SI detected PFOS below RSLs in the soil samples; and PFOS, PFOA, and PFOS+PFOA below the USEPA detection levels in the groundwater samples.	AFFF Area 8 is in the immediate vicinity of the invasive species management and annual prescribed burn project areas.
AFFF Area 8/ SS092P, Defense Fuel Supply Point	A release of 40 to 50 gallons of AFFF was caused by a lightning strike to the AFFF fire suppression system in 2015. Surface and subsurface soil, groundwater, and sediment samples collected during the 2017 SI detected PFOS, PFOA, and PFBS below RSLs in the soil samples; PFOS, PFOA, and PFOS+PFOA above USEPA detection levels; and PFBS below USEPA detection levels in the groundwater samples. PFOS was detected at concentrations below the USEPA RSL in the sediment sample.	AFFF Area 8 is in the immediate vicinity of the invasive species management and annual prescribed burn project areas.
AFFF Area 9, Golf Course	Liquid effluent from the wastewater treatment plant, which potentially contained AFFF in the waste stream from Facility 1188, Building 1065, and the Building 19 washrack, was applied for irrigation at the golf course. During the 2017 SI, groundwater samples detected PFOS and PFOS+PFOA above the USEPA detection levels, and PFBS below the USEPA RSL in all five groundwater wells sampled and below the USEPA detection levels in two of the groundwater wells sampled.	AFFF Area 9 is within and in the immediate vicinity of the invasive species management, annual prescribed burn, and oyster reef/living shoreline project areas.

Source: MacDill AFB 2018; AFCEC 2023

Key: AFFF = Aqueous Film Forming Foam; EOD = Explosive Ordinance Disposal; FTA = Fire Training Area; PFBS = perfluorobutanesulfonic acid; PFOA = Perfluorooctanoic acid; PFOS = perfluorooctane sulfonate; RSL = regional screening level; SI = Site Inspection; USEPA = U.S. Environmental Protection Agency

3.8.2 Environmental Consequences

Impacts on hazardous materials and hazardous waste would be considered significant if the Proposed Action were to result in (1) noncompliance with applicable federal or state regulations; (2) an increase in the amounts generated or procured beyond current management procedures, permits, and capacities; (3) disturbance to or creation of contaminated sites, resulting in negative impacts on human health or the environment; or (4) a proposed action makes it substantially more difficult or costly to remediate existing contaminated sites.

3.8.2.1 PROPOSED ACTION

Hazardous Materials and Petroleum Products. Intermittent, long-term, negligible to minor, adverse impacts on hazardous materials management are expected from the use of equipment and machinery necessary for the projects under the Proposed Action. Hydraulic fluids and petroleum products, such as gasoline, diesel, and oils, would be used by vehicles, equipment, and machinery. Vehicles, equipment, and machinery have the potential to release spills of hazardous materials and/or petroleum products, such as gasoline, diesel, and oils. All hazardous materials and petroleum products would be contained, stored, and managed appropriately (e.g., secondary containment, inspections, spill kits) in accordance with applicable regulations to minimize the potential for a release. Should hazardous materials or petroleum products be released into the environment, cleanup would be conducted in accordance with the installation's SPCC Plan. All equipment and machinery would be maintained according to the manufacturer's specifications, and drip mats would be placed under parked equipment as needed.

Intermittent, long-term, negligible to minor, adverse impacts on hazardous materials management are expected to occur from invasive species management. Hazardous materials, including herbicides, would be used in both terrestrial and aquatic environments. The storage, use, and application of herbicides and pesticides would be conducted in accordance with the installation's IPM Plan. All pesticides and herbicides used would be on the Armed Forces Pest Management Board Standard Pesticide List and approved by the installation's IPM coordinator. Application of pesticides and herbicides would be conducted by certified applicators, either contractors or in-house personnel, in accordance with the installation's IPM Plan and all federal, state, and local regulations. Should a pesticide spill occur, the applicator would clean up the spill in accordance with the installation's SPCC Plan (MacDill AFB 2024c).

Hazardous and Petroleum Wastes. Intermittent, long-term, negligible to minor, adverse impacts on hazardous waste management would occur from the generation of hazardous and petroleum wastes under the Proposed Action. Negligible to minor quantities of hazardous and petroleum wastes, to include universal wastes, could be generated during project activities. Disposal of these wastes would be conducted in accordance with the installation's HWMP and federal, state, and local regulations. BMPs and environmental protection measures would be implemented to prevent an accidental release of these materials.

Should unknown, potentially hazardous wastes be discovered or unearthed during ground-disturbing activities, personnel would immediately cease work, contact appropriate installation

personnel, and await sampling and analysis results before taking further action. Any unknown wastes determined to be hazardous would be managed and disposed of in accordance with applicable laws and regulations.

Defense Environmental Restoration Program. Intermittent, long-term, negligible to minor, adverse impacts on or from IRP and MMRP sites would occur. Several projects under the Proposed Action would occur within or adjacent to active IRP and MMRP sites. Prior to the start of ground-disturbing projects within or immediately adjacent to an active IRP or MMRP site, project personnel would coordinate with the MacDill AFB Defense Environmental Restoration Program (DERP) office to ensure that contamination of these sites or the implementation of institutional controls and land use controls for these sites are would not be impacted or spread during ground-disturbing activities, and a Health and Safety Plan would be developed in accordance with OSHA regulations to protect project personnel. The DERP office would ensure that consultation and coordination are conducted with FDEP, as necessary. Project personnel conducting activities within or adjacent to IRP or MMRP sites with shallow groundwater contamination would take appropriate control measures should ground disturbance reach the depth of groundwater. Project activities would not impact the ability to remediate, investigate, or monitor IRP and MMRP sites. Projects would be appropriately coordinated with the MacDill AFB DERP office, and all regulations would be adhered to and added to contracts, as necessary.

Per- and Polyfluoroalkyl Substances (PFAS). Intermittent, long-term, negligible to minor, adverse impacts may occur from the Proposed Action within or adjacent to AFFF release areas. The invasive species management and annual prescribed burn project areas are located within or in the immediate vicinity of AFFF Areas 1, 2, 7, 8, and 9, as shown in **Figure 3-6**. Ground-disturbing activities would be coordinated with the installation's DERP office to confirm that contamination within these sites is not impacted or spread. All regulations would be adhered to and added to contracts, as necessary.

3.8.2.2 NO ACTION ALTERNATIVE

Under the No Action Alternative, management of natural resources would continue as characterized in previous versions of the MacDill AFB INRMP, including those projects that are recurring and ongoing, and the existing conditions discussed in **Section 3.8.1** would remain unchanged. Therefore, no new impacts on hazardous materials and hazardous wastes would be anticipated.

3.8.2.3 REASONABLY FORESEEABLE EFFECTS

The projects described under the Proposed Action, combined with the reasonably foreseeable actions at the installation, would result in short- and long-term, negligible to minor, adverse impacts on hazardous materials and hazardous waste. Intermittent, long-term, negligible to minor, adverse impacts would occur under the Proposed Action from the use of hazardous materials and petroleum products; generation of hazardous wastes; and potential overlap with active IRP, MMRP, and PFAS sites. If construction of any of the reasonably foreseeable actions were to occur concurrently with that of the Proposed Action, these impacts would be slightly greater but temporary. Intermittent long-term, negligible to minor, adverse reasonably foreseeable impacts would be expected from the increased use and generation of hazardous

materials and wastes and petroleum products under the Proposed Action in combination with the reasonably foreseeable actions identified in **Table 3-2**. All activities would be conducted in accordance with the installation's HWMP, AMOP, LBPMP, SPCC Plan, SWPPP, IPM Plan, and federal, state, and local regulations. Therefore, significant reasonably foreseeable impacts on hazardous materials and hazardous waste management would not be expected.

3.9 Safety and Occupational Health

3.9.1 Existing Conditions

The ROI for safety and occupational health is MacDill AFB and the shallow waters of Tampa and Hillsborough Bays surrounding the installation.

3.9.1.1 CONSTRUCTION

Contractors and DAF personnel working on MacDill AFB follow applicable OSHA regulatory requirements (29 CFR § 1926), except when DoD or DAF-specific requirements apply in specific aspects where military-unique safety concerns are present. The term military-unique refers to military and civilian workplaces, operations, equipment, and systems distinctly unique to the national defense system. These unique safety concerns are typically associated with combat and operation, testing, and maintenance of military-unique equipment and systems, aircraft, weapons, early warning systems, ordnance, and tactical vehicles. Such regulatory requirements, including those described in DAFMAN 91-203, *Air Force Occupational Safety, Fire, and Health Standards*, address DAF safety measures related to the exposure to hazardous materials, use of PPE, and availability of Safety Data Sheets.

Contractors and DAF personnel review potentially hazardous workplace operations; monitor exposure to chemicals (e.g., asbestos, lead, hazardous materials, and range residue), physical hazards (e.g., noise propagation and falls), and biological agents (e.g., infectious waste, wildlife, and poisonous plants); recommend and evaluate controls (e.g., prevention, administrative, and engineering) to ensure personnel are properly protected or unexposed; and ensure a medical surveillance program exists to perform occupational health physicals for workers subject to accidental chemical exposures. Portions of the invasive species management, annual prescribed burn, and oyster reef/living shoreline project areas would be within a clear zone (CZ), with the oyster reef/living shoreline project area in the southern CZ and the invasive species management and annual prescribed burn project areas in the northern CZ.

3.9.1.2 OCCUPATIONAL SAFETY

Day-to-day operation and maintenance activities conducted at MacDill AFB are performed in accordance with applicable DAF safety regulations, published DAF Technical Orders, and standards prescribed by DAF Occupational Safety and Health (OSH) requirements. These are intended to reduce occupational risks to government personnel and contractors and to protect other individuals that reside on, visit, or are near the installation.

3.9.1.3 EXPLOSIVES AND MUNITIONS

Defense Explosives Safety Regulation (DESR) 6055.09_DAFMAN 91-201, *Explosive Safety Standards*. The purpose of the program is to provide the maximum possible protection to

personnel and property, both inside and outside the installation, from the damaging effects of potential accidents involving ammunition and explosives. Ordnance is handled and stored in accordance with DAF explosive safety directives, and all munitions maintenance is carried out by trained, qualified personnel using DAF-approved technical procedures (MacDill AFB 2019b).

The DESR 6055.09_DAFMAN 91-201 establishes the size of the clearance zone around facilities used to store, handle, and maintain munitions based on the quantity-distance criteria. Explosive safety quantity-distance (ESQD) arcs have been established at MacDill AFB to ensure that the minimum safety distance is incorporated where explosions have the potential to occur. Activities within the ESQD arcs include munitions storage, inspection, maintenance, shipping, and receiving, as well as other explosive operations. Currently, ESQD arc coverage is approximately 742 acres at MacDill AFB (MacDill AFB 2019b). Portions of the invasive species management and annual prescribed burn project areas are located within an ESQD arc.

3.9.2 Environmental Consequences

Impacts on safety and occupational health are assessed according to the magnitude of potential impacts on the well-being of personnel, the public, and DAF property. The proposed projects were considered to determine where additional or unique safety risks are associated with their implementation. Any increase in safety risks is considered an adverse impact. Impacts on safety would be considered significant if the Proposed Action were to (1) substantially increase risks associated with the safety of DAF personnel or the general public; (2) introduce a new safety risk for which DAF is not prepared or does not have adequate management and response plans in place; or (3) hinder the ability for a quick response to an emergency.

3.9.2.1 PROPOSED ACTION

Construction. Short-term, negligible to minor, adverse impacts on the safety of installation or contractor personnel during activities described in the INRMP may include potential contact with biological agents, potential slips and falls, noise exposure, hazards associated with prescribed burns, and specific hazards associated with handling power tools. Work under the Proposed Action is expected to carry inherent danger from noise associated with machinery and equipment. See **Section 3.3** for additional information on anticipated noise impacts. All proposed activities would be conducted in accordance with applicable DAF safety protocols, standards prescribed by the DAF OSH program, and OSHA regulations. MacDill AFB would continue to comply with all applicable DAF, DAF OSH, and OSHA regulatory requirements to provide a safe working environment while supporting mission efforts. Personnel working on the INRMP projects would be provided with proper training on potential hazards and given necessary personal protective equipment to mitigate potential safety risks. Such equipment could include hard hats, steel-toed boots, hearing protection, safety vests, signage, and any other equipment deemed necessary.

Occupational Safety. No aspects of the proposed projects are expected to generate new or unique occupational safety concerns; therefore, no changes in health and safety conditions are anticipated over the long term. Applicable regulations, technical orders, DAF OSH, and OSHA

regulations would be followed for the duration of each project to avoid or minimize, to the extent possible, potential impacts on health and safety.

Explosives and Munitions. Short-term, negligible, adverse impacts on safety could occur from increased risk to installation personnel and contractors during invasive species management and annual prescribed burns due to the overlap with the southernmost ESQD arcs. Impacts on safety during activities in the ESQD arcs would however be very unlikely because MacDill AFB does not store a large quantity of munitions, and the munitions on the installation are not highly explosive (MacDill AFB 2019b). While the proposed projects would require the use of power tools, these are unlikely to affect the munitions stored on the installation, because these tools would be used to clear areas that are denser in foliage. Neither project would impact the existing explosives and munitions program at the installation, which would continue to be conducted in accordance with DESR 6055.09_DAFMAN 91-201. Existing coordination procedures would continue to be implemented to ensure the safety of all MacDill AFB personnel while working in the proposed project areas.

3.9.2.2 NO ACTION ALTERNATIVE

Under the No Action Alternative, management of natural resources would continue as characterized in previous versions of the MacDill AFB INRMP, including those projects that are recurring and ongoing, and the existing conditions discussed in **Section 3.9.1** would remain unchanged. Therefore, no new impacts on safety and occupational health would be anticipated.

3.9.2.3 REASONABLY FORESEEABLE EFFECTS

Reasonably foreseeable actions identified in **Table 3-2** that would occur in a similar timeframe and location as those described under the Proposed Action would have the potential for short-term, minor, adverse, reasonably foreseeable impacts on safety and occupational health due to increased safety risks from construction-related noise, roadway congestion and closures, and the potential for spills, falls, and other hazards related to construction work. The potential for these impacts would be minimized wherever possible by adhering to established safety programs at MacDill AFB.

Long-term, beneficial, reasonably foreseeable impacts resulting from the Proposed Action along with the reasonably foreseeable actions would include increased installation-wide efficiency through improved facilities, improved infrastructure, and improved shoreline stability.

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5. List of Preparers

This EA has been prepared by HDR, Inc., under the direction of DAF. The individual contractors that contributed to the preparation of this document are listed as follows:

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A

Agency Correspondence

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Appendix A: Agency Correspondence

Agency Coordination Distribution List

Dr. Timothy A. Parsons
Director, State Historic Preservation Officer
Division of Historical Resources
Florida Department of State
500 South Bronough Street
Tallahassee, FL 32399

Mr. Christopher Stahl
Coordinator
Florida Department of Environmental Protection
Florida State Clearinghouse
3800 Commonwealth Boulevard
Mail Station 47
Tallahassee, FL 32399

Mr. Robert Aldredge
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7915 Baymeadows Way, Suite 200
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Mr. David Bernhart
Assistant Regional Administrator for Protected Resources
National Marine Fisheries Service
Southeast Regional Office
263 13th Avenue South
St. Petersburg, FL 33701

National Historic Preservation Act Section 106 Consultation

LETTER TO FLORIDA STATE HISTORIC PRESERVATION OFFICE

DEPARTMENT OF THE AIR FORCE
6TH AIR REFUELING WING (AMC)
MACDILL AIR FORCE BASE, FLORIDA

8/11/25

MEMORANDUM FOR DIVISION OF HISTORIC RESOURCES
ATTN: MR. SCOTT EDWARDS
R.A. GRAY BUILDING
500 SOUTH BRONOUGH STREET
TALLAHASSEE, FL 32399-0250

FROM: 6 CES/CEI
7621 Hillsborough Loop Drive
MacDill AFB, FL 33621-5207

SUBJECT: Integrated Natural Resource Management Plan (INRMP) Environmental Assessment (EA), MacDill Air Force Base

1. The United States Department of the Air Force (DAF) and the 6th Air Refueling Wing (6 ARW) at MacDill Air Force Base (AFB), Florida, have recently updated the Integrated Natural Resources Management Plan (INRMP) for the installation. The DAF is preparing an Environmental Assessment (EA) to evaluate the potential environmental impacts associated with implementing activities outlined in the INRMP. The INRMP was prepared to assist the Installation Commander with the conservation and rehabilitation of natural resources consistent with the military mission of MacDill AFB for the next five years (2025–2030). The INRMP EA will assess the potential environmental consequences of the natural resources management activities outlined in the INRMP, including consultation efforts, coordination efforts, and other natural resources best management practices that would be implemented during daily operations on the installation, and five larger projects that would involve the most ground disturbance: Invasive Species Management; Oyster Reef/Living Shoreline; Mangrove Habitat Management; Freshwater Wetland Restoration Project (High Marsh Creation Project for Eastern Black Rail); and Annual Prescribed Burns. The proposed natural resources management activity project areas are presented in Figure 1.

2. It is our determination that the proposed natural resources management activities will not affect historic properties located on MacDill AFB in any capacity. The natural resources management activities are not located near the two registered Historic Districts on MacDill AFB and no affects are anticipated (Figure 2). The project area for two of the five proposed activities (Terrestrial Invasive Species Treatment Area and Prescribed Burn Area) overlaps previously recorded cultural resources, including 47 archaeological sites (Figure 2). Six of the 47 archaeological sites that overlap the proposed project area have been determined eligible for listing in the National Register of Historic Places (NRHP). No ground intrusive activities will occur for the above proposed activities.

3. The only proposed activity that includes ground intrusive activities is the Freshwater Wetland Restoration Project. There are ten (10) archaeological sites located within the APE of this proposed activity (Figure 2). Eight of the ten sites have been determined ineligible for the NHRP (Attachment 3). The two NHRP-eligible sites within the APE are Sites 8Hi03280 and

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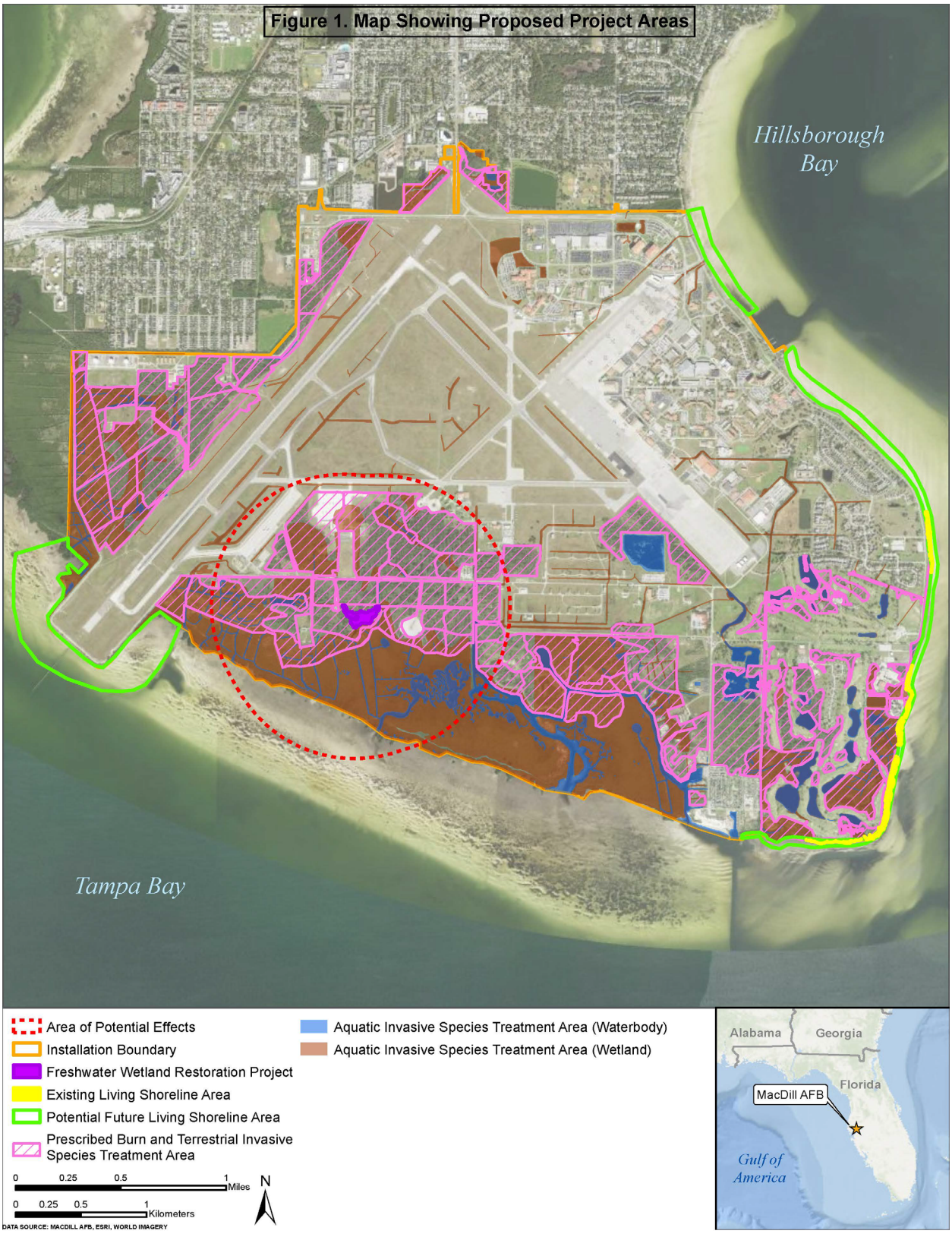
8Hi14538. Site 8Hi03280 is 960 meters away from the Freshwater Wetland Restoration Project and consists of artifact scatter and midden associated with pre-contact archaic and historic twentieth century cultures. Site 8Hi14538 is 535 meters away from this proposed activity and consists of lithic scatters associated with pre-contact unknown cultures. If artifacts, concentrations of shell, or unique soil conditions are discovered during construction, all construction activity in the vicinity of the discovery will cease until the MacDill AFB Cultural Resources Manager has assessed the situation in consultation with the Florida Division of Historic Resources.

4. This letter initiates our consultation under Section 106 of the National Historic Preservation Act (NHPA) (Code of Federal regulations [CFR], Tile 36, Part 800) and requests your concurrence. If you have any questions, please contact Mr. Eric Plage at (813) 828-0460 or eric.plage.ctr@us.af.mil.

RIDER.ANDREW.WARRICK.1153194676
Digitally signed by RIDER.ANDREW.WARRICK.1153194676
Date: 2025.08.11 06:53:11 -04'00'

ANDREW W. RIDER, GS-13, DAF
Chief, Installation Management Flight

3 Attachments:
1. Figure 1. Proposed Project Areas and MacDill Field Historic District
2. (CUI) Figure 2. Project Areas and Archaeological Sites
3. Archaeological Site Descriptions (Freshwater Wetland Restoration Project)



The pages from the letter to the State Historic Preservation Office containing Figure 2 is not included in this Appendix due to the sensitivity of the content.

Archaeological Site Descriptions

Freshwater Wetland Restoration Project (INRMP EA)

Eligible

- **8Hi03280** – This site type is artifact scatter and possible midden with pre-contact unknown cultures. This site is NRHP eligible. The proposed project location is approximately 960m northwest from the site boundary
- **8Hi14538** – This site type is lithic scatter associated with pre-contact unknown cultures. This site is NRHP eligible. The proposed project location is approximately 535m west from the site boundary.

Not Eligible

- **8Hi05656** – This site type is lithic scatter associated with pre-contact late archaic cultures. This site is not NRHP eligible. The proposed project location is approximately 90m west from the site boundary
- **8Hi14518** – This site type is lithic scatter associated with pre-contact unknown cultures. This site is not NRHP eligible. The proposed project location is approximately 380m northwest from the site boundary.
- **8Hi14536** – The site type is lithic scatter associated with pre-contact unknown cultures. The site is not NRHP eligible. The proposed project location is approximately 540m west from the site boundary
- **8Hi14610** – The site type is lithic scatter associated with pre-contact unknown cultures. This site is not NRHP eligible. The proposed project location is approximately 480m west from the site boundary.
- **8Hi14516** – This site type is artifact scatter associated with pre-contact unknown cultures and early twentieth century historic. This site is not NRHP eligible. The proposed project location is approximately 440m southwest from the site boundary.
- **8Hi14517** – The site type is lithic scatter associated with pre-contact unknown cultures. The site is not NRHP eligible. The proposed project location is approximately 690m southwest from the site boundary

Sources:

1. Schnitzer, L.K, et. al, 2020. Phase I Archaeological Survey of 2,236.79 Acres Within MacDill Air Force Base, Hillsborough County, Florida. Prepared for MacDill AFB and Air Force Civil Engineer Center by New South Associates Inc., Stone Mountain, GA.

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ADDITIONAL CORRESPONDENCE WITH FLORIDA STATE HISTORIC PRESERVATION OFFICE

Tribal Coordination

Tribal Coordination Distribution List

MacDill AFB conducts government-to-government consultation with four federally recognized tribes with a historic or cultural affiliation with MacDill AFB lands, which are listed in Table A-1 below. An example of the Notification Letter sent via email on 21 March 2025 to each tribe listed in Table A-1 is provided below; no response was received.

Table A-1. MacDill AFB Tribal Contact List

Tribe	City	State
Miccosukee Tribe of Indians	Miami	FL
Seminole Tribe of Florida	Hollywood	FL
The Seminole Nation of Oklahoma	Wewoka	OK
The Muscogee (Creek) Nation	Okmulgee	OK

Example Tribal Notification Letter

DEPARTMENT OF THE AIR FORCE
6TH AIR REFUELING WING (AMC)
MACDILL AIR FORCE BASE, FLORIDA

12 March 2025

Colonel Edward V. Szczepanik
Commander, 6th Air Refueling Wing
8208 Hangar Lopp Drive, Suite 1
MacDill Air Force Base FL 33621-5407

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

Dear Mr. Cypress,

In accordance with the National Environmental Policy Act (NEPA), MacDill Air Force Base (AFB), Florida is preparing an Environmental Assessment (EA) to analyze the potential environmental impacts associated with implementation of the 2024 MacDill AFB Integrated Natural Resources Management Plan (INRMP). The purpose of the Proposed Action is to direct, guide, and support the installation with the conservation, enhancement, and restoration of natural resources consistent with the military mission. The Proposed Action is needed to implement the natural resources management actions identified in the MacDill AFB INRMP. Implementation of the INRMP is required for compliance with federal laws and regulations (i.e., the Sikes Act), implementation of guidelines and policies for natural resources management (AFMAN 32-7003, *Environmental Conservation*), application of adaptive management strategies, and sustainment of the military training mission at MacDill AFB.

The 2024 MacDill AFB INRMP was developed to provide for effective management and protection of natural resources on the installation (see Attachment 1). It summarizes the natural resources present on the installation and outlines strategies to adequately manage those resources. The primary objective of the natural resources program is to sustain, restore, and modernize natural infrastructure to ensure operational capability and no net loss in the capability of Department of the Air Force (DAF) lands to support the military mission of the installation. The plan outlines and assigns responsibilities for the management of natural resources, discusses related concerns, and provides program management elements that will help to maintain or improve the natural resources within the context of the installation's mission. The INRMP does not assess the potential environmental consequences of implementation; therefore, an EA will be completed to evaluate any potential environmental impacts of the actions and will include Endangered Species Act and National Historic Preservation Act consultation requirements.

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MacDill AFB has identified 116 natural resource projects under the INRMP that would meet 7 overall management goals and each goal's respective objectives to be analyzed collectively in the EA. Additionally, the EA will include a more detailed analysis of 5 larger projects of those 116 total projects (see Attachments 2 and 3). MacDill AFB would implement all goals, objectives and projects as summarized in the INRMP Management Goals and Objectives List (see Attachment 4). The upcoming INRMP EA will also include analysis of a No Action Alternative.

In accordance with Executive Order (EO) 13175, *Consultation with Indian Tribal Governments*, the DAF would like to initiate government-to-government consultation on the proposed INRMP implementation at MacDill AFB. The DAF desires to discuss the proposal in detail with you so that we may understand and consider any comments, concerns, and suggestions you may have. This letter also initiates our consultation under Section 106 of the National Historic Preservation Act and Code of Federal Regulations, Title 36, Part 800 and requests your input.

All tribal, agency, and stakeholder comments provided to DAF will be considered during preparation of the INRMP EA. We respect the unique government-to-government relationship that exists between the DAF and your tribe, and your input on the project is welcome at any time during the NEPA process. However, to ensure we have sufficient time to consider your input in the Draft INRMP EA, please respond within thirty (30) days of receipt of this letter to Mr. Christopher Sutton, Attn: MacDill AFB INRMP EA, 7621 Hillsborough Loop Drive, MacDill AFB, FL 33621 or via email at christopher.sutton.14.ctr@us.af.mil.

Please let us know when you would be available to discuss this proposed project and your expectations on how to proceed with consultation. Feel free to contact me at (813) 828-4444 to discuss dates and times for consultation.

Sincerely

EDWARD V. SZCZEPANIK, Colonel, USAF
Commander

4 Attachments:
1. MacDill AFB Location Map
2. Example INRMP Projects Map
3. Example INRMP Projects Description
4. Collective INRMP Management Goals and Objectives List

Endangered Species Act Section 7 Consultation

Due to the volume of information in both the MacDill AFB Programmatic Biological Assessment (2,000 pages, including all attachments) and the National Marine Fisheries Service Section 7 letter (17 pages), both documents are retained on file in the EA Administrative Record and can be made available upon request.

CONSULTATION INITIATION LETTER TO USFWS

DEPARTMENT OF THE AIR FORCE
6TH AIR REFUELING WING (AMC)
MACDILL AIR FORCE BASE, FLORIDA

28 May 2025

MEMORANDUM FOR MR. ROBERT CAREY
MANAGER, DIVISION OF ENVIRONMENTAL REVIEW
U.S. FISH AND WILDLIFE SERVICE
7915 BAYMEADOWS WAY, SUITE 200
JACKSONVILLE, FL 32257-7517

FROM: 6 CES/CEI
7621 Hillsborough Loop Drive
MacDill AFB FL 33621-5207

SUBJECT: Request for Initiation of Consultation for the Environmental Assessment (EA) Addressing Implementation of Proposed Actions in the MacDill Air Force Base (AFB) Integrated Natural Resources Management Plan (INRMP), Florida

1. The Department of the Air Force (DAF) requests initiation of formal consultation under Section 7(a)(2) of the Endangered Species Act on the effects to ten species resulting from the EA Addressing Implementation of Proposed Actions in the MacDill AFB INRMP. The DAF proposes to conduct integrated ecosystem management of natural resources under the MacDill AFB INRMP. The Proposed Action is the implementation of natural resources management activities outlined in the MacDill AFB INRMP, which is consistent with the Sikes Act Improvement Act. There are five larger proposed INRMP projects listed in the updated INRMP that are analyzed in the EA. Four of these activities (invasive species management, oyster reef/living shoreline, mangrove habitat management, and prescribed burns) may impact ESA-listed or proposed species either directly or indirectly and are described in detail in programmatic biological assessment. The EA includes a fifth project, Freshwater Wetland Restoration Project (High Marsh Creation Project for Eastern Black Rail) which is not included in the programmatic biological assessment. Section 7 consultation for this project occurred via southeast region intra-service biological evaluation (No. 2023-0128281) in October 2023 and no additional consultation is required. The conclusions of the programmatic biological assessment are presented in the following paragraphs.

a. ***May affect and is likely to adversely affect*** two species, the proposed endangered tricolored bat (*Perimyotis subflavus*) and the proposed threatened monarch butterfly (*Danaus plexippus*). In accordance with Section 7(a)(4), the programmatic biological assessment will act as a formal conference for these two proposed species.

b. ***May affect but is not likely to adversely affect*** eight federally threatened species; West Indian manatee (*Trichechus manatus*), eastern black rail (*Laterallus jamaicensis ssp. jamaicensis*), piping plover (*Charadrius melodus*), rufa red knot (*Calidris canutus rufa*), wood stork (*Mycteria americana*), eastern indigo snake (*Drymarchon couperi*), green sea turtle (*Chelonia mydas*) and loggerhead sea turtle (*Caretta caretta*).

PEOPLE, PARTNERS, AIRPOWER

3. We value your support in our efforts to continue carrying out the DAF's responsibility regarding the management of its natural resources and we request your concurrence with this determination. If you have any questions or wish to discuss this project in more detail, the primary points of contact are myself and Mr. Eric Plage. We can be reached at (813) 828-4241 or andrew.rider.2@us.af.mil and (813) 828-0460 or eric.plage.ctr@us.af.mil, respectively.

RIDER.ANDREW.WARRICK.1153194676
Digitally signed by RIDER.ANDREW.WARRICK.1153194676
Date: 2025.05.28 14:24:31 -04'00'

ANDREW W. RIDER, GS-13, DAF
Chief, Installation Management Flight

Attachment:
Programmatic Biological Assessment

COURTESY LETTER TO NATIONAL MARINE FISHERIES SERVICE

DEPARTMENT OF THE AIR FORCE
6TH AIR REFUELING WING (AMC)
MACDILL AIR FORCE BASE, FLORIDA

28 May 2025

MEMORANDUM FOR MR. ROBERT CAREY
MANAGER, DIVISION OF ENVIRONMENTAL REVIEW
U.S. FISH AND WILDLIFE SERVICE
7915 BAYMEADOWS WAY, SUITE 200
JACKSONVILLE, FL 32257-7517

FROM: 6 CES/CEI
7621 Hillsborough Loop Drive
MacDill AFB FL 33621-5207

SUBJECT: Request for Initiation of Consultation for the Environmental Assessment (EA) Addressing Implementation of Proposed Actions in the MacDill Air Force Base (AFB) Integrated Natural Resources Management Plan (INRMP), Florida

1. The Department of the Air Force (DAF) requests initiation of formal consultation under Section 7(a)(2) of the Endangered Species Act on the effects to ten species resulting from the EA Addressing Implementation of Proposed Actions in the MacDill AFB INRMP. The DAF proposes to conduct integrated ecosystem management of natural resources under the MacDill AFB INRMP. The Proposed Action is the implementation of natural resources management activities outlined in the MacDill AFB INRMP, which is consistent with the Sikes Act Improvement Act. There are five larger proposed INRMP projects listed in the updated INRMP that are analyzed in the EA. Four of these activities (invasive species management, oyster reef/living shoreline, mangrove habitat management, and prescribed burns) may impact ESA-listed or proposed species either directly or indirectly and are described in detail in programmatic biological assessment. The EA includes a fifth project, Freshwater Wetland Restoration Project (High Marsh Creation Project for Eastern Black Rail) which is not included in the programmatic biological assessment. Section 7 consultation for this project occurred via southeast region intra-service biological evaluation (No. 2023-0128281) in October 2023 and no additional consultation is required. The conclusions of the programmatic biological assessment are presented in the following paragraphs.

a. ***May affect and is likely to adversely affect*** two species, the proposed endangered tricolored bat (*Perimyotis subflavus*) and the proposed threatened monarch butterfly (*Danaus plexippus*). In accordance with Section 7(a)(4), the programmatic biological assessment will act as a formal conference for these two proposed species.

b. ***May affect but is not likely to adversely affect*** eight federally threatened species; West Indian manatee (*Trichechus manatus*), eastern black rail (*Laterallus jamaicensis ssp. jamaicensis*), piping plover (*Charadrius melodus*), rufa red knot (*Calidris canutus rufa*), wood stork (*Mycteria americana*), eastern indigo snake (*Drymarchon couperi*), green sea turtle (*Chelonia mydas*) and loggerhead sea turtle (*Caretta caretta*).

PEOPLE, PARTNERS, AIRPOWER

3. We value your support in our efforts to continue carrying out the DAF's responsibility regarding the management of its natural resources and we request your concurrence with this determination. If you have any questions or wish to discuss this project in more detail, the primary points of contact are myself and Mr. Eric Plage. We can be reached at (813) 828-4241 or andrew.rider.2@us.af.mil and (813) 828-0460 or eric.plage.ctr@us.af.mil, respectively.

RIDER.ANDREW.WARRICK.1153194676
Digitally signed by RIDER.ANDREW.WARRICK.1153194676
Date: 2025.05.28 14:24:31 -04'00'

ANDREW W. RIDER, GS-13, DAF
Chief, Installation Management Flight

Attachment:
Programmatic Biological Assessment

RESPONSE LETTER FROM NATIONAL MARINE FISHERIES SERVICE REGARDING ESSENTIAL FISH HABITAT

From: Humphreys, Abbey
To: Alexander, Isha
Cc: Rodarte, Amberlyn; Bacon, Cathy
Subject: Fw: [Non-DoD Source] Re: MacDill INRMP Request for Expedited Informal Consultation
Date: Monday, April 28, 2025 2:35:38 PM
Attachments: MacDill INRMP Request for Expedited Informal Consultation_Cover Letter_signed04282025.pdf

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From: SOROKA, KIRA C CTR USAF AMC 6 CES/CEIE <kira.soroka.ctr@us.af.mil>
Sent: Monday, April 28, 2025 1:32:49 PM
To: Humphreys, Abbey <Abbey.Humphreys@hdrinc.com>
Cc: SUTTON, CHRISTOPHER CTR USAF AMC 6 CES/CEIEC <christopher.sutton.14.ctr@us.af.mil>; WERKMEISTER, MARINA M CTR USAF AMC 6 CES/CEIE <marina.werkmeister.ctr@us.af.mil>; PLAGE, ERIC M CTR USAF AMC 6 CES/CEIE <eric.plage.ctr@us.af.mil>; RIDER, ANDREW W CIV USAF AMC 6 CES/CEI <andrew.rider.2@us.af.mil>
Subject: FW: [Non-DoD Source] Re: MacDill INRMP Request for Expedited Informal Consultation

CAUTION: [EXTERNAL] This email originated from outside of the organization. Do not click links or open attachments unless you recognize the sender and know the content is safe.

Abbey,

Please see below and attached regarding the NMFS Section 7 Courtesy/EFH Consultation letter.

V/R

//SIGNED//
Kira Soroka, Contractor
Water Program Manager
6th Civil Engineer Squadron, Environmental Element
Chugach Logistics and Facility Solutions
MacDill AFB FL
O: 813-828-2718
C: 985-991-8384

From: Mark Sramek - NOAA Federal <mark.sramek@noaa.gov>
Sent: Monday, April 28, 2025 12:31 PM
To: SOROKA, KIRA C CTR USAF AMC 6 CES/CEIE <kira.soroka.ctr@us.af.mil>
Cc: SUTTON, CHRISTOPHER CTR USAF AMC 6 CES/CEIEC <christopher.sutton.14.ctr@us.af.mil>; RIDER, ANDREW W CIV USAF AMC 6 CES/CEI <andrew.rider.2@us.af.mil>; WERKMEISTER, MARINA M CTR USAF AMC 6 CES/CEIE <marina.werkmeister.ctr@us.af.mil>; _NMFS ser HCDconsultations

<nmfs.ser.hcdconsultations@noaa.gov>; Adam Brame - NOAA Federal <adam.brame@noaa.gov>
Subject: [Non-DoD Source] Re: MacDill INRMP Request for Expedited Informal Consultation

Hello Ms. Soroka,

Thank you for your essential fish habitat (EFH) consultation request and the attached Department of the Air Force (DAF), MacDill Air Force Base Integrated Natural Resources Management Plan (INRMP) dated April 28, 2025. The proposed DAF activities would include the conservation, enhancement, and rehabilitation of natural resources consistent with the military mission at MacDill AFB located at the southern tip of the Interbay Peninsula in Hillsborough County, Florida.

NOAA's National Marine Fisheries Service (NMFS), Southeast Region, Habitat Conservation Division (HCD), has reviewed the DAF INRMP. MacDill AFB has designated approximately 233 acres of shoreline areas along the northeastern (22 acres), southeastern (70 acres), and southwestern (141 acres) boundaries of the AFB as potential areas for future oyster reef and living shoreline construction activities. To minimize potential impacts to EFH from the proposed projects, future oyster reef sites would be placed in unvegetated soft bottom habitats at least five feet from any seagrass area edges and devoid of any live hard bottom/oysters.

From our evaluation of the project area using Google Earth Pro software, the Florida Fish and Wildlife Conservation Commission's Seagrass Habitat in Florida website, we anticipate any adverse effects that might occur on marine and anadromous fishery resources would be minimal. Accordingly, the NMFS HCD does not have any EFH conservation recommendations to provide regarding these activities. This satisfies the consultation procedures outlined in 50 CFR Section 600.920, of the regulation to implement the EFH provisions of the Magnuson-Stevens Fishery Conservation and Management Act. Therefore, no further EFH consultation with NMFS HCD is required for this action.

Finally, in accordance with the Endangered Species Act of 1973, as amended, determinations involving listed species should be reported to Mr. Adam Brame (cc: above) with our Protected Resources Division's (PRD) Interagency Cooperation Branch. If it is determined the activities may adversely affect any species listed as endangered or threatened under PRD purview, formal consultation must be initiated with NMFS PRD.

Mark

27.82346 N
-082.472417 W
Substrate (Sand/Shell, Estuarine)
Substrate (Mud/Silt, Estuarine)
Submerged Aquatic Vegetation (Estuarine)

---------- Forwarded message ---------
From: **SOROKA, KIRA C CTR USAF AMC 6 CES/CEIE** <kira.soroka.ctr@us.af.mil>
Date: Mon, Apr 28, 2025 at 10:42 AM
Subject: MacDill INRMP Request for Expedited Informal Consultation
To: mark.sramek@noaa.gov <mark.sramek@noaa.gov>
Cc: SUTTON, CHRISTOPHER CTR USAF AMC 6 CES/CEIEC <christopher.sutton.14.ctr@us.af.mil>, RIDER, ANDREW W CIV USAF AMC 6 CES/CEI <andrew.rider.2@us.af.mil>, WERKMEISTER, MARINA M CTR USAF AMC 6 CES/CEIE <marina.werkmeister.ctr@us.af.mil>

Mr. Sramek,

MacDill is requesting expedited informal consultation for the Integrated Natural Resource Management Plan (INRMP). Please let me know if you have any questions or need additional information.

Thank you,

V/R

//SIGNED//
Kira Soroka, Contractor
Water Program Manager
6th Civil Engineer Squadron, Environmental Element
Chugach Logistics and Facility Solutions
MacDill AFB FL
O: 813-828-2718
C: 985-991-8384

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Mark Sramek
Fishery Biologist, Southeast Regional Office
NOAA Fisheries | U.S. Department of Commerce
Office: 941-479-9030
www.fisheries.noaa.gov

B

Public Notices

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Appendix B: Public Notices

Early Public Notice

NOTICE FOR EARLY PUBLIC REVIEW OF A PROPOSED ACTIVITY WITHIN THE 100-YEAR FLOODPLAIN – UNITED STATES AIR FORCE

The Department of the Air Force (DAF) is inviting public input for a proposed activity within the 100-year floodplain at MacDill Air Force Base (AFB). The Proposed Action is the implementation of of natural resources management activities outlined in the the installation's 2024 Integrated Natural Resources Management Plan. The Proposed Action would direct, guide, and support the installation with the conservation, enhancement, and rehabilitation of natural resources consistent with the military mission.

This notice is required by Executive Order 11988 *Floodplains Management* and Executive Order 11990 *Protection of Wetlands*. It has been prepared and made available to the public by the DAF in accordance with 32 CFR 989 and DAF Manual 32-7003 for actions proposed within the 100-year floodplain and within wetlands. The DAF invites public comments on the proposal. The Proposed Action will be analyzed in a forthcoming Environmental Assessment (EA) and the public will have the opportunity to comment on the Draft EA when it is released.

The public comment period ends 30 days after the date of this notice. Please submit written comments to: 6 ARW Public Affairs, RE: MacDill AFB INRMP EA, 8209 Hangar Loop Drive, Suite 14, MacDill AFB, FL 33621-5502 or by email to 6.arw.pa@us.af.mil with reference to MacDill AFB INRMP EA in the subject line. Requests for information on the project can be made by phone to (812) 263-9331.

PRIVACY ADVISORY NOTICE

All written comments received during the comment period will be made available to the public and considered during preparation of the final Environmental Assessment. Providing private address information with your comment is voluntary and such personal information will be kept confidential unless release is required by law. However, address information will be used to compile the project mailing list and failure to provide it will result in your name not being included on the mailing list.

* The early public notice for the project was published in the Tampa Bay Times on March 5, 2025 with public input requested within 30 days of the publication (by April 4, 2025).

IMMIGRANTS
continued from 1B

"President Trump and I are returning (temporary protected status) to its original status: temporary," Homeland Security Secretary Kristi Noem said in a statement.

The order to cut protections for Haitians reverses an 18-month extension that former President Joe Biden's administration granted last July, which expanded the protections through February 2026.

Advocates decried the decision and warned that Haiti was still far from solving its internal crisis.

"This reckless decision doesn't just harm them; it destabilizes the very businesses, families and local economies that rely on them," said Beatriz Lopez, co-executive director of the Immigration Hub, a national pro-immigration group.

According to the International Organization for Migration, more than a million people are displaced in Haiti. Half of them are children. In the capital, Port-au-Prince, there are 108 shelters, which lack essential services such as food and water, the organization said. Many schools there have closed to serve as refuges for displaced Haitians and their families.

Gang violence is another component. Armed groups control 80 percent of the Port-au-Prince metropolitan area and have expanded into remote rural areas. According to the United Nations, 5.5 million Haitians required humanitarian assistance last year.

Violence also disrupted food production and distribution. Half of all Haitians suffer from hunger, said the United Nations' Office for the Coordination of Humanitarian Affairs.

The violence has forced the closure of 63 health facilities across the country. Last year, less than a third of healthcare centers in the capital remained operational.

Joseph said the situation in Haiti worsens every year. Under those circumstances, he sees no chance of going back.

"We are going to fight to stay," he said. "We have a life in this country, a home, a family."

Joseph and his family lived in Tampa until a couple of years ago. Then, he moved to upstate New York to work with a cousin and give his family a better life in a state more welcoming to immigrants. But anxiety and misinformation didn't go away. Negative rhetoric about immigrants kept spreading, such as the false claim, repeated by Trump, that Haitian immigrants in Springfield, Ohio, were eating pet dogs and cats.

Kéto Nord Hodges, a math and special education teacher and well-known member of Tampa Bay's Haitian community, said the situation in Haiti is chaotic. The ongoing violence and political instability have left many people feeling hopeless.

"It is very dangerous to be on your own in Haiti," said Hodges. "Haitians came to the U.S. following a legal process and the majority of them are not here illegally."

Contact Juan Carlos Chavez at jchavez@tampabay.com. Follow @ChavezReporter.

LEGAL NOTICE

INVITATION TO BID

Learning Independence for Tomorrow, Inc. is soliciting sealed bids from licensed contractors (General Contractors) to provide the materials and labor for the following scope of work at Learning Independence for Tomorrow, Inc. located at 1005 S. Highland Avenue, Clearwater, FL 33756. Bids may be submitted for the following:

Inclusive Playground

- Playground Equipment: Installation of ADA-compliant inclusive play structures
- Site Preparation: Clearing, grading, and drainage modifications as needed.
- Safety Surfacing: Installation of impact-absorbing surfacing (e.g., rubber tiles, poured-in-place rubber, or engineered wood fiber).
- Fencing & Accessibility: Installation of perimeter fencing and accessible pathways.
- Landscaping & Seating: Addition of shade structures, seating, and sensory-friendly landscaping.
- Signage & Wayfinding: Placement of instructional and inclusive signage.

A Pre-Bid Meeting will be held on **Tuesday, March 18, 2025, at 2:30 PM** onsite at the address listed above to review construction plans and specifications. Attendance at the Pre-Bid Meeting is strongly encouraged. An invitation to Bid packet that contains the specifications and other contract documents will be available following the Pre-Bid Meeting. Please direct all questions to Phil Hubbell, Finance and Administration Director, Learning Independence for Tomorrow, Inc., 1005 S. Highland Avenue, Clearwater, FL 33756, phone: (727) 421-3662, email: phubbell@lift.org.

Bids must be sealed and are due by **Wednesday, March 26, 2025, at 4:00 PM,** at which time all bids received will be publicly opened and tabulated. Bids received after that date and time will not be considered. Learning Independence for Tomorrow Inc. will award a firm fixed-price contract to the lowest responsive and responsible bidder and reserves the right to reject any and all bids received. An active SAM.gov registration is required for a contract to be awarded.

This project will be utilizing Community Development Block Grant (CDBG) funds provided through the United States Department of Housing and Urban Development (HUD). Therefore, Federal Regulations will apply, including, but not limited to, the following: Federal Labor Standards per 29 CFR parts 3 & 5; Procurement Procedures per part 85 Uniform Administrative Requirements; Affirmative Action to achieve Equal Employment Opportunity per 41 CFR 60-4; and the Davis-Bacon Act. Small businesses, minority businesses, women's business enterprises, and veteran-owned businesses are encouraged to apply.

3/5/2025 26769-1

LEGAL NOTICE

NOTICE FOR EARLY PUBLIC REVIEW OF A PROPOSED ACTIVITY WITHIN THE 100-YEAR FLOODPLAIN – UNITED STATES AIR FORCE

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PRIVACY ADVISORY NOTICE

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3/05/2025 26429-1

LEGAL NOTICE

NOTICE OF PUBLIC HEARINGS ON PROPOSED ORDINANCES CITY OF CLEARWATER, FLORIDA

The City Council of the City of Clearwater, Florida, will hold public hearings on the following proposed ordinances on March 17, 2025, beginning at 6:00 P.M., or as soon thereafter as an ordinance may be heard, in the Clearwater Main Library, City Council Chambers, 100 N. Osceola Avenue, Clearwater, Florida. The proposed ordinances may be inspected in the office of the City Clerk, located at City Hall. At the public hearing, interested parties may appear and be heard with respect to the ordinances. An ordinance may be amended prior to adoption, and may be adopted upon the conclusion of the public hearing. The ordinances to be heard are:

ORDINANCE NO. 9805-25

AN ORDINANCE OF THE CITY OF CLEARWATER, FLORIDA MAKING AMENDMENTS TO THE COMMUNITY DEVELOPMENT CODE BY AMENDING ARTICLE 3, DEVELOPMENT STANDARDS, DIVISION 12. LANDSCAPING/TREE PROTECTION, DIVISION 14. PARKING AND LOADING, AND DIVISION 15. PROPERTY MAINTENANCE STANDARDS; BY AMENDING ARTICLE 8, DEFINITIONS AND RULES OF CONSTRUCTION, SECTION 8-102. DEFINITIONS; BY AMENDING APPENDIX A, SCHEDULE OF FEES, RATES, AND CHARGES, SECTION V. BUILDING AND BUILDING REGULATIONS; BY AMENDING APPENDIX B, LDR 19 ZONING DISTRICT AND DEVELOPMENT STANDARDS, DIVISION 5. SITE DESIGN STANDARDS; CERTIFYING CONSISTENCY WITH THE CITY'S COMPREHENSIVE PLAN AND PROPER ADVERTISEMENT; PROVIDING FOR SEVERABILITY; AND PROVIDING AN EFFECTIVE DATE.

ORDINANCE NO. 9813-25

AN ORDINANCE OF THE CITY OF CLEARWATER, FLORIDA; AMENDING CHAPTER 2, ARTICLE V, DIVISION 3, EMPLOYEES' PENSION PLAN, AMENDING SECTION 2.413 PLAN ADMINISTRATION; AMENDING SECTION 2.418 DISABILITY BENEFITS; PROVIDING FOR INCLUSION IN THE CODE; PROVIDING FOR SEVERABILITY; PROVIDING FOR A REPEALER; AND PROVIDING FOR AN EFFECTIVE DATE.

ORDINANCE NO. 9817-25

AN ORDINANCE OF THE CITY OF CLEARWATER, FLORIDA MAKING AMENDMENTS TO THE CODE OF ORDINANCES BY AMENDING CHAPTER 22; ARTICLE 2; BY ADDING SECTION 22.61 TO ADDRESS THE USE OF MOTORIZED BICYCLES, HOVERBOARDS, UNICYCLES, SCOOTERS AND SIMILAR DEVICES; PROVIDING FOR SEVERABILITY; AND PROVIDING AN EFFECTIVE DATE.

Please take notice that if a person decides to appeal any decision made by the City Council with respect to any matter considered at such hearing, he or she will need a record of the proceedings and, for such purpose, may need to ensure that a verbatim record of the proceedings is made, which record includes the testimony and evidence upon which the appeal is to be based.

City of Clearwater, Florida – Rosemarie Call, City Clerk

A COPY OF THIS AD IN LARGE PRINT IS AVAILABLE IN THE CITY CLERK'S DEPARTMENT. ANY PERSON WITH A DISABILITY REQUIRING REASONABLE ACCOMMODATION IN ORDER TO PARTICIPATE IN THIS MEETING SHOULD CALL THE CITY CLERK'S DEPARTMENT WITH THEIR REQUEST AT (727) 562-4090.

3/5/2025 26804-1

LEGAL NOTICE

CITY OF CLEARWATER NOTICE OF DISPOSITION OF REAL PROPERTY WITHIN THE DOWNTOWN COMMUNITY REDEVELOPMENT AREA

Pursuant to Fla. Stat. § 163.380, Notice is hereby given by the City of Clearwater (the "City") inviting proposals from any persons interested in undertaking to redevelop or rehabilitate property within the downtown community redevelopment area. The property that is the subject of this Notice is owned by the City of Clearwater and currently in use as improved right of way on the southern portion of Garden Avenue between Franklin Street and Court Street, and may be legally described as:

ALL OF THE SOUTHERN PORTION OF RIGHT OF WAY OF S GARDEN AVENUE ABUTTING LOTS 9-11 TOGETHER WITH THAT PORTION ABUTTING THE VACATED 15 FOOT ALLEY LYING BETWEEN LOTS 10 AND 11 OF COURT SQUARE SUBDIVISION AS RECORDED IN PLAT BOOK 5, PAGE 59 OF THE PUBLIC RECORDS OF PINELLAS COUNTY, FLORIDA. CONTAINING 0.65 ACRES MORE OR LESS.

SUBMIT LETTERS OF INTEREST TO:

City of Clearwater
Attn: City Manager's Office
600 Cleveland Street, 6th Fl, Clearwater, FL 33755

Further information may be provided upon request to the office as designated above. All proposals must be submitted by **April 3, 2025.**

Per statute, the City shall consider all such redevelopment or rehabilitation proposals and the financial and legal ability of the persons making such proposals to carry them out; and the City may negotiate with any persons for proposals for the purchase, lease, or other transfer of any real property acquired by it in the community redevelopment area. The City may accept any such proposal as it deems to be in the public interest and in furtherance of the purposes of the Community Redevelopment Act.

3/5/25 26793-1

LEGAL NOTICE

Invitation to Bid

BID TITLE: **FY25 Stormwater Improvements**

Sealed bids must be received at City of Seminole, City Hall, Office of the City Clerk, 9199 113th Street North, Seminole, FL 33772 by 11:00am on April 4, 2025. Bids shall be publicly opened and read aloud at City of Seminole City Hall immediately after closing.

The Scope of Work will consist of installing a manhole and cleaning and lining a 36" stormwater pipe in the Seminole Lake Country Club community. Additionally, this Scope of Work will include regrading approximately 350' of swales East of the neighborhood surrounding Park Place Drive. The work will consist of furnishing all labor and materials and performing all work set forth in the Bid Documents, which include but are not limited to the plans and specifications prepared by Advanced Engineering & Design, Inc., and the City of Seminole Public Works Department.

Bid and contract documents and building plans may be downloaded from Demand Star and the City website at www.myseminole.com after 12:00pm on March 5, 2025.

THERE WILL BE A MANDATORY PRE-BID MEETING HELD ON WEDNESDAY, MARCH 19, 2025, AT 2:00pm AT CITY HALL, LOCATED AT 9199 113th STREET NORTH.

Questions shall be submitted in writing via email to Advanced Engineering & Design Inc., Justin Keller, P.E., at keller@aed-fl.com.

Submission of bid responses by mail, hand delivery, or express mail must be in a sealed envelope/box with the Bidder's name and return address. Electronic Submissions will be accepted through Demand Star.

The outside of the envelope/box used for the sealed bids shall be marked as follows:

"SEALED BID" "DO NOT OPEN"
"FY25 STORMWATER IMPROVEMENTS"
Contractor's Name and Address

Address the bid submission envelope/box to the following:

City of Seminole
Office of the City Clerk
9199 113th Street North
Seminole, FL 33772

Bids shall be accepted no later than the time and date specified on the ITB. Electronic bids will be accepted through Demand Star. All bids received after that time shall be rejected. Offers by telegram, telephone or transmitted by facsimile (FAX) machine will not be accepted. No bid may be withdrawn or modified after the time fixed for the opening of the bid. The City of Seminole reserves the right to reject any and all bids if it is deemed to be in the best interest of the City.

3/5, 3/12/2025 26943-1

C

INRMP Projects

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Appendix C: INRMP Projects

Table C-1 below lists the natural resource management projects for each Objective and Management Goal discussed in the MacDill AFB INRMP.

Table C-1. INRMP Projects

Project #	Description/Status
Goal 1: Protect and improve the recovery of federally-listed species and their associated habitats while ensuring mission sustainability.	
Objective 1.1: Conduct management of gopher tortoises (*Gopherus polyphemus*) and eastern indigo snake (*Drymarchon couperi*) to achieve ESA requirements within the Species Recovery Plan for the eastern indigo snake, and in accordance with the GTCCA.	
1.1.1	Restore, enhance, and maintain current and/or potential gopher tortoise and eastern indigo snake habitat by conducting mechanical and chemical treatment of invasive species and overgrown understory/midstory and replanting with native vegetation.
1.1.2	Conduct gopher tortoise and eastern indigo snake monitoring and required relocations prior to habitat restoration work involving any clearing/land alteration activities.
1.1.3	Ensure proponents of construction projects conduct surveys and monitoring of gopher tortoises and eastern indigo snakes prior to land manipulation.
1.1.4	Implement the "Standard Protection Measures for the Eastern Indigo Snake" developed by USFWS during construction or any clearing/land alteration activities.
1.1.5	Conduct a basewide population survey/estimate at least every five years.
1.1.6	Update the threatened and endangered species DAF GeoBase with gopher tortoise/eastern indigo snake observation, relocation, and burrow locations.
1.1.7	Implement 50 percent of prescribed burn acreage in potential or current gopher tortoise habitat.
1.1.8	Complete the GTCCA annual reporting data call by the end of the calendar year.
Objective 1.2: Conduct management of the federally protected bald eagle (*Haliaeetus leucocephalus)* to ensure compliance with the Bald and Golden Eagle Protection Act and eagle depredation and nest take permit requirements.	
1.2.1	Conduct monitoring of known bald eagle nests during nesting season (October–May) to determine nesting and/or fledging status.
1.2.2	Complete annual reporting requirements, and permit renewal in accordance with USFWS depredation permits.
1.2.3	Update the DAF GeoBase with bald eagle observation locations year-round.
1.2.4	Install temporary signage during bald eagle nesting season at publicly accessible nest locations.

Objective 1.3: Conduct management of the ESA threatened West Indian manatee (*Trichechus manatus*) in installation waters and the MacDill AFB-controlled Coastal Restricted Area to ensure its protection and recovery.	
1.3.1	Conduct Section 7 consultations when actions have the potential to adversely impact the West Indian manatee (*Trichechus manatus*).
1.3.2	Ensure that MacDill AFB's in-water projects are implementing the USFWS "Standard Manatee Conditions for In-water Work".
1.3.3	Provide manatee educational and safety presentations as requested/needed to public or for in-water construction activities.
1.3.4	Conduct surveys for manatees within the Coastal Restricted Area and installation waterways.
1.3.5	Maintain manatee protection signage along the southern and eastern shorelines.
1.3.6	Update the DAF GeoBase with new manatee observation locations within the Coastal Restricted Area and installation waterways.
1.3.7	Prevent destruction of habitat and harm to manatees from fishing equipment, motorized watercraft, and anchoring vessels through regular patrols for unauthorized civilian access to the Coastal Restricted Area.
1.3.8	Investigate and implement, whenever possible, potential projects for restoring seagrass beds to ensure no net loss of seagrasses within installation waters or the Coastal Restricted Area.
1.3.9	Coordinate partner access to installation waters and the Coastal Restricted Area to assess trends in seagrass distribution, abundance, and diversity, including for the Tampa Bay Estuary Program's long-term seagrass monitoring transects and the Southwest Florida Water Management District's biennial seagrass coverage surveys.
1.3.10	Coordinate law enforcement of manatee protection rules, including human activities that constitute harassment, with the FWC Conservation Law Enforcement Officers and the 6th Security Forces Squadron that patrol the installation and Coastal Restricted Area.
1.3.11	Eliminate manatee deaths due to water control structures and canal entrapment by installing manatee exclusion grates when possible, surveying canals before and after in-water work, and monitoring the sluice gate when lifted or closed to prevent crushing-related mortality.
1.3.12	Report all deceased, sick, injured, orphaned, entrapped, and wayward manatees discovered in installation waters and the Coastal Restricted Area to the USFWS and FWC for rescue, rehabilitation, and/or retrieval. FWC Wildlife Alert Hotline: 1-888-404-3922 or imperiledspecies@myFWC.com
1.3.13	Host coastal cleanup events at least once per year to reduce potential impacts from entanglement and ingestion of persistent marine debris.
Objective 1.4: Conduct management of the ESA endangered smalltooth sawfish (*Pristis pectinata*) in installation waters and the MacDill AFB-controlled Coastal Restricted Area to ensure its protection and recovery.	
1.4.1	Document sightings and update the DAF GeoBase and NMFS with smalltooth sawfish observation locations.
1.4.2	Conduct Section 7 consultations when actions have the potential to adversely impact the smalltooth sawfish.
1.4.3	Ensure that MacDill's AFB in-water projects are implementing "Sea Turtle and Smalltooth Sawfish Construction Conditions" developed by NOAA-NMFS.
1.4.4	Provide smalltooth sawfish educational and safety presentations as requested/needed to the public or for in-water construction activities.
1.4.5	Maintain smalltooth sawfish protection signage along the southern and eastern shorelines, and investigate other potential areas heavily utilized by the public for fishing and recreation.

1.4.6	Publicize the use of devices, through the 6th Force Support Squadron, which reduce the capture, injury, and mortality from recreational fishing activities (e.g., corrodible and circle hooks).
1.4.7	Coordinate annually, or as requested, with NOAA-NMFS to provide access to the installation's waters and Coastal Restricted Area for potential smalltooth sawfish research projects.
1.4.8	Prevent destruction of habitat and harm to smalltooth sawfish from fishing equipment, motorized watercraft, and anchoring vessels through regular patrols for unauthorized access to the Coastal Restricted Area.
1.4.9	Host coastal cleanup events at least once per year to reduce potential impacts from entanglement and ingestion of persistent marine debris.
Objective 1.5: Conduct management of the ESA endangered/threatened sea turtles in installation waters and the MacDill AFB-controlled Coastal Restricted Area to ensure their protection and recovery.	
1.5.1	Document sightings, and update the DAF GeoBase, FWC, NMFS, and USFWS (should a future nest be discovered) with sea turtle observation locations.
1.5.2	Conduct Section 7 consultations when actions have the potential to adversely impact sea turtles.
1.5.3	Ensure that MacDill's AFB in-water projects are implementing "Sea Turtle and Smalltooth Sawfish Construction Conditions" developed by NOAA-NMFS.
1.5.4	Investigate and implement, whenever possible, potential projects for restoring seagrass beds to ensure no net loss of seagrasses within installation waters or the Coastal Restricted Area.
1.5.5	Provide sea turtle educational and safety presentations as requested/needed to the public or for in-water construction activities.
1.5.6	Prevent destruction of habitat and harm to sea turtles from fishing equipment, motorized watercraft, and anchoring vessels through regular patrols for unauthorized civilian access to the Coastal Restricted Area.
1.5.6	Conduct aerial sea turtle surveys in installation waters and the Coastal Restricted Area upon approval of the future Small Unmanned Aircraft Systems program.
1.5.7	Coordinate partner access to installation waters and the Coastal Restricted Area to assess trends in seagrass distribution, abundance, and diversity, including for the Tampa Bay Estuary Program's long-term seagrass monitoring transects and the Southwest Florida Water Management District's biennial seagrass coverage surveys.
1.5.8	Ensure in-water projects do not obstruct or impede access to sea turtle foraging grounds and migratory pathways.
1.5.9	Host coastal cleanup events at least once per year to reduce potential impacts from entanglement and ingestion of persistent marine debris.
1.5.10	Report all deceased, sick, injured, entrapped, or wayward sea turtles discovered in installation waters and the Coastal Restricted Area to the USFWS and FWC (FWC Wildlife Alert Hotline: 1-888-404-3922 or imperiledspecies@myFWC.com) for rescue, rehabilitation, and/or retrieval.
Objective 1.6: Conduct management of the ESA endangered/threatened birds (red knot [*Calidris canutus*], piping plover [*Charadrius melodus*], wood stork [*Mycteria americana*], and eastern black rail [*Laterallus jamaicensis*]) to ensure their protection and recovery.	
1.6.1	Document sightings of federally-listed birds, and update the DAF GeoBase, and USFWS with observation locations.
1.6.2	Conduct Section 7 consultations when actions have the potential to adversely impact any ESA-listed birds.

1.6.3	Report observations of banded red knots and piping plovers to the United States Geological Survey year-round or as needed.
1.6.4	Report observations of eastern black rails to the USFWS, should they occur.
1.6.5	Monitor and document any shoreline erosion at MacDill AFB beach.
1.6.6	Continue to support environmentally friendly coastal shoreline and wetland projects such as oyster reef construction and other living shoreline efforts to control erosion.
1.6.7	Investigate and define potential projects for restoring areas around the installation to provide habitat for ESA-listed birds.
1.6.8	Survey for all ESA-listed birds every five years as part of the threatened and endangered species survey, or as needed.
Objective 1.7: Conduct management of federally-listed marine species not present but with the potential to access MacDill AFB waters, such as the giant manta ray (*Manta birostris*) and the Gulf sturgeon (*Acipenser oxyrinchus desotoi*), to ensure their protection and recovery.	
1.7.1	Document sightings of federally-listed marine species that have the potential to occur at MacDill AFB waters and update the DAF GeoBase, and NOAA-NMFS with observation locations.
1.7.2	Coordinate annually, or as requested, with NOAA-NMFS to provide access to the installation's coastline for potential research projects.
Objective 1.8: Work with installation partners to promote conservation measures that ensure habitat integrity, minimize impacts, and reduce human disturbance to ESA listed species.	
1.8.1	Enforce unauthorized entry restrictions in accordance with 33 CFR 334.635(c) of the Coastal Restricted Area (extending 1,000 yards from the shoreline and 2,000 yards from the runway) surrounding MacDill AFB.
Goal 2: Manage invasive species to minimize impacts to federal and state protected species and their native ecosystems, and to support mission sustainability.	
Objective 2.1: Control invasive plant species and monitor effectiveness of treatment.	
2.1.1	Identify and prioritize areas for invasive plant removal.
2.1.2	Utilize mechanical, chemical, and biological methods to remove and control invasive plant species.
2.1.3	Monitor previously treated areas and retreat as needed.
2.1.4	Survey 100 percent of prescribed burn areas for invasive plant species locations and coverage within 6 weeks of treatment.
2.1.5	Ensure 100 percent compliance with vehicle washing and invasive species vector removal by natural resources contracting organizations, after work performed in areas with known invasive plant species.
2.1.6	Conduct invasive plant species and natural community mapping to aid in defining priority treatment areas and habitat restoration goals.
2.1.7	Collect baseline natural community and invasive vegetation data to aid in the development of an Invasive Species Management Masterplan that would define habitat restoration goals and help develop community-specific restoration projects to improve natural areas.
Objective 2.2: Manage invasive wildlife species and monitor potential impacts to protected species and their habitats.	
2.2.1	Identify and update the DAF GeoBase with invasive/nuisance wildlife species observations within, or around, the installation as observed.

2.2.2	Provide guidance to the installation Integrated Pest Management Officer for annual reviews.
Goal 3: Provide management for native wildlife and state protected species by promoting biodiversity, monitoring, and implementing actions to protect and enhance their survival.	
Objective 3.1: Conduct management of imperiled species.	
3.1.1	Provide imperiled species incidental observational data to state and local agencies on an annual basis, or as requested.
3.1.2	Conduct annual imperiled species wading bird rookery surveys in accordance with current FWC guidelines to identify potential nesting/rookery locations on installation.
3.1.3	Conduct periodic acoustic monitoring for gopher frog (*Lithobates capito*) in ditches and wetlands on the installation during known breeding season.
3.1.4	Conduct periodic monitoring for tri-colored bat (*Pipistrellus subflavus* [federal candidate species]) and Florida bonneted bat (*Eumops floridanus* [federally endangered species]) and update the DAF GeoBase with observations.
3.1.5	Conduct surveys for tri-colored and Florida bonneted bats and take an inventory to determine bat distribution on the installation.
Objective 3.2: Conduct management of herpetological species.	
3.2.1	Complete a baseline herpetofauna survey of the installation, targeted for 2024.
3.2.2	Utilize the survey results to determine management actions and incorporate them in the INRMP.
Objective 3.3: Conduct management of migratory birds.	
3.3.1	Complete annual depredation permit reporting requirements and permit renewal.
3.3.2	Conduct surveys for migratory bird nests prior to mechanical and/or prescribed fire treatment and mark nest areas to avoid their destruction.
3.3.3	Ensure proponents of construction or improvement projects conduct surveys for migratory bird nests and mark them to avoid their destruction.
3.3.4	Coordinate and investigate access to the installation by local Audubon groups to conduct annual Christmas Bird Counts, monitor eagle nests, and other efforts, as necessary.
3.3.5	Participate in the Bird Aircraft Hazard Working Group and coordinate wildlife and habitat management in accordance with the Bird ad Aircraft Strike Hazard plan.
3.3.6	Participate in the DoD Partners in Flight program.
3.3.7	Perform shorebird and wading bird surveys every five years as part of the installation's threatened and endangered survey and record observations using the Avian Knowledge Network system.
3.3.8	Monitor DoD Partners in Flight Mission-Sensitive Species occurring on the installation to determine how airfield operations and other military activities could be affected should these species become listed under the ESA.
Goal 4: Manage natural resources with an adaptive ecosystem management framework to maintain, enhance, and restore natural habitat conditions and promote biodiversity.	
Objective 4.1: Protect, enhance, and restore coastal habitat systems through maintenance, enhancement and/or restoration, monitoring, and collaboration.	

4.1.1	Conduct shoreline oyster reef and other living shoreline restoration events in conjunction with Tampa Bay Watch.
4.1.2	Perform year-round inspections of shorelines, beaches, navigable waterways/canals and document substantial signs of erosion or habitat degradation.
4.1.3	Conduct coastal cleanups.
4.1.4	Meet with Tampa Bay Watch biannually to discuss potential partnership opportunities and project statuses.
4.1.5	Coordinate access to seagrass monitoring transects for the Tampa Bay Estuary Program and partner organizations.
4.1.6	Attend the Tampa Bay Region Planning Council's Agency on Bay Management meeting quarterly.
4.1.7	Attend the Tampa Bay Estuary Program Technical Advisory meeting annually.
4.1.8	Attend the Tampa Bay Estuary Program Habitat Restoration Consortium quarterly.
Objective 4.2: Maintain, enhance, and restore wetlands to achieve a no-net loss of overall quantity and quality and promote better water quality in installation waters and the Coastal Restricted Area.	
4.2.1	Control 56 acres of aquatic nuisance and invasive vegetation within the SWIM wetland system as mandated in Section 404 USACE permit#: SAJ-2012-00246(NW-LDD).
4.2.2	Restore mangrove and saltern wetland sites as described in the Ecosystem Restoration Management Plan. Restoration work may include the removal of invasive vegetation, restoring wetland hydrology and hydrological flows, and replanting with native wetland vegetation.
4.2.3	Conduct installation-wide wetlands survey and inventory to update wetland boundaries that were last established in 1996.
Objective 4.3: Maintain a wildland fire management program in accordance with the MacDill AFB Wildland Fire Management Plan to restore natural habitats by mimicking historic fire regimes, reduce wildfire threats, and enhance sustainability of the military mission.	
4.3.1	Conduct prescribed fire annually, based on a 5-year average, on a 3- to 5-year fire return interval.
4.3.2	Maintain current fire breaks, through the DAF Wildland Fire Branch and MacDill AFB 6th Force Support Squadron, to prevent wildfire threats to the military mission and critical infrastructure.
4.3.3	Plan, coordinate, and schedule prescribed fire operations with the DAF Wildland Fire Branch throughout the year and provide requested technical assistance for them to conduct prescribed burns on base.
Goal 5: Seek opportunities to improve installation resilience and add ecologic value using nature-based solutions.	
Objective 5.1: Coordinate with USACE to evaluate opportunities to beneficially use dredged material generated during dredging of the shipping channels in Tampa and Hillsborough Bays.	
5.1.1	Develop a beneficial use of dredged material master plan that describes, evaluates, and broadly designs projects that utilize dredged material to improve installation resilience and enhance ecological value.
5.1.2	Host a facilitated workshop coordinated in collaboration with the Water Institute to engage local stakeholders, regulatory agencies, appropriate MacDill AFB tenants, USACE, and the Port of Tampa.

5.1.3	Beneficially use dredged material to create new and expand existing submerged shallow shelf habitat along MacDill AFB's eastern and southern shorelines to increase submerged aquatic vegetation in installation waters and the Coastal Restricted Area.
5.1.4	Place dredged clean sand material in front of the existing rip-rap revetment to create a sacrificial beach buffer against wind and wave energy along MacDill AFB's highly exposed eastern shoreline.
5.1.5	Beneficially use dredged material to re-establish longshore bar systems that historically existed along MacDill AFB's eastern and southern shorelines within the Coastal Restricted Area.
5.1.6	Create barrier islands along MacDill AFB's highly exposed eastern shoreline to reduce wind and wave energy and create quiescent zones between the islands and shoreline that will encourage growth of submerged aquatic vegetation within the Coastal Restricted Area.
5.1.7	Restore bay bottom habitat and facilitate the establishment of submerged aquatic vegetation by beneficially using dredged material to fill historic dredge holes within the Coastal Restricted Area.
5.1.8	Conduct Section 7 consultations to ensure Beneficial Use Dredge Material projects provide sufficient conservation benefits and implement avoidance and minimization measures for federally-listed species, such as no net loss of submerged aquatic vegetation, unimpeded movement corridors, best practices for turbidity reduction, and others.
Goal 6: Manage and support the standardized DAF GeoBase (data collection, submittal, and integration) for the management of MacDill AFB natural resources.	
Objective 6.1: Provide support and assistance for the standardization of Functional Data Set.	
6.1.1	Coordinate with the DAF Civil Engineer Center Environmental GIS Analyst to determine the current version being used for all software, data, and data standards.
6.1.2	Collect and develop natural resources GIS data that complies with the most current and compliant Data Layer Specifications provided on the Environmental GIS eDASH page.
6.1.3	Deliver spatial data in the applicable UTM Zone 17 for MacDill AFB coordinate system, and support requests for environmental data delivery and data calls.
Objective 6.2: Utilize natural resources data to support MacDill AFB decision-making.	
6.2.1	Use GIS data in project planning and National Environmental Policy Act environmental analysis to identify, delineate, and ensure protection of federally-listed, state-imperiled, and wildlife species, and their associated habitats.
6.2.2	Use GIS data and maps to provide natural resources-related trainings, outreach, and DAF leadership briefings.
Goal 7: Provide consumptive and non-consumptive recreational and educational opportunities to enhance the morale and welfare of individuals on base.	
Objective 7.1: Conduct educational, volunteer, and public outreach activities to promote the involvement of base personnel in natural resource management.	
7.1.1	Support the MacDill AirFest on a biannual basis with natural resource guidance.
7.1.2	Conduct an annual natural resource event for Earth Day.

7.1.3	Conduct at least one Coastal Clean-up Day annually.
7.1.4	Conduct at least one dive cleanup day annually.
7.1.5	Conduct an annual natural resource event for Arbor Day.
7.1.6	Advertise through the various squadrons and/or base-wide public service announcement system all natural resource volunteer opportunities on the installation to increase base personnel involvement.
7.1.7	Meet standards for Tree City U.S.A communities annually.
Objective 7.2: Coordinate with the 6 Force Support Squadron and federal/state agencies to ensure proper implementation of consumptive recreational activities.	
7.2.1	Report all known natural resource infractions to FWC Conservation Law Enforcement Officers, as necessary.
7.2.2	Coordinate with FWC to conduct angler surveys on the base on an annual basis.

Source: MacDill AFB 2024

Key: AFB = Air Force Base; CFR = Code of Federal Regulations; DAF = Department of the Air Force; DoD = Department of Defense; ESA = Endangered Species Act; FWC = Florida Fish and Wildlife Conservation Commission; GIS = geospatial information system; GTCCA = Gopher Tortoise Candidate Conservation Agreement; INRMP = Integrated Natural Resources Management Plan; NMFS = National Marine Fisheries Service; NOAA = National Oceanic and Atmospheric Association; SWIM = Surface Water Improvement and Management; U.S. = United States; USACE = United States Army Corps of Engineers; USFWS = United States Fish and Wildlife Service; UTM = Universal Transverse Mercator.

D

CZMA Coastal Consistency Determination

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Appendix D: CZMA Coastal Consistency Determination

Introduction

This document provides the State of Florida with the United States Department of the Air Force's (DAF) Federal Consistency Determination under the Coastal Zone Management Act (CZMA) Section 307 and 15 Code of Federal Regulations (CFR) § 930 Subpart C. The information in this Consistency Determination is provided pursuant to 15 CFR § 930.39; Section 307 of the CZMA; and 16 United States Code (USC) § 1456, as amended, and its implementing regulations at 15 CFR § 930.

Proposed Federal Agency Action

This Federal Consistency Determination addresses DAF's proposal to conduct integrated ecosystem management of natural resources under the Integrated Natural Resource Management Plan at MacDill Air Force Base (AFB), Florida between 2026 to 2031.

The 6th Air Refueling Wing (6 ARW) at MacDill AFB has recently updated the Integrated Natural Resources Management Plan (INRMP) for the installation. The INRMP was prepared to assist the Installation Commander with the conservation and rehabilitation of natural resources consistent with the military mission of MacDill AFB for the next five years (2026–2031). The INRMP is consistent with the Sikes Act Improvement Act of 1997, as amended through 2010 (16 USC §§ 670a *et seq*.), which requires the preparation, implementation, update, and review of an INRMP for each military installation in the United States and its territories with significant natural resources. Resources addressed in the INRMP EA include Noise, Air Quality, Biological Resources, Water Resources, Geology and Soils, Cultural Resources, Hazardous Materials and Hazardous Wastes, and Safety.

The purpose of the Proposed Action is to direct, guide, and support the installation with the conservation, enhancement, and restoration of natural resources consistent with the military mission.

The Proposed Action is needed to implement the natural resources management actions identified in the MacDill AFB INRMP. Implementation of the INRMP is required for compliance with federal laws and regulations (i.e., the Sikes Act Improvement Act), implementation of guidelines and policies for natural resources management (DAF Manual 32-7003, *Environmental Conservation*), application of adaptive management strategies, and sustainment of the military training mission at MacDill AFB.

Federal Consistency Review

The Florida Statutes addressed as part of the Florida Coastal Management Program consistency review and considered in the analysis of the Proposed Action at MacDill AFB are discussed in **Table D-1**.

Table D-1. Florida Coastal Management Program Federal Consistency Review

Statute	Scope	Consistency
Chapter 161, F.S. *Beach and Shore Preservation*	Authorizes the Florida Department of Environmental Protection to regulate construction on or seaward of the state's beaches	The Proposed Action would not have adverse impacts on Florida beaches. The Proposed Action would have long-term, beneficial impacts on shorelines from reducing shoreline erosion and improving coastal resilience. The Proposed Action activities would help to stabilize the shoreline, restore natural vegetation, and improve habitat. The eastern shoreline of MacDill AFB is susceptible to erosion due to the lack of vegetation and wave energy from ship traffic in Hillsborough Bay. MacDill AFB continuously participates in erosion mitigation projects to combat that excessive erosion, including construction and maintenance of oyster reefs along the southeastern shoreline to break up wave energy, trap sediment, and encourage the recruitment of vegetation, and construction of a limestone revetment along the eastern shoreline of Bayshore Boulevard. These efforts are meant to control erosion, restore the natural stabilizing coastal vegetation, and improve coast communities' habitat and marine habitat.
Chapter 163, F.S. *Intergovernmental Programs: 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 that is consistent with the public interest	The Proposed Action would not impact local government comprehensive plans.
Chapter 186, F.S. *State and Regional Planning*	Details state-level planning requirements; requires the development of special statewide plans governing water use, land development, and transportation	State and regional agencies will be provided the opportunity to review the INRMP EA. The Proposed Action would not affect nor interfere with the development of state plans for water use, land development, or transportation.
Chapter 252, F.S. *Emergency Management*	Directs the state to reduce the vulnerability of its people and property to natural and human-made disasters; prepare for, respond to, and reduce the impacts of disasters; and decrease the time and resources needed when responding to disasters	The Proposed Action would not have adverse impacts on the ability of the state to manage and respond to natural and human-made disasters. The Proposed Action would improve coastal resiliency and reduce the impact from flooding and storm events on the installation.
Chapter 253, F.S. *State Lands*	Provides the framework for conservation and protection	The Proposed Action would occur on federal property; therefore, no impact on state-owned lands would occur.

Statute	Scope	Consistency
	of natural and cultural resources on state-owned lands	
Chapter 258, F.S. *State Parks and Preserves*	Addresses administration and management of state parks, preserves, and recreation areas	The Proposed Action would not impact state parks, recreational areas, or preserves.
Chapter 259, F.S. *Land Acquisitions for Conservation or Recreation*	Authorizes acquisition of environmentally endangered lands and outdoor recreation lands	The Proposed Action would not affect publicly owned lands for tourism or outdoor recreation.
Chapter 260, F.S. *Florida Greenways and Trails Act*	Authorizes acquisition of land to create a recreational trails system (Florida Greenways and Trails System) and to facilitate management of the system	The Proposed Action would not include acquisition of land and would not affect the Greenways and Trails Program.
Chapter 267, F.S. *Historical Resources*	Addresses management and preservation of the state's archaeological and historic resources	The Proposed Action at MacDill AFB would not have an adverse impact on historic properties. No National Register of Historic Places-eligible structures or historic districts are located within the project area or would be impacted by the Proposed Action. No long-term viewshed impacts are anticipated. The Proposed Action would overlap the boundaries of 47 archaeological sites, including 3 that have been determined eligible for listing in the National Register of Historic Places (one of which includes ancestral remains). Ground-disturbing activities under the Proposed Action that could damage subsurface deposits are not permitted where the known cultural resources (archaeological sites and cemeteries) are located. Should any inadvertent discovery occur during the Proposed Action at MacDill AFB, DAF's standard operating procedures for inadvertent discoveries of archaeological resources would be implemented. The DAF is satisfying its responsibilities under Section 106 of the National Historic Preservation Act concurrent with the NEPA Process, as provided for in 36 CFR § 800.8 (a), by consulting with the Florida State Historic Preservation Office and four federally recognized tribes with a historic or cultural affiliation with MacDill AFB lands.
Chapter 288, F.S. *Commercial Development and Capital Improvements*	Provides the framework for promoting and developing the general business, trade, and tourism components of the state economy	The Proposed Action would not have adverse impacts on Florida industries or economic diversification efforts.
Chapter 334, F.S.	Addresses the transportation	Short-term, minor, adverse impacts are anticipated on the transportation network at MacDill AFB from

Statute	Scope	Consistency
Transportation Administration	administration policies of the state	increased traffic associated with construction vehicles. Traffic and congestion may increase temporarily during implementation of management efforts.
Chapter 339, F.S. *Transportation Finance and Planning*	Addresses the state's transportation systems finance and planning needs	The Proposed Action would not affect the finance and planning needs of the state's transportation system.
Chapter 373, F.S. *Water Resources*	Addresses conservation and preservation of water resources, water quality, and environmental quality.	Short- and long-term, negligible to minor, adverse impacts on the surficial aquifer at MacDill AFB and impacts on groundwater recharge may occur from ground disturbance. Similar levels of impacts on surface water, floodplains, and wetlands would occur temporarily due to increased stormwater runoff, flooding potential, and erosion and sedimentation during ground disturbance from the Proposed Action activities. Impacts would be minimized through implementation of best management practices and by following the installation's Stormwater Pollution Prevention Plan. All applicable permits would be coordinated in accordance with Florida statutes and the National Pollutant Discharge Elimination System. Therefore, the Proposed Action would be consistent with Florida statutes and regulations regarding water resources.
Chapter 375, F.S. *Outdoor Recreation and Conservation Lands*	Addresses the development of a comprehensive multipurpose outdoor recreation plan	The Proposed Action would not affect opportunities for outdoor recreation on state lands.
Chapter 376, F.S. *Pollutant Discharge Prevention and Removal*	Regulates the transfer, storage, and transportation of pollutants, and cleanup of pollutant discharges	All petroleum, oils, and lubricants would be managed through implementation of the installation's Spill Prevention, Control, and Countermeasures Plan. Handling, storage, transportation, and disposal activities would be conducted in accordance with applicable federal, state, and local regulations; DAF Instruction; and the MacDill AFB Hazardous Waste Management Plan.
Chapter 377, F.S. *Energy Resources*	Addresses the regulation, planning, and development of oil and gas resources of the state	The Proposed Action would not affect energy resource production, including oil and gas, in Florida.
Chapter 379, F.S. *Fish and Wildlife Conservation*	Addresses the management of the wildlife resources of the state	The Proposed Action would have short-term, minor to moderate, adverse impacts on vegetation from vegetation disturbance, including trampling and soil compaction, from motorized and mechanical equipment used to conduct activities and from increased stormwater runoff and sedimentation potential. The Proposed Action would have long-term, moderate, beneficial impacts on vegetation through the encouragement of native vegetation growth from the reduction of invasive plant species, erosion control, decreased wave energy and sedimentation, removal of

Statute	Scope	Consistency
		excess spoil mounds, growth of fire-dependent native plant assemblages, nutrient recycling, reduction of disease and pest, wetland habitat creation and increased biodiversity. The Proposed Action Alternative would result in short-term, minor to moderate, impacts on wildlife and special status species from increased noise, distraction from normal activities, decreased foraging capacity and prey availability, smoke disruption, increased potential for vehicle/vessel collisions, increased turbidity and suspended sediments and loss of available habitat. Long-term, moderate, beneficial impacts would be expected by creating native habitat, increasing food sources, and providing clearings for foraging and movement for wildlife. Short-term, minor adverse impacts on EFH may occur from an increase in turbidity and suspended sediments during in-water work but long-term, moderate, beneficial impacts on EFH from the would be expected from erosion control activities that would help to stabilize the shoreline, restore natural vegetation, and improve habitat. Prescribed burn activities could result in significant adverse impacts to the tricolored bat from loss of habitat, noise, prey availability, and smoke. Significant impacts would be reduced to less than significant from the implementation of recommended mitigation measures and minimization, avoidance, and mitigations identified in the INRMP EA. In compliance with Section 7 of the Endangered Species Act, MacDill AFB initiated formal consultation with United States Fish and Wildlife Service on May 27, 2025, a programmatic Biological Opinion is anticipated on October 11, 2025. Additionally, MacDill AFB initiated informal consultation, including an EFH analysis, with National Marine Fisheries Service on April 28, 2025. MacDill AFB received concurrence from NMFS on the EFH analysis on April 28, 2025, that no further EFH consultation was required. MacDill AFB is awaiting concurrence from NMFS on the informal Section 7 analysis letter and were informed that no further informatin was required.
Chapter 380, F.S. *Land and Water Management*	Establishes state land and water management policies to guide and coordinate local decisions relating to growth and development	The Proposed Action would not include changes to coastal infrastructure, such as capacity increases of existing coastal infrastructure, nor use of state funds for infrastructure planning, designing, or construction.

Statute	Scope	Consistency
Chapter 381, F.S. *Public Health: General Provisions*	Establishes public policy concerning the state's public health system	The Proposed Action would not affect the state's policy concerning the public health system.
Chapter 388, F.S. *Mosquito Control*	Addresses mosquito control efforts in the state	The Proposed Action would not affect the State's mosquito control efforts.
Chapter 403, F.S. *Environmental Control*	Establishes public policy concerning environmental control (i.e., pollution control) in the state	The Proposed Action would have negligible to minor impacts on air quality, groundwater and surface water quality and quantity, floodplains and wetlands, and the conservation of environmentally sensitive living resources. Minimization measures for these impacts are identified in the INRMP EA.
Chapter 553, F.S. *Building Construction Standards*	Addresses building construction standards for a unified Florida Building Code	The Proposed Action would not include building construction; therefore, no impacts on building construction standards would occur.
Chapter 582, F.S. *Soil and Water Conservation*	Provides for the control and prevention of soil erosion	Soil disturbance would occur during the Proposed Action activities but would be controlled through implementation of environmental protection measures and BMPs. Additionally, adherence to site-specific Erosion and Sediment Control Plans, both site-specific and installation SWPPPs, and Section 438 of the Energy Independence and Security Act would further minimize impacts.
Chapter 597, F.S. *Aquaculture*	Establishes public policy to enhance the growth of aquaculture	The Proposed Action would not affect aquaculture.

Key: BMPs = Best Management Practices; CFR= Code of Federal Regulations; DAF = Department of the Air Force; EA = Environmental Assessment; EFH = Essential Fish Habitat; F.S. = Florida Statute; INRMP = Integrated Natural Resources Management Plan; NEPA = National Environmental Policy Act; SWPPP = Storm Water Pollution Prevention Plan

Based on the information and analysis provided in **Table D-1**, MacDill AFB finds that the Proposed Action, under which the management activities in the INRMP would be implemented, is consistent with the applicable enforceable policies and mechanisms of the Florida Coastal Management Program.

Pursuant to 15 CFR § 930.41, the Florida State Clearinghouse has 60 days from receipt of this document to concur with, or object to, this Consistency Determination, or to request an extension in writing under 15 CFR § 930.41(b). Florida's concurrence will be presumed if MacDill AFB does not receive its response by the 60th day from receipt of this determination.

E

Resource Area Definitions

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Appendix E: Resource Area Definitions

Air Quality

Air quality is defined by the concentration of various pollutants in the atmosphere at a given location. Under the Clean Air Act (42 United States Code [USC] § 85), the U.S. Environmental Protection Agency (USEPA) has established National Ambient Air Quality Standards (NAAQS) for the six pollutants that define air quality, called "criteria pollutants," which include carbon monoxide, sulfur dioxide, nitrogen dioxide, ozone (O_3), suspended particulate matter (measured less than or equal to 10 microns in diameter and less than or equal to 2.5 microns in diameter), and lead. Carbon monoxide, sulfur oxides, nitrogen oxides, lead, and some particulates are emitted directly into the atmosphere from emission sources. Nitrogen oxides, O_3, and some particulates are formed through atmospheric reactions that are influenced by weather, ultraviolet light, and other atmospheric processes. Volatile organic compounds and NO_X emissions are precursors of O_3 and are used to represent O_3 generation.

Areas that are and have historically been in compliance with the NAAQS or have not been evaluated for NAAQS compliance are designated as attainment areas. Areas that violate a federal air quality standard are designated as nonattainment areas. Areas that have transitioned from nonattainment to attainment are designated as maintenance areas. Nonattainment and maintenance areas are required to adhere to a State Implementation Plan to reach attainment or ensure continued attainment. The USEPA General Conformity Rule applies to federal actions occurring in nonattainment or maintenance areas. When the total emissions of nonattainment and maintenance pollutants (or their precursors) exceed specific emissions thresholds (i.e., *de minimis* levels; specified at 40 Code of Federal Regulations [CFR] § 93.153), a general conformity determination is required. The General Conformity Rule does not apply to federal actions occurring in attainment or unclassified areas.

Noise

Noise is any sound that is unwanted, loud, or unpleasant; interferes with communication; is intense enough to damage hearing; or is otherwise intrusive. How a person responds to noise varies depending on the type and characteristics of the noise. These characteristics include distance between the noise source and the receptor, receptor sensitivity, and time of day. Noise is often generated by activities, such as construction or vehicular traffic, which are essential to a community's quality of life. Any area where occupants are more susceptible to the adverse effects of noise is considered to be noise-sensitive receptors. Noise-sensitive receptors include a land use where people involved in indoor or outdoor activities may be subject to stress or considerable interference from noise. Such locations or facilities include residential dwellings, hospitals, nursing homes, places of worship, educational facilities, and libraries. Sensitive receptors may also include noise-sensitive cultural practices, some domestic animals, or certain wildlife species or broad areas such as nature preserves and designated districts in which occasional or persistent sensitivity to noise above ambient (background noise) levels exists in the environment. Ambient noise levels will vary depending on housing density and proximity to open space, major traffic areas, or airports.

Sound is a form of energy and varies by both intensity and frequency. Sound is produced when something vibrates, sending waves of energy through the environment, also known as an acoustic wave. This energy displaces particles and creates a mechanical pressure. The sound pressure level is measured in decibels (dB) and is used to quantify sound intensity or loudness. Frequency, measured in Hertz (Hz), is the number of times per second an acoustic wave repeats itself and drives the sound's pitch. People can hear sound between 20 and 20,000 Hz with increased sensitivity between 250 and 5,000 Hz. Humans respond differently to changes in these frequencies they can hear and are less able to hear low frequencies versus high frequencies. Considering this varying sensitivity, the "A"-weighted decibel (dBA) scale is used to approximate the relative loudness of sound based on human perception. Factors that influence human response to noise include intensity or loudness, duration that the sound is detected, frequency (or pitch) of the sound, repetition of the sound source, time of day the sound occurs, abruptness of onset or cessation of the sound, and successful application of noise control measures (DoD 2018). Distance from the noise source is also an important consideration because noise levels reduce by 6 dB with every doubling of distance from the source, and for a difference of 10 dBA, the noise level perceived by the human ear is either doubled or halved (OSHA 2018). Most people are exposed to daily sound levels of 50 to 55 dBA or higher. Common sounds encountered in daily life and through construction activities and their dBA levels 50 feet from the source are provided in **Table E-1**.

Table E-1. Common Sound Sources and Sound Levels

Common Sound Sources	Distance from Source	Sound Level (dBA)
Household/Outdoor		
Soft Whisper	5 feet	30
Refrigerator or Light Traffic	3 feet; 100 feet, respective	50
Garbage Disposal or Motorcycle	3 feet; 25 feet, respective	80
Lawn mower	3 feet	90
Car horn	3 feet	100
Ambulance Siren	100 feet	120
Jet Taking Off	200 feet	130
Clearing and Grading Machinery		
Concrete Mixer	50 feet	74–88
Paver	50 feet	86–88
Dozer/Tractor/Front Loader	50 feet	75–80
Construction Equipment		
Grader	50 feet	80–93
Truck	50 feet	83–94
Backhoe	50 feet	72–93
Pile Driver	50 feet	91–110

Sources: USEPA 1971; DoD 2018; FAA 2022; CHC 2022
Key: dBA = "A"-weighted decibel

Various sound level metrics have been developed for purposes of characterizing the sound environment. Day-night average sound level (DNL) is the average sound energy in a 24-hour period with a weighting added to the nighttime A-weighted sound levels. Due to the potential to be particularly intrusive, noise events occurring between 10:00 pm and 7:00 am are assessed at a 10 dB weighting when calculating DNL. The DNL provides a measure of the overall acoustical environment, but it does not represent the sound level at any given time.

Regulatory Review and Land Use Planning. The Noise Control Act of 1972 directs federal agencies to comply with applicable federal, state, and local noise control regulations. The Occupational Safety and Health Administration (OSHA), under the Noise Control Act, established workplace standards for noise. The minimum requirement states that constant noise exposure must not exceed 90 dBA over an 8-hour period. The highest allowable sound level to which workers can be constantly exposed is 115 dBA, and exposure to this level must not exceed 15 minutes within an 8-hour period. Additionally, the standards limit instantaneous exposure, such as impact noise, to 140 dBA. If noise levels exceed these standards, employers are required to provide hearing protection equipment that reduces sound levels to acceptable limits (OSHA 2008).

Department of Defense (DoD) Instruction 4715.13, *DoD Operational Noise Program*, establishes policy, assigns responsibilities, and prescribes procedures for administering the DoD Operational Noise Program and managing military noise. The DoD developed the Air Installations Compatible Use Zones program for military airfields. The program goal is to promote compatible land use development around military airfields by providing information on aircraft noise exposure and accident potential. The Department of the Air Force (DAF)'s land use guidelines for noise exposure are outlined in Air Force Handbook 32-7084, *Air Installations Compatible Use Zones Program Manager's Guide.*

Biological Resources

Biological resources include native or naturalized flora and fauna and the habitats (e.g., grasslands, forests, and wetlands) in which they exist. Special status species include species listed as threatened, endangered, or proposed under the Endangered Species Act as designated by the U.S. Fish and Wildlife Service; migratory birds; bald eagles (*Haliaeetus leucocephalus*) and golden eagles (*Aquila chrysaetos*); and species that are protected by laws or programs of states. Sensitive habitats include areas designated by U.S. Fish and Wildlife Service and the National Oceanic and Atmospheric Administration as critical habitat protected under the Endangered Species Act and sensitive ecological areas designated by other federal or state regulations. Sensitive habitats also include wetlands (discussed in **Section 3.5**). **Table E-2** lists the applicable regulations that direct and guide consideration and impact analysis regarding biological resources.

Table E-2. Biological Resources Regulatory Framework

Regulatory/Permitting	Overview
Endangered Species Act	The ESA (16 USC § 1531 *et seq*.) establishes a federal program to protect and recover imperiled species and the ecosystems upon which they depend. The ESA requires federal agencies, in consultation with USFWS and NOAA, to ensure that actions they authorize, fund, or carry out are not likely to jeopardize the continued existence of any listed species or result in the destruction or adverse modification of designated critical habitats of such species. Under the ESA, "jeopardy" occurs when an action is reasonably expected, directly or indirectly, to diminish the number, reproduction, or distribution of a species so that the likelihood of survival and recovery in the wild is appreciably reduced. An "endangered species" is defined by the ESA as any species in danger of extinction throughout all or a significant portion of its range. A "threatened species" is defined by the ESA as any species likely to become an endangered species in the foreseeable future. The ESA also prohibits any action that causes a "take" of any listed species. "Take" is defined as "to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect or attempt to engage in any such conduct." Federal species of concern are not protected by law; however, these species could become listed and, therefore, are given consideration when addressing impacts from a proposed action. Listed plants are not protected from taking, although it is illegal to collect or maliciously harm them on federal land. USFWS has primary responsibility for terrestrial and freshwater organisms protected under the ESA. Under the ESA, critical habitat is designated if USFWS or NMFS determines that the habitat is essential to the conservation of a federally threatened or endangered species. In consultation for those species with critical habitat, federal agencies must ensure that their activities do not adversely modify critical habitat to the point that it will no longer aid in the species' recovery.
Florida State Protected Species	The FWC oversees the protection and management of state-protected fauna under the Florida Endangered and Threatened Species Act (Florida Statute 379.2291). Within the FAC, protection is provided to endangered and threatened species (68A-27.003 FAC) and species of special concern (68A-27.005 FAC). The Florida Department of Agriculture and Consumer Services maintains the state list of plants designated as endangered, threatened, and commercially exploited (5B-40 FAC) as defined under Florida Statute 581.185(2). Sea grapes (*Coccoloba uvifera*) and sea oats (*Uniola paniculata*) are protected in Florida, not as state-listed threatened or endangered species, but under Florida Statutes: • Section 161.053: that no person shall remove any living beach-dune vegetation without proper authorization from relevant authorities like FDEP; and • Section 161.242: Harvesting of sea oats and sea grapes prohibited; possession prima facie evidence of violation The purpose of the statutes is to protect the beaches and shores of the state from erosion by preserving natural vegetative cover to bind the sand.
Migratory Bird Treaty Act	The MBTA was enacted to protect migratory birds and their parts (i.e., eggs, nests, and feathers). Migratory birds are protected under the MBTA of 1918 (16 USC §§ 703–712) as amended and EO 13186, *Responsibilities of Federal Agencies to Protect Migratory Birds*. An MOU was executed in September 2014 and extended in May 2022 until both parties deem a revised MOU is required between the DoD and USFWS to promote the conservation of migratory birds. Section 315 of the Authorization Act for Fiscal Year 2003 (Public Law 107-314, 116 Statute 2458) exempts military readiness activities

Regulatory/Permitting	Overview
	carried out in accordance with 50 CFR § 21.15 from the prohibition against the incidental taking of migratory birds. Military readiness activities, as defined in the Authorization Act and implementing regulations at 50 CFR § 21.3, include all training and operations of the Armed Forces that relate to combat and the adequate and realistic testing of military equipment, vehicles, weapons, and sensors for proper operation and suitability for combat use. The EO 13186 requires federal agencies to avoid or minimize impacts on migratory birds listed in 50 CFR § 10.13, List of Migratory Birds. If the design and implementation of a federal action cannot avoid measurable adverse impacts on migratory birds, EO 13186 requires the responsible agency to consult with the USFWS.
Bald and Golden Eagle Protection Act	Bald and golden eagles are protected under the BGEPA of 1940 (16 USC §§ 668–668c), as amended in 1962. The BGEPA prohibits the take, possession, or transport of bald eagles, golden eagles, and their parts (e.g., feathers, body parts), nests, and eggs without authorization from the USFWS. This includes inactive and active nests. “Take,” according to the BGEPA, means to pursue, shoot, shoot at, poison, wound, kill, capture, trap, collect, destroy, molest, or disturb. Activities that directly or indirectly lead to “take” are prohibited without a permit from the USFWS.
Marine Mammal Protection Act	All marine mammals are protected under the MMPA of 1972 (16 USC §§ 1361–1407). The MMPA prohibits the "taking" of marine mammals, and enacts a moratorium on the import, export, and sale of any marine mammal, along with any marine mammal part or product, within the U.S. The MMPA defines "take" as "the act of hunting, killing, capture, and/or harassment of any marine mammal; or the attempt at such." The MMPA defines harassment as "any act of pursuit, torment or annoyance which has the potential to either: (a) injure a marine mammal in the wild, or (b) disturb a marine mammal by causing disruption of behavioral patterns, which includes, but is not limited to, migration, breathing, nursing, breeding, feeding, or sheltering.
Magnuson-Stevens Fishery Conservation and Management Act	As amended by the Sustainable Fisheries Act of 1996, the MSA establishes a requirement to describe and identify EFH in each Fishery Management Plan. The MSA requires all federal agencies to consult with NOAA Fisheries on all actions, or proposed actions, permitted, funded, or undertaken by the agency that may reduce the quality or quantity of EFH."
Sikes Act Improvement Act	The SAIA (16 USC § 670 a(a)(2)) authorizes the development of integrated installation plans (e.g., INRMP) and reflects mutual agreement of the parties concerning conservation, protection, and management of fish and wildlife resources.

Source: MacDill AFB 2024

Key: BGEPA = Bald and Golden Eagle Protection Act; CFR = Code of Federal Regulations; DoD = Department of Defense; EO = Executive Order; ESA = Endangered Species Act; FAC = Florida Administrative Code; MBTA = Migratory Bird Treaty Act; MMPA = Marine Mammal Protection Act; MOU = Memorandum of Understanding; MSA = the Magnuson-Stevens Fishery Conservation and Management Act; NMFS = National Marine Fisheries Service; NOAA = National Oceanic and Atmospheric Association; SAIA = Sikes Act Improvement Act USFWS = United States Fish and Wildlife Service

Table E-3. Predominant Vegetation Communities within the Proposed Larger INRMP Project Areas

Proposed Project	Predominant Vegetation Communities	Area (Acres)	Coverage (Percent)
Invasive Species Management	***Aquatic Invasive Species Treatment Area (Waterbody)***		
	Duckweed species, Watermeal species, Common Duckmeat (*Spirodela polyrrhiza*) Aquatic Vegetation Alliance	18.5	7.1
	Red Mangrove (*Rhizophora mangle*) Fringe Mangrove Alliance	60.3	23.2
	Water	157.0	60.5
	Aquatic Invasive Species Treatment Area (Wetland)		
	Black Mangrove (*Avicennia germinans*), White Mangrove (*Laguncularia racemosa*) Basin Mangrove Alliance	270.2	22.4
	Live Oak (Quercus virginiana), Eastern Red-cedar (*Juniperus virginiana),* Hercules'-club (*Zanthoxylum clava-herculis*) / Gum Bully (*Sideroxylon lanuginosum*) Woodland	72.6	6.0
	Red Mangrove (*Rhizophora mangle*) Fringe Mangrove Alliance	434.6	36.0
	Water	125.6	10.4
	Terrestrial Invasive Species Treatment Areas		
	Black Mangrove (*Avicennia germinans*), White Mangrove (*Laguncularia racemosa*) Basin Mangrove Alliance	169.8	12.2
	Cabbage Palmetto (*Sabal palmetto*), Southern Red-cedar (*Juniperus virginiana var. silicicola*) Woodland	131.0	9.4
	Live Oak (Quercus virginiana), Eastern Red-cedar (*Juniperus virginiana),* Hercules'-club (*Zanthoxylum clava-herculis*) / Gum Bully (*Sideroxylon lanuginosum*) Woodland	134.0	9.6
	Live Oak (Quercus virginiana), Slash Pine (*Pinus elliottii*), Cabbage Palmetto (*Sabal palmetto*) / American Beautyberry (Callicarpa americana) Forest	227.2	16.3
	Red Mangrove (*Rhizophora mangle*) Fringe Mangrove Alliance	111.6	8.0
	Slash Pine (*Pinus elliottii*) Forest Plantation Cultural Subtype	89.5	6.4
	Slash Pine (*Pinus elliottii*) Ruderal Maritime Woodland	206.3	14.8

Proposed Project	Predominant Vegetation Communities	Area (Acres)	Coverage (Percent)
Oyster Reef/Living Shoreline	Water (includes approximately 132 acres of seagrass coverage)	237.1	100
Mangrove Habitat Management	Black Mangrove (*Avicennia germinans*), White Mangrove (*Laguncularia racemosa*) Basin Mangrove Alliance	116.9	21.1
	Red Mangrove (*Rhizophora mangle*) Fringe Mangrove Alliance	345.7	62.7
	Water	60.6	11.0
Freshwater Wetland Restoration Project	Chinaberry (*Melia azedarach*), White Leadtree (*Leucaena leucocephala*) / Common Elderberry (*Sambucus nigra*) Ruderal Woodland Alliance	4.8	95.5
Annual Prescribed Burns[1]	Black Mangrove (*Avicennia germinans*), White Mangrove (*Laguncularia racemosa*) Basin Mangrove Alliance	169.8	12.2
	Cabbage Palmetto (*Sabal palmetto*), Southern Red-cedar (*Juniperus virginiana var. silicicola*) Woodland	131.0	9.4
	Live Oak (Quercus virginiana), Eastern Red-cedar (*Juniperus virginiana),* Hercules'-club (*Zanthoxylum clava-herculis*) / Gum Bully (*Sideroxylon lanuginosum*) Woodland	134.0	9.6
	Live Oak (Quercus virginiana), Slash Pine (*Pinus elliottii*), Cabbage Palmetto (*Sabal palmetto*) / American Beautyberry (Callicarpa americana) Forest	227.2	16.3
	Red Mangrove (*Rhizophora mangle*) Fringe Mangrove Alliance	111.6	8.0
	Slash Pine (*Pinus elliottii*) Forest Plantation Cultural Subtype	89.5	6.4
	Slash Pine (*Pinus elliottii*) Ruderal Maritime Woodland	206.3	14.8

Source: U.S. National Vegetation Classification Version 2.03

Notes: Vegetation communities considered met the predominant classification of coverage greater than 5 percent.

[1] The project areas for terrestrial invasive species management and annual prescribed burns are the same.

Table E-4. Special Status Species that Potentially Occur on MacDill AFB or in Surrounding Waters

Species	Status	Distribution	Habitat	Documented on or in the waters surrounding MacDill AFB
Mammals				
Common bottlenose dolphin (*Tursiops truncatus*) (Northern Gulf of America Bay, Sound, and Estuary Stocks)	MMPA	Throughout Florida	Found in Tampa Bay in bays, sounds, and estuarine habitats	Yes
Florida bonneted bat (*Eumops floridanus*)	FE	Southern Florida	Semitropical forests with tropical hardwood, pineland, and mangrove habitats, as well as man-made areas such as golf courses and neighborhoods	No
Tricolored bat (*Perimyotis subflavus*)	PE	Throughout Florida, except the Keys	Prefers partially open landscapes with large trees and woodland edges	Yes
West Indian manatee (*Trichechus manatus*)	FT/ MMPA	The coastal waters of the southern Atlantic Ocean	Found in Tampa Bay and tributaries	Yes
Birds				
American Oystercatcher (*Haematopus palliatus*)	ST	Mostly along the eastern and western coastal edges	Prefers coastal shorelines, sandbars, and tidal flats	Yes
American white ibis (*Eudocimus albus*)	MBTA	Throughout Florida	Salt, fresh, and brackish marshes; mangroves; shallow water	Yes
Bald eagle (*Haliaeetus leucocephalus*)	BGEPA	Throughout Florida	Potential for foraging and nesting on the installation	Yes
Black scoter (*Melanitta americana*)	MBTA	Along the eastern and western coastal edges	Seacoasts, bays, and along exposed coastlines	No
Black skimmer (*Rynchops niger*)	ST	Along the coastal edges of Florida	Prefers open sandy beaches	Yes

Species	Status	Distribution	Habitat	Documented on or in the waters surrounding MacDill AFB
Brown pelican (*Pelecanus occidentalis*)	MBTA	Along the eastern and western coastal edges	Found at beaches, docks, sandbars, estuaries, mangrove islands, inlets, and sand spits	Yes
Cattle Egret (*Bubulcus ibis*)	MBTA	Throughout Florida	Found in fields and dry grassy habitats	Yes
Chimney swift (*Chaetura pelagica*)	MBTA	Throughout Florida	Likely preferred nesting in caves and hollow trees; currently uses chimneys as their preferred nesting site. Need a vertical surface for nesting	No
Common loon (*Gavia immer*)	MBTA	Throughout Florida	Prefers lakes surrounded by forests	No
Crested caracara (*Caracara plancus*)	FT	Southcentral Florida	Prefers wet prairies with cabbage palms; may also be found in wooded areas	No
Eastern black rail (*Laterallus jamaicensis jamaicensis*)	FT	Along the western and eastern coasts of Florida	Inhabits impounded and unimpounded salt and brackish marshes	Yes
Everglade snail kite (*Rostrhamus scoialbilis plumbeus*)	FE	Southern half of Florida panhandle	Found in shallow freshwater marshes and lake grass	No
Florida burrowing owl (*Athene cunicularia floridana*)	ST	Predominantly peninsular Florida	Nests in open, mowed areas	Yes
Florida sandhill crane (*Grus canadensis pratensis*)	ST	Throughout the Florida panhandle	Inhabits freshwater marshes, prairies, and pastures	Yes
Florida scrub-jay (*Aphelocoma coerulescens*)	FT	Throughout central peninsular Florida	Florida oak scrub and scrubby flatwoods found on prehistoric and current sand dunes	No
Great blue heron (*Ardea herodias*)	MBTA	Throughout Florida	Found in swamps, marshes, tideflats, and shores	No

Species	Status	Distribution	Habitat	Documented on or in the waters surrounding MacDill AFB
Great egret (*Ardea alba*)	MBTA	Throughout Florida	Found in marshes, ponds, shores, and swamps	Yes
Gull-billed tern (*Gelochelidon nilotica*)	MBTA	Throughout Florida	Primarily inhabits rivers, lakes, and freshwater marshes	No
Least tern (*Sternula antillarum*)	ST	Throughout Florida, mostly along the coastal edges	Forages in drainage ditches and ponds on the installation	Yes
Lesser yellowlegs (*Tringa flavipes)*	MBTA	Throughout Florida	Prefers boreal forest and forest/tundra transition areas	No
Little blue heron (*Egretta caerulea*)	ST	Throughout Florida	Common along shorelines, ditches, and mangroves	Yes
Long-tailed duck (*Clangula hyemalis*)	MBTA	Throughout Florida	Favors saltwater	No
Magnificent frigatebird (*Fregata magnificens*)	MBTA	Along the western and eastern coasts of Florida	Found along coasts and islands	No
Mangrove cuckoo (*Coccyzus minor*)	MBTA	Throughout Florida	Found in mangroves, swamps, and tropical hardwood groves	No
Pectoral sandpiper (*Calidris melanotos*)	MBTA	Throughout Florida	Prefers coastal or near coastal habitat. Can be found further inland in wetlands that have open mudflats	No
Piping plover (*Charadrius melodus*)	FT	Along the coastal edges of Florida	Occurs along shorelines in winter	Yes
Prairie warbler (*Setophaga discolor*)	MBTA	Throughout Florida	Prefers early successional shrubby habitats; e.g., clearcut oak forests and young pines	No
Red-breasted merganser (*Mergus serrator*)	MBTA	Along the western and eastern coasts of Florida	Found in coastal waters, estuaries, bays, and the open ocean	No
Red-cockaded woodpecker (*Leuconotopicus borealis*)	FE	Throughout Florida	Prefers longleaf pine stands and occasionally slash pines	No

Species	Status	Distribution	Habitat	Documented on or in the waters surrounding MacDill AFB
Reddish egret (*Egretta rufescens*)	ST	Coastal areas in central eastern/central and southwestern Florida	Prefers shorelines, sandbars, and shallow salt ponds	Yes
Ring-billed gull (*Larus delawarensis*)	MBTA	Throughout Florida	Found at coasts, bays, lakes, and piers; anyplace associated with water	No
Roseate spoonbill (*Platalea ajaja*)	ST	Central eastern/western Florida along the coast and southern coast	Forages and roosts along shorelines and mangrove systems	Yes
Royal tern (*Thalasseus maximus*)	MBTA	Along the western and eastern coasts of Florida	Found at sandy beaches, coasts, and salt bays	No
Ruddy turnstone (*Arenaria interpres morinella*)	MBTA	Along the western and eastern coasts of Florida	Prefers mudflats, sandy coastlines, wetlands, rocky beaches, and intertidal areas	No
Rufa red knot (*Calidris canutus rufa*)	FT	Along the coastal edges of Florida	Uses relatively undisturbed sandy beaches and tidal flats	Yes
Scott's seaside sparrow (*Ammodramus maritimus peninsulae*)	ST	Predominantly the northwestern edge of peninsular Florida	Primarily inhabits tidal marshes in Florida	No
Short-billed dowitcher (*Limnodromus griseus*)	MBTA	Along the western and eastern coasts of Florida	Prefers brackish lagoons and coastal mud flats	No
Snowy egret (*Egretta thula*)	MBTA	Throughout Florida	Found in marshes, ponds, shores, and swamps	Yes
Snowy plover (*Charadrius nivosus)*	ST	Sandy beaches along the Gulf of America coast	Occurs along shorelines in winter; observed along the shoreline at the MacDill in 2016	Yes
Southeastern American kestrel (*Falco sparverius paulus*)	ST	Throughout Florida	Prefers open stands of mature pines	Yes

Species	Status	Distribution	Habitat	Documented on or in the waters surrounding MacDill AFB
Surf scoter (*Melanitta perspicillata*)	MBTA	Along the western and eastern coasts of Florida	Prefers marinas, ocean surf, and salt bays	No
Swallow-tailed kite (*Elanoides forficatus*)	MBTA	Throughout Florida	Commonly found in near prairie or marsh, cypress swamps, and riverside swamp forests	No
Tricolored heron (*Egretta tricolor*)	ST	Throughout Florida	Common along shorelines, ditches, and mangroves	Yes
White-winged scoter (*Melanitta fusca*)	MBTA	Along the western and eastern coasts of Florida	Salt bays, oceans, and lakes	No
Whooping crane (*Grus americana*)	MBTA	One area in northern Florida and one in central Florida	Marshes, prairie pools, and coastal marshes (experimental population)	No
Willet (*Tringa semipalmata*)	MBTA	Along the western and eastern coasts of Florida	Found in marshes	No
Wilson's plover (*Charadrius wilsonia*)	MBTA	Along the western and eastern coasts of Florida	Prefers sandy inlets, tidal flats, and open beaches	No
Wood stork (*Mycteria americana*)	FT	Throughout most of the Florida panhandle	Occurs regularly in freshwater and estuarine wetlands	Yes
Reptiles and Amphibians				
American alligator (*Alligator mississippiensis*)	FT (S/A)	Throughout Florida	Found occasionally	Yes
American crocodile (*Crocodylus acutus*)	FT	Along the eastern, southern, and western coasts of Florida	Prefers mangrove swamps and low-energy mangrove-lined bays, creeks, and inland swamps	No
Eastern diamondback rattlesnake (*Crotalus adamanteus*)	UR	Throughout coastal Florida, predominantly southwestern Florida	Found in Florida pinelands	Yes
Eastern indigo snake (*Drymarchon couperi*)	FT	Throughout Florida	Occurs in woody uplands	Yes[1]

Species	Status	Distribution	Habitat	Documented on or in the waters surrounding MacDill AFB
Florida pinesnake (*Pituophis melanoleucus mugitus*)	ST	Throughout Florida	Prefers xeric pine flatwoods	No
Gopher frog (*Lithobates capito*)	UR/ST	Throughout Florida, except for the southern tip	Prefers xeric habitats, including pine, oak, and sandhills	Yes
Gopher tortoise (*Gopherus polyphemus*)	ST	Throughout Florida	Occurs in recently burned pine flatwoods	Yes
Green sea turtle (*Chelonia mydas*)	FT	Throughout the Florida coasts	Uses beach areas for nesting	Yes
Hawksbill sea turtle (*Eretmochelys imbricata*)	FE	Along the Atlantic coast and Keys	Uses beach areas for nesting	No
Kemp's ridley sea turtle (*Lepidochelys kempii*)	FE	Scatters isolated coastal beaches of Florida	Uses beach areas for nesting	No
Leatherback sea turtle (*Dermochelys coriacea*)	FE	Predominantly along the Atlantic coast of Florida	Uses beach areas for nesting	No
Loggerhead sea turtle (*Caretta caretta*), North Atlantic Distinct Population Segment	FT	Along the Atlantic coast and Keys	Uses beach areas for nesting	Yes
Short-tailed snake (*Lampropeltis extenuata*)	PT/ST	Predominantly west central Florida	Prefers xeric pine flatwoods	No
Fishes				
Giant manta ray (*Manta birostris*)	FT	Mostly southern Florida	Occasionally seen around coral reefs and fish cleaning stations	No
Gulf sturgeon (*Acipenser Oxyrinchus desotoi*)	FT	Mostly throughout the northern portions of Florida	Occurs in most major river systems from the Mississippi River to the Suwannee River (Florida) and marine waters south to Florida Bay	No
Smalltooth sawfish (*Pristis pentinata*)	FE	Mostly the southern panhandle tip of Florida	Juveniles inhabit coastal areas such as estuaries, river mouths, and bays year-round	No

Species	Status	Distribution	Habitat	Documented on or in the waters surrounding MacDill AFB
Insects				
Monarch butterfly (*Danaus plexippus*)	FP	Throughout Florida	This species lays eggs on obligate milkweed plants (*Asclepia* spp.)	Yes
Plants				
Florida golden aster (*Chrysopsis floridana*)	FE	Mostly around Tampa, Florida	Generally found in sand pine scrub	No
Pygmy fringe-tree (*Chionanthus pygmaeus*)	FE	Predominately central Florida	Generally found in the xeric, coarse white sand of scrub/oak scrub	No
Seagrape[2] (*Coccoloba uvifera*)	SP	Southern and central Florida.	Coastal beaches	Yes
Sea oats (*Uniola paniculata*)	SP	Eastern seaboard from Virginia to Florida and along the coastline of the Gulf States	Sea oats can be found on beachfronts and barrier islands	Yes

Sources: Urian et al. 2009; FWC 2011, 2022; Hayes et al. 2022; FDACS 2023; USFWS 2023a, 2023b, 2023c, 2024; MacDill AFB 2019, 2024; State of Florida 2024; ARC 2024

Key: AFB = Air Force Base; BGEPA = Bald and Golden Eagle Protection Act; E = Endangered; F = Federally; MBTA = Migratory Bird Treaty Act; MMPA = Marine Mammal Protection Act; P = Proposed (Federal designation); S = State; S/A = similarity of appearance; T = Threatened; UR = under review (Federal designation)

[1] Historical observation of one eastern indigo snake was documented over 25 years ago.

[2] Sea grape trees and sea oats are protected in Florida under the category of beach-dune vegetation under Sections 161.053 and 161.252 of the Florida Statutes.

Water Resources

Water resources are natural and human-made sources of water that are available for use by and for the benefit of humans and the environment. Water resources include groundwater, surface water, floodplains, and wetlands. Evaluation of water resources examines the quantity and quality of the resource and its demand for various purposes.

Groundwater. Groundwater is water that collects or flows beneath the Earth's surface, filling the porous spaces in soil, sediment, and rocks. A deposit of subsurface water that is large enough to tap via a well is referred to as an aquifer. Groundwater originates from precipitation, percolates through the ground surface, and is often used for potable water consumption, agricultural irrigation, and industrial applications. Groundwater can typically be described in terms of its depth from the surface, aquifer or well capacity, water quality, surrounding geologic composition, and recharge rate.

Surface Water. Surface water includes natural, modified, and constructed water confinement and conveyance features above groundwater that may have a defined channel and discernable water flows as well as associated flora, fauna, and habitats. These features are generally classified as streams, creeks, springs, wetlands, natural and artificial impoundments (e.g., ponds, lakes), and constructed drainage canals and ditches.

The Clean Water Act (CWA) provides the statutory basis for state water quality standards. The Florida Department of Environmental Protection (FDEP) is responsible for implementing state laws providing for the protection of the quality of Florida's water resources (FDEP 2024). The FDEP has established five surface water classifications according to designated uses. In addition to these classifications, FDEP may designate a surface water body as an Outstanding Florida Water. An Outstanding Florida Water is a surface water body that has exceptional recreational or ecological significance (FDEP 2023).

Surface waters that are defined as waters of the U.S. are also protected under Section 404 of the CWA. The term "waters of the United States" (WOTUS) includes relatively permanent bodies of water forming geographic features such as lakes, rivers, streams, and oceans. The final conforming rule Amendments to the "Revised Definition of 'WOTUS' was issued September 8, 2023, by the USEPA (88 *Federal Register* 61964).

Floodplains. Floodplains are areas of low-level ground present along rivers, stream channels, large wetlands, or coastal waters. Such lands might be subject to periodic or infrequent inundation from rain or melting snow. Floodplain ecosystem functions include natural moderation of floods, flood storage and conveyance, groundwater recharge, and nutrient cycling. Floodplains also help to maintain water quality and are often home to a diverse array of plants and animals. In their natural vegetated state, floodplains slow the rate at which the incoming overland flow reaches the main water body.

The risk of flooding typically depends on local topography, the frequency and intensity of precipitation events, and the size of the watershed above the floodplain. Flood potential is evaluated by the Federal Emergency Management Agency, which defines 100- and 500-year

floodplains. The 100-year floodplain is an area that has a 1 percent chance of inundation by a flood event in a given year, while 500-year floodplains have a 0.2 percent chance of inundation in a given year. In addition to the 100- and 500-year floodplains, the Federal Emergency Management Agency designates Coastal High Hazard Areas (or Special Food Hazard Areas) along the coasts that have additional hazards due to wind and wave action. EO 11988 requires federal agencies to determine whether a proposed action would occur within a floodplain and directs them to avoid floodplains to the maximum extent possible wherever there is a practicable alternative.

Stormwater. Stormwater is water that originates from heavy precipitation events (i.e., rain and/or melting hail or snow) and generates runoff. Stormwater runoff flows over land or impervious surfaces, not soaking into the ground, picking up pollutants like trash, chemicals, oils, and sediment. To protect vulnerable surface waters from stormwater runoff, stormwater controls are used, which filter out pollutants and/or prevent pollution by controlling it at its source.

Under CWA Section 402, the National Pollutant Discharge Elimination System (NPDES) stormwater program regulates stormwater discharges from three potential sources: municipal separate storm sewer systems, construction activities, and industrial activities. The NPDES permitting mechanism is designed to prevent stormwater runoff from washing harmful pollutants into local surface waters. NPDES regulations require authorization from FDEP for discharges of stormwater to any surface water (ditches, canals, ponds) and/or WOTUS (Hillsborough and Tampa Bays). Additionally, projects that disturb more than 1 acre (or that contribute stormwater discharges to surface waters of the state of Florida or a municipal separate storm sewer system) must apply for an NPDES General Permit for Stormwater Discharge from Large and Small Construction Activities.

Stormwater controls for federal projects are also regulated under Section 438 of the Energy Independence and Security Act (42 USC § 17094), which requires stormwater design for federal projects that disturb more than 5,000 square feet. Use of stormwater management practices outlined in Section 438 of the Energy Independence and Security Act, such as revegetation and use of porous pavements, cisterns, and green roofs, is required to maintain or restore pre-development hydrology.

Wetlands. Wetlands are areas where water is present either at, near, or covering the surface of the soil all year or for varying periods of time during the year. Wetlands are an important natural system and habitat because of the diverse biologic and hydrologic functions they perform. These functions include water quality improvement, groundwater recharge and discharge, pollution mitigation, nutrient cycling, wildlife habitat provision, and erosion protection.

Wetlands are protected as a subset of WOTUS under Section 404 of the CWA. Also incorporated are special aquatic habitats, including wetlands when they have a continuous surface connection to water bodies such as lakes, rivers, streams, and oceans that are WOTUS. The U.S. Army Corps of Engineers defines wetlands as “those areas that are inundated or saturated by

surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas" (33 CFR § 328.3(c)(1)).

Executive Order 11990 requires that federal agencies provide leadership and take actions to minimize or avoid the destruction, loss, or degradation of wetlands and to preserve and enhance the natural and beneficial values of wetlands. Federal agencies are to avoid new construction in wetlands unless the agency finds there is no practicable alternative to construction in the wetland and the proposed construction incorporates all possible measures to limit harm to the wetlands.

DoD Instruction 4715.03, *Natural Resources Conservation Program*, includes requirements for the protection of natural resources, including wetlands, on DoD-controlled land.

The FDEP Environmental Resource Permit Program regulates projects in, on, or over wetlands or other surface waters under 62-330 Florida Administrative Code, *Environmental Permitting Process*.

Geology and Soils

Geological resources consist of the Earth's surface and subsurface materials. Within a given physiographic province, these resources typically are described in terms of geology, topography, and physiography; soils; and geological hazards.

Topography. Topography and physiography pertain to the general planes and characteristics of a land surface with respect to elevation, slope, aspect, and landforms.

Geology. Geology is the study of the Earth's composition and provides information on the structure and configuration of surface and subsurface features. The geology of an area may include bedrock materials, mineral deposits, and fossil remains. Bedrock is relatively hard, consolidated rock (e.g., granite, limestone, sandstone).

Soils. Soils consist of unconsolidated materials overlying the bedrock or other parent material. Soils are typically described in terms of their complex type, slope, and physical characteristics. Differences among soil types, in terms of their structure, elasticity, strength, shrink-swell potential, and erosion potential, affect their abilities to support certain applications or uses.

Geologic Hazards. Geological hazards are defined as natural geological events that can endanger human lives and threaten property. Examples of geologic hazards include erosion, earthquakes, ground subsidence, and sinkholes.

Table E-5. Soils within the Project Areas at MacDill AFB

Mapping Unit	Slope	Characteristics[1]	Project Areas (Acres)	Project Areas (Percent)
Arents, nearly level	0 to 5 percent slopes	Consists of 100 percent Arents and similar soils; Arents components have a depth to restrictive layer greater than 80 inches and are somewhat poorly drained with very low runoff and high to very high permeability; not hydric	21.0	1.0
Immokalee-Urban land complex	0 to 2 percent slopes	Consists of 50 percent Immokalee and similar soils, 40 percent Uban land, and 10 percent minor components; Immokalee components have a depth to restrictive layer greater than 80 inches and are poorly drained with very high runoff and moderately high to high permeability; not hydric	0.1	0.0
Malabar fine sand, 0 to 2 percent slopes	0 to 2 percent slopes	Consists of 85 percent Malabar and similar soils and 15 percent minor components; Malabar components have a depth to restrictive layer greater than 80 inches and are poorly drained with very high runoff and high permeability; this soil is hydric	250.6	12.1
Myakka fine sand, 0 to 2 percent slopes	0 to 2 percent slopes	Consists of 85 percent Myakka and similar soils, and 15 percent minor components; Myakka components have a depth to restrictive layer greater than 80 inches and are poorly drained with very high runoff and moderately high to high permeability; generally, not hydric, although the minor component (Basinger); this soil is hydric	401.0	19.4
Myakka fine sand, frequently flooded	0 to 1 percent slopes	Consists of 90 percent Myakka, frequently flooded, and similar soils, and 10 percent minor components; Myakka components have a depth to restrictive layer greater than 80 inches and are very poorly drained with high runoff and moderately high to high permeability; this soil is hydric	462.9	22.4
Myakka-Urban land complex	0 to 2 percent slopes	Consists of 50 percent Myakka and similar soils, 40 percent urban land, and 10 percent minor components; Myakka components have a depth to restrictive layer greater than 80 inches and are poorly drained with very high runoff and moderately high to high permeability; not hydric	50.7	2.5
Pomello fine sand, 0 to 5 percent slopes	0 to 5 percent slopes	Consists of 95 percent Pomello and similar soils and 5 percent minor components; Pomello components have a depth to the restrictive layer greater than 80 inches and are moderately well drained with negligible runoff and high permeability; not hydric	133.9	6.5
Pomello-Urban land complex, 0 to 5 percent slopes	0 to 5 percent slopes	Consists of 45 percent Pomello and similar soils, 40 percent Urban land and 15 percent minor components; Pomello components have a depth to restrictive layer greater than 80 inches and are moderately well drained with negligible runoff and high permeability; generally, not hydric, although the minor component (Felda); this soil is hydric	37.9	1.8

Mapping Unit	Slope	Characteristics[1]	Project Areas (Acres)	Project Areas (Percent)
Quartzipsamments, nearly level	0 to 2 percent slopes	Consists of 95 percent Quartzipsamments and similar soils and 5 percent minor components; Quartzipsamments components have a depth to the restrictive layer greater than 80 inches and are moderately well drained with very low runoff and high to very high permeability; generally, not hydric, although the minor component (Haplaquents); this soil is hydric	25.6	1.2
St. Augustine-Urban land complex	0 to 2 percent slopes	Consists of 50 percent St. Augustine, 40 percent Urban Land, and 10 percent minor components; St. Augustine components have a depth to the restrictive layer greater than 80 inches and are somewhat poorly drained with very low runoff and high to very high permeability; generally, not hydric, although the minor components (Kesson and Myakka) are hydric soils	220.8	10.7
Tavares fine sand-Urban land complex, 0 to 5 percent slopes	0 to 5 percent slopes	Consists of 43 percent Tavares, 37 percent Urban Land, and 20 percent minor components; Tavares components have a depth to the restrictive layer greater than 80 inches, and are moderately well drained with very low runoff and high to very high permeability; not hydric	3.1	0.1
Urban land, 0 to 2 percent slopes	0 to 2 percent slopes	85 percent or more of the surface is covered by impervious surfaces and artificially drained with 15 percent minor components; generally, not hydric, although the minor components (Cypress Lake and Brynwood) are hydric soils	64.7	3.1
Wabasso fine sand, 0 to 2 percent slopes	0 to 2 percent slopes	Consists of 85 percent Wabasso and similar soils, and 15 percent minor components; Wabasso components have a depth to the restrictive layer greater than 80 inches, and are poorly drained with very high runoff and high permeability; they are generally, not hydric, although the minor components (Riviera, Basinger, Malabar, and Felda) are hydric soils	73.6	3.6
Wabasso-Urban land complex	0 to 2 percent slopes	Consists of 50 percent Wabasso, 35 percent Urban Land, and 15 percent minor components; Wabasso components have a depth to the restrictive layer greater than 80 inches, and are poorly drained with very high runoff and moderately low to moderately high permeability; generally, not hydric, although the minor components (Malabar and Felda) are hydric soils	210.7	10.2

Source: USDA NRCS 2025
Note: [1] The U.S. Department of Agriculture Natural Resource Conservation Service does not rate Urban Land for soil characteristics such as water capacity or erosion potential.

Cultural Resources

Cultural resources are historic sites, buildings, structures, objects, or districts considered important to a culture, subculture, or community for scientific, traditional, religious, or other purposes. They include archaeological resources, historic architectural or engineering resources, and traditional cultural resources. Federal laws that pertain to cultural resources management include the National Historic Preservation Act (NHPA; 1966), the Archeological and Historic Preservation Act (1974), the American Indian Religious Freedom Act (1978), the Archaeological Resources Protection Act (1979), and the Native American Graves Protection and Repatriation Act (1990). MacDill Air Force Base is required to comply with DAF regulations and instructions, including DAF Manual 32-7003, *Environmental Conservation*, and DAF Instruction 90-2002, *Interactions with Federally Recognized Tribes*. The Integrated Cultural Resources Management Plan (MacDill AFB 2021) is the guidance document for cultural resources on the installation for planning and proposed activities.

The NHPA defines historic properties as buildings, structures, sites, districts, or objects listed in or eligible for listing in the National Register of Historic Places (NRHP). Resources found significant under NRHP criteria may be considered eligible for listing in the NRHP. Historic properties are generally 50 years of age or older (i.e., considered historic age), are historically significant, and retain the majority, if not all, of seven aspects of integrity: location, design, setting, materials, workmanship, feeling, and association, which enables them to convey their historic significance.

Under Section 106 of the NHPA, federal agencies must take into account the effect of their undertakings on historic properties within the proposed undertaking's Area of Potential Effects (APE). Federal agencies must assess the possible effects of the proposed undertaking on historic properties in consultation with the SHPO and other consulting or interested parties, including the public. The APE is defined as the geographic area or areas within which an undertaking (project) may directly or indirectly cause changes in the character or use of historic properties, if any such properties exist. The APE for the Proposed Action includes the five project areas for the subject larger Integrated Natural Resources Management projects.

Hazardous Materials and Hazardous Waste

Hazardous Materials and Petroleum Products. Hazardous materials are defined by 49 CFR § 171.8 as hazardous substances, wastes, marine pollutants, elevated temperature materials, materials designated as hazardous in the Hazardous Materials Table (49 CFR § 172.01), and materials that meet the defining criteria for hazard classes and divisions in 49 CFR § 173.

Petroleum products include crude oil or any derivative thereof, such as gasoline, diesel, or propane. They are considered hazardous materials because they present health hazards to users in the event of incidental releases or prolonged exposure to their vapors.

Hazardous and Petroleum Wastes. Hazardous wastes are defined by the Resources Conservation and Recovery Act at 42 USC § 6903(5) as amended by the Hazardous and Solid Waste Amendments 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."

Certain types of common hazardous wastes are subject to special management provisions intended to ease the management burden and facilitate the recycling of such materials. These are called universal wastes, and the standards for managing them are established in 40 CFR § 273. Wastes covered under the universal waste standards include batteries, pesticides, mercury-containing equipment, lamps, and aerosol cans.

Defense Environmental Restoration Program. The Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) governs response or cleanup actions to address releases of hazardous substances, pollutants, and contaminants into the environment. Congress formally established the Defense Environmental Restoration Program in 1986 to provide for cleanup of DoD property at active installations, Base Realignment and Closure installations, and formerly used defense sites throughout the U.S. and its territories. The two major restoration programs under the Defense Environmental Restoration Program are the Installation Restoration Program and Military Munitions Response Program. The Installation Restoration Program addresses contaminated sites, while the Military Munitions Response Program addresses nonoperational military ranges and other sites suspected or known to contain unexploded ordnance, discarded military munitions, or munitions constituents. Each site is investigated, and appropriate remedial actions are taken under the supervision of applicable federal and state regulatory programs. When no further action is granted for a given site, the site is closed, and it no longer represents a threat to human health.

Special Hazards

Per- and polyfluoroalkyl substances. DoD has identified certain Per- and polyfluoroalkyl substance (PFAS) as emerging contaminants of concern that have affected DAF installations. PFAS are a class of synthetic compounds that possess a chemical structure that gives them unique properties, including thermal stability and the ability to repel both water and oil. This class of chemicals was developed in the 1940s and includes the chemicals perfluorooctane sulfonate, perfluorooctanoic acid, perfluorobutanesulfonic acid, perfluorononanoic acid, and perfluorohexane sulfonate. Aqueous film forming foam (AFFF) containing PFAS was developed in the early 1960s and used at airports, municipal fire stations, petroleum facilities, and in other industries in the U.S. to extinguish hydrocarbon-based fires effectively. DAF began using AFFF containing PFAS as a firefighting agent to extinguish petroleum fires in the 1970s. Firefighters at military installations regularly used AFFF in emergencies or were trained with AFFF in an unconfined manner. As awareness of PFAS-related health risks has increased, DAF has limited the use of PFAS at its installations and continues to investigate and mitigate PFAS-related environmental impacts under CERCLA. The USEPA finalized a National Primary Drinking Water Regulation for PFAS on 10 April 2024, creating Maximum Content Levels for six PFAS compounds (USEPA 2025).

Toxic Substances. Toxic substances are substances that might pose a risk to human health and are addressed separately from hazardous materials and hazardous wastes. Toxic substances include asbestos-containing materials (ACM), lead-based paint (LBP), and polychlorinated biphenyls (PCB), all of which are typically found in buildings and utilities infrastructure.

Asbestos is regulated by USEPA under the Clean Air Act, Toxic Substances Control Act, and CERCLA. The USEPA has established that any material containing more than one percent asbestos by weight is considered an ACM. USEPA implemented several bans on various ACMs between 1973 and 1990, so ACMs are most likely found in older buildings (i.e., constructed before 1990). LBP was commonly used prior to its ban in 1978; therefore, buildings constructed prior to 1978 may contain LBP. PCBs are man-made chemicals that persist in the environment and were widely used in building materials (e.g., caulk) and electrical products prior to 1979. Structures constructed prior to 1979 potentially include PCB-containing building materials.

Radon. Radon is a naturally occurring, odorless, and colorless radioactive gas found in soils and rocks that can lead to the development of lung cancer. Radon tends to accumulate in enclosed spaces, usually those that are below ground and poorly ventilated (e.g., basements). The USEPA established a guidance radon level of 4 picocuries per liter in indoor air for residences, where radon levels above this amount are considered a health risk to occupants.

Safety and Occupational Health

Safe conditions exist in an environment where potential risk, including the potential for death, serious bodily injury, illness, or property damage, is mitigated wherever possible by adhering to existing precautionary protocols. Safety concerns involving human activity that is required to maintain operation readiness and associated activities is considered Occupational Safety. Explosives and munitions safety addresses the concerns and potential impacts associated with the management, storage, and use of explosive materials necessary for installation operations and training activities. Construction safety addresses potential hazards associated with the use of machinery/equipment and common issues related to construction and demolition projects. Flight safety considers airfield and aircraft flight risks such as aircraft mishaps and accidents.

The *Occupational Safety and Health Act* (29 USC § 651, *Congressional Statement of Findings and Declaration of Purpose and Policy*) and other relevant laws ensure safe and healthy working conditions for civilian workers by setting and enforcing standards and providing health and safety training, outreach, education, and assistance. The health and safety of on-site military and civilian workers are also safeguarded by numerous DoD and DAF regulations designed to comply with the standards issued by OSHA and USEPA. These standards specify the amount and type of training required for industrial workers, the use of personal protective equipment and clothing, engineering controls, and maximum exposure limits for workplace stressors.

DAF Instruction 91-202, *The U.S. Air Force Mishap Prevention Program*, ensures that DAF operational and construction procedures meet or exceed OSHA and DAF Occupational Safety and Health guidance (DoD Directive 4715.1E, *Environment, Safety, and Occupational Health*) as well as other federal safety and health requirements. DAF Manual 91-203, *Air Force Occupational Safety, Fire, and Health Standards*, provides specific work procedures for a safe

workplace and details safety components of construction work, including civil engineering activities, motor vehicle operations and maintenance, materials handling, mishap prevention, fire prevention, and tool and machinery operations.

Acronyms

ACM	asbestos-containing material
AFB	Air Force Base
AFFF	aqueous film forming foam
APE	Area of Potential Effects
BGEPA	Bald and Golden Eagle Protection Act
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
CWA	Clean Water Act
DAF	Department of the Air Force
dB	decibel
dBA	"A"-weighted decibel
DNL	day-night average sound level
DoD	Department of Defense
E	Endangered
EISA	Energy Independence and Security Act
EO	Executive Order
ESA	Endangered Species Act
F	Federally
FAC	Florida Administrative Code
FDEP	Florida Department of Environmental Protection
Hz	hertz
LBP	lead-based paint
MBTA	Migratory Bird Treaty Act
MMPA	Marine Mammal Protection Act
MOU	Memorandum of Understanding
MSA	the Magnuson-Stevens Fishery Conservation and Management Act
NAAQS	National Ambient Air Quality Standards
NHPA	National Historic Preservation Act
NMFS	National Marine Fisheries Service
NOAA	National Oceanic and Atmospheric Association
NPDES	National Pollutant Discharge Elimination System
NRHP	National Register of Historic Places
O_3	ozone
OSHA	Occupational Safety and Health Administration

P	Proposed (Federal designation)
PCB	polychlorinated biphenyl
PFAS	Per- and polyfluoroalkyl substance
S	State
S/A	similarity of appearance
SAIA	Sikes Act Improvement Act
T	Threatened
UR	under review (Federal designation)
USC	United States Code
USEPA	U.S. Environmental Protection Agency
USFWS	U.S. Fish and Wildlife Service
WOTUS	Waters of the United States

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