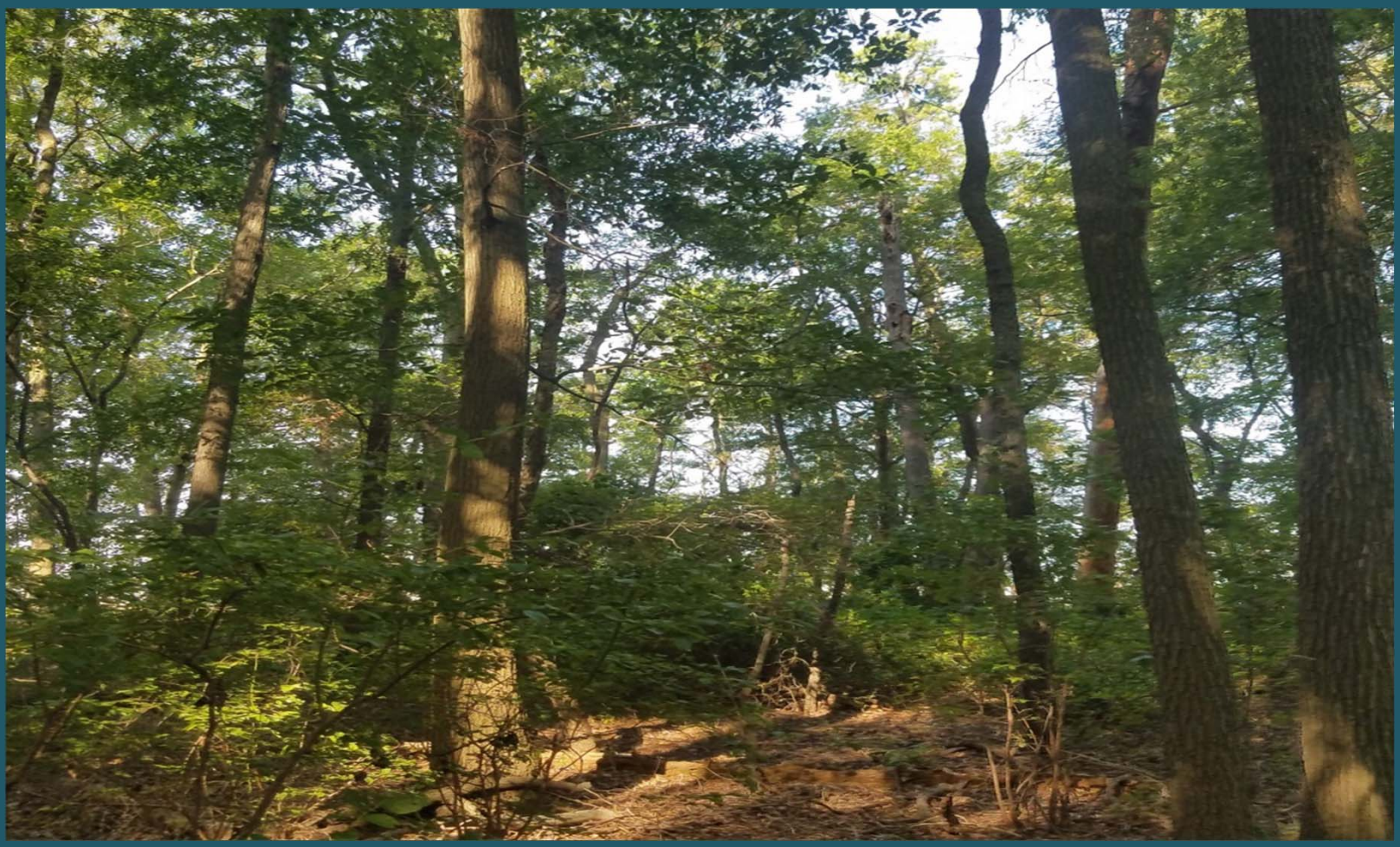

Integrated Natural Resources Management Plan

Maryland Air National Guard Base Martin State Airport

November 2021

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3501 Fetchet Avenue
Joint Base Andrews, MD 20762

Maryland Air National Guard
Maryland Air National Guard Base,
Martin State Airport
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Finding of No Significant Impact (FONSI) for the Integrated Natural Resources Management Plan / Environmental Assessment Maryland Air National Guard Base, Martin State Airport, Maryland

Purpose

Pursuant to the Council on Environmental Quality (CEQ) Regulations (40 *Code of Federal Regulations* (CFR) Parts 1500–1508) for implementing the procedural provisions of the National Environmental Policy Act (NEPA) (42 United States Code [USC] § 4321 et seq.) and 32 CFR Part 989, *Environmental Impact Analysis Process* (EIAP), the Maryland Air National Guard (ANG) has conducted an Environmental Assessment (EA) of the potential effects associated with implementing an Integrated Natural Resources Management Plan (INRMP) at the Martin State Airport, Maryland. This INRMP has been prepared in accordance with the provisions of the Sikes Act as amended (16 USC § 670a et seq.), Department of Defense Instruction (DoDI) 4715.03, *Natural Resources Conservation Program*, Department of Defense Manual (DoDM) 4715.03, *INRMP Implementation Manual*, and Air Force Manual (AFMAN) 32-7003, *Environmental Conservation.* This INRMP has been prepared for the 175th Wing (175 WG) of the Maryland ANG at Maryland Air National Guard Base Martin State Airport (MDANGB) to manage significant natural resources in support of the training mission. Significant natural resources at MDANGB include WOTUS, including wetlands, forested habitat, and the installation occurs with the Chesapeake Bay Watershed. The purpose of the INRMP implementation is to comply with the Sikes Act and carry out the set of recommended resource-specific management strategies developed in the INRMP, which would enable the Maryland ANG to effectively manage the use and condition of natural resources on MDANGB. The EIAP for the implementation of the 2022 INRMP does not include an analysis of effects for individual projects.

Background

The 175 WG is stationed at the MDANGB in Middle River, Baltimore County, MD. The MDANGB comprises 175 acres (71 hectares) in the northeastern portion of the airport, approximately 12 miles (19 kilometers) east of Baltimore in the Chesapeake Bay watershed. The mission of the 175 WG is to provide world class combat capability, excel as a community leader, and foster a culture of continuous improvement. The Maryland ANG has a dual mission, one federal and one state. The federal mission provides air combat forces and theater airlift to America's Unified Combatant Commands and provides cyber response and protection to the US Cyber Command (USCYBERCOM) and the US Air Force. In addition to the one flying unit and the one cyber group, the 175 WG maintains support units including security forces, engineers, communications, logistics, aerial support, and administrative support functions among others. The state mission assists state authorities during civil and natural disaster emergencies by providing personnel, equipment, and facilities to protect life and property and to preserve public safety for the state of Maryland.

Proposed Action

The Maryland ANG's Proposed Action is to implement the INRMP, which supports an ecosystem approach and includes natural resources management measures to be undertaken on MDANGB. The Proposed Action focuses on a 5-year planning period, which is consistent with the timeframe for the management measures described in the INRMP. Implementation of the Proposed Action would support the Maryland ANG's need to provide realistic training for

Maryland ANG personnel in fulfillment of mission requirements while complying with the Sikes Act and other environmental regulations and policies.

Alternatives

The development of proposed management measures for the INRMP included a screening analysis of resource-specific alternatives. The screening analysis involved the use of accepted criteria, standards, and guidelines, when available; or best professional judgment to identify management practices for achieving natural resources management objectives on the installation. The outcome of the screening analysis led to the development of the Proposed Action as described above. Consistent with the intent of NEPA, this screening process focused on identifying a range of reasonable resource-specific management alternatives and developing a plan that could be implemented, as a whole, in the foreseeable future. Management alternatives deemed to be infeasible were not analyzed further. As a result of the screening process, the EA, as an integral part of the INRMP, formally addresses two alternatives: the Proposed Action (i.e., implementation of the INRMP) and the No Action Alternative.

No Action Alternative

Under the No Action Alternative, the proposed management measures set forth in the INRMP would not be implemented. Current management measures for natural resources on the installation are limited and they would remain in effect and existing (i.e., baseline) conditions would continue. The No Action Alternative serves as a baseline against which the Proposed Action can be evaluated. Inclusion of a No Action Alternative is prescribed by CEQ regulations; therefore, the No Action Alternative has been analyzed in the EA, which is included as a component of this INRMP.

Environmental Impacts of the Proposed Action

The EA has evaluated the potential environmental impacts associated with the Proposed Action and No Action Alternative. Potential impacts of the Proposed Action have been assessed for the following environmental resource areas:

Soils- The Proposed Action would minimize impacts on soils associated with erosion and sedimentation resulting in long-term beneficial impacts to the resource. MDANGB would take a proactive approach to minimize and prevent soil erosion and compaction through implementation of revegetation plans, including interim mechanisms to stabilize the soil until vegetative cover has become established, and implementation of best management practices (BMPs).

Water Resources-Surface Water and Waters of the US- Implementation of the INRMP is expected to result in beneficial impacts to surface water and Waters of the US (WOTUS). The INRMP describes management activities and projects to prevent potential degradation in water quality and reduce sedimentation from erosion by conducting routine screening of watersheds to evaluate the potential for adverse impacts. Monitoring high risk erosion areas, monitoring re-vegetation efforts, implementing BMPs, and planning and constructing activities in areas that are less likely to impact wetlands would also provide beneficial impacts. MDANGB is located in the Chesapeake Bay watershed and as such, the Maryland ANG will incorporate the goals and outcomes of the 2014 Chesapeake Bay Watershed Agreement for water quality, healthy watersheds, and land conservation into projects where feasible. Consistent with the goals of the agreement, the MDANGB will when feasible, protect riparian forest buffers; protect

groundwater through spill prevention and the use of pesticides in an integrated program with a focus on mechanical practices; reduce sediment through erosion control plans and BMPs; protect wetlands; and address invasive species issues through the Integrated Pest Management (IPM) Plan. The Maryland ANG will ensure that any proposed projects or activities that may impact coastal resources or uses will undergo a federal consistency review in compliance with the Coastal Zone Management Act.

Vegetation- This INRMP includes specific actions to manage installation ecosystems, including wildlife habitat surveys, protection of sensitive ecological areas, and an integrated approach to pest management. Establishment of long-term surveying and monitoring programs under the Proposed Action would provide long-term benefits to the native vegetation on the installation.

Wildlife- Projects listed in the INRMP and management recommendations would provide beneficial effects to wildlife under the Proposed Action. Wildlife surveys and support of the 2015 Maryland State Wildlife Action Plan (SWAP) would provide beneficial effects to regional biodiversity. Survey efforts would inform the MDANGB of species present on the installation and would allow the MDANGB to manage for specific species when possible to sustain populations. Implementation of the Bird/Wildlife Aircraft Strike Hazard Plan and IPM Plan reduce human and wildlife conflicts which could negatively impact the mission.

Special Status Species- Beneficial effects on special status species at MDANGB would be expected with implementation of the INRMP, as it would provide a greater degree of protection and management for species not protected under the Endangered Species Act, such as state-listed species, species of greatest conservation need, and sensitive habitats. No federal threatened or endangered species reside on MDANGB.

Land Use- Implementation of the INRMP would have long-term beneficial effects on the natural environment within the installation and, over time, ensure the sustainability of MDANGB lands to support training activities and mission requirements (i.e., no net loss in training land).

Cumulative Impacts- Implementation of the INRMP would have long-term positive effects on the natural environment. The MDANGB INRMP was developed to be consistent with regional goals and objectives in the 2015 Maryland SWAP. As development continues in areas adjacent to MDANGB, protection and conservation of natural resources within the boundaries of the installation will become more important. Measures enacted on MDANGB to prevent runoff, soil erosion, and degradation of wetlands will provide beneficial impacts to the overall health of the Chesapeake Bay ecosystem. As such, a long-term, positive cumulative effect would be expected to natural resources as a result of this INRMP and other natural resources management activities occurring within the region.

In accordance with 40 CFR §1501.9(f)(1), the Maryland ANG, in cooperation with the National Guard Bureau Natural Resources Manager, determined implementation of the INRMP would have no potential impacts on geology, floodplains, air quality, climate change, noise, utilities and infrastructure, cultural resources, hazardous materials, socioeconomics, environmental justice, protection of children, human health, and airspace. Implementation of the INRMP and associated plans would assist the federal and state Environmental Managers in their efforts to successfully manage natural resources found on the installation which include WOTUS, including wetlands, forested habitat, and the installation occurs with the Chesapeake Bay Watershed.

Public Involvement

The Sikes Act requires the preparation of an INRMP in cooperation with the US Fish and Wildlife Service (USFWS) and the appropriate state fish and wildlife agency (Maryland Department of Natural Resources [MDNR]) when significant natural resources are present. In addition, the Sikes Act requires the resulting Plan reflects the mutual agreement of the parties concerning conservation, protection, and management of fish and wildlife resources. The USFWS and MDNR participated in the development of the INRMP which ensured that information concerning the natural resources on or in the vicinity of the installation was accurate and presented with acknowledgment to local and regional management strategies. Consultation was undertaken with the USFWS, the US Department of Agriculture-Animal and Plant Health Inspection Service-Wildlife Services, and the MDNR. Comments from the agencies were incorporated into the INRMP.

The Sikes Act also requires public comment on the INRMP at its inception as well as during revisions when there is a mission change or changes that are expected to result in significant changes to biological resources from those identified in the existing INRMP. A Notice of Availability was placed in the *Avenue News* newspaper on 5 August 2021 to invite the public to comment on the Draft INRMP/EA for a period of 30 days. The documents were available at the Baltimore County Library – Essex Branch. No public comments were received.

Finding of No Significant Impact

Based on my review of the facts and analyses contained in the INRMP EA, I conclude that implementation of the Proposed Action to implement the INRMP would not have any significant adverse direct, indirect, or cumulative impacts on the quality of the human or natural environment. Accordingly, the requirements of NEPA, the CEQ, and 32 CFR 989 have been fulfilled and an Environmental Impact Statement is not required.

HEWETT.MARC.V.1170450791 Digitally signed by HEWETT.MARC.V.1170450791 Date: 2021.12.06 07:40:22 -05'00'

6 Dec 2021

Marc V Hewett, P.E., GS-15, DAF
Chief, Asset Management Division

Date

SIGNATURE PAGE

This Integrated Natural Resources Management Plan (INRMP) has been prepared for the 175th Wing of the Maryland Air National Guard at Maryland Air National Guard Base Martin State Airport (hereafter referred to as MDANGB) to manage significant natural resources in support of the training mission. Significant natural resources include the presence of state-listed protected species, forested habitat, Waters of the United States including wetlands, and the installation is located within the Chesapeake Bay Watershed. The INRMP meets the intent of the Sikes Act (16 United States Code § 670a–670l, 74 Stat. 1052).

To the extent that resources permit, the US Fish and Wildlife Service, Maryland Department of Natural Resources, and MDANGB, by signature of their agency representative, do hereby agree to work together for the purposes of conserving, protecting, and managing the natural resources present on MDANGB. This INRMP may be modified and amended by agreement of the authorized representatives of the three agencies. The agreement will become effective upon the date of the last signatory and shall continue in full force for a period of 5 years or until terminated by written notice to the other parties, in whole or in part, by any of the parties signing the agreement.

By their signatures below, or an attached sheet, all parties grant their concurrence with and acceptance of the following document.

Approving Officials:

ROBINSON.JORI.ANN.1145604806 Digitally signed by ROBINSON.JORI.ANN.1145604806 Date: 2022.01.28 12:23:36 -05'00'

Jori A. Robinson, Brig Gen
Commander
Maryland Air National Guard, Martin State Airport

28 Jan 2022
Date

DANIEL MURPHY Digitally signed by DANIEL MURPHY Date: 2022.01.04 15:08:02 -05'00'

Acting for Genevieve LaRouche
Project Leader, Chesapeake Bay Field Office
US Fish and Wildlife Service

Date

Jeannie Haddaway-Riccio
Secretary
Maryland Department of Natural Resources

12/7/2021
Date

ANNUAL REVIEW PROCEDURES

The Environmental Manager (EM) of the Maryland Air National Guard Base Martin State Airport (hereafter referred to as MDANGB) will review the Integrated Natural Resources Management Plan (INRMP) annually, prior to September 30, in cooperation with the US Fish and Wildlife Service (USFWS) and Maryland Department of Natural Resources (MDNR) to ensure the goals and objectives of the INRMP remain current. Prior to the annual meeting with the USFWS and the MDNR, the EM will schedule an internal stakeholders meeting with the Safety Office, the US Department of Agriculture-Animal and Plant Health Inspection Service-Wildlife Services (USDA-APHIS-WS), the Installation Pest Management Coordinator (IPMC), and tenant organizations to obtain feedback on how implementation of the INRMP affected or did not affect their programs and to obtain any comments and recommendations they may have. Following the internal stakeholders meeting, the EM will prepare a summary of the actions taken in support of the INRMP over the past year, what actions were not completed with an explanation of why they were not implemented, and the actions planned for the coming year. The EM will send out invitations with the written summary to the USFWS, MDNR, National Guard Bureau (NGB)/A4VN Natural Resources Program Manager, Safety Office, USDA-APHIS-WS, IPMC, and other entities deemed necessary to participate in an annual meeting held in-person, via a conference call, or via a Teams meeting to discuss the written review summary, to address any questions regarding implementation of the INRMP over the past year, and to discuss the planned actions for the coming year. The EM will document the meeting with the invitation, an agenda, meeting minutes, and a sign-in roster of attendees. Following the meeting, the MDANGB EM will submit the documentation to the USFWS and the MDNR for their review and comment and for concurrence that the documentation reflects the discussions held and the agreements made during the annual meeting. The metrics used for this evaluation are set forth in DoDI 4715.03, *Natural Resources Conservation Program*, Enclosure 5. The installation's natural resources management progress will be determined based on information obtained annually that supports the focus areas in the DoDI 4715.03 through the US Air Force/NGB biannual environmental quality data calls.

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DOCUMENT CONTROL

Record of Review - In accordance with the Sikes Act, Department of Defense Instruction 4715.03, *Natural Resources Conservation Program*, Department of Defense Manual 4715.03, *INRMP Implementation Manual*, and Air Force Manual 32-7003, *Environmental Conservation*, an Integrated Natural Resources Management Plan (INRMP) is required to be reviewed annually to ensure plans and projects remain current, and every 5 years for operation and effect. Annual reviews and updates are accomplished through annual meetings led by the base Environmental Manager (EM) and attended by the US Fish and Wildlife Service (USFWS), the Maryland Department of Natural Resources (MDNR) and, if required, the National Oceanic and Atmospheric Administration, National Marine Fisheries Service. During the annual meetings, actions taken over the previous year are discussed and actions to be taken over the coming year are discussed and agreed to. The meeting is followed up in writing for concurrence by the EM and the representatives from the USFWS and the MDNR. As part of the annual and 5-year reviews, the EM shall also hold meetings with internal stakeholders to ensure all personnel and tenants are informed of INRMP requirements.

ACRONYMS

°C	degrees Celsius
°F	degrees Fahrenheit
175 WG	175th Wing
AFI	Air Force Instruction
AFMAN	Air Force Manual
AJD	Approved Jurisdictional Determination
ANG	Air National Guard
ANGB	Air National Guard Base
ANGRC	ANG Readiness Center
AOC	Area of Concern
BA	Biological Assessment
BASH	Bird/Wildlife Aircraft Strike Hazard
BHWG	Bird/Wildlife Hazard Working Group
BMP	Best Management Practice
CATEX	Categorical Exclusion
CBCA	Chesapeake Bay Critical Area
CE	Civil Engineer
CECOS	Civil Engineer Corps Officers School
CEQ	Council on Environmental Quality
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	*Code of Federal Regulations*
COG	Cyber Operations Group
COS	Cyber Operations Squadron
CPT	Cyber Protection Team
CWA	Clean Water Act
CZMA	Coastal Zone Management Act
DEPARC	Defense Environmental Programs Annual Report to Congress
DERP	Defense Environmental Restoration Program
DoD	Department of Defense
DoDI	Department of Defense Instruction
DoDM	Department of Defense Manual
DUSD	Deputy under Secretary of Defense
EA	Environmental Assessment
EIAP	Environmental Impact Analysis Process
EIS	Environmental Impact Statement
EM	Environmental Manager
EO	Executive Order
ESA	Endangered Species Act
ESC	Erosion and Sediment Control
FEMA	Federal Emergency Management Agency
FIRM	Federal Insurance Rate Map
FW	Fish and Wildlife

FY	Fiscal Year
GHG	Greenhouse Gas
GIS	Geographic Information System
GM	Grounds Maintenance and Landscaping
ICRMP	Integrated Cultural Resources Management Plan
IFAW	International Fund for Animal Welfare
IICEP	Interagency and Intergovernmental Coordination for Environmental Planning
IN	Invasive Species
INRMP	Integrated Natural Resources Management Plan
IPaC	Information for Planning and Consultation
IPM	Integrated Pest Management
IPMC	Installation Pest Management Coordinator
IPCC	Intergovernmental Panel on Climate Change
IRP	Installation Restoration Program
JD	Jurisdictional Determination
JP-4	Jet Petroleum No. 4
LEDPA	Least Environmentally Damaging Practicable Alternative
MAA	Maryland Aviation Administration
MBTA	Migratory Bird Treaty Act
MCCC	Maryland Commission on Climate Change
MDA	Maryland Department of Agriculture
MDANGB	Maryland Air National Guard Base Martin State Airport
MDE	Maryland Department of the Environment
MDNR	Maryland Department of Natural Resources
MDSPGP-5	Maryland State Programmatic General Permit-5
MISC	Maryland Invasive Species Control
MOA	Memorandum of Agreement
MOU	Memorandum of Understanding
MS4	Municipal Separate Storm Sewer System
NAAQS	National Ambient Air Quality Standards
NEPA	National Environmental Policy Act
NGB	National Guard Bureau
NGB/A4VN NRPM	NGB/A4VN Natural Resources Program Manager
NLEB	Northern Long-eared Bat
NMT	National Mission Team
NOAA	National Oceanic and Atmospheric Administration
NOI	Notice of Intent
NPDES	National Pollutant Discharge Elimination System
NWR	National Wildlife Refuge
OCP	Oil Control Program
OPR	Office of Primary Responsibility
OSS	Operations Support Squadron
OWS	Oil Water Separator

PA	Preliminary Assessment
PM	Program Management
POL	Petroleum, Oil, and Lubricants
SI	Site Investigation
SWAP	State Wildlife Action Plan
SWPPP	Stormwater Pollution Prevention Plan
TE	Threatened and Endangered
TPH-DRO	Total Petroleum Hydrocarbon - Diesel Range Organics
US	United States
USACE	US Army Corps of Engineers
USAF	US Air Force
USC	United States Code
USCYBERCOM	US Cyber Command
USDA	US Department of Agriculture
USDA-APHIS-WS	US Department of Agriculture-Animal and Plant Health Inspection Service-Wildlife Services
USEPA	US Environmental Protection Agency
USFWS	US Fish and Wildlife Service
VM	Vegetative Management
WA	Water Resource Protection
WNS	White-nose Syndrome
WQC	Water Quality Certification
WT	Wetland Management and Protection
WOTUS	Waters of the US

1.0 EXECUTIVE SUMMARY

The Sikes Act Improvement Act of 1997, 16 United States Code (USC) § 670a et seq., as amended, (herein referred to as the Sikes Act) requires federal military installations with significant natural resources to develop a long-range Integrated Natural Resources Management Plan (INRMP) and implement cooperative agreements with other agencies. The Sikes Act is implemented through Department of Defense (DoD) and US Air Force (USAF) instructions and manuals. The conservation measures discussed in the INRMP help manage water resources, reduce bird/wildlife aircraft strike hazard (BASH) risk, manage state and federally listed species, and sustain natural resources.

The Maryland Air National Guard Base Martin State Airport (hereafter referred to as MDANGB) INRMP is intended to be in support of and consistent with the Sikes Act. This INRMP is the primary guidance document and tool for managing natural resources on MDANGB. MDANGB occupies approximately 175 acres (71 hectares) of land in the northeastern portion of Martin State Airport in Middle River, Baltimore County, MD in the Chesapeake Bay watershed. The 175th Wing (175 WG) is located at MDANGB. The 175 WG has a dual mission: to augment active duty forces, and to assist state authorities during civil and natural disaster emergencies. The A-10 Thunderbolt has missions involving close air support, forward air control, combat search and rescue, and night flying operations in either an offensive or defensive capacity. The mission of the 175 WG is to provide world class combat capability, excel as a community leader, and foster a culture of continuous improvement.

The 2014 Chesapeake Bay Watershed Agreement expanded the 1983 Agreement to include all states within the Chesapeake Bay watershed and it recommits the Chesapeake Bay Watershed Partnership to its goals and outcomes for the restoration of the Bay, its tributaries and the lands that surround the watershed (Chesapeake Bay Program 2014). In 1984, DoD became one of the first federal agencies to formally join the watershed restoration effort. The Chesapeake Bay Watershed Agreement, with Executive Order (EO) 13508, *Chesapeake Bay Protection and Restoration*, guides the overall management of the DoD Chesapeake Bay Program (DoD 2021). The MDANGB will incorporate the goals and outcomes of the 2014 Chesapeake Bay Watershed Agreement for water quality, healthy watersheds, and land conservation into projects where feasible. Natural resource management activities on MDANGB must be conducted in a way that provides for sustainable land use; complies with applicable environmental laws and regulations, real estate leases, and licenses; and provides for "no net loss" in the capability to support the military mission. This INRMP provides a structure and plan to manage natural resources effectively and ensures that facilities remain available to support the installation's military mission into the future.

Specific actions in this INRMP are supported by its goals and objectives, the annual work plans, and the management strategies. Goals and objectives are listed in **Section 8**, and work plans are provided in **Section 9**. The INRMP provides a description of the installation, the military mission, the environment on the installation, and specific plans and strategies for natural resource management designed for sustainable military training. Implementation of the INRMP will ensure the successful accomplishment of the military mission while promoting adaptive management that sustains ecosystem and biological integrity and provides for multiple uses of natural resources.

2.0 GENERAL INFORMATION

2.1 Purpose and Scope

This INRMP is the primary guidance document and tool for natural resource management at the MDANGB. It provides for sustainable, healthy ecosystems; complies with applicable environmental laws and regulations, real estate leases, and licenses; and provides for "no net loss" in the capability of installation lands to support the military mission. The Installation Commander and the Environmental Manager (EM) can use this INRMP to manage natural resources more effectively to ensure that installation lands remain available and in good condition to support the installation's military mission over the long term. The INRMP is consistent with the Sikes Act as required by the DoD, USAF, and the National Guard Bureau (NGB). A multiple-use approach is implemented to allow for the presence of mission-oriented activities, as well as protecting environmental quality through the efficient management of natural resources.

This INRMP solely directs lands under the management authority of Maryland Air National Guard (ANG). If the Maryland ANG acquires additional lands at some future time, revision of the INRMP will provide management direction for such additional lands and any applicable natural resources management actions to address those additional resources. The comprehensive planning process, which incorporates logistics and operations of MDANGB, should incorporate the concerns presented in this INRMP, so that growth of the installation can progress in a manner consistent with, and complementary to, the objectives of the USAF with respect to the protection of natural resources.

2.2 Management Philosophy

2.2.1 Ecosystem Management

Natural resources at MDANGB are managed with an ecosystem management approach as directed by Air Force Manual (AFMAN) 32-7003, *Environmental Conservation*, Department of Defense Instruction (DoDI) 4715.03, *Natural Resources Conservation Program*, and Department of Defense Manual (DoDM) 4715.03, *INRMP Implementation Manual* (Table 1). Ecosystem management may be defined as management to restore and maintain the health, sustainability, and biological diversity of ecosystems while supporting sustainable economies and communities. The goal of ecosystem management on military lands is to ensure that military lands support present and future training and testing requirements while preserving, improving, and enhancing ecosystem integrity.

Ecosystem management provides a means for the USAF to conserve biodiversity and to provide high-quality military readiness. This INRMP is a mechanism through which MDANGB can maintain sustainable land use through ecosystem management. Each of the management strategies described in this INRMP should be monitored so that modifications can be made during implementation as conditions change. Human communities are entirely and completely dependent on the goods and services provided by our diverse ecosystems (Bernstein 2008). Decline of these ecosystems, and the biodiversity within them, is one of the foremost limitations to human prosperity. Ecosystem sustainability is the key to both biological diversity and human existence. It is the goal of this INRMP to successfully integrate ecological sustainability with goals and objectives that will sustain human communities and the operational missions of the MDANGB. By protecting a mosaic of habitats that support the greatest variety of life, this INRMP helps perpetuate viable, sustainable populations of native species, and the communities they compose. The protection of these species and communities, in turn, promotes the sustainability of functional ecosystems across the landscape.

Table 1. Elements and Principles of Ecosystem Management

DoDI 4715.03 Elements	
1	Avoid single-species management and implement an ecosystem-based multiple species management approach that is consistent with the requirements of the Endangered Species Act (ESA).
2	Use an adaptive management approach to manage natural resources-related issues such as climate change.
3	Evaluate and engage in the formation of local or regional partnerships that benefit the goals and objectives of the INRMP.
4	Use the best available scientific information in decision-making and adaptive management techniques in natural resource management.
5	Foster long-term sustainability of ecosystem services.
AFMAN 32-7003 Principles	
1	Maintain or restore native ecosystem types across their natural range where practical and consistent with the military mission.
2	Maintain or restore natural ecological processes such as fire and other disturbance regimes where practical and consistent with the military mission.
3	Maintain or restore the hydrological processes in streams, floodplains, and wetlands when feasible and practical and consistent with the military mission.
4	Use regional approaches to implement ecosystem management on an installation by collaboration with other DoD components as well as other federal, state and local agencies, and adjoining property owners.
5	Provide for outdoor recreation, agricultural production, harvesting of forest products, and other practical utilization of the land and its resources, provided that such use does not inflict long-term ecosystem damage or negatively impact the ANG mission.

2.2.2 Biodiversity

Biodiversity is the degree of variation of life within a given ecosystem, region, or even the entire planet. The DoD's challenge is to manage for biodiversity in a way that supports the military mission. Specific management practices identified in the MDANGB INRMP have been developed to enhance and maintain biological diversity within the installation's ecosystems. Ecosystem management includes biodiversity conservation and invasive species control as integral parts of ecosystem management. ANG installations maintain or reestablish viable populations of all native species when practical and consistent with the military mission. ANG installations also identify the presence of exotic and invasive species, and implement programs to control and/or eradicate those species. Finally, when feasible, ANG installations develop joint control strategies with other federal, state, and local cooperating agencies and adjacent landowners to increase the effectiveness of control measures and for the benefits illustrated in Figure 1.

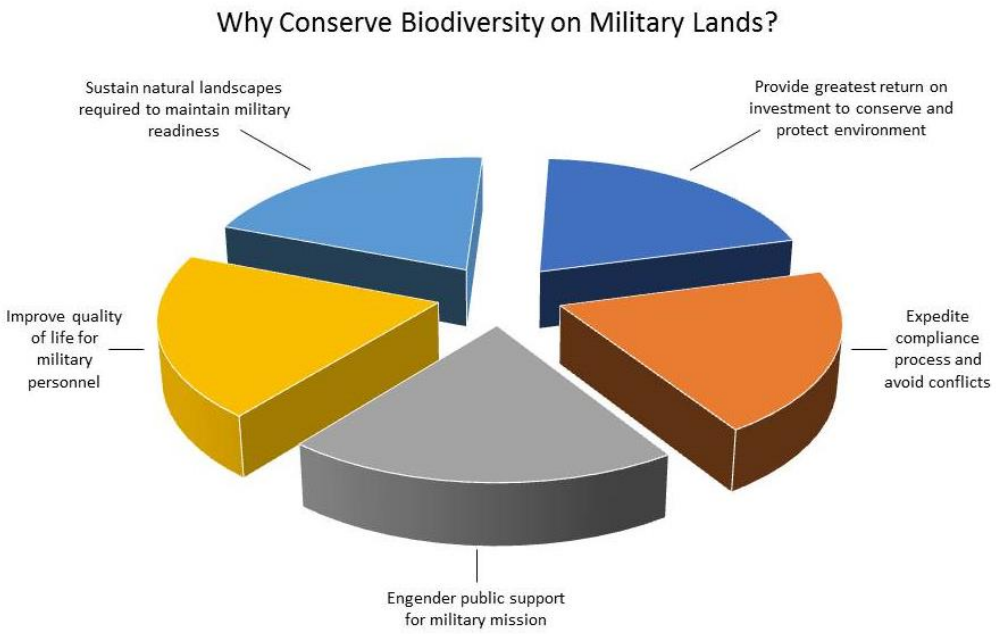


Figure 1. Why Conserve Biodiversity on Military Lands?
**Adapted from Keystone Center, 1996.*

This INRMP is the mechanism through which both ecosystem management and biodiversity conservation will be accomplished on MDANGB in agreement with the successful accomplishment of the installation's operational missions. Specifically, management practices are as follows:

- Manage natural resources for long-term use and support of the ANG military mission.
- Minimize habitat fragmentation and promote the natural pattern and connectivity of habitats.
- Protect native species and discourage non-native, invasive species.
- Protect rare and ecologically important species.
- Protect unique or sensitive environments, such as wetlands.
- Maintain or mimic natural processes.
- Restore species, communities, and ecosystems.
- Monitor impacts on biodiversity.
- Recognize the role that trees and ground cover play in stormwater sequestration.
- Preserve trees where possible.

2.3 Authority

2.3.1 Natural Resources Law, Regulations & Policy

The Maryland ANG, U.S. Fish and Wildlife Service (USFWS), and Maryland Department of Natural Resources (MDNR) determined an INRMP was required for the MDANGB due to the presence of significant natural resources such as state-listed protected species, forested habitat, Waters of the US (WOTUS) including wetlands, and the installation is located in the Chesapeake Bay watershed, thereby necessitating conservation and management. To ensure proper consideration of fish, wildlife, and habitat needs, this INRMP was prepared in cooperation with the USFWS and MDNR. The draft INRMP was provided to the USFWS and MDNR for review and comment. A Task Force meeting was held on 19 May 2021 to discuss the draft INRMP and all interested parties, such as the Installation Pest Management Coordinator (IPMC), USFWS, MDNR, NGB, US Department of Agriculture-Animal and Plant Health Inspection Service-Wildlife Services (USDA-APHIS-WS), and the Safety Office were invited.

Comments from the meeting were incorporated into the draft final INRMP which was then made available for a 30-day public review. Comments provided by the agencies included:

- Update the state-listed species list.
- Consider implementation measures to increase pollinator habitat where feasible.
- Address protective measures for effects of climate change.
- Develop designs for monitoring surveys for breeding birds and bald eagles in cooperation with USDA-APHIS-WS.

No public comments were received. DoDI 4715.03, *Natural Resources Conservation Program*, identifies the DoD policies and procedures concerning natural resources management and INRMP reviews, public comment, and endangered species consultation. INRMPs are required to be jointly reviewed by the USFWS, MDNR, and the ANG installation for operation and effect on a regular basis, but not less than every 5 years. Minor updates and continued implementation of an existing INRMP do not require public comment. Major revisions to an INRMP do require an opportunity for public review. Specific projects in the INRMP may need informal or formal consultation under the Endangered Species Act (ESA) Section 7 depending on identifiable impacts to natural resources.

2.3.2 National Environmental Policy Act Compliance

The Environmental Impact Analysis Process (EIAP) is the process by which federal agencies facilitate compliance with environmental regulations. The primary legislation affecting these agencies' decision-making process is the National Environmental Policy Act of 1969 (NEPA; 42 USC § 4321 *et seq*.). NEPA requires that any organization using federal monies, proposing work on federal lands, or requiring a federal permit consider potential environmental consequences of proposed actions. The law's intent is to protect, restore, or enhance the environment through well-informed decisions.

The Council on Environmental Quality (CEQ) was established under NEPA for the purpose of implementing and overseeing federal policies as they relate to the NEPA process. The adoption of an INRMP can be considered a major federal action as defined by 40 *Code of Federal Regulations* (CFR) §1502.4 of the CEQ regulations. This requires an analysis of potential environmental impacts for the implementation of an INRMP, although a complete environmental assessment (EA) is not necessarily required as individual actions and projects for an INRMP typically undergo their own separate NEPA analysis. Required components of an EA have been incorporated into this INRMP and can be located in this document as follows:

- Purpose and Need for Action (§1501.5(c)(2) and 1502.13) – Section 11.2
- Description of Alternatives, including the Proposed Action (§1501.5(c)(2) and 1502.14) – Sections 11.3 and 11.4
- Description of Affected Environment (§1501.5(c)(1) and 1502.15) – Sections 4 and 5
- Analysis of Environmental Consequences (§1501.5(c)(2) and 1502.16) – Section 11.6
- Summary of Submitted Alternatives, Information, and Analyses (§1502.17) – Section 2.3.1
- Appendices (§1502.19)

CEQ regulations require intergovernmental notifications prior to making any detailed statement of environmental impacts. Through the Interagency and Intergovernmental Coordination for Environmental Planning (IICEP) process, Maryland ANG notifies relevant federal, state, and local agencies and allows them sufficient time to make known their environmental concerns specific to a proposed action. Comments and concerns submitted by these agencies during the IICEP process are subsequently incorporated into the analysis of potential environmental impacts. This coordination fulfills requirements under EO 12372, *Intergovernmental Review of Federal Programs*, and Air Force Instruction (AFI) 32-7060, IICEP. Furthermore, public participation in decision-making on new proposals is also required. Consideration of the views and information of all interested persons promotes open communication and enables better decision-making. Agencies, organizations, and members of the public with a potential interest in a proposed action, including minority, low-income, disadvantaged, and Native American groups, are urged to participate.

The EIAP for the implementation of MDANGB's 2022 INRMP was conducted in accordance with NEPA, CEQ *Regulations for Implementing the Procedural Provisions of the National Environmental Policy Act* (40 CFR § 1500-1508), and the USAF NEPA regulation 32 CFR Part 989. The EIAP and decision-making process for the Proposed Action (implementation of the 2022 INRMP) involved an examination of all environmental issues pertinent to the action proposed. Impact evaluations of the 2022 INRMP determined that no significant environmental impacts would result from implementation of the Proposed Action or any identified alternative. This determination was based on thorough review and analysis of existing resource information, and coordination with knowledgeable, responsible personnel from MDANGB and other relevant local, state, and federal agencies. The EIAP for the implementation of the 2022 INRMP does not include an analysis of effects for individual projects. Individual projects that have the potential to impact the environment will be analyzed separately in accordance with the NEPA process.

If a future project has the potential to impact the environment, the initial step in compliance with NEPA is to complete USAF Form 813 "Request for Environmental Impact Analysis" (Section 989.12 of 32 CFR 989) through ANG Readiness Center's (ANGRC's) online NEPA Tool. The form is prepared to aid in the development of the assessment, providing information on the proposed action and its alternatives, purpose, and potential environmental effects. This allows the proponent to identify potential environmental impacts early. The ANGRC reviews the Form 813 and associated information to determine if the proposed action requires a categorical exclusion (CATEX), EA, or environmental impact statement (EIS). Natural resources management actions in this INRMP at the time of implementation would be reviewed to determine if they qualify for a CATEX, EA or would require an EIS depending on the impacts to the natural resources.

2.3.3 Responsibilities

The INRMP has been organized to ensure the implementation of year-round, cost-effective management activities and projects that meet the requirements of the installation. Various personnel and organizations within the ANG that are responsible for the implementation of this INRMP are described in the following subsections.

2.3.3.1 Installation Commander

The Installation Commander oversees the installation and is responsible for ensuring that the goals and objectives of this INRMP are implemented to the fullest extent practicable based on funding and manpower availability. The Installation Commander is the official signatory for the INRMP.

2.3.3.2 Base Civil Engineer

The Base Civil Engineer (CE) plans, budgets, approves, and oversees all maintenance and construction activities performed on the installation. All maintenance and construction-related projects or management activities proposed in this INRMP should be approved by the Base CE to ensure that funding is available and these projects are complementary to the installation's comprehensive planning processes.

2.3.3.3 NGB/A4VN Natural Resources Program Manager

The NGB/A4VN Natural Resources Program Manager (NGB/A4VN NRPM) is the technical point of contact on all natural resource related activities for the ANG. The NGB/A4VN NRPM tracks DoD and USAF policies and approves funding for projects identified as a priority in the MDANGB INRMP. The development of projects included in the INRMP and any deviations from those projects will be submitted to the NGB/A4VN NRPM for review. Decisions resulting from those reviews will be a cooperative effort between the NGB/A4VN NRPM and the EM and/or the Installation's Natural Resources Manager, when applicable.

2.3.3.4 Environmental Manager

The EM plans, budgets, approves, and oversees all environmental activities performed on the installation and is responsible for ensuring that activities associated with the implementation of this INRMP adhere to applicable federal, state, local, and USAF environmental regulations and guidelines. Projects proposed in the INRMP are reviewed by the EM and the NGB/A4VN NRPM. The EM should independently review deviation from the projects proposed in this INRMP and should annually review federal and state species listings. Persons responsible for implementation of the INRMP are required to attend the Civil Engineer Corps Officers School (CECOS) DoD Natural Resources Management and Compliance course (https://www.denix.osd.mil/cecos/).

2.3.3.5 Pest Management Coordinator

The IPMC is responsible for the control of undesirable and/or nuisance plants and animals (including insects), and prevention of damage to natural resources. Pest management personnel utilize Integrated Pest Management (IPM) approaches and are responsible for the implementation of the IPM Plan. The IPMC is also responsible for completing monthly usage reports in the Pest Management Module in Enterprise Environmental, Safety, and Occupational Health Management Information System when pesticides are applied. The IPMC will, when required, assist in obtaining depredation permits for the management of wildlife on the installation and/or in the confines of the airfield on behalf of or in cooperation with the Safety Office and the USDA-APHIS-WS Specialist. The IPMC is also responsible for coordinating with the installation's Public Health Officer and/or Medical offices to ensure monitoring efforts and control methods for potential disease vectors or animals of other medical importance are specified in the IPM Plan and reported on. The IPMC will coordinate pest management activities with the EM to ensure sensitive areas are identified and to ensure actions taken do not impact those sensitive areas. The IPMC will ensure the goals and objectives of pest management activities are explained in the INRMP and will report all pest management activities to the INRMP Working Group and when applicable, the Bird/Wildlife Hazard Working Group (BHWG).

2.3.3.6 Wing Safety Office

The Wing Safety Office is responsible for development, implementation, and management of the BASH Program at MDANGB. The Wing Safety Office also ensures that bird/wildlife strikes resulting from aircraft assigned to transient units at MDANGB are accurately documented and

reported to the EM and the USAF BASH Team. The Wing Safety Office participates in MDANGB's BHWG, which conducts meetings to evaluate and refine strategies for the reduction of BASH risk on MDANGB. The Wing Safety Office is responsible for coordinating with and providing required information to the EM on BASH activities and ensures that the BHWG conducts meetings on the reduction of the BASH threat on the installation.

2.3.3.7 Airfield Management

Airfield Management is responsible for ensuring that the airfield is acceptable and appropriate for flight activity.

2.3.3.8 US Department of Agriculture-Animal and Plant Health Inspection Service-Wildlife Services

The USDA-APHIS-WS is responsible for monitoring hazardous wildlife that have the potential to create an aircraft strike hazard. USDA-APHIS-WS personnel support activities that pertain to the BASH Program and are responsible for wildlife depredation requirements within the airfield, as well as dispersal/harassment, capture and translocation, trapping and removal, and surveillance and monitoring. The USDA-APHIS-WS will coordinate efforts in regard to the removal of species and studies needed with the EM.

2.3.3.9 Operations and Maintenance

Operations and Maintenance personnel are responsible for all grounds maintenance activities on the installation. Operations and Maintenance personnel will assist the IPMC and the EM in the implementation of natural resource management projects when applicable. The Operations and Maintenance personnel will also periodically review grounds maintenance equipment to determine if new or additional equipment is needed for the proper maintenance of the installation's landscapes.

2.3.3.10 Legal Office

The Legal Office is responsible for ensuring the implementation of the management objectives contained within the INRMP meets all regulatory and statutory requirements that pertain to natural resources management. The Legal Office will review any future natural resources management proposals and alert the Installation Commander and the EM should there be any regulatory conflicts or shortfalls. In addition, the Legal Office will keep participating INRMP parties informed of any new statutes or regulations that might affect natural resources management.

2.3.3.11 Public Affairs Office

The Public Affairs Office is responsible for the coordination of public access for events at MDANGB. The Public Affairs Office serves as the point of contact to interface between the Installation Commander and civilian groups interested in installations for environmental, educational, or other purposes.

2.3.3.12 US Fish and Wildlife Service

The USFWS is a signatory of the INRMP and provides input regarding natural resource projects and operational component plans. The USFWS reviews and comments on the operations and effect update of the INRMP every 5 years and, when feasible, attends the task force meeting. The USFWS, when feasible, attends the annual meetings to discuss the status of the projects identified in the Annual Work Plans. At both the 5-year operations and effect and the annual meetings, the USFWS advises on the status of any pending additions or deletions to the federal threatened and

endangered species list that have the potential for inhabiting MDANGB. When feasible, the USFWS may support ANG wildlife and vegetation surveys conducted at MDANGB.

2.3.3.13 Maryland Department of Natural Resources

The MDNR is the state fish and wildlife agency and is a signatory of the INRMP and provides input regarding natural resource projects and operational component plans. The MDNR reviews and comments on the operations and effect update of the INRMP every 5 years and, when feasible, attends the task force meeting. The MDNR, when feasible, also attends the annual meetings to discuss the status of the projects identified in the Annual Work Plans. At both the 5-year operations and effect and the annual meetings, the MDNR advises on the status of any pending additions or deletions to the state threatened and endangered species list that have the potential for inhabiting MDANGB. When feasible, the MDNR may support ANG wildlife and vegetation surveys conducted at MDANGB.

2.4 Integration with Other Plans

By its nature, an INRMP is multidisciplinary and provides a summary of natural resources and associated management at a specific installation. As a result, information from an INRMP is incorporated into other plans and other plans are written to support an INRMP. MDANGB plans include the following:

- IPM Plan. Provides a summary of management of pest species to minimize impact to mission, natural resources, and the environment. This document is currently in development.
- Stormwater Pollution Prevention Plan (SWPPP). Provides an overview of prevention and management of stormwater (MDANGB 2018a).
- BASH Plan. Provides an active program to minimize bird and other wildlife strikes to aircraft on MDANGB, including techniques, processes, responsibilities, and management recommendations (Maryland ANG 2018b).
- Integrated Cultural Resources Management Plan (ICRMP). Provides a plan for management of cultural resources, including legal requirements, known cultural resources, processes, and responsibilities (Maryland ANG 2014b).

In addition, this INRMP reflects the goals and objectives of the following plans from other agencies.

- Chesapeake Bay Watershed Agreement (Chesapeake Bay Program 2014). The DoD is a member of the Chesapeake Bay Program Partnership formed in 1983 to restore and protect the Chesapeake Bay. The Chesapeake Bay Watershed Agreement establishes long-term goals for protection and restoration of the Bay, and time-bound, measurable outcomes that directly contribute to achieving those goals.
- Maryland State Wildlife Action Plan (SWAP). The DoD and the ANG encourage integration of the SWAP as part of a comprehensive installation natural resources program. The Maryland SWAP represents a shared vision and a strategy that has been developed by working with state, federal, and local organizations that partner with MDNR for wildlife conservation. The overall goal of the Maryland SWAP is to keep common species common or keep wildlife species from becoming listed as rare, threatened, or endangered, and work to recover species so that they no longer require legal protection (MDNR 2015). Several tools for conservation planning and information management to track implementation and effectiveness of the conservation actions were included in the 2015 SWAP (MDNR 2015).

Maryland ANG will consult with the regional MDNR office to determine areas where the installation can participate in future wildlife conservation partnerships with the MDNR in support of the SWAP. In addition, the MDNR will be integral in discussion of future revisions to the INRMP.

- The Martin State Airport Wildlife Hazard Management Plan. MDANGB personnel will continue to work with airport personnel on BASH reduction efforts.

3.0 INSTALLATION OVERVIEW

3.1 Location and Area

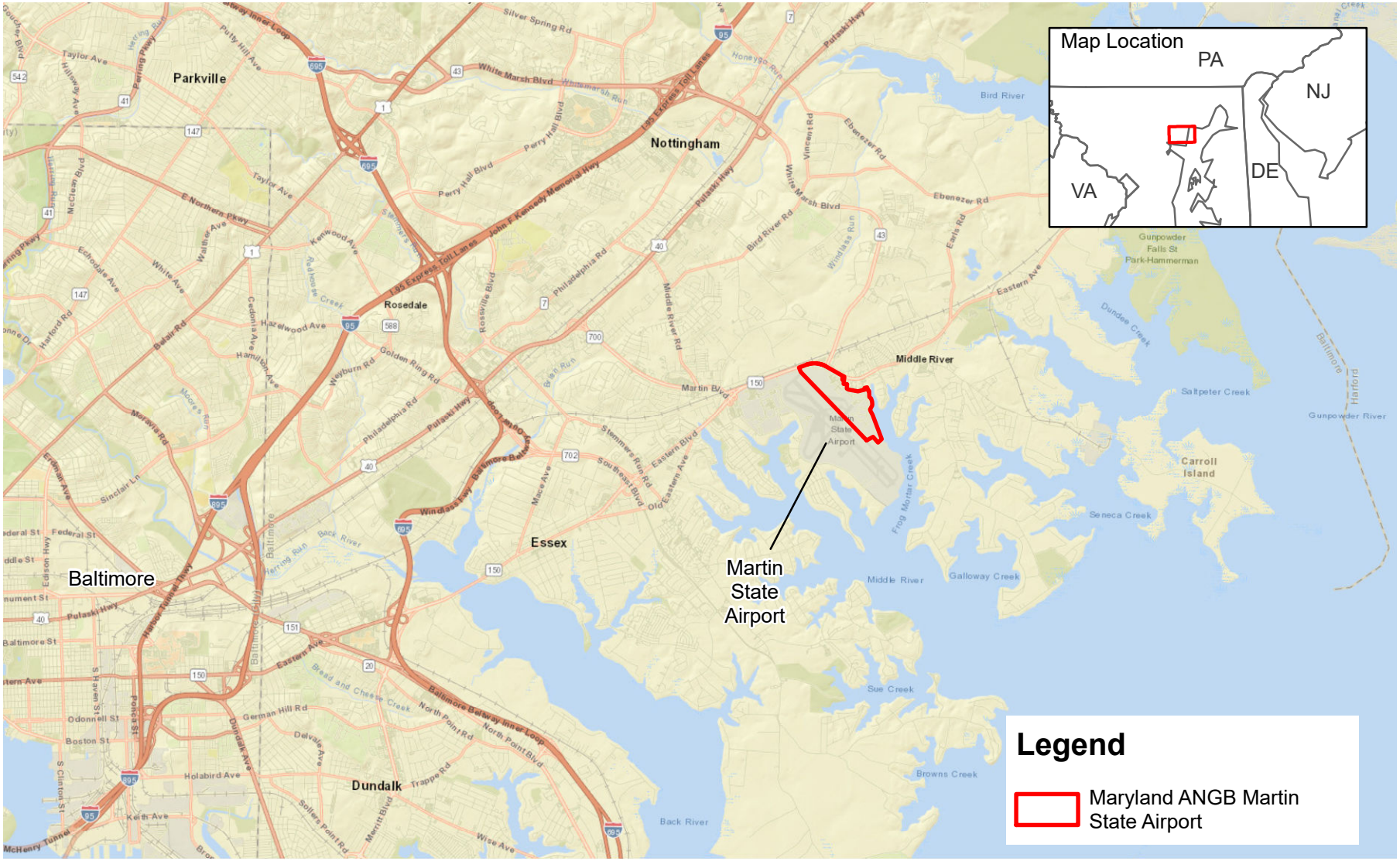
The 175 WG is stationed at the MDANGB at the Martin State Airport in Middle River, Baltimore County, MD in the Chesapeake Bay watershed. The MDANGB is located on 175 acres (71 hectares) of land which the USAF leases from the Maryland Aviation Administration (MAA). Maryland ANG, in turn, licenses the property from the USAF. The Martin State Airport is located approximately 12 miles (19 kilometers) east of Baltimore (Figure 2). The main entrance to the property is located south of the intersection of Eastern Boulevard and Lynbrook Road (Figure 3). The main cantonment comprises 67 acres (27 hectares) and 53 buildings of the 175-acre (71-hectare) installation and is located on the northeastern portion of the airport.

3.2 Installation History

The Maryland ANG traces its origins to June 29, 1921, when the 104th Observation Squadron received federal recognition (Maryland ANG 2020). The 104th was the first post-war National Guard flying unit to be equipped with its own aircraft, 13 Curtiss JN-4 Jennies. The unit operated out of Baltimore's Logan Field and initially served as division aviation for the 29th Infantry Division. The 104th's World War II service began on February 3, 1941, when it was mobilized along with the rest of the Maryland Guard. In 1957, the unit was relocated to the Glenn L. Martin Company Airport, whose longer runway was necessary to support jet operations.

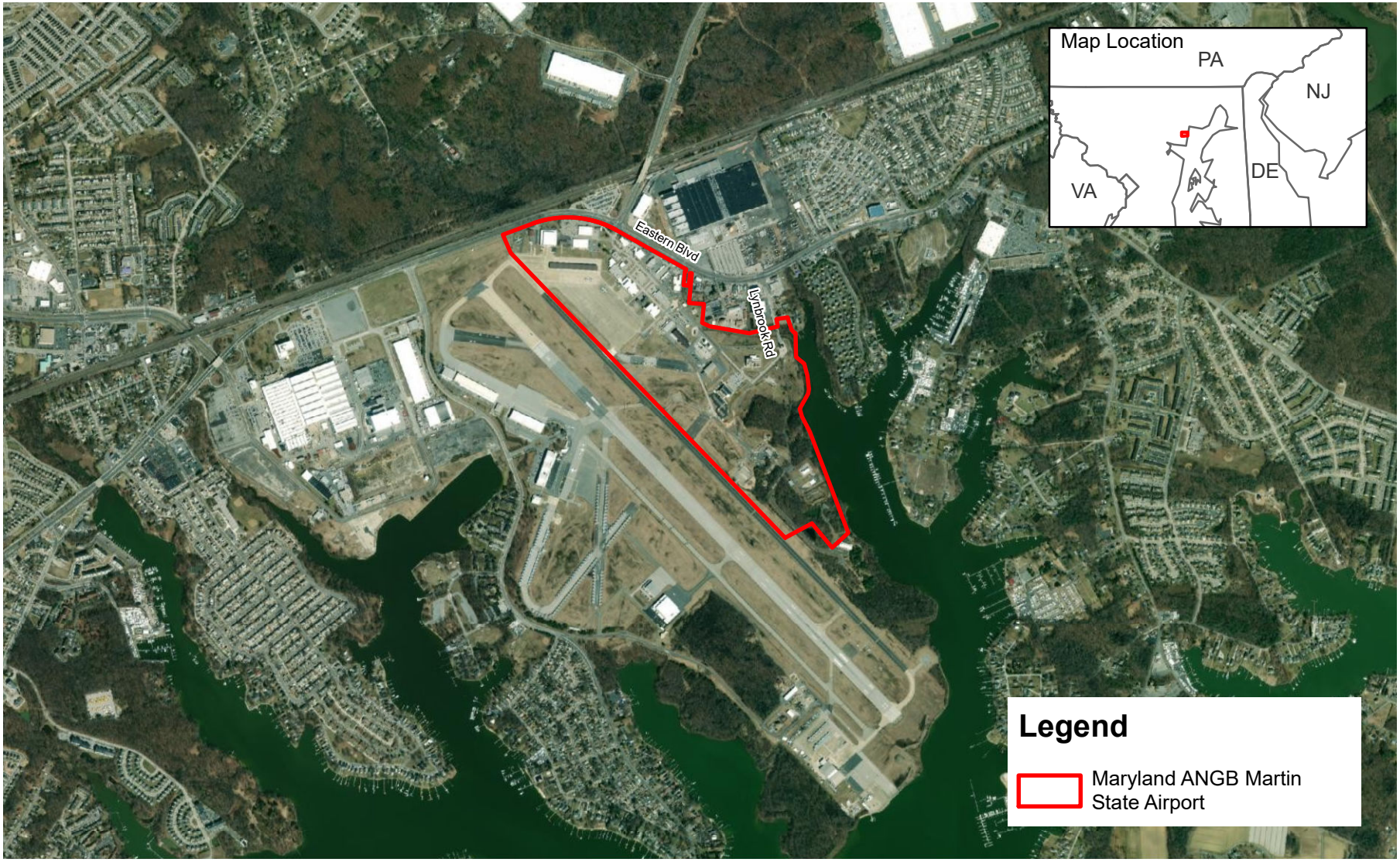
Maryland gained a second flying unit - and its first group-level headquarters - in 1955, when the 135th Air Resupply Group was organized at Harbor Field. A second group headquarters was added in 1962, when the 175th Tactical Fighter Group was established. The 104th Tactical Fighter Squadron became part of the new group. The Spring of 1968 brought considerable activity, with both the 135th and 175th being called out to help quell rioting in Baltimore following the assassination of Dr. Martin Luther King, Jr., and elements of the 175th being federalized and deployed to Cannon Air Force Base, NM, in response to the Pueblo Crisis in Korea.

The 135th endured multiple changes in designation, mission, and aircraft during the 1970s, switching first from special operations to a tactical air support role, where it flew forward air control missions aboard O-2A Super Skymasters. In 1977, the unit converted to a tactical airlift mission, flying the C-7A Caribou and in 1980, the unit converted to the C-130 Hercules aircraft, which it has flown ever since. The 175th, which had flown the A-37 Dragonfly since turning in its F-86s in 1970, received brand new A-10 Thunderbolt II attack aircraft from the factory in Hagerstown, MD, beginning in 1979. The unit continues to fly the famed tank killer to this day.



ANG - Air National Guard

Figure 2. Maryland ANGB Martin State Airport Regional Map



ANGB - Air National Guard Base

Figure 3. Maryland ANGB Martin State Airport Installation Map

The military facilities at Martin State Airport were formally renamed in honor of Major General Edwin Warfield III, former adjutant general of Maryland, in 1982, and the base was then known as Warfield Air National Guard Base (ANGB). The civilian portion of the field had been purchased by the state and renamed Martin State Airport in 1975. The installation is currently known as the Maryland Air National Guard Base Martin State Airport.

On June 15, 1996, the units of the 135th and 175th merged to form the 175 WG. The 175 WG, which carries on the lineage and honors of the 175th Fighter Group, is a composite organization with an Air Combat Command-gained fighter unit, an Air Mobility Command-gained airlift unit, a US Air Forces in Europe-gained civil engineer flight, and, since 2006, a network warfare squadron.

Maryland ANG marked its 90th year of operation in 2011. The year saw big changes for the unit with the transition from C-130J Hercules to the new C-27J Spartan Joint Cargo Aircraft that will allow the unit to continue airlift transport capabilities around the world. In addition, the $7.9 million 12-bay fire station was completed on base to handle any aircraft emergencies. These changes did not last long; for in 2013, the Wing no longer carried the air lift mission and was divested of the C-27J Spartans.

A new mission was assigned to the Wing. The 175th Cyber Operations Group (COG) was established on August 21, 2016 and comprises four squadrons including the 175th Cyber Operations Squadron (COS), 275th COS, 276th COS, and the 275th Operations Support Squadron (OSS). Both the 175th and 276th COS are designated National Mission Teams (NMTs) while the 275th COS is a Cyber Protection Team (CPT).

3.3 Military Missions

The 175 WG serves as the host unit at the base. The mission of the 175 WG is to conduct tactical air operations through the utilization of assigned tactical forces in either an offensive or defensive capability, including close air support to friendly ground forces. The 175 WG maintains and operates A-10 aircraft (Maryland ANG 2020).

The NMT mission includes providing forces to US Cyber Command (USCYBERCOM) for Defensive Cyber Operations - Response Actions. The CPT provides Defensive Cyber Operation - Internal Defensive Measures on behalf of USCYBERCOM and the USAF. The 275th OSS is responsible for fielding weapons and tactics, training, scheduling, and equipment for the entire 175th COG.

In addition, the mission of Maryland ANG is to provide air combat forces and theater airlift aircraft to America's Unified Combatant Commands. As a unit of the Maryland ANG, the 175 WG also provides personnel, equipment, and facilities to protect life and property and preserve public safety for the state of Maryland.

3.4 Surrounding Communities

Martin State Airport and MDANGB are located in Middle River, MD, approximately 12 miles (19 kilometers) east of the city of Baltimore. Land use surrounding MDANGB and the Martin State Airport is a mixture of residential, commercial, and industrial uses located along the major roadways. North of the base across Eastern Boulevard and the railroad line is space consisting primarily of undeveloped forested area. Nearby residential areas are located to the east across Frog Mortar Creek and south of the airport along Wilson Point Road. The Chesapeake Industrial Park adjoins the Martin State Airport to the west and the Middle River Federal Depot is located just north of the base along Eastern Boulevard (Maryland ANG 2014a). The estimated population in Middle River in 2019 was 25,129 (US Census Bureau 2021a). Surrounding unincorporated

communities in Baltimore County with populations as estimated in 2019 include: Essex (population of 39,437), Rosedale (population of 19,842), Rossville (population of 15,127), and Bowley's Quarters (population of 6,412) (US Census Bureau 2021b).

3.5 Local and Regional Natural Areas

The MDANGB is located in the Chesapeake Bay watershed and is subject to the DoD Chesapeake Bay Program requirement and those of the 2014 Chesapeake Bay Agreement and EO 13508, *Chesapeake Bay Protection and Restoration*. Dundee National Environmental Area, Gunpowder Falls State Park-Hammerman, and Eastern Regional Park lie to the east while Wilson Point Park and Kingston Point Park lie directly west of the installation (Figure 4). Wilson and Kingston Point parks are waterfront parks for boaters whereas Eastern Regional Park in a 122.5-acre (49.6-hectare) diverse recreational park. Although there are no National Wildlife Refuges (NWRs) near MDANGB, there are three NWRs within 30 miles (48 kilometers) that play an important role in waterfowl migration. Two of these are part of the Chesapeake Bay Marshlands NWR Complex; the Eastern Neck NWR and the Susquehanna NWR. The third NWR is the Patuxent Research Refuge approximately 23 miles (37 kilometers) south-southwest of the airport (Maryland ANG 2018b).

4.0 PHYSICAL ENVIRONMENT

4.1 Climate

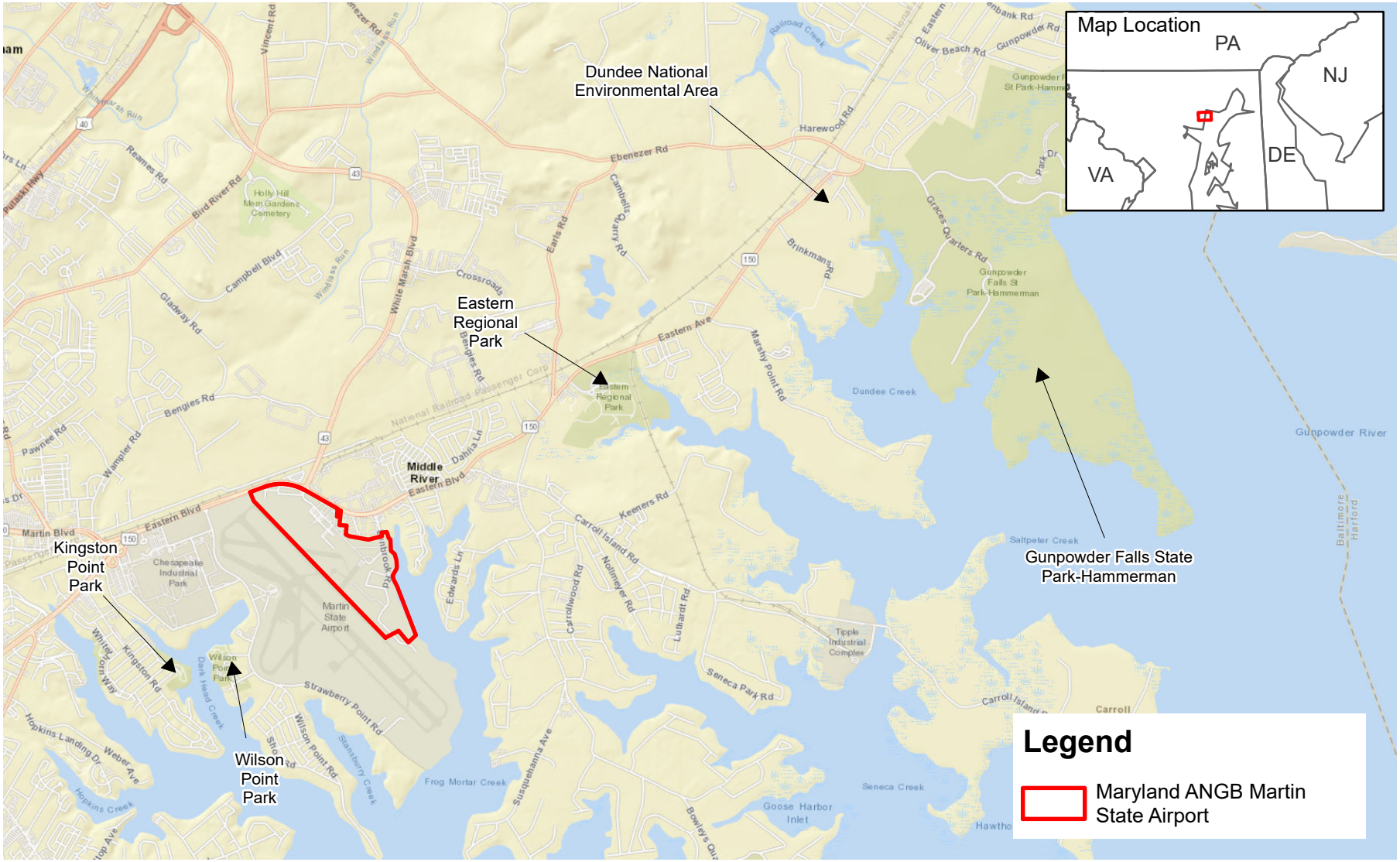
The climate in Middle River, MD is warm during the summer and very cold during the winter months, average temperatures in the 70s and 30s, respectively. The nearest National Weather Service weather station measuring both temperature and precipitation is located at the Baltimore/ Washington International Thurgood Marshall Airport, which is approximately 30 miles (48 kilometers) south of MDANGB. The average annual temperature in Middle River is 55.5 degrees Fahrenheit (°F) [13.1 degrees Celsius (°C)]. In a year, the average rainfall is 43.8 inches (111.3 centimeters). The least amount of rainfall occurs in February at under 3 inches (7.6 centimeters); most precipitation falls in summer and early fall. The temperatures are highest on average in July, at around 87.2 °F (30.7°C). In January, the average high temperature is 41.4 °F (5.22°C) which is the lowest average temperature of the whole year. The variation in the precipitation between the driest and wettest months is 1.27 inches (3.22 centimeters). Average monthly temperature and precipitation data are provided in Table 2.

Table 2. Average Monthly Temperatures and Precipitation in the Region

Month	Average Low Temperature (°F)	Average High Temperature (°F)	Average Rain Precipitation (inches)	Average Snow Precipitation (inches)
January	24.4	41.4	3.05	6.8
February	26.6	44.9	2.90	5.0
March	33.5	53.6	3.90	1.9
April	42.7	64.6	3.19	Trace
May	52.0	73.9	3.99	0.0
June	61.9	83.0	3.46	0.0
July	66.8	87.2	4.07	0.0
August	65.2	85.1	3.29	0.0
September	57.6	77.9	4.03	0.0
October	45.4	66.8	3.33	0.0
November	36.5	56.4	3.30	0.4
December	28.1	45.3	3.37	3.0

Source: NOAA 2021

°F degrees Fahrenheit



ANGB - Air National Guard Base

Figure 4. Local and Regional Natural Areas near Maryland ANGB Martin State Airport

Climate Change

DoDI 4715.03, *Natural Resources Conservation Program,* requires the INRMP to include an assessment of the potential impacts of climate change on natural resources on the base and to adaptively manage such resources to minimize adverse mission impacts. Climate change could have serious impacts on the state's diverse ecosystems and native species, and may encourage the spread of non-native species. It would also likely alter the natural range of many different plants and animals.

In 2007, the Maryland Commission on Climate Change (MCCC) was established by Executive Order (01.01.2007.07), *Climate Change and "Coast Smart" Construction,* which is an initiative to increase the state's long-term resiliency to storm-related flooding and sea level rise. The commission is charged with developing an action plan and firm timetable for mitigation of and adaptation to the likely consequences and impacts of climate change in Maryland, including strategies to reduce Maryland's greenhouse gas (GHG) emissions. The Intergovernmental Panel on Climate Change (IPCC) estimated that if GHG emissions continue to increase at the present rate, sea level will rise by over 2 feet (0.6 meter) along Maryland's 7,000 miles (11,265 kilometers) of shoreline during this century when the rate of regional land subsidence is taken into account. The action plan called to reduce GHG by 25 percent by 2020 and by 90 percent by 2050 (MCCC 2008).

The IPCC models show that by the end of the century, the difference between the higher and lower emissions scenario is markedly different. The low emissions path has held temperature increase to 4.8°F (2.7°C) in summer, and 4.0°F (2.2°C) in winter, while the higher emissions scenario leads to warming of nearly 9.0°F (5.0°C) in summer and 7.0°F (3.9°C) in winter in Maryland (MCCC 2008). The number of days with temperatures exceeding 90°F (32°C) is projected to double by the end of the century even under the low emissions scenario and triple under the higher emissions scenario (MCCC 2008). Precipitation is projected to increase during the winter, but become more episodic, with more falling in extreme events. Projections of winter rainfall show the greatest change, with increases of 5 percent by 2025 projected for both scenarios, a 6.6 to 6.8 percent increase by 2050, and increases of 10.4 to 12.6 percent by 2090 under the lower and higher emissions scenarios respectively. Large decreases are projected in winter snow volume (25 percent less in 2025 to 50 percent less in 2100 regardless of emission scenario). Drier and hotter conditions during summer months are likely to result in the loss of small wetlands and intermittent or ephemeral streams, potentially resulting in negative impacts on the water quality downstream (Boesch 2008). The length of the growing season would likely increase affecting the vegetation type and composition over time as reduction in soils moisture will cause some areas to experience increased water demand for crops and landscape irrigation. This could lead to increased grounds maintenance costs and increase the risk of local flooding events. In Maryland, the water available for runoff or groundwater recharge is projected to decrease by 0.08 to 0.3 inches (2 to 7 millimeters) per month during the summer and increase by 0.2 to 0.3 inches (6 to 7 millimeters) per month during the winter by the end of the century. Historic tide gauge records demonstrate that sea levels are rising along Maryland's coast. Due to a combination of global sea-level rise and land subsidence, sea levels have risen as much as 1.6 feet (0.48 meter) within Maryland's waters over the last 120 years and are expected to continue to rise (Boesch 2008).

4.2 Landforms

Maryland is part of six physiographic regions: geographic areas in which the geology (including lithology and structure) and climate history have resulted in landforms that are distinctly different from adjacent areas (MGS 2020). MDANGB is located within the Atlantic Coastal Plains region. This area is underlain by unconsolidated sediments including gravel, sand, silt, and clay, which overlap the rocks of the eastern Piedmont region at the contact zone known as the Fall Line (MGS 2020). The cities of Baltimore, Perryville, and Elkridge, Maryland are among those that lie along the fall line.

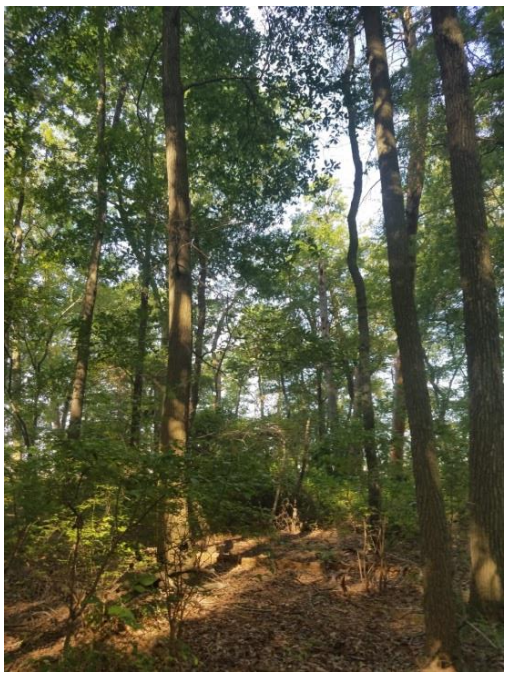


Figure 5. Maryland ANGB Landscape

4.3 Geology and Soils

The MDANGB occupies the eastern portion of a peninsula formed by Frog Mortar Creek and Middle River. The local environment consists of bay head and tidal marsh zones. The area is located within the Western Shore Coastal Plain Physiographic Province (Maryland ANG 2014b). During the last Ice Age, the sea levels were considerably lower than they are today. Thus, the Chesapeake Bay area that we know today was actually a valley with the Susquehanna River and its tributaries coursing over the exposed land mass. Several major rivers at that time all flowed into the Susquehanna River's paleo-valley, with the Susquehanna River then flowing into the Atlantic Ocean east of the current existing Eastern Shore. The infilling of the coastal plain and the formation of Chesapeake Bay was a 12,000-year long process, with it commencing between 14,000 and 15,000 years ago at the end of the Wisconsin Glacial Period, and ending approximately 3,000 years ago, with the land, Chesapeake Bay and Atlantic Ocean coastlines appearing as they are today. The James River originally flowed out into the Atlantic Ocean in its own river system, but when the Chesapeake Bay formed completely, the James River began draining out into the Bay, near the ocean entrance. Currently, three major tributaries the Potomac, the Susquehanna, and the James, form 80 percent of the contribution of fresh water that flows into Chesapeake Bay (Maryland ANG 2014b).

Geologically, the Coastal Plain area is underlain by southeasterly trending layers of unconsolidated sediments. The sediments are sand and clay with smaller proportions of gravel. This formation is closest to the surface at the fall line (See Section 4.2), and then trends downward so that it is 7,874 feet (2,400 meters) below surface as it underlies the modern Eastern Shore area, terminating at greater than 19,685 feet (6,000 meters) below surface at the now submerged scarp of the continental shelf. Thus the loose clay, sand, and gravels below the soil surface become a thicker deposit as one moves from the fall line to the east (Maryland ANG 2014b).

The majority of the installation is a semi-urban environment, with paved roads, sidewalks, buildings, and parking areas. A small portion, east of the runways, contains some built resources but also significant size tracts of woodland and grass covered terrain. Except for a wooded area in the east-central portion of the facility, all of the soils mapped for the project area are classed either as Mattapex-Urban Land or Urban Land (USDA NRCS 2020; Figure 6). Mattapex-Urban Land soils are defined as Mattapex Series soils that have been graded, cut, and filled or otherwise disturbed for non-farm uses (Maryland ANG 2014b). Urban Land soils have been covered by fill to a depth of greater than 18 inches (46 centimeters) or most of the profile has been completely graded away.

ANGB - Air National Guard Base

Figure 6. Soil Map for Maryland ANGB Martin State Airport

The undisturbed soils of the installation are confined to predominately Woodstown loam and Udorthents. Woodstown loam soil is deep, moderately well drained and is located on nearly level to gently sloping uplands of the Coastal Plain. These soils formed in unconsolidated deposits of very old sandy materials containing moderate amounts of silt and clay (Maryland ANG 2014b).

4.4 Hydrology

4.4.1 Groundwater

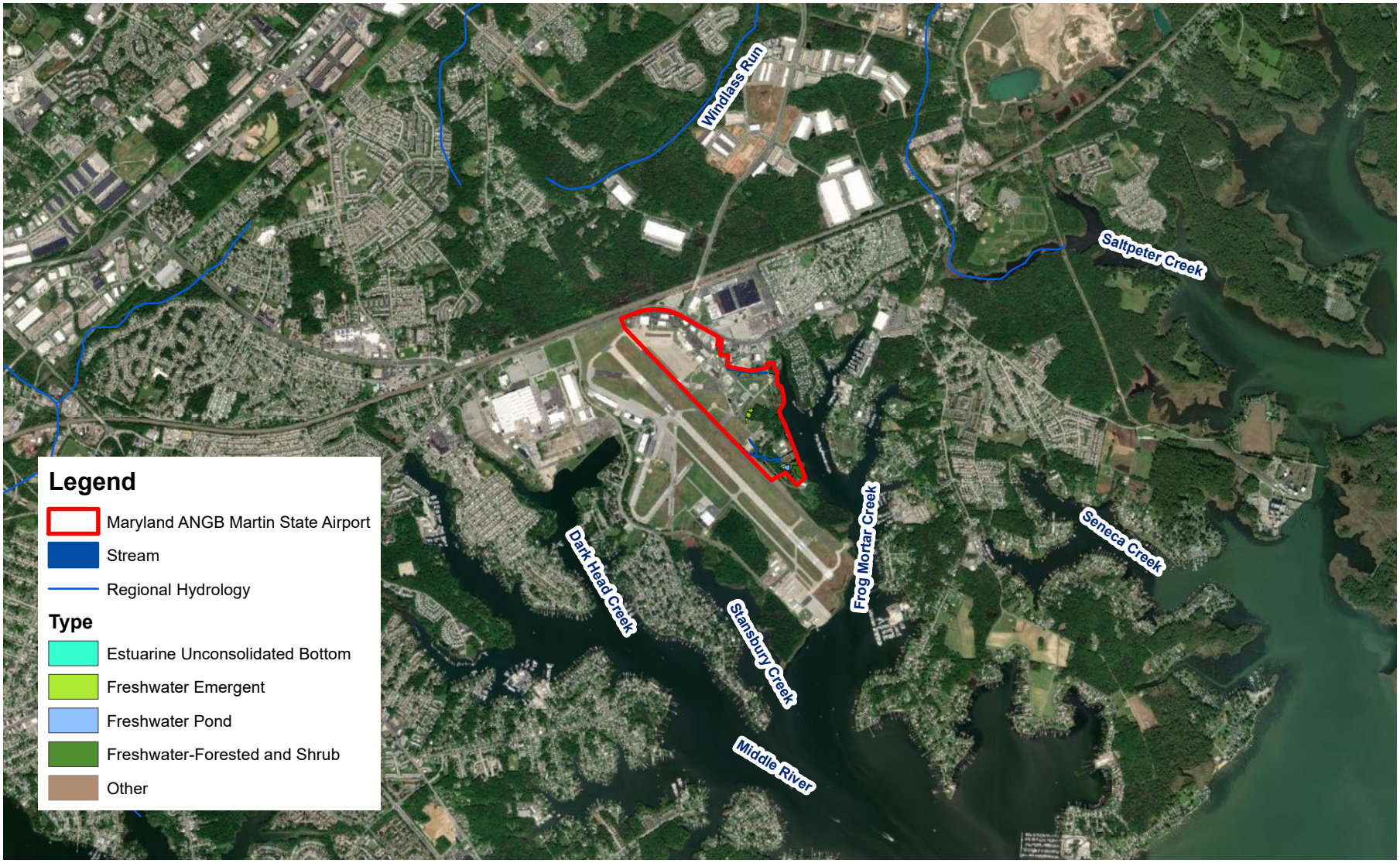
Groundwater supplies in the Baltimore area are mostly obtained from two separate aquifers, the Patuxent and the Patapsco Formations (MDANGB 2018a). The Patuxent is the primary aquifer used, particularly in the City of Baltimore; however, the Patapsco is more commonly used east and northeast of the city, such as in the Middle River area where the MDANGB is located. The Patapsco formation overlies the Arundel clay and is generally unconfined in much of the Baltimore area, including the location of the MDANGB. The Arundel clay overlies the Patuxent and serves as the upper confining unit. The Patuxent formation crops out in a band running alongside the Fall Line and dips southeast towards the Chesapeake Bay. The underlying crystalline basement rocks tend to be relatively impermeable, as compared to the Patuxent, and serve as a lower confining unit. A relatively low average groundwater velocity of 1.4 feet (0.42 meter) per year was determined for the shallow water in the redeveloped portions of the facility. The shallow water is generally perched within the fill material by relatively impermeable massive dry red clay (MDANGB 2018a).

4.4.2 Surface Water

The MDANGB is located in the Middle River watershed within the Chesapeake Bay watershed (drainage basin), near the confluence of Frog Mortar Creek and the Middle River. The creek borders the southeastern edge of the MDANGB (Figure 7), flows southeast from the base, and discharges 1.0 mile (1.6 kilometers) downstream into Middle River. The Middle River then flows east into the Chesapeake Bay (Maryland ANG 2018b).

The Middle River is listed on the Maryland Integrated 303(d)/305(b) List of Impaired Waters for total nitrogen and phosphorus in addition to polychlorinated biphenyls and mercury in fish tissue (MDE 2021a). In addition, Maryland Department of the Environment (MDE) classifies the waters of Frog Mortar Creek and Middle River as Use II waters, suitable for water contact sports, leisure activities involving direct contact with surface water, fishing, growth and propagation of fish and shellfish, agricultural and industrial water supply, and other seasonal uses permissible to the Chesapeake Bay and its tidal tributaries (MDE 2021b).

Other water bodies at the MDANGB include surface water drainage, retention ponds, and wetlands associated with Frog Mortar Creek. Wetlands are described further in Section 5.5. Surface water on the northern portion feeds into drainage ditches and underground storm sewers which empty into an open drainage ditch located along the south side of Eastern Boulevard. This ditch travels less than a mile to its discharge point into Frog Mortar Creek. Surface water on the central portion of the base drains into ditches and underground storm sewers which discharge into a large oil water separator (OWS) and a drainage ditch that runs just north of the petroleum, oil, and lubricants (POL) storage area east into Frog Mortar Creek. The drainage in and around the POL storage area also discharges into this OWS and the drainage ditch. Surface water in the southeastern portion of the base drains by both sheet flow and stormwater sewers to a stormwater outfall channel that empties into Frog Mortar Creek by the Munitions Maintenance Area of the base (Building 5110). A stormwater retention pond in the southeast portion of the MDANGB retains airfield stormwater runoff from the runway and vicinity. The water contained in this stormwater retention pond drains along a ditch that eventually flows to Frog Mortar Creek (MDANGB 2018a).



ANGB - Air National Guard Base

Figure 7. Hydrology Map for Maryland ANGB Martin State Airport

5.0 ECOSYSTEMS AND THE BIOTIC ENVIRONMENT

5.1 Ecosystem Classification

The MDANGB is located in the Chesapeake – Albemarle Silty Lowlands and Tidal Marshes ecoregion (Woods et al. 1999). Ecoregions denote areas of similarity in the mosaic of biotic, abiotic, terrestrial, and aquatic ecosystem components (EPA 2021). This ecoregion occurs in low elevations characterized by nearly flat terrain, terraces, swampy streams, tidal marshes, and ponds. Extensive salt estuarine bay marshes and tidal marshes are found on the poorly drained soils of the silty low terraces of this ecoregion. Dominant trees include gum and cypress (family Cupressaceae; Bailey et al. 1995). Today, forests and agriculture, including corn and soybean farming, are found where natural or artificial drainage is sufficient (Woods et al. 1999).

5.2 Vegetation

5.2.1 Historic Vegetative Cover

Since Baltimore County was settled in the 1600s by European colonists, introduced plant species are very common. By 1753 significant land clearing for agriculture had already occurred and some 60 non-native plant species had already been introduced. Based on pollen and archaeological botanical studies, the pre-contact pristine forests for the portions of the county adjacent to the rivers and the bay contain an oak-gum association. Tree species would have included willow oak (*Quercus phellos*), water oak (*Q. nigra*), basket oak (*Q. michauxii*), pin oak (*Q. palustris*), and swamp oak (*Q. bicolor*). Also, sweet gum (*Liquidambar styraciflua*), and sour or black gum (*Nyssa sylvatica*) would have flourished. Freshwater wetland plants forming the understory would have included different types of sedge from the genera *Scirpus*, *Carex*, and *Eleocharis*; grass from the genera *Phragmites*, *Panicum*, *Dichanthelium* and *Zisania*; and cattail (*Typha*). While other species would have been represented these would have been dominant (Maryland ANG 2014b).

5.2.2 Current Vegetative Cover

Most of the land on MDANGB has been paved, graded, landscaped, or otherwise modified. Three unique habitats were delineated during surveys in 2019 including: maintained/landscaped, woodland, and wetland (MDANGB 2020a). During the 2019 survey, a total of 84 unique plant species were observed (Table 3) across the three habitat types (Figure 8; MDANGB 2020a). Sixty-three of the species are considered native and the remainder are introduced species. Six of the 63 native species can also be considered introduced (Table 3). Native species are defined by the US Department of Agriculture (USDA) as species that are naturally occurring at the time of European colonization. An introduced species is a species that arrived later from some other part of the world.

Table 3. Plant Species Observed at MDANGB

Scientific Name	Common Name	Cover Type(s) Observed	Origin[1]
Acer negundo	Boxelder	Woodland/Wetland	Native
Acer rubrum	Red maple	Woodland/Forest	Native
Acer saccharum	Sugar maple	Woodland	Native
Ailanthus altissima	Tree-of-heaven	Woodland	MD Invasive Species of Concern
Alisma subcordatum	American water plantain	Wetland	Native
Ambrosia artemisiifolia	Annual ragweed	Maintained	Native
Amelanchier canadensis	Aerviceberry	Woodland	Native
Apocynum cannabinum	Indianhemp	Wetland	Native
Aralia spinose	Devil's walking stick	Maintained	Native
Arundo donax	Giant reed	Wetland	MD Invasive Species of Concern
Asclepias syriaca	Common milkweed	Maintained	Native
Boehmeria cylindrica	Smallspike false nettle	Wetland	Native
Campsis radicans	Trumpet vine	Wetland	Native
Carex spp.	Sedges	Wetland	Either
Cephalanthus occidentalis	Common buttonbush	Wetland	Native
Cichorium sp.	Chicory	Maintained	Introduced
Clethra alnifolia	Pepperbush	Woodland/Forest	Native
Conyza canadensis	Canadian horseweed	Maintained	Native
Cornus racemosa	Red-panicled dogwood	Woodland	Native
Cyperus sp.	Sedge	Wetland	Native
Dactylis glomerata	Orchardgrass	Maintained	Introduced
Daucus carota	Queen Anne's lace	Woodland	Introduced
Echinochloa crus-galli	Barnyard grass	Maintained	Introduced
Eleocharis palustris	Common spikerush	Wetland	Native
Erigeron philadelphicus	Fleabane	Maintained	Native
Fraxinus pennsylvanica	Green ash	Wetland	Native
Hedara elix	English ivy	Woodland	MD Invasive Species of Concern
Ilex opaca	American holly	Woodland/Forest	Native
Impatiens capensis	Jewelweed	Wetland	Native
Juncus effuses	Soft rush	Wetland	Native
Juncus sp.	Rush	Wetland	Native
Leersia oryzoides	Rice cutgrass	Wetland	Native
Lespedeza cuneata	Sericea lespedeza	Maintained/Woodland	Introduced
Leucanthemum vulgare	Oxeye daisy	Wetland (edge)	Introduced
Liquidambar styraciflua	Sweetgum	Woodland/Forest/ Wetland	Native
Lonicera japonica	Japanese honeysuckle	Woodland/Forest/ Wetland	MD Invasive Species of Concern

Scientific Name	Common Name	Cover Type(s) Observed	Origin[1]
Morus rubra	Red mulberry	Woodland	Native
Nyssa sylvatica	Blackgum	Wetland	Native
Onoclea sensibilis	Sensitive fern	Wetland	Native
Panicum virgatum	Switchgrass	Maintained	Native
Parthenocissus quinquefolia	Virginia creeper	Woodland/Forest	Native
Phragmites australis	Common reed	Wetland/Maintained	MD Invasive Species of Concern
Phytolacca americana	American pokeweed	Maintained/Wetland	Native
Pinus virginiana	Virginia pine	Woodland/Forest	Native
Plantago lanceolata	Narrowleaf plantain	Wetland	Introduced
Plantago sp.	Plantain	Maintained	Either
Platanus occidentalis	American sycamore	Wetland	Native
Poa annua	Annual bluegrass	Maintained	Introduced
Polygonum pennsylvanicum	Pennsylvania smartweed	Wetland	Native
Polygonum spp.	Knotweed	Wetland	Either
Prunus serotina	Black cherry	Wetland	Native
Pulchea purpurascens	Saltmarsh camphor-weed	Wetland	Native
Quercus alba	White oak	Woodland/Forest	Native
Quercus palustris	Pin oak	Woodland/Forest	Native
Quercus phellos	Willow oak	Woodland/Forest	Native
Quercus rubra	Red oak	Woodland/Forest	Native
Rosa multiflora	Multiflora rose	Woodland	MD Invasive Species of Concern
Rubus argutus	Sawtooth blackberry	Woodland/Wetland/ Maintained	Native
Rubus sp.	Blackberry	Woodland	Native
Rumex acetosella	Common sheep sorrel	Maintained	Introduced
Rumex crispus	Curly dock	Wetland	Introduced
Sagittaria latifolia	Broadleaf arrowhead	Wetland	Native
Salix nigra	Black willow	Wetland	Native
Sassafras albidum	Sassafras	Woodland/Forest	Native
Schizachyrium scoparium	Little bluestem	Woodland (edge)	Native
Scirpus atrovirens	Green bulrush	Wetland	Native
Smilax rotundifolia	Roundleaf greenbrier	Woodland/Wetland	Native
Smilax sp.	Greenbrier	Woodland/Forest	Native
Solidago canadensis	Canada goldenrod	Woodland	Native
Solidago semperviens	Seaside goldenrod	Woodland	Native
Sonchus oleraceus	Common sow-thistle	Maintained	Introduced
Sorgham halepense	Johnsongrass	Maintained/Wetland	Introduced
Tilia americana	American basswood	Woodland/Forest	Native
Toxicodendron radicans	Eastern poison ivy	Woodland/Forest	Native
Trifolium pratense	Red clover	Maintained/Wetland	Introduced

Scientific Name	Common Name	Cover Type(s) Observed	Origin[1]
Triodanis perfoliata	Clasping Venus's looking-glass	Woodland (edge)	Native
Typha angustifolia	Narrowleaf cattail	Wetland	Native
Ulmus americana	American elm	Woodland/Forest	Native
Vaccinium corymbosum	Highbush blueberry	Woodland/Forest	Native
Viburnum dentatum	Southern arrowwood	Woodland	Native
Vicia sp.	Vetch	Maintained	Either
Vitis riparia	Riverbank grape	Wetland/Maintained	Native
Vitis sp.	Grape	Woodland	Native
Woodwardia virginica	Virginia chain fern	Wetland	Native

Source: MDANGB 2020a

1 Native species are defined by the US Department of Agriculture (USDA) as species that are naturally occurring at the time of European colonization. An introduced species is a species that arrived later from some other part of the world. Species classified as "either" are native species that can be classified in either category because the species has infraspecific taxa that either are native or introduced.

ANGB - Air National Guard Base

Figure 8. Habitat Distribution at Maryland ANGB Martin State Airport

5.2.2.1 Maintained/Landscaped

The maintained or landscaped habitat comprises herbaceous grasses and forbs around buildings and parking areas on MDANGB with zero percent bare ground cover (approximately 73.2 acres [29.6 hectares]). The habitat is dominated by maintained grassland adjacent to the runway and road network and is mowed regularly. No trees or shrubs occur in this habitat. Of the 21 species identified during the survey in this habitat, nine of the species are introduced; four can either be native or introduced and one, common reed (*Phragmites australis),* is a state listed invasive. Non-native mowed grasses dominate this habitat in addition to some native forb and shrub species such as annual ragweed (*Ambrosia artemisiifolia),* devil's walking stick (*Aralia spinose*), Canadian horseweed (*Conyza canadensis*), and switchgrass (*Panicum virgatum*).

5.2.2.1 Woodland

Thirty native species and six introduced species have been documented in woodland habitat (31.6 acres [12.8 hectares]). Three of the six introduced species are Maryland Invasive Species of Concern: English ivy (*Hedara elix*), Japanese honeysuckle (*Lonicera japonica*), and multiflora rose (*Rosa multiflora*). Woodland habitat in the southern portion of the base is adjacent to riparian stream habitat and provides mesic conditions (Figure 8). Red maple (*Acer rubrum*) woodland/forest was the dominant community type and showed a high level of disturbance as well as invasive species. The herbaceous layer included Canada goldenrod (*Solidago canadensis*) and seaside goldenrod (*Solidago semperviens*) while the mid-story layer was dominated by American holly (*Ilex opaca*).

Red maple and dogwood (*Cornus racemose*) were also present in the mid-story layer. Woody shrubs and vines such as, Japanese honeysuckle (40 percent), eastern poison ivy (*Toxicodendron radicans*), roundleaf greenbrier (*Smilax rotundifolia*), and English ivy were also documented. The canopy included red maple, sweetgum (*Liquidambar styraciflua*), and boxelder (*Acer negundo*).

An oak woodland/forest with red oak and willow oak (*Quercus phellos*) is present in the central part of the installation. In addition, sweetgum and red maple are represented in the canopy. Virginia pine (*Pinus virginiana)* dominates along the edges of the woodland. The mid-story layer includes willow oak, American holly, pin oak (*Quercus palustris*), and American elm (*Ulmus americana*). Woody shrubs include pepperbush (*Clethra alnifolia*), Virginia creeper (*Parthenocissus quinquefolia*), and greenbrier (*Smilax sp*.).

5.2.2.2 Wetlands

Several different wetland types were documented on site, concentrated at the southeastern end of the installation, including: palustrine forested, broadleaved deciduous wetland; palustrine emergent wetland; palustrine emergent/scrub-shrub wetland; forested wetland; and palustrine emergent/forested wetland (approximately 5.3 acres [2.1 hectares]). Wetlands are further discussed in Section 5.5.

5.3 Fish and Wildlife

A total of 50 bird, 11 mammal, five reptile, and three amphibian species have been observed or noted as occurring at MDANGB (Tables 4-6). Bat surveys were conducted at MDANGB in 2019 and resulted in the identification of three species of bats (Table 5; MDANGB 2020b). None of the bats captured during the surveys showed evidence of white-nose syndrome (WNS). In addition, no bats or bat sign (e.g., guano deposits or urine staining) were observed at any of the installation structures.

Table 4. Bird Species Observed at MDANGB

Scientific Name	Common Name	Scientific Name	Common Name
Agelaius phoeniceus	Red-winged blackbird	*Larus arinus*	Great black-backed gull
Anas platyrhynchos	Mallard	*Larus delawarensis*	Ring-billed gull
Ardea herodias	Great blue heron	*Leucophaeus atricilla*	Laughing gull
Baeolophus bicolor	Tufted titmouse	*Melanerpes carolinus*	Red-bellied woodpecker
Bombycilla cedrorum	Cedar waxwing	*Mimus polyglottos*	Northern mockingbird
Branta canadensis	Canada goose	*Pandion haliaetus*	Osprey
Buteo jamaicensis	Red-tailed hawk	*Passerina caerulea*	Blue grosbeak
Butorides virescens	Green heron	*Phalacrocorax auritus*	Double-crested cormorant
Cardinalis cardinalis	Northern cardinal	*Picoides pubescens*	Downy woodpecker
Cathartes aura	Turkey vulture	*Pluvialis squatarola*	Black-bellied plover
Charadrius vociferus	Killdeer	*Poecile carolinensis*	Carolina chickadee
Chaetura pelagica	Chimney swift	*Progne subis*	Purple martin
Chroicocephalus philadelphia	Bonaparte's gull	*Quiscalus quiscula*	Common grackle
Colaptes auratus auratus	Yellow-shafted flicker	*Riparia riparia*	Bank swallow
Coragyps atratus	Black vulture	*Sialia sialis*	Eastern bluebird
Columba livia	Rock pigeon	*Spizella passerina*	Chipping sparrow
Corvus brachyrhynchos	American crow	*Sternula antillarum*	Least tern
Cyanocitta cristata	Blue jay	*Stelgidopteryx serripennis*	Northern rough-winged swallow
Falco sparverius	American kestrel	*Sturnella magna*	Eastern meadowlark
Haemorhous mexicanus	House finch	*Sturnus vulgaris*	European starling
Haliaeetus leucocephalus	Bald eagle	*Tachycineta bicolor*	Tree swallow
Hirundo rustica	Barn swallow	*Thryothorus ludovicianus*	Carolina wren
Icterus spurius	Orchard oriole	*Turdus migratorius*	American robin
Junco hyemalis	Dark-eyed junco	*Vireo gilvus*	Warbling vireo
Larus argentatus	Herring gull	*Zenaida macroura*	Mourning dove

Source: MDANGB 2020a; Maryland ANG 2018b; Maryland ANG 2014a

Table 5. Mammal Species Observed at MDANGB

Scientific Name	Common Name	Scientific Name	Common Name
Didelphis marsuspialis	Virginia opossum	*Procyon lotor*	Raccoon
Eptesicus fuscus	Big brown bat	*Peromyscus* spp.	Mice
Lasiurus borealis	Eastern red bat	*Sciurus carolinensis*	Eastern gray squirrel
Lasiurus cinereus	Hoary bat	*Sylvilagus floridanus*	Eastern cottontail
Marmota monax	Groundhog	*Vulpes vulpes*	Red fox
Odocoileus virginianus	White-tailed deer		

Source: MDANGB 2020a; MDANGB 2020b; Maryland ANG 2014a

Table 6. Herpetofauna Species Observed at MDANGB

Scientific Name	Common Name
Reptiles	
Chelydra s. serpentina	Eastern snapping turtle
Nerodia sipedon	Common watersnake
Pantherophis alleghaniensis	Eastern ratsnake
Plestiodon laticeps	Broad-headed skink
Pseudemys rubriventris	Northern red-bellied cooter
Amphibians	
Anaxyrus fowleri	Fowler's toad
Lithobates catesbeiana	American bullfrog
Lithobates palustris	Pickerel frog

Source: MDANGB 2020a

5.4 Threatened and Endangered Species and Species of Concern

Federal status as a threatened or endangered species is derived from the ESA of 1973 (16 USC §1531 et seq.) and administered, depending on the species, by the USFWS and/or the National Marine Fisheries Service. A total of 741 plant and 514 animal native species are described as rare, threatened, or endangered in Maryland by the MDNR, though several of these species are believed to be extirpated from the state (MDNR 2016 and 2019a). According to MDNR's Baltimore County report, 194 plant and 36 animal species that are rare, threatened, or endangered may be found there (MDNR 2019b). According to the USFWS, four federally listed species are known to occur in Baltimore County but only two were noted as potentially occurring on MDANGB (USFWS 2019b and 2021): the northern long-eared bat (NLEB; *Myotis septentrionalis*; Table 7) and monarch butterfly (*Danaus plexippus*).

Table 7. State and Federally Listed Species in Baltimore County, Maryland

Scientific Name	Common Name	Listing Status
Birds		
Bartramia longicauda	Upland sandpiper	E
Botaurus lentiginosus	American bittern	T
Lanius ludovicianus	Loggerhead shrike	E
Laterallus jamaicensis	Black rail	E
Sternula antillarum	Least Tern	T
Invertebrates		
Alasmidonta undulata	Triangle floater	E
Alasmidonta varicosa	Brook floater	E
Cicindela patruela	Northern barrens tiger beetle	E
Danaus plexippus	Monarch butterfly	FC
Erynnis martialis	Mottled duskywing	E
Limotettix minuendus	Eastern sedge barrens leafhopper	E
Ophiogomphus incurvatus incurvatus	Appalachian snaketail	E
Satyrium edwardsii	Edwards' hairstreak	E
Satyrium favonius ontario	Northern oak hairstreak	E

Scientific Name	Common Name	Listing Status
Reptiles		
Glyptemys muhlenbergii	Bog turtle	FT[1], T
Graptemys geographica	Northern map turtle	E
Mammals		
Myotis septentrionalis	Northern long-eared bat	FT, T
Plants		
Adlumia fungosa	Climbing fumitory	T
Agalinis acuta	Sandplain gerardia	FE[1], E
Agalinis setacea	Thread-leaved gerardia	E
Agastache scrophulariifolia	Purple giant-hyssop	T
Anthoxanthum hirtum	Vanilla grass	E
Arnica acaulis	Leopard's-bane	E
Asclepias rubra	Red milkweed	E
Asplenium pinnatifidum	Lobed spleenwort	E
Borodinia missouriensis	Missouri rockcress	E
Bromus latiglumis	Broad-glumed brome	E
Calopogon tuberosus	Tuberous grass-pink	E
Carex hystericina	Porcupine sedge	E
Carex meadii	Mead's sedge	E
Carex richardsonii	Richardson's sedge	E
Carex vestita	Velvety sedge	T
Chenopodium standleyanum	Standley's goosefoot	E
Coptis trifolia	Goldthread	E
Crocanthemum bicknellii	Plains frostweed	E
Dactylorhiza viridis	Long-bract green orchis	E
Deschampsia cespitosa	Tufted hairgrass	E
Desmodium obtusum	Stiff tick-trefoil	E
Desmodium strictum	Pineland tick-trefoil	E
Dirca palustris	Eastern leatherwood	T
Eleocharis intermedia	Matted spikerush	E
Equisetum sylvaticum	Woodland horsetail	E
Eriocaulon parkeri	Parker's pipewort	T
Eupatorium leucolepis	White-bracted thoroughwort	T
Euphorbia purpurea	Glade spurge	E
Filipendula rubra	Queen-of-the-prairie	E
Gaylussacia dumosa	Dwarf huckleberry	E
Gentiana andrewsii	Fringe-top bottle gentian	T
Gentiana villosa	Striped gentian	E
Gentianopsis crinita	Fringed gentian	E
Homalosorus pycnocarpos	Glade fern	T
Hydrastis canadensis	Golden-seal	E
Iris prismatica	Slender blueflag	E

Scientific Name	Common Name	Listing Status
Juncus torreyi	Torrey's rush	E
Limosella australis	Mudwort	E
Linum intercursum	Sandplain flax	T
Linum sulcatum	Grooved yellow flax	E
Lupinus perennis	Sundial lupine	T
Lygodium palmatum	Climbing fern	T
Matelea obliqua	Climbing milkweed	E
Monotropsis odorata	Sweet pinesap	E
Oxydendrum arboretum	Sourwood	E
Panicum flexile	Wiry witch grass	E
Parthenium integrifolium	American feverfew	E
Pedicularis lanceolata	Swamp lousewort	E
Phemeranthus teretifolius	Roundleaf fameflower	T
Phlox pilosa	Downy phlox	E
Platanthera blephariglottis var. blephariglottis	White fringed orchid	T
Platanthera ciliaris	Yellow fringed orchid	T
Platanthera grandiflora	Large purple fringed orchid	T
Platanthera peramoena	Purple fringeless orchid	T
Poa saltuensis	Drooping bluegrass	E
Polanisia dodecandra	Common clammyweed	E
Polygala senega	Seneca snakeroot	T
Pycnanthemum torreyi	Torrey's mountainmint	E
Pycnanthemum verticillatum	Whorled mountainmint	E
Rhynchospora cephalantha	Capitate beakrush	E
Sanguisorba canadensis	Canada burnet	T
Scutellaria leonardii	Shale barren skullcap	T
Silene nivea	Snowy champion	E
Solidago speciosa	Showy goldenrod	T
Sphenopholis pensylvanica	Swamp wedgescale	T
Spiranthes lucida	Shining ladies'-tresses	E
Spiranthes ochroleuca	Yellow nodding ladies'-tresses	E
Symphyotrichum depauperatum	Serpentine aster	E
Thaspium trifoliatum	Purple meadow parsnip	E
Trillium flexipes	Nodding trilium	E
Triosteum angustifolium	Yellowleaf tinker's-weed	E
Veratrum hybridum	Broadleaf bunchflower	E

Source: USFWS 2019b and 2021; MDNR 2019b
FE = Federally endangered FT = Federally threatened FC = Federal candidate E = Endangered (state) T = Threatened (state)
1 Not listed in the Information for Planning and Consultation (IPaC) report for the area but is listed by the USFWS.

5.5 Waters of the US, Wetlands, and Floodplains

5.5.1 Waters of the US and Wetlands

A WOTUS survey was conducted for MDANGB in 2019. A total of 5.30 acres (2.14 hectares) of wetlands (Figure 9) and 2,840 linear feet (866 linear meters) of streams were delineated within the installation. A full description of these 21 wetlands and nine watercourses can be found in the WOTUS report (MDANGB 2021). A brief description of the wetland habitat is summarized below by the wetland types.

Two artificial ponds, surrounded by extremely dense stands of giant reed (*Arundo donax*) or common reed, were documented on the installation. It appears these ponds are formed from depressions in the landscape resulting from historic dumping and backfilling activities. Signs of past dumping activities include piles of construction debris, concrete rubble, and vegetation typically associated with disturbed sites such as common reed, Japanese honeysuckle, blackberry (*Rubus argutus*), pokeweed (*Phytolacca americana*), and devil's walking stick (*Aralia spinosa*). The ponds are open-water features with no distinguishable outlets.

The majority of the wetlands were classified as palustrine emergent wetlands. Vegetation in these wetlands predominately included narrow-leaf cattail (*Typha angustifolia*), spike rush (*Eleocharis palustris*), common reed, Japanese honeysuckle, green ash (*Fraxinus pennsylvanica*), *Rubus* spp., red maple, sycamore (*Platanus occidentalis*) with a few black gum trees interspersed in some of the wetlands. Some of these wetlands areas are mowed/maintained and have been hayed.

Palustrine scrub-shrub wetlands documented on site contained common reed, Virginia chain fern (*Woodwardia virginica*), *Rubus* spp., and red maple. Three wetlands were characterized as palustrine forested wetland with black gum, jewelweed (*Impatiens capensis*), poison ivy (*Toxicodendron radicans*), roundleaf greenbriar (*Smilax rotundifolia*), box elder, red maple, sweet gum, sycamore, and common reed.

The WOTUS report was submitted to the US Army Corps of Engineers (USACE) Baltimore District along with a request for an Approved Jurisdictional Determination (AJD) for their review and to confirm the wetland boundaries.

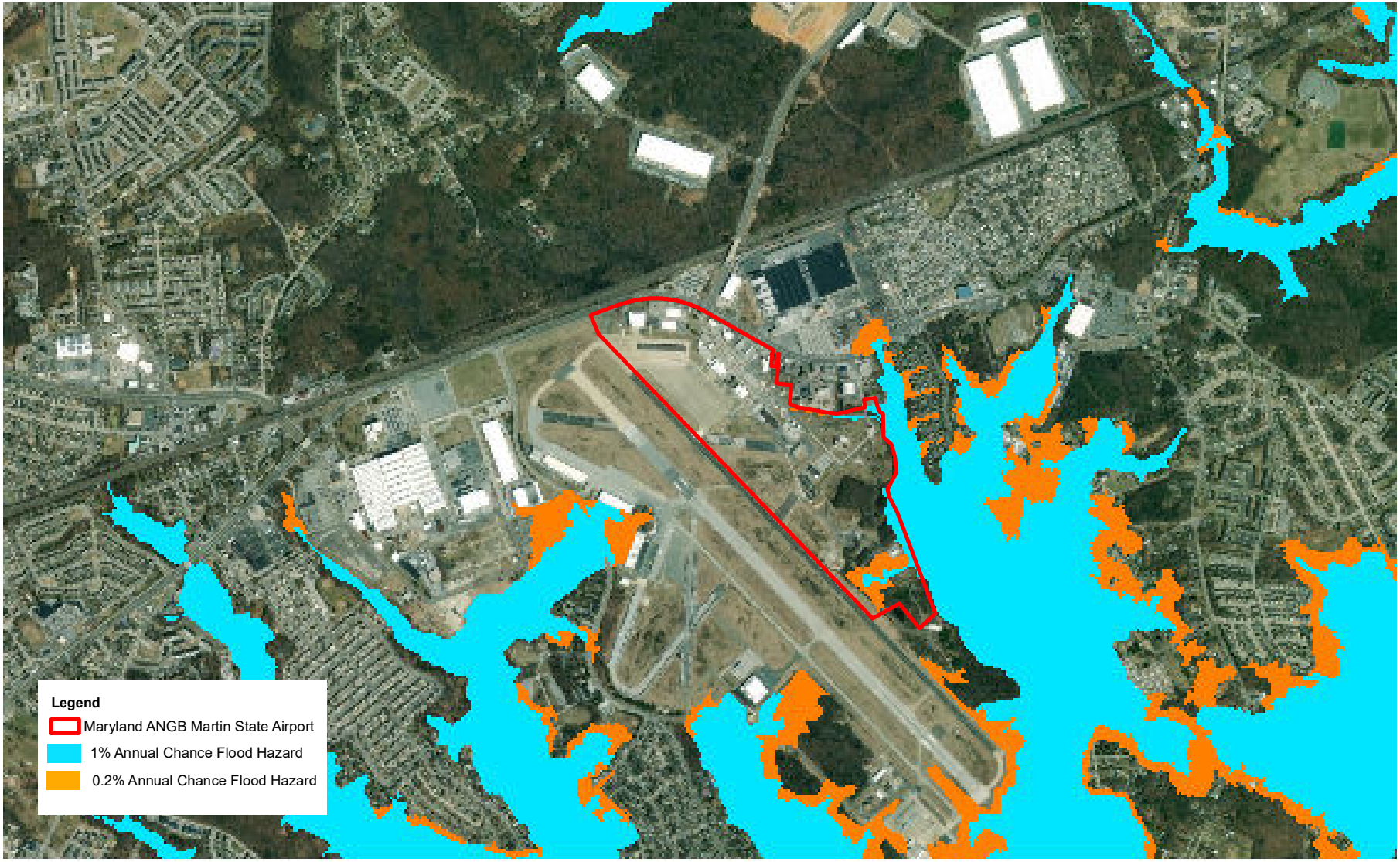
5.5.2 Floodplains

Floodplains are lowlands and relatively flat areas adjoining waters that are subject to flooding. The 100-year floodplain is designated based on different factors on the Federal Insurance Rate Maps (FIRMs) along with other flooding and storm surge information. With respect to occurrence a 100-year flood has a one percent chance of occurring in any given year and the 500-year flood has a 0.2 percent chance in any given year. The floodplains are defined by the limits to which that flood reaches. Floodplains are regulated by the Federal Emergency Management Agency (FEMA) with standards outlined in 44 CFR Part 60.3. EO 11988, *Floodplain Management*, requires agencies to assess the effects that their actions may have on floodplains and to consider alternatives to avoid adverse effects and incompatible development on floodplains. A portion of the eastern border of MDANGB (Figure 10) lies within the 100-year floodplain on FIRM #2400100435G. The MDANGB contains approximately 6.2 acres (2.5 hectares) that fall within the 100-year floodplain and 5.56 acres (2.25 hectares) within the 500-year floodplain in the southeast corner of the installation (Figure 10). This floodplain is associated with Frog Mortar Creek (FEMA 2014).

ANGB - Air National Guard Base

EUB - estuarine unconsolidated bottom
PFO - palustrine forest
PSS - palustrine scrub/shrub
PEM - palustrine emergent
PUB - palustrine unconsolidated bottom

Figure 9. Waters of the US and Wetlands on Maryland ANGB Martin State Airport



ANGB - Air National Guard Base

Figure 10. Flood Hazard Zones at Maryland ANGB Martin State Airport

6.0 MISSION IMPACTS ON NATURAL RESOURCES

6.1 Natural Resources Needed to Support the Military Mission

The MDANGB requires operation areas to support tactical air operations and surrounding areas to serve as a buffer to reduce BASH risk and provide support facilities and functions. The military mission and training requirements are dynamic and can change over time, requiring potential changes to natural resource needs to support the mission. Degradation of natural resources can result in unintended impacts to the military mission, impaired readiness, and increased expenses for natural resources management rather than the military mission. The MDANGB needs the land and its natural resources to function together in a healthy ecosystem to support the military mission. Management activities in this INRMP are designed to support the desired habitats and ecosystem functions to meet the military mission.

6.2 Natural Resources Constraints to Mission and Mission Planning

The natural resources constraints to installation planning and mission are summarized as:

- Any project which is anticipated to impact WOTUS including wetlands must obtain a Section 404 Permit from the USACE and a Section 401 Water Quality Certification (WQC) from MDE. A delineation of the boundaries of all onsite WOTUS including wetlands must be completed in accordance with the policies and procedures defined under the Rivers and Harbors Act; 33 CFR Part 328; the 1987 USACE Wetlands Delineation Manual, Technical Report Y-87-1, and subsequent rules and guidelines issued governing its implementation; and the applicable Regional Supplement to the 1987 USACE Wetlands Delineation Manual. Projects with impacts to wetlands must also undergo the NEPA process per 32 CFR Part 989 and be approved by NGB/A4VN NRPM. A State public notice for a Maryland Tidal Wetland License or Permit or a Nontidal Wetlands and Waterways Permit is required when the project is proposing permanent impacts to nontidal wetlands greater than 5,000 square feet (464.5 square meters).
- Any project that is anticipated to significantly impact floodplains must undergo the NEPA process per 32 CFR Part 989 and be approved by the NGB/A4VN NRPM. Any project that permanently alters the hydrology of a floodplain may require a floodplain study to arrive at the correct elevations to meet state or local government regulations. If a study is required the installation will have to work directly with the state or local government agency responsible for the administration of floodplain laws and regulations.
- MDANGB possesses populations of, and habitat features that are attractive to, high BASH threat species (species that have historically caused the greatest damage).
- MDANGB must manage state and federally listed species without impacting the mission. Any new activities or infrastructure could be limited in areas where state or federally listed species are known to occur or where there is state priority habitat.

6.2.1 Land Use

The MDANGB is located on approximately 175 acres (71 hectares) within the Martin State Airport's 775-acre (314-hectare) complex. The parcel is located in the northeast part of the airport. Martin State Airport is generally bounded on the north by Eastern Boulevard, on the east by Frog Mortar Creek, on the south by Stansbury Creek, and on the west by Wilson Point Road. Land use is divided into areas for:

- Aircraft Operations (93 acres [38 hectares]) – includes safety zones, airfield pavement, aircraft maintenance, and aircraft operations.
- Industrial (14.5 acres [5.9 hectares]) – includes base supply, CE, motor pool, POL, and storage (munition and hazardous).
- Command and Support (9 acres [4 hectares]) – includes Headquarters, clinic, security police, dining hall, audio visual, photo lab, and the pavilion on Frog Mortar Creek.
- Open Space (58 acres [23 hectares])

6.2.2 Current Major Impacts

Mission activities at MDANGB include maintaining a level of operational readiness that will provide trained and equipped combat-ready tactical units ready for immediate integration into the active USAF. Impacts to natural resources are more likely to result from mission support activities, including facility and utility construction activities. In addition, support and non-mission related activities, such as management and disposal of hazardous substances, industrial operations, and landscape maintenance activities can potentially affect natural resources. The current major impacts to natural resources from the MDANGB military mission include:

- Impacts to migratory birds (managed through the BASH Program).
- Impacts to the environment from the potential misuse of hazardous materials, pesticides, and herbicides.
- Impacts from installation restoration sites.

6.2.2.1 Installation Restoration Program

The Defense Environmental Restoration Program (DERP) was developed by the DoD to investigate and clean up hazardous substances, pollutants, and contaminants that pose environmental health and safety risks at active military installations and formerly used defense sites. Future development of sites identified through the DERP might be constrained depending on the severity of the contamination or the extent of the remedial action required. The overall objective of the DERP is to identify potential environmental problems and provide timely remedies to protect public health and the environment. The Installation Restoration Program (IRP) established under DERP is a comprehensive program to identify and address environmental contamination from past military operations.

There are a total of 16 IRP sites resulting from past activities at the base. These IRP sites are associated with former underground or aboveground storage tanks, hazardous waste accumulation areas, wash racks, and fire training areas. All of the 16 IRP sites have been concurred with No Further Action by the MDE (Maryland ANG 2014a). In 2012, ANG began an environmental comprehensive restoration program that initiated revisiting ANG installations, and evaluating records for areas that were previously excluded from the original DERP to ensure that all potential environmental sites at the facility had been properly addressed.

Preliminary Assessment (PA) activities were conducted at MDANGB in 2013 at the following nine Areas of Concern (AOCs; NGB 2018):

- SA023 – Battery Shop at Building 1060
- OW018 – Oil Water Separator at Former Building 1130
- SA022 – Battery Rooms at Former Building 1130
- TU019 – Hydraulic Lift at Former Building 1130
- TU020 – Hydraulic Lift 1 at Building 2110
- TU021 – Hydraulic Lift 2 at Building 2110
- TU024 – Acid Pit at Building 2110
- FL012 – Leach Field at Building 5054
- FL017 – Leach Field at Building 5100

Based on recommendations from previous investigations and the PA, Site Investigation (SI) activities were warranted for all nine AOCs. SI activities, including soil and groundwater sampling, were conducted in 2014. Based on the results of the SI, the following three potential contaminated sites were recommended for further action and are shown on Figure 11:

- OW018 – Oil Water Separator at Former Building 1130
- TU020 – Hydraulic Lift 1 at Building 2110
- TU021 – Hydraulic Lift 2 at Building 2110

Site OW018 – Oil Water Separator at Former Building 1130

Site OW018 includes a former aboveground OWS at former Building 1130, which was constructed in 1958. Building 1130 was used for several operations, including aerospace ground equipment maintenance, corrosion control, and paint shops. Hazardous materials used and wastes generated included degreasing solvents, mineral spirits, thinners, paint stripper, jet fuel (JP-4), engine oils, and hydraulic oil. In 2012, Building 1130 was demolished, the sump and OWS were removed, and the drain from the OWS to the sanitary sewer line was sealed. The 2014 SI concluded that evidence of a Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) release was not found at the site; however, the laboratory results of soil and groundwater samples from the site contained total petroleum hydrocarbon - diesel range organics (TPH-DRO), which are regulated by the MDE Oil Control Program (OCP). The site inspection recommended closure of the site under CERCLA with further action at the site directed to MDE OCP. A remedial investigation was conducted in 2017 which resulted in the recommendation of No Further Response Action Planned (NGB 2018).

Sites TU020 and TU021 - Hydraulic Lifts 1 and 2 at Building 2110

Sites TU020 and TU021 include two former in-ground hydraulic vehicle maintenance lifts (Hydraulic Lift 1 and Hydraulic Lift 2, respectively) at Building 2110, which was constructed in 1980. Vehicle maintenance activities continue in Building 2110 to present day. Building 2110 was associated with two IRP sites: IRP Site 8 (Motor Vehicle Wash Area) and IRP Site 13 (Vehicle Maintenance). IRP Site 8, located north-northwest of Building 2110, consisted of an OWS for the wash area. IRP Site 13, located south of Building 2110, included three 5,000-gallon (18,930-liter) underground storage tanks that served Building 2110; one for diesel fuel, one for leaded gasoline, and one for unleaded gasoline. The SI, conducted in October 2014, concluded that evidence of a CERCLA release was not found at the sites; however, the laboratory results of soil and groundwater samples from the sites contained TPH-DRO, which is regulated by MDE OCP.

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Figure 11. Active Installation Restoration Program Sites at Maryland ANGB Martin State Airport

The SI recommended closure of the site under CERCLA with further action at the site directed to MDE OCP. A remedial investigation was conducted in 2017 which resulted in the recommendation of No Further Response Action Planned (NGB 2018).

7.0 NATURAL RESOURCES PROGRAM MANAGEMENT

7.1 Natural Resources Program Management

The guiding philosophy of the MDANGB INRMP is to take an ecosystems approach to managing natural resources. Ecosystem management is based on clearly stated goals and objectives, and associated projects. The MDANGB INRMP identifies goals and objectives, and presents the means to accomplish them as well as the methodologies to monitor results.

7.2 Fish and Wildlife Management

Wildlife management involves manipulating various aspects of an ecosystem to benefit chosen wildlife species. Management of habitats generally is focused to benefit native species, particularly listed species and game species. Habitat management could be required to decrease the abundance of certain wildlife species or to reduce animal damage or bird strike hazards. The installation's limited size necessitates implementation of wildlife management options that do not increase the potential for wildlife mission conflicts but still conserve regional biodiversity. Wildlife population and habitat management on MDANGB will (1) attempt to deter animals from foraging or roosting in areas near or adjacent to the flightline and other mission-critical areas, (2) attract wildlife to portions of the installation away from these areas, and (3) protect and conserve regional biodiversity through conservation of habitat corridors across the installation.

The DoD and the ANG encourage support of SWAPs as part of a comprehensive installation natural resources program. The implementation of this INRMP and many of the proposed projects will support the goals of the Maryland SWAP. In addition, Maryland enacted the Nongame and Endangered Species Conservation Act (Annotated Code of Maryland 10-2A-01) to govern and define the criteria for listing species in the state (MDNR 2019a).

7.2.1 Federal Wildlife Policies and Regulations

Endangered Species Act

The ESA of 1973, as amended (16 USC §1531 *et seq.*) provides for the identification and protection of threatened and endangered plants and animals, including their critical habitats. The ESA requires federal agencies to conserve threatened and endangered species and cooperate with state and local authorities to resolve water resources issues in concert with the conservation of threatened and endangered species. This law establishes a consultation process involving federal agencies with input from state agencies to minimize impacts to the greatest extent practicable by agency action that would adversely affect species or habitat. Further, it prohibits all persons subject to U.S. jurisdiction from taking, including any harm or harassment, endangered or threatened species.

Migratory Bird Treaty Act

The Migratory Bird Treaty Act (MBTA) prohibits, unless permitted by regulations, the pursuit, hunting, take, capture, killing or attempting to take, capture, kill, or possess any migratory bird included in the MBTA, including any part, nest, or egg of any such bird (16 USC § 703). The DoD has a Memorandum of Understanding (MOU) with the USFWS pursuant to EO 13186, *Responsibilities of Federal Agencies to Protect Migratory Birds*, which outlines a collaborative approach to promote the conservation of migratory bird populations. This MOU specifically

pertains to natural resource management activities, including, but not limited to, habitat management, erosion control, forestry activities, invasive weed management, and prescribed burning. It also pertains to installation support functions, operation of industrial activities, construction and demolition activities, and hazardous waste cleanup. In February 2007, the USFWS finalized regulations for issuing incidental take permits to the DoD. If any of the Armed Forces determine that a proposed or an ongoing military readiness activity may result in a significant adverse effect on a population of migratory bird species, then they must confer and cooperate with the USFWS to develop appropriate and reasonable conservation measures to minimize or mitigate identified significant adverse effects (50 CFR Part 21). At this time, the DoD MOU is under review.

Bald and Golden Eagle Protection Act

The Bald and Golden Eagle Protection Act (16 USC 668-668c), enacted in 1940 and amended several times since then, prohibits anyone, without a permit issued by the Secretary of the Interior, from "taking" bald eagles, including their parts, nests, or eggs. The Act provides criminal penalties for persons who "take, possess, sell, purchase, barter, offer to sell, purchase or barter, transport, export or import, at any time or any manner, any bald eagle ... [or any golden eagle], alive or dead, or any part, nest, or egg thereof."

In addition to immediate impacts, this definition also covers impacts that result from human-induced alterations initiated around a previously-used nest site during a time when eagles are not present, if, upon the eagle's return, such alterations agitate or bother an eagle to a degree that interferes with or interrupts normal breeding, feeding, or sheltering habits, and causes injury, death, or nest abandonment.

7.2.2 Nuisance Wildlife and Wildlife Diseases

Wildlife species that pose a moderate to high risk are identified in the installation's BASH Plan (Maryland ANG 2018b). Steps to reduce bird airstrikes are outlined and followed per the BASH guidelines. Aside from those species, there are few nuisance wildlife species at the installation. Any large-scale wildlife deaths and unnatural behavior occurring on the installation will be reported, recorded, and investigated in conjunction with USFWS, US Environmental Protection Agency (USEPA), and MDNR personnel, if appropriate. MDANGB does cooperate with USDA-APHIS-WS for BASH management.

7.2.3 Management of Threatened and Endangered Species and Habitats

This section presents information about the management of priority species that are located within or have the potential to occur at MDANGB, along with requirements and strategies for their management. As additional surveys and natural resources management activities are conducted, it is possible other species may be added in the future.

7.2.3.1 Federally-listed Special Status Wildlife Species

Four federally listed species were noted in Baltimore County; however, only two of these species were noted as potentially occurring at MDANGB. NLEBs are known to use a wide variety of tree species and a network of roost trees based on presence of cavities or crevices or presence of peeling bark (USFWS 2016a). Although no NLEBs were detected during the 2019 surveys, forested areas at MDANGB present some snags and other roosting opportunities for NLEBs as well as non-listed bat species. Monarch butterflies were recently listed as a candidate species under the ESA and have the potential to occur on the installation. Habitat for the bog turtles (*Glyptemys muhlenbergii*) and sandplain gerardia (*Agalinis acuta*) does not occur on MDANGB.

Northern Long-eared Bat: The NLEB was federally listed as threatened on April 2, 2015 due to declines in population caused by WNS. The bat is also listed by MDNR as endangered. The bat is distinguished from other *Myotis* species by its long ears. This medium-sized bat has a body length of 3.0 to 3.7 inches (76 to 94 millimeters) and a wing span of 8.9 to 10 inches (230 to 250 millimeters; USFWS 2016a). Adult bats can weigh between 0.18 and 0.28 ounces (5.1 and 7.9 grams). This migratory bat species hibernates between mid-fall through mid-spring in mines or caves and spends its summers in wooded areas (USFWS 2016b). Suitable spring staging/fall swarming habitat, which is most typically within 5 miles (8 kilometers) of a hibernaculum, consists of the variety of forested/wooded habitats where they roost, forage, and travel (USFWS 2016b). NLEBs roost underneath bark, in cavities, or in crevices of both live trees and snags (typically ≥ 3.0 inches diameter at breast height [7.6 centimeters]). NLEBs are known to use a wide variety of tree species and a network of roost trees based on presence of cavities or crevices or presence of peeling bark (USFWS 2016b).

Forested areas at MDANGB present some snags and other roosting opportunities for NLEBs as well as non-listed bat species. The NLEB will also roost in buildings (Harvey et.al. 2011). Foliage-roosting bats prefer leafy sites, well covered above, but open below. They will often use camouflage by roosting in a clump of dead leaves (Harvey et. al. 2011). Roosting locations are often over 6 feet (2 meters) above the ground, and located on the edge of a clearing.

Figure 12. Northern long-eared bat

Photo courtesy of USFWS

The following management strategies for the NLEB are recommended:

- Ensure the use of pesticides on the base and in sensitive habitats is done in accordance with the product label at the lowest amount possible.
- Limit presence of off-road vehicles in known foraging habitat to the maximum extent feasible.
- Limit tree removal and trimming to outside the maternity season (May 1 to August 30) to the maximum extent feasible.
- Protect snags greater than 5.0 inches (13 centimeters) in diameter in early stages of decay, where they do not pose a safety hazard, particularly in the areas currently forested.
- Maintain vegetation along surface water features to reduce erosion of streambanks which serve as critical foraging areas.

Monarch Butterfly: The monarch butterfly can be found in a variety of habitats, especially those supporting milkweed plants (*Asclepias* sp.), the primary food source of the caterpillars. These butterflies feed on nectar sources found in grasslands, prairies, meadows, and wetlands. Monarch butterfly populations east of the Rocky Mountains have declined more than 80 percent (Xerces Society 2021). Herbicide and pesticide use as well as the loss of habitat supporting milkweed and adequate nectar sources have contributed to the decline of the species.

Figure 13. Monarch butterfly

Photo courtesy of Conserve Wildlife Foundation of New Jersey

The following management strategies for the monarch butterflies are recommended:

- Allow common milkweed to grow and potentially expand into field edges where feasible.
- Consider landscaping with native fall-blooming flowers, such as goldenrod, and allowing the species to expand where feasible. This will also help attract other pollinators such as native bees.

At Risk Species: In addition to the NLEB and the monarch butterfly, the USFWS National Listing Workplan (USFWS 2019a) was reviewed to determine if any species documented at MDANGB could be considered "at risk". The species that are considered "at risk" have a timeline for a listing decision to be made in the next 5 years and conservation measures are recommended. Nine species are listed in Maryland by the USFWS as species at risk: tricolored bat (*Perimyotis subflavus*), little brown bat (*Myotis lucifugus*), golden-winged warbler (*Vermivora chrysoptera*), northern red-bellied cooter (*Pseudemys rubriventris*), saltmarsh sparrow (*Ammospiza caudacuta*), spotted turtle (*Clemmys guttata*), wood turtle (*Glyptemys insculpta*), frosted elfin butterfly (*Callophrys irus*), and regal fritillary (*Speyeria idalia*). The northern red-bellied cooter are usually found in areas with deep fast-moving water (Chesapeake Bay Program 2021). Protection of water resources on MDANGB will benefit this species.

7.2.3.2 State Special Status Species

During the flora and fauna surveys conducted in 2019, the least tern (*Sternula antillarum*) was found on the installation (MDANGB 2020a). Three additional species that are listed as species of greatest conservation need by the state have been observed at MDANGB: eastern red bat (*Lasiurus borealis*), bald eagle (*Haliaeetus leucocephalus*), and eastern meadowlark (*Sturnella magna*).

Least Tern: Least terns are listed as threatened in the state of Maryland (MDNR 2016). The species was observed foraging in Frog Mortar Creek, in the opening by the pavilion, just outside of the installation's eastern boundary. Preferred nesting habitat includes gravelly or sandy beaches and riverbanks (Chesapeake Bay Program 2020). Terns have also been known to nest on buildings with gravel roof tops. It is likely the birds are nesting on nearby islands and using the creek for foraging, as there is no suitable natural nesting habitat on the installation. This population of least terns is not listed by the USFWS as endangered; only the interior population is federally listed.

Figure 14. Least tern

Photo courtesy of Birds of the World

The following management strategies for the least tern are recommended:

- Preserve habitat where feasible.
- Ensure the use of pesticides on the base and in sensitive habitats is done in accordance with the product label at the lowest amount possible.

Eastern Red Bat: The eastern red bat is a species of greatest conservation need. This tiny bat weighs between 0.25 to 0.50 ounces (9 and 15 grams) and averages 2.1 inches (50 millimeters; MDNR 2021a). Their orange to red color makes them very distinctive at dusk while foraging for insects. Preferred summer roosting is in deciduous trees often among the leaves. In Maryland, eastern red bats migrate south for the winter, or go through short term periods of inactivity known as torpor (MDNR 2021a).

Figure 15. Eastern red bat

Photo courtesy of Kentucky Department of Fish and Wildlife

The following management strategies for the red bat are recommended:

- Preserve forested habitat to the maximum extent feasible.
- Limit tree removal and trimming to outside the maternity season (May 1 to August 30) to the maximum extent feasible.

Bald Eagle: Bald eagles are often found near water sources and in Maryland they are concentrated along the Chesapeake Bay (MDNR 2021b). This large, 3-foot (0.9-meter) tall, raptor is a year-round resident in Maryland. Although fish make up a large portion of their diet, bald eagles are opportunistic foragers. By March bald eagles lay their clutch in nests that have easy access at the edge of wooded areas. Bald eagles have been observed nesting on MDANGB.

Figure 16. Bald eagle

Photo courtesy of Bill Byrne, Massachusetts Wildlife

The following management strategies for the bald eagles are recommended:

- Preserve habitat where feasible.
- Protect potential roost and nest sites by retaining mature trees and old growth stands, particularly within 0.5 mile (0.8 kilometer) from water.
- Follow USFWS conservation management guidelines for bald eagles.
- Maintain distance between the activity and the nest (distance buffers).
- Avoid certain activities during the nesting season (timing buffers).

Eastern Meadowlark: The eastern meadowlark is a ground-nesting passerine of grasslands, hayfields and pastures (NHESP 2020). Typically, eastern meadowlarks will not initiate breeding on grasslands of less than 10 acres (4.0 hectares), and a site will often need greater than 100 acres (40 hectares) of contiguously suitable habitat to support a breeding population of multiple pairs (NHESP 2020). Continued restoration and management of grassland communities to provide suitable nesting habitats are important for the species.

Figure 17. Eastern meadowlark

Photo courtesy of Cornell Lab of Ornithology

The following management strategies for the eastern meadowlark are recommended:

- Maintain existing grasslands where feasible.
- Investigate alternative methods for mowing during breeding season (April 1 to August 15).

7.2.3.3 Management Strategies for Special Status Species

In order to facilitate the continuation of the military mission and meet natural resource management objectives while reducing BASH issues and minimizing impacts to special status species, the MDANGB will:

- Update biological inventories regularly as the occurrence of listed species is subject to change over time as a result of either recruitment, responses to management activities, identification of additional protected species, or changes in the status of species currently present at MDANGB.
- Maintain existing forested areas, grasslands, and wetlands, and minimize disturbance in riparian and wetland buffers to the maximum extent feasible.
- Continue supporting the BASH Program to minimize take of MBTA and federally and state listed threatened and endangered species.

7.2.3.4 Climate Change and Special Status Species Vulnerability

Climate change vulnerability assessments are a means of preparing for and coping with the effects of climate change. Vulnerability is defined as the susceptibility of a species or habitat to the negative effects of climate change and other stressors (Boesch 2008). Climate change vulnerability for special status species is related to each species' expected exposure to climate change stressors, the sensitivity of that species to the stressors, and the adaptive capacity of the species to cope with the stressors related to climate change. Although not all species have been examined, Table 8 indicates which species have been identified as vulnerable to climate change according to the Maryland SWAP.

Table 8. Climate Change Vulnerability of Special Status Species

Species	Status	Climate Vulnerable
Northern long-eared bat[1] (*Myotis septentrionalis*)	FT	Yes. Increase in temperature can have a negative effect on distribution of southern populations.
Eastern red bat[1] (*Lasiurus borealis*)	ST	Yes. Increase in temperature can have a negative effect on distribution of southern populations.
Least tern[1,2] (*Sternula antillarum*)	SGCN	Moderately vulnerable due to temperature changes.
Bald eagle[1] (*Haliaeetus leucocephalus*)	SGCN	No information
Eastern meadowlark[1] (*Sturnella magna*)	SGCN	Expected to maintain population.
Northern red-bellied cooter[1] (*Pseudemys rubriventris*)	USFWS At Risk Species	No information
Monarch butterfly[1] (*Danaus plexippus*)	SGCN	No information

1 Source: MDNR 2015
2 Source: Climate Adaptation Explorer 2021
FT Federally Threatened
SGCN Species of Greatest Conservation Need
ST State Threatened
USFWS US Fish and Wildlife Service

7.3 Water and Wetland Resource Protection

Water resources on MDANGB consist of 21 wetlands and 9 watercourses. Water resource protection is important to natural resources management because it directly affects surface water quality and the value of aquatic habitats. Wetlands, floodplains, and stream buffers are critical in the protection and maintenance of wildlife resources. MDANGB currently protects its water resources through compliance with a number of federal, state, and local environmental regulations that require the installation to have detailed spill control and response procedures and to implement stormwater pollution prevention best management practices (BMPs). The objective of these regulations is to prevent pollutants (e.g., fuels, solvents, sediments) from entering surface waters.

7.3.1 Regulatory and Permitting

The Clean Water Act (CWA; 33 USC 1251 et seq.) is the primary federal statute that protects the nation's waters. The intent of the CWA is to prevent, reduce, and eliminate pollution in the nation's waters for the purposes of restoring and maintaining the chemical, physical, and biological integrity of the nation's waters. WOTUS include, but are not limited to, coastal and inland waters, lakes, rivers, ponds, streams, intermittent streams, vernal pools, and wetlands. See 33 CFR Part 328.3(a) for the full list of WOTUS.

The three primary sections of the CWA that may affect day to day operations are Sections 404, 401, and 402. The USACE is the regulatory agency responsible for implementation of the CWA and the USEPA has oversight over the CWA. Section 404 regulates the discharge of dredged or fill material into WOTUS, including wetlands. When impacts to WOTUS, including wetlands, cannot be avoided, a Section 404 permit must be obtained from the USACE. When a Section 404 permit is required, a Section 401 WQC from the state is also required.

Section 10 of the Rivers and Harbors Act (33 USC 403) regulates the placement of any obstructions in and the excavation or fill in any navigable WOTUS. The USACE is the regulatory agency responsible for implementation of the Rivers and Harbors Act.

Management of wetlands on federal lands, including military installations, is further governed by EO 11990, *Protection of Wetlands*, and DoDI 4715.03, *Natural Resources Conservation Program*. Under EO 11990 and DoDI 4715.03, wetlands are required to be managed for no net loss. This

means short- and long-term impacts to WOTUS, including wetlands, must be avoided. If they cannot be avoided, the impacts must be minimized to the least environmentally damaging practicable alternative (LEDPA). When impacts cannot be avoided, they must be mitigated to ensure there is no net loss of acreage.

To obtain Section 404 and Section 10 permits and Section 401 WQC, applicants are, depending on the state in which the installation is located, required to submit permit applications to the USACE and the state agency responsible for implementation of Section 401 or through a Joint Permit Application. In Maryland, the state agency responsible for implementation of Section 401 is the MDE. There are different types of Section 404 and Section 10 permits that include but are not limited to individual and Nationwide Permits. The specific type of permit is based on the total area of impact and the overall impact to the system. WQCs can be individual or they can be issued as part of a Nationwide Permit.

Applications for Section 404 permits must include an avoidance and minimization analysis that addresses the USEPA Section 404(b)(1) Guidelines (40 CFR Part 230.10). The analysis must demonstrate the effort made to first avoid the impacts and then the rationale for the selected LEDPA. The analysis must also demonstrate the impacts will not cause or contribute to violations of state water quality standards and the activity does not jeopardize listed species or sensitive cultural resources (33 CFR Part 320.3 [e] and [g]). The analysis must also identify mitigation requirements and the preferred alternative selected to meet mitigation requirements.

Section 401 of the CWA gives Maryland the authority to regulate, through the state WQC program, proposed federally-permitted activities that may result in a discharge to water bodies, including wetlands. The state may issue certification, with or without conditions, or deny certification for activities that may result in a discharge to water bodies. In Maryland, the MDE is responsible for issuing Section 401 WQCs. In addition to the requirements of 40 CFR §121.5 (WQC request), Maryland has regulations governing the processing and issuance of WQCs (COMAR 26.08.02.10; MDE 2021c).

In 1970, the Maryland General Assembly recognized that many wetlands had been lost or despoiled throughout the State by unregulated activities such as dredging, dumping and filling, and that remaining wetlands were in jeopardy. The assembly established the Tidal Wetlands Act (Code of Maryland Regulations Section 26.24.01), which restricts construction and development actions in tidal wetlands.

In 1991, Maryland enacted the Maryland's Nontidal Wetlands Protection Act (Maryland Environmental Code § 5-901 Water Resources-Nontidal Wetlands) to protect nontidal wetlands by regulating and restricting all activities that could impact nontidal wetlands or waters of the state. A 25-foot (7.6-meter) buffer is used around wetlands. Buffer requirements are expanded to 100 feet (30.5 meters) for "nontidal wetlands of special State concern". These wetland areas are designated by regulation and mapped as having exceptional ecological or educational value of statewide significance. Any activity in a nontidal wetland or within a 25-foot buffer (7.6-meter) or 100-foot (30.5 meters) expanded buffer around a nontidal wetland requires a state nontidal permit or letter of authorization from the MDE (MDE 2021d). The Act is implemented in cooperation with the USACE Baltimore District. The USACE has issued a Maryland State Programmatic General Permit-5 (MDSPGP-5) for activities that would cause no more than minimal adverse environmental effects. The MDSPGP-5 provides authorization in accordance with Section 404 of the CWA and/or Section 10 of the Rivers and Harbors Act. This programmatic general permit applies to the discharge of dredged or fill material and/or the placement of structures, which individually and cumulatively result in impacts not to exceed 1 acre (0.4 hectare). Some activities require an application submittal to MDE for verification of USACE authorization prior to commencement of

the proposed work and others may require notification to the USACE via the Federal/State Joint Permit Application and review before being considered under the MDSPGP-5 permit. A State public notice for a Maryland Tidal Wetland License or Permit or a Nontidal Wetlands and Waterways Permit is required when the project is proposing permanent impacts to nontidal wetlands greater than 5,000 square feet (464.5 square meters), the project is located in Use III (support of estuarine and marine aquatic life) or IV (recreational trout fishing and public water supply) waters, or other sensitive habitats identified by State law or regulation.

Wastewater, construction, stormwater, and pretreatment discharges, also known as point source discharges, are managed through the National Pollution Discharge Elimination System (NPDES) Permit Program (Phase I) as authorized by Section 402 of the CWA. The MDE implements Section 402 for the state of Maryland. All point source discharges must have a NPDES permit. NPDES permits require specific actions including monitoring and analysis work that must be conducted during the lifetime of the permit. NPDES general permit covers small municipal separate storm sewer systems (MS4s) owned or operated by the United States or the State of Maryland in certain portions of the State of Maryland as defined under Title 40 of the CFR §122.26(b)(16) and 122.32(a)(1). The Phase II program expands Phase I by requiring owners and operators of "small" MS4s to implement programs to control stormwater runoff through the use of an NPDES permit. MDE has determined that an impervious area threshold is appropriate for establishing eligibility criteria for government properties for which agencies are required to obtain MS4 general permit coverage. Eligible properties will be those that have greater than ten percent impervious area. The MDE has issued two general discharge permits for small MS4s: one for small municipalities and another for State and federal agencies (MDANGB 2018a).

The Chesapeake Bay Critical Area (CBCA) legislation was enacted by the Maryland General Assembly in 1984. The CBCA law regulates land use activities within a minimum 1,000-foot (305-meter) strip landward along the Chesapeake Bay's tidal waters, tributaries, and wetlands (MDNR 2020a and 2020b). MDANGB is not subject to CBCA.

Maryland is a signatory to the 2014 Chesapeake Bay Watershed Agreement. The Chesapeake Bay Watershed Agreement, with EO 13508, *Chesapeake Bay Protection and Restoration*, guides the overall management of the DoD Chesapeake Bay Program. The DoD is committed to supporting the Agreement in all six states (Maryland, Virginia, Pennsylvania, New York, West Virginia, and Delaware) and the District of Columbia. The MDANGB is located in the Chesapeake Bay Watershed and is therefore subject to the requirements of EO 13508 and the 2014 Chesapeake Bay Watershed Agreement. MDANGB will incorporate the goals and outcomes of the 2014 Chesapeake Bay Watershed Agreement for water quality, healthy watersheds, and land conservation into projects where feasible. Consistent with the goals of the agreement, the MDANGB will when feasible, protect riparian forest buffers; protect groundwater through spill prevention and the use of pesticides in an integrated program with a focus on mechanical practices; reduce sediment through erosion control plans and BMPs; protect wetlands; and address invasive species issues through the IPM Plan.

EO 11988, *Floodplains Management*, requires all federal agencies to provide leadership and take action to reduce the risk of floodplain loss; minimize the impacts of floods on human safety, health, and welfare; and restore and preserve the natural and beneficial values of floodplains when acquiring, managing, or disposing of federal lands. In addition, if action is taken that permits an encroachment within the floodplain that alters the flood hazards on a national FIRM (e.g., changes to the floodplain boundary), MDANGB must submit an analysis reflecting those changes to FEMA. FEMA headquarters can be contacted at 202-646-3461 to obtain booklet MT-2, *Revisions to National Flood Insurance Program Maps*, for further guidance. The Department of Conservation

and Recreation, Flood Hazard Management Program administers the National Flood Insurance Program for the state of Maryland.

This INRMP focuses mainly on the potential impacts to water resources related to ground disturbance and stormwater associated with changes in impervious areas. The MDANGB implements the following specific watershed protection measures:

- Obtaining a Construction General Permit for Discharge of Stormwater and Dewatering Wastewaters through the MDE, for construction that disturbs greater than 1 acre (0.4 hectare). Ensuring BMPs designated under the regulations are implemented.
- Obtaining a Section 404 permit and a Section 401 WQC prior to the commencement of any land disturbance. Mitigation may be required for the loss of acreage.
- Managing invasive species to promote desirable native species.
- Maintaining vegetated buffers around water resources.
- Restricting vehicles within 100 feet (30 meters) of water resources except where established crossings and roads exist.
- Adhering to the Maryland Nontidal Wetland Protection Act for activities in a nontidal wetland or within a 25-foot (7.6-meter) buffer or 100-foot (30-5-meter) expanded buffer around a nontidal wetland.
- Adhering to BMPs during construction and operational activities as described in applicable manuals, plans, and permits.

7.3.2 Coastal Management Zones

The Federal Coastal Zone Management Act (CZMA) of 1972, as amended (16 USC §§ 1451-1466) encourages coastal states and territories to develop comprehensive coastal management programs. The program is administered by the Secretary of Commerce, who in turn has delegated this responsibility to the National Oceanic and Atmospheric Administration's (NOAA's) National Ocean Service. The CZMA requires that federal actions within or outside the coastal zone that affect any land or water use or natural resource of the coastal zone shall be carried out in a manner which is consistent with the enforceable policies of approved state coastal management programs. This concept is known as "federal consistency." The Maryland Coastal Zone Management program received federal approval in 1979. Counties that border the Chesapeake Bay or its tidal tributaries are included in the coastal zone. Within this zone, coastal areas, tidal tributaries, and tidal wetlands are protected under the CZMA. The federal consistency requirements are enforced through the Coastal Zone Consistency Division in the Wetlands and Waterways Program of the Water Management Administration in the MDE. On 8 May 2013, the State of Maryland and DoD signed a MOU concerning federal consistency requirements of the CZMA and the application and implementation of enforceable polices of Maryland's Coastal Zone Management Program. In addition, Maryland prepared and NOAA approved on 18 March 2011, a Routine Program Change to Maryland's Enforceable Coastal Policies. The Maryland ANG will ensure that any proposed projects or activities that may impact coastal resources or uses will undergo a federal consistency review.

7.3.3 Vegetation Buffers

Vegetated buffers are also referred to as riparian management zones, riparian buffers, wetland buffers, lake buffers, buffer strips, filter strips, or streamside management areas. Buffers can take

many forms and may vary in size and function depending on the upland land use and the type of water resource being protected. They can either be grassland or forest, and may or may not be mowed and maintained occasionally. One of the primary purposes of a vegetated buffer is for water quality protection by providing vegetation to interrupt water flow and to trap and filter out suspended sediments, nutrients, chemicals, and other polluting agents before they reach the body of water. Vegetated buffers should be maintained along all perennial and intermittent streams, wetlands, lakes, or ponds where nearby management activities result in surface/soil disturbance, earth changes, and where erosion and sediment transport occur during rain events.

MDANGB will maintain riparian buffers around water resources to reduce the influx of sedimentation and other materials into the water resources in compliance with the CWA, CBCA, and the Non-Tidal and Tidal Wetlands Acts. MDANGB will minimize detrimental disturbance in riparian and wetland buffers. A 25-foot (7.6-meter) buffer will be maintained around wetlands except for "nontidal wetlands of special State concern" where the buffer is expanded to 100 feet (30.5 meters).

7.4 Grounds Maintenance

MDANGB currently occupies approximately 175 acres (71 hectares) of land with approximately 58 acres (23.5 hectares) of open space. The grounds maintenance personnel currently mow the grass in the maintained areas of the installation and conduct tree maintenance. It is recommended that the installation move toward the use of more native plants that require less maintenance inputs in terms of energy, water, manpower, equipment, and chemicals. The implementation of this goal will promote the sustainable management of federal facility lands through the implementation of cost-effective, environmentally-sound landscaping practices, and programs to reduce adverse impacts to the natural environment. All grounds maintenance activities will ensure compliance with environmental legislation, regulations, and guidelines. General recommendations to promote environmentally beneficial landscaping include:

- Maximize use of regionally native plant species and avoid introduction of invasive, non-native species in revegetation and landscaping activities.
- Choose plantings with climate change resiliency in mind. Implement water-efficient practices, use efficient irrigation systems and recycled water, and use landscaping to conserve energy.
- Design landscaping to be suitable to the specific site and appropriate for the use and operation of the facility.

7.5 Wildland Fire Management

The threat of wildfire to the mission and natural resources is extremely low and a wildland fire management plan for MDANGB is not required.

7.6 Forest Management

Forest lands on MDANGB are minimal; therefore, there is no formal management program in place. Forest lands will be managed with the overall goal of supporting the installation ecosystem and resources. Future projects may include the development of a forestry management plan. MDANGB will avoid removing trees during nesting season.

7.7 Soil Conservation and Sediment Management

The soils at the installation are susceptible to water erosion if not protected with vegetation or other cover. Maintenance of key ecosystem functions, such as erosion control and sediment retention, require a healthy, uniform ground cover be established as quickly as possible following land use conversion or disturbance, and that interim soil stabilization measures be implemented. Two main types of soil erosion exist: wind erosion and water erosion. Several factors affect water erosion. These factors include rainfall, slope steepness and length, soil texture or erodibility, cover protecting the soil, and special practices such as terracing or planting on the contour. Sediment resulting from erosion affects surface water quality and aquatic organisms. Soil types with high susceptibility for soil erosion on MDANGB include Woodstown loam and Udorthents. Construction activities that disturb the ground surface can accelerate erosion by removing vegetation, compacting or disturbing the soil, changing natural drainage patterns, and by covering the ground with impermeable surfaces (pavement, concrete, buildings). When the land surface is impermeable, stormwater can no longer infiltrate, resulting in larger amounts of water that can move more quickly across a site and which can carry larger amounts of sediment and other pollutants into stormwater drains and drainage basins and ultimately into streams and rivers. As soil quality declines, adverse impacts to on-site and off-site environments increase. Therefore, the maintenance of soil quality is important for efficient and productive land management and utilization.

The MDANGB operates under an individual groundwater discharge permit (NPDES Permit Number MDR055501), which provides sampling, monitoring, and reporting requirements for discharge of treated effluent from the wastewater treatment plant. Construction activities that disturb one or more acres are regulated under USEPA's NPDES construction stormwater program and would need a Construction Stormwater Permit.

To protect water quality, MDANGB implements the following strategies:

- Monitoring surface water quality.
- Implementing BMPs for construction and industrial activities.
- Preventing surface water pollution by ensuring environmental plans (e.g. SWPPP) are implemented when appropriate.
- Minimizing the use of pesticides.
- Maintaining vegetation buffers around water resources.
- Re-seeding disturbed areas after construction with native grasses and plant species.
- Implementing requirements in the MS4 permit.

7.8 Outdoor Recreation, Public Access, and Public Outreach

Due to security and/or safety measures, there is currently no unsupervised public access or individual public access programs for outdoor recreation or otherwise at MDANGB. Recreational opportunities such as a running track are available to installation personnel.

The DoD Chesapeake Bay Program conducts an Annual Clean the Bay Day on DoD installations. MDANGB will consider participating in the event with base military and civilian personnel. Information on the amount of debris removed will be reported to the DoD Chesapeake Bay Program and in the annual Chesapeake Bay data call.

7.9 Conservation Law Enforcement

No hunting or fishing is allowed on the installation; therefore, conservation law enforcement officers are not necessary.

7.10 Geographic Information Systems

Geographic Information System (GIS) is used to manage and catalog information acquired in natural resources research. GIS assists in planning by charting areas of environmental concern and providing a baseline for analyzing the potential impacts of any proposed natural resources management action. Managers can implement the capabilities of a GIS to watershed, wetlands, wildlife, and various other natural resource management applications. GIS needs and requirements will be addressed through the ANG GeoBase Program.

7.11 Other Plans

7.11.1 Integrated Pest Management Plan

MDANGB is required to follow an IPM Plan in an effort to control organisms that negatively influence human health and/or the environment while using sustainable practices. A goal of the plan is to use non-chemical pest removal when possible. Strategies considered would include mowing and frequently removing waste to eliminate rodent habitat and food sources. Removing invasive species at installation boundaries is key to keep plants from encroaching inward. Pesticide application is conducted by a licensed professional, and the wetlands on the installation (see Section 5.5) are avoided.

7.11.2 Invasive Species

An invasive species survey was conducted in 2019 on the installation (MDANGB 2020a). Non-native, invasive, and pest species have the potential to be major contributors to ecosystem destabilization. Non-native species (also termed exotic), as the name indicates, are species from other regions of the world which have been artificially introduced to the region, primarily through human activities. Invasive species are those that, whether native or non-native, tend to become established in disturbed systems and competitively exclude native species. Invasive plant species should be eradicated to prevent further spread and infestation. Information on invasive species in Maryland can be found from various sources:

- MDNR - Invasive and Exotic Species. https://dnr.maryland.gov/wildlife/Pages/plants_wildlife/Invasives/invintro.aspx
- Maryland Invasive Species Control (MISC). http://www.mdinvasives.org/wp-content/uploads/2018/03/Invasive_Species_of_Concern_in_Maryland.pdf
- Maryland Department of Agriculture (MDA). https://mda.maryland.gov/plants-pests/Documents/Invasive-Plant-List-March-2020.pdf
- USDA's Introduced, Invasive and Noxious Plants. https://plants.usda.gov/java/noxious?rptType=State&statefips=24

The MDA maintains a list of Tier 1 invasive plant species that cannot be propagated, imported, transferred, sold, purchased, transported or introduced (MDA 2020). Of the 20 non-native plant species documented on MDANGB during the 2019 flora and fauna surveys, six of the species are classified by MISC as a Maryland Invasive Species of Concern; one species is considered both an

Invasive Species of Concern and a USDA Listed Invasive (Table 9). Table 9 presents which vegetative cover types each of the species inhabits.

Of the non-native species documented on MDANGB, the most common and potentially impactful species observed was common reed, which accounts for approximately 40 percent of the vegetative cover in several wetlands on MDANGB. Common reed and Johnsongrass are the only species documented on MDANGB that are regulated by the state and/or federal law.

EO 13112, *Invasive Species*, requires all federal agencies to prevent the introduction of invasive species and provide for their control and to minimize the economic, ecological, and human health impacts that invasive species cause.

Table 9. Invasive Species Observed During the Flora and Fauna Surveys

Scientific Name	Common Name	Cover Type(s) Observed	Status
Ailanthus altissima	Tree-of-heaven	Woodland (edge)	MD Invasive Species of Concern
Hedara elix	English ivy	Woodland	MD Invasive Species of Concern
Lonicera japonica	Japanese honeysuckle	Woodland / Forest	MD Invasive Species of Concern
Phragmites australis	Common reed	Disturbed/Developed / Wetland	MD Invasive Species of Concern
Rosa multiflora	Multiflora rose	Woodland	MD Invasive Species of Concern
Sorgham halepense	Johnsongrass	Disturbed/Developed / Wetland	MD Invasive Species of Concern; USDA listed species

Sources: MDANGB 2020a; MISC 2005; USDA 2020
MD Maryland
USDA US Department of Agriculture

Pest species are typically non-native species that have negative impacts on natural ecosystems or on human health. The goals of the IPM Plan are to establish and maintain safe, effective, and environmentally sound IPM practices to control pests that may adversely impact readiness of military operations by affecting the health of personnel or damaging structures, material, or property. Management strategies outlined for implementation of this INRMP are to ensure no net loss of military training capabilities.

General pest management strategies are as follows:

- Controlling invasive and exotic species and noxious weeds through early detection and isolation of infested areas.
- Establishing and maintaining systematic and pest-specific surveillance and monitoring programs (including termite inspection frequency) to determine the status of pest presence at the installation and if and when treatments are needed rather than by a predetermined schedule.
- Implementing BMPs to minimize land disturbances that favor invasion of non-native species and re-vegetating disturbed areas with native species.
- Avoiding pesticide use in and around wetlands and other surface waters.
- Avoiding use of invasive, non-native species in landscaping.
- Implementing judicious use of both non-chemical and chemical control techniques to achieve effective pest management that minimizes economic, health, and environmental risks. Emphasizing the use of mechanical, biological, and cultural control techniques, using

chemical techniques sparingly with caution. Using chemical controls only after careful consideration of alternative controls.

- Educating site users.
- Ensuring all pest management operations involving the application of pesticides on the installation are performed by DoD or state certified pesticide applicators and by licensed commercial pest management companies.
- Ensuring pesticides used at MDANGB are stored in accordance with the product labels, their Safety Data Sheets, and in accordance with DoDI 4150.07, *Pest Management Program,* and federal, state, and local regulations.
- Ensuring the IPMC monitors contracts for pest management at MDANGB.

7.11.3 Stormwater Management

MDE issued an NPDES industrial stormwater permit (State permit number 13SF5501/NPDES Permit Number MDR05550) for industrial stormwater at MDANGB effective from 31 October 2018 through 30 October 2023. Under this permit, the 175 WG manages stormwater collection and discharge in accordance with a SWPPP. The SWPPP provides engineering and management strategies designed to improve the quality of stormwater runoff from the installation and thereby improve the quality of receiving waters (MDANGB 2018a). MDANGB also operates under a general MS4 permit that requires management programs be developed to effectively control the discharge of pollutants from stormwater runoff and improve water quality. An Illicit Discharge Detection and Elimination program is implemented and includes activities such as mapping the stormwater conveyance system, inspecting outfalls to discover polluted discharges, investigating the source of pollution, and taking steps to eliminate the discharge, which may include enforcement actions.

A Notice of Intent (NOI) Form must be filed with the MDE before any construction occurs that disturbs one or more acres. The NOI must be submitted to obtain coverage under the General Permit for Storm Water Associated with Construction Activity.

7.11.4 Bird/Wildlife Aircraft Strike Hazard

MDANGB has a BASH plan to address potential hazards to the ANG including but not limited to resident and migratory bird species and other wildlife. Daily and seasonal bird movements create various hazardous conditions. The BASH Plan (Maryland ANG 2018b) establishes procedures to minimize the hazard to the MDANGB and deployed aircraft at the installation and in their operating areas.

In 2016, Martin State Airport had 79,332 aircraft operations, an average of 217 per day; 94 percent general aviation, 3 percent military, and 2 percent air taxi (MDANGB 2018b). From 2000-2017 there were 85 total strikes for the 175 WG. Two strikes were reported as Class C mishaps ($50,000 to less than $500,000 in damage). There were six strike reports designated as Class E mishaps (no damage or less than $20,000 in damage). The remaining strikes did not indicate a mishap class. An increase in strikes is noticed in the spring and fall most likely associated with migration (MDANGB 2018b). The most frequently reported struck species during that time period were the American kestrel (*Falco sparverius*, five reports), American robin (*Turdus migratorius*, five reports), bank swallow/sand swallow (*Riparia riparia*, five reports) and the barn swallow (*Hirundo rustica*, five reports). Higher risk species that were also reported struck included: black vulture (*Coragyps atratus*), Bonaparte's gull (*Chroicocephalus philadelphia*), double-crested cormorant

(*Phalacrocorax auritus*), herring gull (*Larus argentatus*), laughing gull (*Leucophaeus atricilla*), mourning dove (*Zenaida macroura*), red-tailed hawk (*Buteo jamaicensis*), and ring-billed gull (*Larus delawarensis*).

Animal and bird populations, both migratory and resident populations, on the flightline area are controlled to prevent wildlife/aircraft collisions. This will be accomplished by habitat modification, fence maintenance around the flightline, noise and distress calls, and as a last resort, depredation removal by the USDA-APHIS-WS. Flightline vegetation will be maintained between 7 and 14 inches (18 and 36 centimeters) in height to discourage birds and limit the number of mowings required. The BASH Plan covers procedures and techniques for preventing bird aircraft strikes and hazards and provides a list of species that pose a risk.

7.11.5 Maryland State Wildlife Action Plan

During the INRMP development process, MDANGB consulted with the MDNR to ensure INRMP goals, objectives, and strategies are consistent with Maryland's overall statewide and habitat-specific plans. The 2015 SWAP provides MDNR with important tools for restoring and maintaining critical habitats and populations of the state's species of conservation and management concern as well as conserving Maryland's wildlife diversity (MDNR 2015).

8.0 MANAGEMENT GOALS AND OBJECTIVES

Goals and objectives provide the framework for natural resources management programs. Goals provide a general guiding direction for each technical area and objectives are more specific actions that facilitate achieving those goals. The objectives then drive the development of specific activities and projects to achieve those objectives. Management goals and objectives for the INRMP were developed by a thorough evaluation of the natural resources present on MDANGB in accordance with AFMAN 32-7003, *Environmental Conservation*, and the principles of adaptive ecosystem management by an interdisciplinary team of biologists, planners, and environmental scientists. Goals and objectives should be revised over time to reflect evolving environmental conditions, adaptive management, and the completion of tasks as the INRMP is implemented.

GOAL – Natural Resources Program Management (PM): Manage natural resources in a manner that is compatible with and supports the military mission while complying with applicable federal and state laws, and USAF regulations and policies.

- OBJECTIVE PM1: Ensure Environmental Management staff are trained in accordance with the requirement of AFMAN 32-7003. At a minimum, members of the Environmental Management Office must attend the CECOS Natural Resources Compliance Course as part of their training requirements for implementation of the INRMP. When feasible, members of the Environmental Management Office will attend the annual National Military Fish and Wildlife Association Training Workshop.
- OBJECTIVE PM2: Prepare a budget and identify project needs to implement the natural resources management program at MDANGB. Project needs are to be submitted to the NGB/A4VN NRPM for budget and contracting.
- OBJECTIVE PM3: Conduct an annual INRMP review meeting with internal stakeholders. The EM will promote discussion with Installation Command, personnel, and pertinent internal stakeholders to identify operational needs relative to natural resources management. The EM will document, in writing, the discussions held and agreements made and will

address the document at the annual meeting with the USFWS, state, and NGB/A4VN NRPM.

- OBJECTIVE PM4: Conduct an annual INRMP review meeting with the USFWS, MDNR, IPMC, NGB/A4VN NRPM, Safety Office, and USDA-APHIS-WS. The annual meeting can be conducted as an in person meeting, via a teleconference, via Teams, or via email. The EM will present the status of the project actions taken over the previous year and any changes that occurred and will identify the project actions to be undertaken over the coming year. The EM will record the discussions held and the agreements made and will provide an attendance roster for attendees to sign. The EM will submit the written record and attendance roster to the attendees and will request review and concurrence with the documents provided. Receipt of written concurrence from the USFWS and the MDNR will constitute conclusion of the annual meeting.

GOAL – Fish and Wildlife Monitoring (FW): Establish a general wildlife and plant population trend monitoring program as a component of long-term ecological trend monitoring.

- OBJECTIVE FW1: Based on the findings contained in the Final Flora and Fauna Surveys report (MDANGB 2020a), identify any additional surveys that are deemed necessary and resource and conservation management projects to be included in the annual work plans.
- OBJECTIVE FW2: Determine the monitoring intervals, typically 3-5 years, needed to ensure populations and conditions of flora and fauna species and their habitats are thriving.
- OBJECTIVE FW3: Maintain an updated inventory of plants and animals present on MDANGB.
- OBJECTIVE FW4: Support USDA in their development of new methodology for reducing hazards at the airport.

GOAL – Vegetative Management (VM): Establish survey and monitoring programs to identify and address various vegetative communities on the installation.

- OBJECTIVE VM1: Survey the extent of the riparian habitat/corridors on the installation to identify any possible conservation and protective measures that could be implemented while ensuring there is no conflict with the flying mission of the installation.

GOAL – Invasive Species (IN): Establish survey and monitoring protocols to identify and address invasive, non-native, and noxious species. Implement an invasive and non-native species survey and plan.

- OBJECTIVE IN1: Based on the results of the Final Flora and Fauna Surveys (MDANGB 2020a), determine what actions are needed to address the presence of invasive, non-native, and noxious species.
- OBJECTIVE IN2: Ensure pest management projects and invasive species projects undertaken by either the Pest Management Office or the Environmental Office are coordinated and provide mutual benefit.

GOAL – Threatened and Endangered Species (TE): Identify the presence of federally and state threatened and endangered species to include any species of greatest conservation need identified in Maryland's SWAP.

- OBJECTIVE TE1: Based on the Final Flora and Fauna Surveys (MDANGB 2020a) for MDANGB, as well as state and federal websites identifying state and federally listed

species, determine if any additional survey work and actions may be needed to protect and conserve onsite state and federally listed species.

- OBJECTIVE TE2: Based on the Final Bat Report prepared for MDANGB (MDANGB 2020b), determine the intervals at which future bat surveys need to be conducted. Ensure all bat surveys and other surveys look for all species not just threatened and endangered species. Surveys will be conducted in accordance with USFWS protocols.
- OBJECTIVE TE3: Annually review state and federal lists of endangered, threatened and species of concern with potential to occur on the installation. Maintain current lists of federal and state species.
- OBJECTIVE TE4: Maintain compliance with USFWS regulations and recommendations concerning the NLEB. When feasible do not remove trees during summer roosting season.
    - Based on the findings of the Final Bat Survey Report (MDANGB 2020b) identify the need for any additional surveys such as specifically looking for suitable habitat for the NLEB and any other bats species that are listed by the USFWS and the MDNR.
    - Provide copies of the Final Bat Survey Report (MDANGB 2020b) to the USFWS and the MDNR to assist them in their actions to protect bat species.

GOAL – Grounds Maintenance and Landscaping (GM): Manage vegetative cover, forested areas, and soil to minimize sediment loss and erosion, while protecting water quality.

- OBJECTIVE GM1: In cooperation with grounds maintenance personnel, develop and implement a revegetation plan, with interim mechanisms to stabilize the soil until vegetative cover has become established, to reclaim disturbed areas following land use conversion, timber harvest, and other disturbances.
    - Use appropriate native seed mixtures and flora on new landscaping projects and disturbed areas.
    - Monitor revegetation efforts for effectiveness and modify as needed.
- OBJECTIVE GM2: Improve effectiveness of grounds maintenance to the overall ecosystem while also complying with the BASH Plan.
    - Develop a natural resources plan/grounds maintenance plan that contains an evaluation of improved and semi-improved lands with potential for conversion to unimproved. Plan should include a list of suitable native plants for on base landscape projects.
    - Establish and maintain a mixture of native grasses in the open/airfield areas and keep them mowed to within the 7- to 14-inch (18- to 36-centimeter) height range required in the BASH Plan.
    - Explain the need for mowing to begin at the center of an area and to move out from the center to allow wildlife to flee in all directions and not become trapped in the center or to one side.
- OBJECTIVE GM3: Continue to educate grounds maintenance personnel to reduce risks to listed species.

GOAL – Water Resource Protection (WA): Manage water resources to prevent potential degradation in water quality with no net loss of acreage or functions and values.

- OBJECTIVE WA1: Review all land disturbing activities proposed on the installation to ensure such work is done in accordance with applicable permits and other approvals required.
- OBJECTIVE WA2: Ensure all ground disturbance activities are conducted in accordance with state or local erosion and sediment control (ESC) laws and regulations to prevent erosion from disturbed areas causing sediment to enter waterways and/or wetlands.
    - Review Maryland's ESC program to determine feasibility of having Environmental and Grounds personnel attend ESC courses/trainings and having installation personnel become certified ESC inspectors.
    - Identify, inventory, and map areas of erosion and determine which areas pose a high risk for impacting WOTUS including wetlands, runways, roadways, and building foundations.
- OBJECTIVE WA3: Ensure the individual groundwater discharge permit is current and all conditions of that permit are being implemented in accordance with the permit.
- OBJECTIVE WA4: Participate with Chesapeake Bay Action Team – data calls, total maximum daily loads reporting, outreach and educational activities. Coordinate with water resources subject matter experts to develop projects with co-benefits to water quality and Chesapeake Bay Program goals.
- OBJECTIVE WA5: Implement MDANGB's MS4 Permit.

GOAL – Waters of the US (WOTUS)/Wetland Management and Protection (WT): Ensure the jurisdictional determinations (JDs) for onsite WOTUS, including wetlands, remain current.

- OBJECTIVE WT1: Ensure the boundaries of WOTUS, wetlands, and floodplains identified on and adjacent to the installation are shown in a GIS data layer, in all installation development and comprehensive plans and in all educational materials developed for installation personnel, leadership, and visiting personnel.
- OBJECTIVE WT2: Educate key installation and visiting personnel on the processes for conducting the mission in and adjacent to delineated and mapped WOTUS, wetlands, and floodplains.
- OBJECTIVE WT3: Ensure the JD for WOTUS including wetlands remains current. JDs are valid for 5 years and can be renewed every 5 years. If not kept current, a new delineation and JD may be required.
- OBJECTIVE WT4: Review all land disturbing projects including but not limited to all phases of construction, demolition, and maintenance projects to determine if the projects will impact WOTUS including wetlands and floodplains.
    - If impacts will occur, identify the need for Section 404 and 401 permits and a permit from the MDE in accordance with the state's Nontidal Wetland Protection Program and the steps needed to obtain those permits. Work with the NGB/A4VN NRPM to prepare and submit required permits submitted to the USACE and/or the MDE and Section 401 WQC to the state.

9.0 ANNUAL WORK PLANS

The INRMP Annual Work Plans contain projects listed by fiscal year (FY). For each project, a specific timeframe for implementation is provided (as applicable), as well as the office of primary responsibility (OPR), funding source, and priority for implementation (Tables 10 through 14). Priorities are defined as follows:

- High: The INRMP signatories assert that if the project is not funded the INRMP is not being implemented and the USAF is non-compliant with the Sikes Act; or that it is specifically tied to an INRMP goal and objective and is part of a "Benefit of the Species" determination necessary for ESA Sec 4(a)(3)(B)(i) critical habitat exemption.
- Medium: Project supports a specific INRMP goal and objectives, and is deemed by INRMP signatories to be important for preventing non-compliance with a specific requirement within a natural resources law or EO 13112, *Invasive Species*. However, the INRMP signatories would not contend that the INRMP is not being implemented if not accomplished within the programmed year due to other priorities and/or funding shortfalls.
- Low: Project supports a specific INRMP goal and objectives, enhances conservation resources or the integrity of the installation mission, and/or supports long-term compliance with specific requirements within natural resources law; but is not directly tied to specific compliance within the programmed year.

Table 10. Work Plans FY 2023

Project	Objective	Frequency	OPR	Funding Source	Priority Level
Prepare budget to implement the natural resources management program.	PM2	Annual			High
Complete annual review of the INRMP with installation stakeholders.	PM3	Annual		NGB	High
Complete annual review of the INRMP with USFWS and MDNR.	PM4	Annual		NGB	High
Review natural resource studies conducted at MDANGB to identify potential project/studies to be conducted.	FW1, TE2	Once			Medium
Annually review federal and state listings for threatened, endangered, and species of concern to maintain current lists of federal and state species.	TE3	Ongoing			High
Attend quarterly BASH meetings.	PM3	Ongoing			High
Prepare IPM Plan and bring to final.	IN1	Annual			High
Conduct study to determine presence of spotted lantern fly.	IN1	Once			Medium
Ensure compliance with the MS4 permit.	WA5	Ongoing			High
Support Annual Clean the Bay Day.	WA4	Annual			High

Table 11. Work Plans FY 2024

Project	Objective	Frequency	OPR	Funding Source	Priority Level
Prepare budget to implement the natural resources management program.	PM2	Annual			High
Complete annual review of the INRMP with internal stakeholders.	PM3	Annual		NGB	High
Complete annual review of the INRMP with USFWS and MDNR.	PM4	Annual		NGB	High
Attend quarterly BASH meetings.	PM3	Ongoing			High
Annually review federal and state listings for threatened, endangered, and species of concern to maintain current lists of federal and state species.	TE3	Annual		NGB	High
Continue to work with grounds maintenance personnel to implement safe mowing practices to reduce mortality of wildlife that do not conflict with the BASH Plan.	GM2, GM3	Ongoing			Medium
Continue to implement the educational outreach program for key installation and visiting personnel on conducting the mission in and adjacent to mapped WOTUS, wetlands, and floodplains.	WT1, WT2	Ongoing			Medium
Review and develop methodology for preventing bird nesting in lights along runways.	FW3	Ongoing			Medium
Remove phragmites from outfall channel 003.	VM1	Ongoing			Medium
Support Annual Clean the Bay Day.	WA4	Annual			High

Table 12. Work Plans FY 2025

Project	Objective	Frequency	OPR	Funding Source	Priority Level
Prepare budget to implement the natural resources management program.	PM2	Annual			High
Complete annual review of the INRMP with internal stakeholders.	PM3	Annual		NGB	High
Complete annual review of the INRMP with USFWS and MDNR.	PM4	Annual		NGB	High
Submit request to the NGB/A4VN NRPM to have studies/projects implemented at MDANGB.	PM2	Annual			Medium
Attend quarterly BASH meetings.	PM3	Ongoing			High
Annually review federal and state listings for threatened, endangered, and species of concern to maintain current lists of federal and state species.	TE3	Annual			High
Continue to work with grounds maintenance personnel to implement safe mowing practices to reduce mortality of wildlife that do not conflict with the BASH Plan.	GM2, GM3	Ongoing			Medium
Support Annual Clean the Bay Day.	WA4	Annual			High
Investigate the feasibility of increasing pollinator habitat away from the airfield.	TE1	Once			Low

Table 13. Work Plans FY 2026

Project	Objective	Frequency	OPR	Funding Source	Priority Level
Prepare budget to implement the natural resources management program.	PM2	Annual			High
Complete annual review of the INRMP with internal stakeholders.	PM3	Annual		NGB	High
Complete annual review of the INRMP with USFWS and MDNR.	PM4	Annual		NGB	High
Continue to work with grounds maintenance personnel to implement safe mowing practices to reduce mortality of herpetofauna and other wildlife that do not conflict with the BASH Plan.	GM2	Ongoing			Medium
Continue to implement the educational outreach program for key installation and visiting personnel on conducting the mission in and adjacent to mapped WOTUS, wetlands, and floodplains.	WT1, WT2	Ongoing			Medium
Work with NGB/A4VN NRPM to have additional studies and/or projects developed to address the findings of the watershed assessments monitoring program.	WA1	Ongoing			Medium
Attend quarterly BASH meetings.	PM3	Ongoing			High
Annually review federal and state listings for threatened, endangered, and species of concern to maintain current lists of federal and state species.	TE3	Annual			High
Support Annual Clean the Bay Day.	WA4	Annual			High
Investigate the feasibility of installing bat boxes away from the airfield.	TE2	Once			Low

Table 14. Work Plans FY 2027

Project	Objective	Frequency	OPR	Funding Source	Priority Level
Prepare budget to implement the natural resources management program.	PM2	Annual			High
Complete annual review of the INRMP with installation stakeholders.	PM3	Annual		NGB	Medium
Complete update of the the INRMP with USFWS and MDNR.	PM4	Annual		NGB	High
Submit request to the NGB/A4VN NRPM to have studies/projects implemented at MDANGB.	PM2	Annual		NGB	Medium
Attend quarterly BASH meetings.	PM3	Ongoing			High
Annually review federal and state listings for threatened, endangered, and species of concern to maintain current lists of federal and state species.	TE3	Annual			High
Review the INRMP, studies completed, and the written documents generated from the annual meetings to determine what updates and projects will be needed for the 5-year operations and effect review.	PM4	Annual			Medium
Support Annual Clean the Bay Day.	WA4	Annual			High

10.0 INRMP IMPLEMENTATION, UPDATE, AND REVISION PROCESS

10.1 INRMP Implementation

In accordance with AFMAN 32-7003, *Environmental Conservation*, an INRMP is considered implemented if an installation:

- Actively requests, receives, and uses funds for "must fund" projects and activities as defined by Chapter 4 of AFI 32-7001, *Environmental Quality Programming and Budgeting*.
- Executes all "must fund" projects and activities in accordance with specific time frames identified in the INRMP.
- Prepares the INRMP in cooperation with appropriate stakeholders. Notifies stakeholders when a new or revised INRMP will be prepared, and solicits participation and input to the INRMP development and review process.
- Ensures that sufficient numbers of professionally trained natural resources management personnel are available to perform the tasks required by the INRMP.
- Ensures the INRMP has been approved in writing by the appropriate representative from each cooperating agency within the past 5 years.
- Reviews the INRMP annually and coordinates annually with cooperating agencies.
- Establishes and maintains regular communications with the appropriate federal and state agencies for the region where the installation is located.
- Documents specific INRMP action accomplishments undertaken each year.
- Ensures INRMP updates and reviews are conducted in cooperation with the USFWS, MDNR, and NOAA, where applicable.
- Ensures the INRMP implements ecosystem management on ANG installations by setting goals for attaining a desired land condition.

Natural resource and land use management issues are not the only factors contributing to the development and implementation of this INRMP. Facility management and other seemingly unrelated issues affect implementation. It is important to the implementation of this INRMP that personnel at MDANGB take ownership of this INRMP to provide the necessary resources (e.g. personnel and equipment), and to utilize the appropriate funding allocated by the NGB/A4VN NRPM to implement the INRMP. It is extremely important that the INRMP Working Group continue to participate in the implementation of this INRMP. The INRMP Working Group is made up of the key MDANGB personnel, and has an oversight role to ensure the effective implementation of this INRMP. Top and middle-level management representation, as well as representation from individuals with daily on-site experience will provide the INRMP Working Group with the leadership and structure necessary for the successful implementation of this INRMP.

10.1.1 Monitoring INRMP Implementation

10.1.1.1 MDANGB INRMP Implementation Analysis

Implementation of the MDANGB INRMP will be monitored by the EM in cooperation with the NGB A4VN NRPM for meeting the legal requirements of the Sikes Act as well as for other mission

and biological measures of effectiveness. The ultimate successful implementation of this INRMP is realized in no net loss in the capability of the MDANGB training lands to support the military mission while at the same time providing effective natural resources management.

In order to monitor and evaluate the effectiveness of the INRMP implementation, the following will be reviewed, as applicable, and discussed within the context of the annual review and/or a formal review of operation and effect:

- Impacts to and from military mission
- Conservation program budget
- Staff requirements
- Program budget
- Compliance with regulatory requirements
- Program and project implementation
- Feedback from military trainers, the USFWS, MDNR, and others
- Trends in species and habitat diversity as evidenced by recurring biological surveys, land use changes, and opinions of natural resource experts

Some of these areas may not be reviewed every year due to lack of data or pertinent information. The effectiveness of this INRMP as a mission enabling conservation tool will be decided by mutual agreement of the USFWS, the MDNR, and MDANGB during annual reviews and/or reviews for operation and effect.

10.1.1.2 USAF and DoD INRMP Implementation Monitoring

The USAF uses the Defense Environmental Programs Annual Report to Congress (DEPARC) to monitor Sikes Act compliance. DEPARC is the automated system used to collect installation environmental information for reporting to DoD and Congress. Established to fulfill an annual requirement to report the status of DoD's Environmental Quality Program to Congress, DEPARC collects information on enforcement actions, inspections, and other performance measures for high-level reports and quarterly reviews. DEPARC also helps the USAF track fulfillment of DoD Measures of Merit requirements. The Deputy under Secretary of Defense's (DUSD's) Updated Guidance for Implementation of the Sikes Act also includes an updated section, Conservation Metrics for Preparing and Implementing INRMPs. Progress toward meeting these measures of merit is reported in the annual report to Congress.

10.1.2 Priorities and Scheduling

The Office of Management and Budget considers funding for the preparation and implementation of this INRMP, as required by the Sikes Act, to be a high priority. However, the reality is that not all of the projects and programs identified in this INRMP will receive immediate funding. Therefore, projects need to be funded consistent with timely execution to meet future deadlines. Projects are generally prioritized with respect to compliance. Highest priority projects are projects related to recurring or current compliance, and these are generally scheduled earliest. The prioritization of the projects is based on need, legal drivers, and ability to further implement the INRMP.

Current compliance includes projects and activities needed because an installation is currently or will be out of compliance if projects or activities are not implemented in the current program year. Examples include:

- Environmental analyses, monitoring, and studies required to assess and mitigate potential effects of the military mission on conservation resources
- Planning documents
- Baseline inventories and surveys of natural resources (historical and archaeological sites)
- Biological assessments (BAs), surveys, or habitat protection for a specific listed species
- Mitigation to meet existing regulatory permit conditions or written agreements
- Wetland delineations in support of subsequent JDs
- Efforts to achieve compliance with requirements that have deadlines that have already passed

Maintenance requirements include those projects needed that are not currently out of compliance but shall be out of compliance if projects are not implemented in time to meet an established deadline beyond the current program year. Examples include:

- Compliance with future requirements that have deadlines
- Conservation and GIS mapping to be in compliance
- Efforts undertaken in accordance with non-deadline specific compliance requirements of leadership initiatives
- Wetlands enhancement, in order to achieve the executive order for no net loss or to achieve enhancement of existing degraded wetlands
- Public education programs that explain the importance of protecting natural resources

Lower priority projects include those that enhance conservation resources of the installation mission, or are needed to address overall environmental goals and objectives, but are not specifically required under regulation or executive order, and are not of an immediate nature. These projects are generally funded after those of higher priority are funded. Examples include:

- Community outreach activities such as Earth Day and Historic Preservation Week activities
- Educational and public awareness projects such as interpretive displays, nature trails, wildlife checklists, and conservation teaching materials
- BAs, biological surveys, or habitat protection for a non-listed species
- Restoration or enhancement of natural resources when no specific compliance requirement dictates a course or timing of action
- Management and execution of volunteer and partnership programs

10.1.3 Funding

Implementation of this INRMP is subject to the availability of annual funding. Funding for specific projects can be grouped into three main categories by source: federal ANG or NGB funds, other

federal funds, and non-federal funds. When projects identified in the plan are not implemented due to lack of funding, or other compelling circumstances, the installation will review the goals and objectives of this INRMP to determine whether adjustments are necessary. Funding options include:

- The Legacy Resource Management Program provides financial assistance to DoD efforts to conserve natural and cultural resources on federal lands. Legacy projects could include regional ecosystem management initiatives, habitat preservation efforts, archeological investigations, invasive species control, and/or flora or fauna surveys. Project proposals are submitted to the Legacy program during their annual funding cycle (https://www.denix.osd.mil/legacy/home).
- Grant and assistance programs are administered by other federal agencies that could be accessed for natural resources management at MDANGB. Examples include funds associated with the CWA and endangered species.
- Other non-federal funding sources that could be considered include The Public Lands Day Program, which coordinates volunteers to improve the public lands they use for recreation, education, and enjoyment, and the National Environmental Education and Training Foundation, which manages, coordinates, and generates financial support for the program (https://www.neefusa.org/npld).
- MDANGB may also consider entering into cooperative or mutual aid agreements with states, local governments, non-governmental organizations, and other individuals.

10.1.4 Cooperative Agreements

The DoD and subcommand entities have MOUs, Memorandums of Agreement (MOAs), and other cooperative agreements with other federal agencies, conservation and special interest groups, and various state agencies in order to provide assistance with natural resources management at installations across the United States. Generally, these agreements allow installations and agencies, or conservation and special interest groups to obtain mutual conservation objectives. The DoD agreements applicable to MDANGB include:

- MOU between DoD and USFWS/International Fund for Animal Welfare (IFAW) to promote the conservation of migratory birds (2011).
- MOU between DoD and USFWS/IFAW for a Cooperative Integrated Natural Resource Program associated with the ecosystem-based management of fish, wildlife, and plant resources on military lands (2006).
- MOU between the DoD and USEPA to form a working partnership to promote environmental stewardship by adopting IPM strategies to reduce the potential risks to human health and the environment associated with pesticides (2012).
- MOA for federal Neotropical Migratory Bird Conservation Program and addendum (Partners in Flight-Aves De Las Americas) among DoD, through each of the Military Services, and over 110 other federal and state agencies and non-governmental organizations (1991).
- MOU between the DoD and Ducks Unlimited, Inc. to provide a foundation for cooperative development of selected wetlands and associated uplands in order to maintain and increase waterfowl populations and to fulfill the objectives of the North American Waterfowl Management Plan, within the context of DoD's environmental security and military missions (2006).

- MOU between DoD and Natural Resources Conservation Service to promote cooperative conservation, where appropriate (2006).
- MOU with Watchable Wildlife Incorporated (2002).
- MOU between the DoD and Bat Conservation International to identify, document, and maintain bat populations and habitats on DoD installations (2011).
- MOA between Federal Aviation Administration, USAF, US Army, USEPA, USFWS, and USDA to address aircraft-wildlife strikes (2003).

For a further list of cooperative agreements and MOUs please visit:

https://www.denix.osd.mil/announcements/unassigned/sikes-tripartite-mou/

10.1.5 Consultation Requirements

The MDANGB has multiple natural resources consultation requirements in addition to the INRMP development and review requirements as identified in the Sikes Act. Federally-listed species management requires ESA Section 7 consultation with the USFWS. State-listed species management, as well as game species management, requires consultation with MDNR. Actions that fall under the jurisdiction of Section 401 of the CWA necessitate permitting from the MDE, while Section 404 actions necessitate permitting from the USACE and the MDE.

The USFWS has updated the way federal agencies may consult on the effects of their actions on the NLEB. In 2016, the USFWS developed the optional streamlined Section 7 consultation framework for the NLEB. The framework was part of the USFWS' January 5, 2016 biological opinion on their issuance of a 4(d) rule for the species (USFWS 2016b). Agencies can use the online determination key available through the USFWS Information for Planning and Consultation website (https://ecos.fws.gov/ipac/).

10.2 Annual INRMP Review and Coordination Requirements

Per DoD policy, the EM of the MDANGB will review the INRMP annually, prior to September 30, in cooperation with the USFWS and MDNR to ensure the goals and objectives of the INRMP remain current. The metrics used for this evaluation are set forth in DoDI 4715.03, *Natural Resources Conservation Program*, Enclosure 5. The installation's natural resources management progress will be determined based on information obtained annually that supports the focus areas in the DoDI 4715.03 through the US Air Force/NGB biannual environmental quality data calls. Prior to the annual meeting with the USFWS and the MDNR, the EM will schedule an internal stakeholders meeting with the Safety Office, USDA-APHIS-WS, IPMC, and tenant organizations to obtain feedback on how implementation of the INRMP affected or did not affect their programs and to obtain any comments and recommendations they may have. Following the internal stakeholders meeting, the EM will prepare a summary of the actions taken in support of the INRMP over the past year, what actions were not completed with an explanation of why they were not implemented, and the actions planned for the coming year. The EM will send out invitations with the written summary to the USFWS, MDNR, NGB/A4VN NRPM, Safety Office, USDA-APHIS-WS, IPMC, and other entities deemed necessary to participate in an annual meeting held in-person, via a conference call, or via a Teams meeting to discuss the written review summary, to address any questions regarding implementation of the INRMP over the past year and to discuss the planned actions for the coming year. The EM will document the meeting with the invitation, an agenda, meeting minutes, and a sign-in roster of attendees. Following the meeting, the MDANGB EM will submit the documentation to the USFWS and the MDNR for their review and comment and for

concurrence that the documentation reflects the discussions held and the agreements made during the annual meeting.

At this annual meeting the need for updates or revisions will be discussed. If updates are needed, MDANGB will initiate the updates and, after agreement of all three parties, they will be incorporated in the INRMP. If it is determined that major changes are needed, all three parties will provide input and an INRMP revision will be initiated with MDANGB acting as the lead coordinating agency. The annual meeting will be used to expedite the more formal review for operation and effect and, if all parties agree and document their mutual agreement, it can fulfill the requirement to review the INRMP for operation and effect.

If not already determined in previous annual meetings, by the fourth-year annual review a determination will be made jointly to continue implementation of the existing INRMP with updates or to proceed with a revision. If the parties feel that the annual reviews have not been sufficient to evaluate operation and effect and they cannot determine if the INRMP implementation should continue or be revised, a formal review for operation and effect will be initiated. The determination on how to proceed with INRMP implementation or revision will be made after the parties have had time to complete this review.

As part of the annual review, MDANGB will specifically:

- Invite feedback from USFWS and MDNR on the effectiveness of the INRMP.
- Inform USFWS and MDNR which INRMP projects are required to meet current natural resources compliance needs.
- Document specific INRMP action accomplishments from the previous year.

10.3 INRMP Update and Revision Process

10.3.1 Review for Operation and Effect

Not less than every 5 years, the INRMP will be reviewed for operation and effect to determine if the INRMP is being implemented as required by the Sikes Act and contributing to the management of natural resources at MDANGB. The review will be conducted by the three cooperating parties to include the Installation Commander responsible for the INRMP, the Project Leader of the USFWS Chesapeake Bay Field Office, and Secretary of the MDNR. While these are the responsible parties, technical representatives generally are the personnel who actually conduct the review.

The review for operation and effect will either conclude that the INRMP is meeting the intent of the Sikes Act and only needs an update and implementation can continue; or that it is not effective in meeting the intent of the Sikes Act and it must be revised. The conclusion of the review will be documented in a jointly executed memorandum, meeting minutes, or in some way that reflects mutual agreement.

If only updates are needed, they will be completed in a manner agreed to by all parties. The updated INRMP will be reviewed by the local USFWS Chesapeake Bay Field Office and MDNR. Once concurrence letters or signatures are received from the Project Leader of the USFWS Chesapeake Bay Field Office and the Secretary of MDNR, the update of the INRMP will be complete and implementation will continue. Generally, the environmental impact analysis will continue to be applicable to updated INRMPs, and a new analysis will not be required.

If a review of operation and effect concludes that an INRMP must be revised, there is no set time to complete the revision. The existing INRMP remains in effect until the revision is complete and

USFWS and MDNR concurrence on the revised INRMP is received. MDANGB will endeavor to complete such revisions within 18 months, depending upon funding availability. Revisions to the INRMP will go through a detailed review process similar to development of the initial INRMP to ensure MDANGB military mission, USFWS and MDNR concerns are adequately addressed, and the INRMP meets the intent of the Sikes Act.

11.0 ENVIRONMENTAL ASSESSMENT

11.1 Introduction

As discussed in Section 2.3.2, the adoption of this INRMP requires an EIAP in accordance with the NEPA, CEQ Regulations (40 CFR §1500-1508), and 32 CFR 989. The activities addressed within this document may constitute a federal action and therefore must be assessed in accordance with NEPA. To comply with NEPA, as well as other pertinent environmental requirements, the decision-making process for the Proposed Action includes the development of this EA to address the environmental issues related to the implementation of the INRMP. The individual actions or projects described in Section 8 that have the potential to impact the environment may require additional environmental impact analysis to ensure NEPA compliance.

This INRMP is a living document that provides a framework for natural resources management into the future and is reviewed annually. Management practices included in the plan have been developed without compromising long-range goals and objectives. As the plan is implemented and updated, additional environmental analyses might be required as new management activities are developed and specific projects are implemented.

The following sections provide a description of the Proposed Action and alternatives considered, an assessment of the environmental consequences associated with each alternative, and an analysis of potential cumulative effects.

11.2 Purpose and Need

The Maryland ANG at Martin State Airport is proposing the implementation of this INRMP, to support the management of natural resources as prescribed by the Plan itself and to comply with the Sikes Act. The purpose of the Proposed Action is to carry out the set of recommended resource-specific management strategies developed in the INRMP, which would enable the Maryland ANG to manage effectively the use and condition of natural resources on the installation. The INRMP is a long-term plan and is intended to be a management framework with goals, objectives, and projects that support natural resource management at the installation and that may change annually as some goals and objectives are completed or as these goals and objectives are modified to coincide with changing mission requirements or environmental conditions at the installation. Implementation of the Proposed Action would support the Maryland ANG's need to provide realistic training for Maryland ANG personnel in fulfillment of mission requirements while complying with environmental regulations and policies.

The need for this INRMP is to provide a means to guide Maryland ANG at Martin State Airport in maintaining and improving the sustainability and biological diversity of the ecosystems present at the base, while supporting military readiness.

11.3 Proposed Action

The Proposed Action is to implement the INRMP, which supports an ecosystem approach and includes natural resources management measures to be undertaken on MDANGB. The Proposed

Action focuses on a 5-year planning period, which is consistent with the timeframe for the management measures described in the INRMP.

11.4 No Action Alternative

The No Action Alternative is a continuation of operations as currently conducted. Currently there is limited environmental management of natural resources on the installation. Management efforts are currently limited to BASH and pest management. Species-specific management, habitat management including wetland protection, and population trends through species surveys are not conducted. Existing conditions and management practices would continue, and no new initiatives would be established. The No Action Alternative is used as a baseline against which the action alternative may be compared. Inclusion of a No Action Alternative is required and will be carried forward for further analysis.

11.5 Scope of Analysis

The potential environmental effects associated with the Proposed Action are required to be assessed in compliance with NEPA, CEQ regulations, 32 CFR Part 989, AFI 32-7061, *The Environmental Impact Analysis Process*, and AFMAN 32-7003, *Environmental Conservation*. This EA analyzes potential environmental effects associated with implementation of the Proposed Action and the No Action Alternative in the geographical area of MDANGB. The INRMP describes impacts of the military mission upon natural resources and means to mitigate these impacts. However, this INRMP does not evaluate Maryland ANG's military mission, nor does it replace any requirement for environmental documentation of the military mission at MDANGB. This INRMP presents information on the management of natural resources on MDANGB. It also discusses the setting, identifies known natural resources, describes the human environment that affects natural resources, and describes how MDANGB would manage resources to provide sustained military use, sustain ecological functions, and protect listed and other sensitive plant and wildlife species. Major emphasis would be placed on proactive management to reduce the potential for negative environmental impacts due to the installation military mission.

The MDANGB INRMP is a "living" document that focuses on a 5-year planning period based on past and present actions. Short-term management practices included in the plan have been developed without compromising long-range goals and objectives. Because the plan will be modified over time, additional environmental analyses could be required as new management measures are developed for the long term (i.e., beyond 5 years).

11.6 Environmental Consequences

This section presents an evaluation of the environmental impacts that could potentially result from implementation of the Proposed Action and the No Action. Potential impacts are addressed in the context of the scope of the Proposed Action as described in the INRMP. The extent to which an action might affect an environmental resource depends on many factors. Environmental resources can be affected directly, indirectly, or not at all, and effects could occur in the short or long term. Environmental resources could also be affected in terms of context and intensity.

Per NEPA regulation (40 CFR 1501.9(f)(1)), and CEQ guidance, only those resources that have the potential to be impacted by the implementation of the Proposed Action or alternatives were carried through the EA for detailed evaluation. No impacts, positive or negative, are anticipated as a result of the Proposed Action or No Action to geology; floodplains; cultural resources; air quality; climate change; visual resources; noise; utilities and infrastructure; hazardous materials; socioeconomics, environmental justice, and protection of children; human health and safety; and airspace management. Potential environmental consequences associated with the Proposed Action and No

Action Alternative for the remaining resource areas are provided below with the affected environment described within the INRMP (see Table 15 for reference). A tabular summary of these potential environmental impacts is also presented in Table 15.

11.6.1 Soils

Proposed Action

Sediment resulting from erosion affects surface water quality and aquatic organisms. Soil types with high susceptibility for soil erosion on MDANGB include Woodstown loam and Udorthents. Maryland ANG would take a proactive approach to minimize and prevent soil erosion and compaction through implementation of revegetation plans, including interim mechanisms to stabilize the soil until vegetative cover has become established, and implementation of BMPs. The Proposed Action would minimize impacts on soils associated with erosion and sedimentation resulting in long-term beneficial impacts to the resource.

No Action

Under the No Action Alternative, minor adverse effects are expected. Revegetation plans and other actions to prevent or minimize potential soil problems related to erosion and sedimentation would not be implemented. By failing to implement a revegetation plan and other activities, impacts on soils associated with erosion and sedimentation on MDANGB would be expected to continue and, perhaps, increase.

11.6.2 Water Resources- Surface Water and Waters of the US

Proposed Action

Implementation of the INRMP is expected to result in beneficial impacts to surface water and WOTUS. The INRMP describes management activities and projects to prevent potential degradation in water quality and reduce sedimentation from erosion by conducting routine screening of watersheds to evaluate the potential for adverse impacts. Monitoring high risk erosion areas, monitoring re-vegetation efforts, implementing BMPs, and planning and constructing activities in areas that are less likely to impact wetlands would also provide beneficial impacts. Brief periods of increased sedimentation are likely to occur during repair and construction activities, but these should be more than compensated for by the reduction in sedimentation. Efforts to limit impacts in riparian/wetland areas on the installation and ensure vegetation buffers around these areas would reduce the potential for water quality degradation both in and downstream of the installation as well as the Chesapeake Bay. MDANGB is located in the Chesapeake Bay watershed and as such, MDANGB will incorporate the goals and outcomes of the 2014 Chesapeake Bay Watershed Agreement for water quality, healthy watersheds, and land conservation into projects where feasible. The Proposed Action offers more effective protection and mitigation for damages incurred to water resources due to the Maryland ANG mission than does the No Action Alternative.

No Action

Under the No Action Alternative, the MDANGB would not benefit from management measures associated with implementing the INRMP. The water resources are vulnerable to degradation without the implementation of a formal management plan of action that includes watershed protection measures, erosion control, and a monitoring program designed to identify water quality problems at their onset. Minor, short-term adverse effects would be expected. The MDANGB would follow the stipulations outlined in their NPDES industrial stormwater permit.

11.6.3 Vegetation

Proposed Action

Establishment of long-term surveying and monitoring programs under the Proposed Action would provide long-term benefits to the native vegetation on the installation. Maintaining, protecting, and enhancing habitat would benefit listed species as well as native wildlife. The INRMP uses an ecosystem management strategy to achieve biological diversity conservation, in accordance with the DoD Biodiversity Initiative. The INRMP includes specific actions to manage installation ecosystems, including wildlife habitat surveys, protection of sensitive ecological areas, invasive species surveys, and an integrated approach to pest management.

No Action

Implementation of the No Action Alternative could result in direct, long-term adverse effects to native vegetation communities as a result of habitat degradation. The IPM Plan would still be implemented. However, in the absence of an INRMP and specific management objectives and practices, the No Action Alterative would likely emphasize reaction to problems rather than a proactive approach to natural resources management.

11.6.4 Wildlife

Proposed Action

Projects listed in the INRMP and management recommendations would provide beneficial impacts to wildlife under the Proposed Action. As part of the Proposed Action, wildlife resources at the MDANGB would be periodically quantified and evaluated, allowing for population monitoring and management. Wildlife surveys and support of the Maryland SWAP would provide beneficial impacts to regional biodiversity. Management actions such as migratory bird and flightline surveys, implementation of the BASH plan, and mitigation would ensure that impacts on migratory birds that may be caused by day-to-day operations of the installation would be minimized.

No Action

Under the No Action Alternative, implementation of the BASH Plan would occur; however, management activities designated to support wildlife conservation projects in cooperation with the goals and objectives of the SWAP would not be implemented. Consistent and long-term wildlife and ecological monitoring would not occur to track wildlife populations. In the absence of population monitoring to identify population trends, particularly for sensitive species, and the implementation of conservation projects, long-term adverse impacts to regional biodiversity and populations may occur.

11.6.5 Special Status Species

Proposed Action

Beneficial effects on special status species at MDANGB would be expected with implementation of the INRMP, as it would provide a greater degree of protection and management for species not protected under the ESA, such as state-listed species and sensitive habitats. The INRMP also includes specific recommendations for conducting species inventories, and managing special status species populations that are associated with the MDANGB.

No Action

Special status species, except when listed under the ESA, would not be afforded protection under the No Action Alternative. The implementation of the No Action Alternative could result in long-term, adverse effects to state-listed species, species of greatest conservation need, and biodiversity.

11.6.6 Land Use

Proposed Action

Implementation of the INRMP would have long-term beneficial effects on the natural environment within the installation and, over time, ensure the sustainability of MDANGB lands to support training activities and mission requirements (i.e., no net loss in training land). Due to the integration of mission requirements in the creation of this INRMP, no negative impacts to training activities would be anticipated and the Proposed Action provides specific guidance on the conservation of ecosystem function in support of the mission.

No Action

Under the No Action Alternative, the INRMP would not be implemented and the existing level of natural resources management would continue. This could cause undeveloped training lands and existing natural resources to degrade over time. The No Action Alternative does not accommodate land use sustainability necessitated by needs of mission requirements, and therefore, could result in long-term impacts to the mission.

11.6.7 Summary of Environmental Consequences

Compared to the No Action Alternative, environmental conditions at MDANGB would be conserved or improved, and the safety of the flying mission would be improved as a result of implementing the proposed INRMP. Therefore, implementing the INRMP (i.e., the Proposed Action) is the Preferred Alternative.

Table 15. Summary of Potential Environmental Consequences

Resource Area	Environmental Consequence*	
	No Action Alternative	Preferred Alternative
Geology (Section 4.3)	No effect	No effect
Soils (Section 4.3)	Short-term adverse impact	Beneficial
Water Resources (Section 4.4)	Short-term adverse impact	Beneficial
Floodplain (Section 5.5.2)	No effect	No effect
Air Quality	No effect	No effect
Noise Environment	No effect	No effect
Climate (Section 4.1)	No effect	No effect
Vegetation (Section 5.2)	Long-term adverse impact	Beneficial
Fish and Wildlife (Section 5.3)	Long-term adverse impact	Beneficial
Special Status Species (Section 5.4)	Long-term adverse impact	Beneficial
Utilities and Infrastructure	No effect	No effect
Cultural Resources	No effect	No effect
Hazardous Materials	No effect	No effect
Socioeconomic Environment	No effect	No effect
Environmental Justice	No effect	No effect

Resource Area	Environmental Consequence*	
	No Action Alternative	Preferred Alternative
Protection of Children	No effect	No effect
Human Health	No effect	No effect
Airspace Management	No effect	No effect
Cumulative Impacts	Long-term adverse impact	Beneficial

*Short- and long-term adverse impacts are expected to be less than significant.

11.7 Cumulative Effects

A cumulative effect is defined as an effect on the environment that results from the incremental effect of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency or person undertakes such other actions. Cumulative effects can result from individually minor but collectively significant actions taking place locally or regionally over a period of time.

Implementation of the INRMP would result in a comprehensive natural resources management strategy for MDANGB that includes compliance, restoration, prevention, and conservation; improves the existing management approach for natural resources; and meets legal and policy requirements consistent with national natural resources management philosophies. Implementation of the INRMP would have long-term beneficial effects on the natural environment. Over time, adoption of the Proposed Action would enable the Maryland ANG to achieve its goal of maintaining ecosystem viability and ensuring sustainability of desired military training conditions.

This INRMP was developed to be consistent with regional goals and objectives in the Maryland SWAP. As development continues in areas adjacent to MDANGB, protection and conservation of natural resources within the boundaries of the installation will become more important. Measures enacted on MDANGB to prevent runoff, soil erosion, and degradation of wetlands will provide beneficial impacts to the overall health of the Chesapeake Bay ecosystem. As such, a long-term, positive cumulative effect would be expected to natural resources as a result of this INRMP and other natural resources management activities occurring within the region.

11.8 Conclusion

The Proposed Action to implement the INRMP for MDANGB was analyzed by comparing potential environmental consequences against existing conditions. Findings indicate that, under the Proposed Action, potential consequences would result in either no effects or beneficial effects on each resource area. The affected environment would not be significantly or adversely impacted by proceeding with the Preferred Alternative (Proposed Action). Additionally, no significant adverse cumulative effects are expected.

Based on this EA, implementation of the Preferred Alternative (full implementation of this INRMP) would have no significant adverse environmental or socioeconomic effects. Because no significant effects would result from implementation of the Preferred Alternative, the preparation of an EIS is not required, and the preparation of a Finding of No Significant Impact (FONSI) is appropriate.

APPENDIX A. REFERENCES

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APPENDIX B. LAWS, REGULATIONS, POLICIES, AND EXECUTIVE ORDERS

Federal Laws

American Indian Religious Freedom Act of 1978 (Public Law 95-341; 42 USC §1196) – requires the United States, where appropriate, to protect and preserve religious rights of the American Indian, Eskimo, Aleut, and Native Hawaiians, including but not limited to access to sites, use and possession of sacred objects, and the freedom to worship through ceremonials and traditional rites.

Animal Damage Control Act of 1931 (7 USC §426 et seq.) – provides broad authority for investigation, demonstrations, and control of mammalian predators, rodents, and birds.

Anti-Deficiency Act of 1982 (31 USC §1341 et seq.) – provides that no federal official or employee may obligate the government for the expenditure of funds before funds have been authorized and appropriated by Congress for that purpose.

American Antiquities Act of 1906 (Public Law 59-209; 16 USC §431-433) – authorizes the President to designate historic and natural resources of national significance, located on federal lands, as National Monuments for the purpose of protecting items of archeological significance.

Archeological and Historical Preservation Act of 1974 (Public Law 95-96; 16 USC §469 et seq.) – provides for the preservation of historical and archeological data, including relics and specimens, threatened by federally funded or assisted construction projects.

Archeological Resources Protection Act of 1979 (16 USC §470 et seq.) – prohibits the excavation or removal from federal or Indian lands any archeological resources without a permit.

Bald Eagle Protection Act of 1940 (Public Law 87-884; 16 USC §668a-d) – prohibits the taking or harming (i.e. harassment, sale, or transportation) of bald eagles or golden eagles, including their eggs, nests, or young, without appropriate permit.

Clean Air Act of 1970 (42 USC §7401 et seq.) – regulates air emissions from stationary, area, and mobile sources. This law authorizes the USEPA to establish National Ambient Air Quality Standards (NAAQS) to protect public health and the environment.

Clean Water Act of 1972 (Public Law 92-500; 33 USC §1251 et seq.) – aims to restore and maintain the chemical, physical, and biological integrity of the Nation's waters. Under Section 401, states have authority to review federal permits that may result in a discharge to wetlands or water bodies under state jurisdiction. Under Section 404, a program is established to regulate the discharge of dredged or fill material into the Nation's waters, including wetlands.

Coastal Zone Management Act of 1972 (Public Law 92-583; 16 USC §1451 et seq.) – provides incentives for coastal states to develop coastal zone management programs. Federal actions that impact the coastal zone must be consistent to the maximum extent practicable with the state program.

Conservation and Rehabilitation Program on Military and Public Lands (Public Law 93-452; 16 USC §670 et seq.) – provides for fish and wildlife habitat improvements, range rehabilitation, and control of off-road vehicles on federal lands.

Conservation Programs on Military Reservations (Public Law 90-465; 16 USC §670 et seq.) – requires each military department to manage natural resources and to ensure that services are provided which are necessary for management of fish and wildlife resources on each installation; to provide their personnel with professional training in fish and wildlife management; and to give priority to contracting work with federal and state agencies that have responsibility for conservation or management of fish and wildlife. In addition it authorizes cooperative agreements (with states, local governments, non-governmental organizations, and individuals) which call for each party to provide matching funds or services to carry out natural resources projects or initiatives.

Endangered Species Act of 1973, as amended (16 USC §1531 et seq.) – provides for the identification and protection of threatened and endangered plants and animals, including their critical habitats. Requires federal agencies to conserve threatened and endangered species and cooperate with state and local authorities to resolve water resources issues in concert with the conservation of threatened and endangered species. This law establishes a consultation process involving federal agencies to facilitate avoidance of agency action that would adversely affect species or habitat. Further, it prohibits all persons subject to US jurisdiction from taking, including any harm or harassment, endangered species.

Federal Insecticide, Fungicide, and Rodenticide Act of 1947 (Public Law 92-516; 7 USC §136 et seq.) – governs the use and application of pesticides in natural resource management programs. This law provides the principal means for preventing environmental pollution from pesticides through product registration and applicator certification.

Federal Land Policy and Management Act of 1976 (43 USC §1701) – establishes public land policy and guidelines for its administration and provides for the management, protection, development, and enhancement of the public lands.

Federal Noxious Weed Act of 1974 (Public Law 93-629; 7 USC §2801) – provides for the control and eradication of noxious weeds and their regulation in interstate and foreign commerce.

Fish and Wildlife Conservation Act of 1980 (Public Law 96-366; 16 USC §2901 et seq.) – encourages management of non-game species and provides for conservation, protection, restoration, and propagation of certain species, including migratory birds threatened with extinction.

Fish and Wildlife Coordination Act of 1934 (16 USC §661 et seq.) – provides a mechanism for wildlife conservation to receive equal consideration and coordinate with water-resource development programs.

Land and Water Conservation Act of 1965 (16 USC §4601 et seq.) – assists in preserving developing, and assuring accessibility to outdoor recreation resources.

Migratory Bird Conservation Act of 1929 (16 USC §715 et seq.) – establishes a Migratory Bird Conservation Commission to approve areas recommended by the Secretary of the Interior for acquisition with Migratory Bird Conservation Funds.

Migratory Bird Treaty Act of 1918 (Public Law 65-186; 16 USC §703 et seq.) – provides for regulations to control taking of migratory birds, their nests, eggs, parts, or products without the appropriate permit and provides enforcement authority and penalties for violations.

National Environmental Policy Act of 1969 (Public Law 91-190; 42 USC §4321 et seq.) – mandates federal agencies to consider and document environmental impacts of proposed actions and legislation. In addition it mandates preparation of comprehensive environmental impact statements where proposed action is “major” and significantly affects the quality of the human environment.

Native American Graves Protection and Repatriation Act of 1990 (Public Law 101-601; 25 USC §§3001-3013) – addresses the recovery, treatment, and repatriation of Native American and Native Hawaiian cultural items by federal agencies and museums. It includes provisions for data gathering, reporting, consultation, and issuance of permits.

Resource Conservation and Recovery Act of 1976 (42 USC §6901 e 1860 t seq.) – establishes a comprehensive program which manages solid and hazardous waste. Subtitle C, Hazardous Waste Management, sets up a framework for managing hazardous waste from its initial generation to its final disposal. Waste pesticides and equipment/containers contaminated by pesticides are included under hazardous waste management requirements.

Sikes Act Improvement Act of 1997 (Public Law 105-85; 16 USC §670a et seq.) – amends the Sikes Act of 1960 to mandate the development of an INRMP through cooperation with the Department of the Interior (through the USFWS), DoD, and each state fish and wildlife agency for each military installation supporting natural resources.

Soil Conservation Act of 1935 (16 USC §590a et seq.) – provides for soil conservation practices on federal lands.

Federal Regulations

40 CFR 1500-1508 – CEQ Regulations on Implementing NEPA Procedures
40 CFR 6 – USEPA Regulations on Implementation of NEPA Procedures
40 CFR § 122.26(b)(16) and 122.32(a)(1) – Stormwater Discharge
40 CFR 162 – USEPA Regulations on Insecticide, Fungicide, and Rodenticide Use
15 CFR 930 – Federal Consistency with Approved Coastal Management Programs
50 CFR 17 – USFWS List of Endangered and Threatened Wildlife
50 CFR 10.13 – List of Migratory Birds
32 CFR 190 – Natural Resources Management Program

Federal Executive Orders (EOs)

Chesapeake Bay Protection and Restoration (EO 13508) – establish federal actions to protect and restore the health, heritage, natural resources, and social and economic value of the nation's largest estuarine ecosystem and the natural sustainability of its watershed.

Energy Efficiencies and Water Conservation at Federal Facilities (EO 12902) – directs federal agency use of energy and water resources towards the goals of increased conservation and efficiency.

Environmental Safeguard for Activities for Animal Damage Control on Federal Lands (EO 11870) – restricts the use of chemical toxicants for mammal and bird control.

Exotic Organisms (EO 11987) – restricts federal agencies in the use of exotic plant species in any landscape and erosion control measures.

Floodplain Management (EO 11988) – specifies that agencies shall encourage and provide appropriate guidance to applicant to evaluate the effects of their proposals in floodplains prior to submitting applications. This includes wetlands that are within the 100-year floodplain and especially discourages filling.

Indian Sacred Sites (EO 13007) – provides for the protection of and access to Indian sacred sites.

Intergovernmental Review of Federal Programs (EO 12372) – structures the federal government’s system of consultation with state and local governments on its decisions involving grants, other forms of financial assistance, and direct development.

Invasive Species (EO 13112) – directs federal agencies to prevent the introduction of invasive species and provide for their control and to minimize the economic, ecological, and human health impacts that invasive species cause.

Off-Road Vehicles on Public Lands (EO 11989) – specifies that the respective agency shall determine if the use of off-road vehicles will cause or is causing considerable adverse effects on the soil, vegetation, wildlife, wildlife habitat or cultural or historic resources of particular areas or trails of the public lands, and immediately close such areas or trails to the type of off-road vehicle causing such effects, until such time as it determines that such adverse effects have been eliminated and that measures have been implemented to prevent future recurrence.

Protection and Enhancement of Environmental Quality (EO 11514) – provides for environmental protection of federal lands and enforces requirements of NEPA.

Protection of Wetlands (EO 11990) – directs all federal agencies to take action to minimize the destruction loss or degradation of wetlands, and to preserve and enhance the natural and beneficial values of wetlands. This applies to the acquisition, management, and disposal of federal lands and facilities; to construction or improvements undertaken, financed, or assisted by the federal government; and to the conduct of federal activities and programs which affect land use.

Responsibilities of Federal Entities to Protect Migratory Birds (EO 13186) – directs all federal agencies taking actions that have a potential to negatively affect migratory bird populations to develop and implement a MOU with the USFWS by January 2003 that shall promote the conservation of migratory bird populations.

DoDI, AFI, AFMAN, & Air Force Pamphlets (PAM)

DoDI 4715.03 – Natural Resources Conservation Program
DoDI 4165.57 – Air Installations Compatible Use Zones
DoDI 4150.07 – Pest Management Program
DoDI 6055.06 – Fire and Emergency Services Program
DoDI 4150.03 – Integrated Pest Management Program
DoDM 4715.03 – INRMP Implementation Manual
DoDM 4150.07 – DoD Pest Management Program Manual Volumes 1-3
AFMAN 32-1053 – DoD Pest Management Program
AFI 32-7001 – Environmental Quality Programming and Budgeting
AFI 32-7060 – IICEP
AFI 32-7061 – The Environmental Impact Analysis Process
AFI 32-7062 – Air Force Comprehensive Planning
AFMAN 32-7003 – Environmental Conservation
AFPAM 91-212 – BASH Techniques

Department of Defense Memoranda

Memorandum, Assistant DUSD (Environment, Safety and Occupational Health), 20 Sept 11, Subject: *Interim Policy on Management of White Nose Syndrome in Bats.*

Memorandum, Assistant DUSD (Environment, Safety and Occupational Health), 3 Apr 07, Subject: *Guidance to Implement the Memorandum of Understanding to Promote the Conservation of Migratory Birds.*

Memorandum, Assistant DUSD (Environment, Safety and Occupational Health), 14 Aug 06, Subject: *Integrated Natural Resource Management Plan (INRMP) Template*

Memorandum, Assistant DUSD (Environment, Safety and Occupational Health), 17 May 05, Subject: *Implementation of Sikes Act Improvement Amendments: Supplemental Guidance concerning Leased Lands*

Memorandum, Assistant DUSD (Environment, Safety and Occupational Health), 1 Nov 04, Subject: *Implementation of Sikes Act Improvement Amendments: Supplemental Guidance concerning INRMP Reviews*

Memorandum, DUSD (Installations and Environment), 10 Oct 02, Subject: *Implementation of Sikes Act Improvement Act: Updated Guidance*

Memorandum, Assistant DUSD (Environment), 5 Aug 02, Subject: *Access to Outdoor Recreation Programs on Military Installations for Persons with Disabilities*.

Memorandum, Assistant Secretary of Army (Environment, Safety and Occupational Health), Deputy Assistant Secretary of the Navy (Environment), Deputy Assistant Secretary of the Air Force (Environment, Safety and Occupational Health), 20 Sep 11, Subject: *Interim Policy on Management of White Nose Syndrome in Bats.*

Regional

Chesapeake Bay Watershed Agreement establishes long-term goals for protection and restoration of the Bay, and time-bound, measurable outcomes that directly contribute to achieving those goals.

State and Local Statutes

Maryland Executive Order (01.01.2007.07), *Climate Change and "Coast Smart" Construction*

Maryland Nongame and Endangered Species Conservation Act (Annotated Code of Maryland 10-2A-01)

Maryland Nontidal Wetlands Protection Act 1991 (Maryland Environmental Code § 5-901 Water Resources- Nontidal Wetlands)

Maryland Tidal Wetlands Act 1970 (Code of Maryland Regulations Section 26.24.01)

Maryland Water Quality Certification (Code of Maryland Section 26.08.02.10)