

# Integrated Natural Resources Management Plan

United States Army Garrison West Point  
West Point, New York

Final



September 2018

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*Final*  
**Integrated Natural Resources Management Plan for  
the United States Army Garrison West Point  
2018 – 2022**

**West Point, New York**

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**INTEGRATED NATURAL RESOURCES  
MANAGEMENT PLAN SIGNATURE PAGE  
UNITED STATES ARMY GARRISON WEST POINT  
2018 – 2022  
WEST POINT, NEW YORK**

This Integrated Natural Resources Management Plan has been developed by the United States Army Garrison – West Point in cooperation with the United States Department of the Interior, Fish and Wildlife Service and the New York State Department of Environmental Conservation. The signatures below indicate the mutual agreement of the parties concerning the conservation, protection, and management of fish and wildlife resources as presented in the Plan.

**Plan Approval:**

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Colonel Harry C. Marson V  
Garrison Commander  
United States Army Garrison West Point  
West Point, New York

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Date

**Signatory Agency Agreement:**

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David Stilwell  
Field Office Supervisor, New York Field Office  
United States Fish and Wildlife Service  
Cortland, New York

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Date

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Kelly Turturro  
Regional Director, Region 3  
New York State Department of Environmental Conservation  
New Paltz, New York

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Date

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**FINDING OF NO SIGNIFICANT IMPACT**  
**FOR THE INTEGRATED NATURAL RESOURCES MANAGEMENT PLAN/  
ENVIRONMENTAL ASSESSMENT**

**U.S. Army Garrison West Point  
West Point, New York**

**PURPOSE:** United States Army Garrison West Point (USAG WP) is preparing this Environmental Assessment (EA) to further evaluate the environmental consequences associated with implementing an Integrated Natural Resources Management Plan (INRMP), which supports the management of natural resources as prescribed by the plan itself. The purpose of the proposed action is to carry out the set of resource-specific management measures developed in the INRMP, which would enable USAG WP to effectively manage the use and condition of natural resources located on the installation to protect the natural setting primarily for training purposes. Army and USAG WP practice is to manage natural resources above and beyond those measures for simple compliance. Natural resource management at USAG WP includes many practices to promote stewardship and conservation of resources, which have a proactive benefit to natural resources on the installation. Implementation of the proposed action would support USAG WP's continuing need to train cadets and soldiers in a realistic natural setting while meeting other mission and community support requirements and complying with environmental regulations and policies. The INRMP has been developed for use by USAG WP in accordance with the provisions of the Sikes Act (16 United States Code §670a et seq.), Army Regulation 200-1, *Environmental Protection and Enhancement*; Department of Defense Manual 4715.03, *Integrated Natural Resources Management Plan Implementation*; and Department of Defense Instruction 4715.03, *Natural Resources Conservation Program*.

**BACKGROUND:** USAG WP is located along the Hudson River approximately 50 miles north of New York City in an area known as the Hudson Highlands. The 16,000-acre installation, founded in 1802, is the home of the United States Military Academy (USMA) and United States Corps of Cadets. The installation can be considered to consist generally of three parts: (1) the Main Post or cantonment area, (2) the reservation, and (3) Constitution Island. The Main Post, or the cantonment, is approximately 2,500 acres and is the academic, administrative, and community area along the Hudson River. The reservation is generally considered to be the 14,000-acre area to the west of the Main Post that serves as the field training facility for USAG WP. USAG WP's mission is to "Provide the services, programs, and infrastructure to sustain the West Point community." Originally established as a military base, USAG WP provides medical, administrative, commissary, post exchange, and other logistical support to military personnel, both active and retired. As an installation with a mission focused entirely on supporting USMA in training future cadets, USAG WP and the USMA hold a unique mission and place in the U.S. Army.

**PROPOSED ACTION:** The proposed action is to implement the INRMP for USAG WP. This proposal would meet the USAG WP underlying need to train cadets in a realistic setting while maintaining compliance with environmental regulations and policies. The Proposed Action includes natural resource management measures in areas associated with the installation. In addition, because the INRMP is a "living" document, it will be modified (adaptively managed) over time. The INRMP provides a plan and schedule for the implementation of the plan and projects proposed in the plan revision. The schedule and projects are reviewed annually by the

Natural Resources Branch and other signatory agencies (United States Fish and Wildlife Service and New York State Department of Environmental Conservation) to ensure that the INRMP is being implemented and natural resource management is being addressed. The Proposed Action focuses on providing a solid foundation for natural resources management beyond 2018 on a 5-year planning period, which is consistent with the time frame for the management measures described in the INRMP. Implementation of the INRMP (the Proposed Action) involves putting in place the management measures presented in the INRMP. Additional environmental analyses may be required as new management measures are developed over the long term (i.e., beyond 5 years). Implementation of some INRMP-related projects also may require evaluation to determine the need for and appropriate level of National Environmental Policy Act documentation.

**NO ACTION ALTERNATIVE:** Implementation of the No Action Alternative means that the management measures set forth in the Revised INRMP would not be implemented and the INRMP covering 2011 through 2015 would continue to be used for management of natural resources. Current management measures for natural resources would remain in effect, and existing conditions would continue as the status quo. This document refers to the continuation of existing (i.e., baseline) conditions of the affected environment, without implementation of the Proposed Action, as the No Action Alternative. Continuation of management under the current INRMP would mean that data used to make management decisions would become out of date. The current INRMP does not include management measures to address threatened and endangered species that have been listed since 2011 or include Endangered Species Management Plans for two listed species at USAG WP. In addition, it does not reflect projects occurring at USAG WP, as many projects proposed in the current INRMP have already been completed. Lastly, the current INRMP does not reflect the recent and foreseeable changes to training and development at USAG WP that have occurred since 2011. Inclusion of a No Action Alternative is prescribed by Council on Environmental Quality regulations and serves as a benchmark against which proposed federal actions can be evaluated.

**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:

***Air Quality***—No effects to air quality will occur under the preferred alternative due to the implementation of the INRMP. Implementation of the INRMP does not include any activities that would contribute significantly to changes in existing air quality conditions.

***Noise***—Implementation of the INRMP will include noise associated with management activities, but activities will occur on a short-term basis and would not rise above current noise levels for management activities. Therefore, impacts to noise levels are not expected.

***Soils and Geology***—Implementation of the INRMP will create beneficial impacts to soils and no impacts on geology. Ongoing adaptation of the USAG WP soils resource management activities will help to reduce erosion and sedimentation impacts. Measures in the INRMP will reduce soil impacts resulting from training activities, and the INRMP includes the implementation of additional soil conservation measures.

***Water Resources***—Implementation of the INRMP will create beneficial impacts to water resources by reducing the potential for water quality degradation within and downstream of USAG WP. Ongoing maintenance of riparian buffers will continue to protect water quality, and measures to limit impacts to waterbodies from training and management activities will reduce the potential for degradation. The INRMP includes management measures for the use of chemicals for herbicide and insecticide that will also reduce impacts on waterbodies. Improvement of the wastewater treatment facilities at USAG WP will also have beneficial impacts on water resources.

***Coastal Zone***—Implementation of the INRMP will have no impacts on the coastal zone; activities in the coastal zone will continue under the current management to protect shoreline resources.

***Wetlands and Floodplains***—Implementation of the INRMP will create beneficial impacts to wetlands and will have no impact on floodplains. The INRMP includes measures to evaluate, monitor, and protect wetland resources at USAG WP. Maintenance of wetland buffers and control of invasive species will minimize the potential for impacts from adjacent training and management activities. Additional planning measures, including training planning and dam removal planning, also have the potential to improve and protect wetlands on the installation. The INRMP also includes measures to address areas where wetland impacts are currently occurring.

***Threatened and Endangered Species***—Implementation of the INRMP will create beneficial impacts to threatened and endangered species occurring at USAG WP. Although listed species are currently managed, the updated INRMP will provide additional direction for current issues and needs, as well as address species listed since the last INRMP revision. Listing species will be monitored and protected during training and other activities at USAG WP, and the management of invasive species is expected to benefit listed species and habitat. In addition, the development and update of Endangered Species Management Plans for federally listed species will have beneficial impacts for the management of these species.

***Vegetation***—Beneficial impacts are expected due to the implementation of the INRMP, which includes measures for the continued treatment of invasive species and the protection and restoration of native habitats. Management of invasive species will benefit the military mission as well as the ecological integrity of habitats at USAG WP. Promotion of pollinator species and adaptive management of forest resources will also benefit vegetation and habitats.

***Wildlife***—Implementation of the INRMP will include management actions that will support wildlife at USAG WP, including both game and nongame species. The INRMP will allow for additional monitoring and management of species identified during surveys as part of the last INRMP and will include development of additional data management measures to assist in protecting wildlife and habitat. Management actions proposed in the INRMP, including leaving downed woody debris and mowing, will also provide benefits to wildlife.

***Land Use***—The implementation of the INRMP will have beneficial impacts on land use. Although no changes to current land use patterns are proposed in the INRMP, future encroachment issues mean that the implementation of the INRMP will become increasingly important in the protection of natural lands and resources.

**Forestry**—The implementation of the INRMP will have beneficial impacts on forestry and forest management. Projects within the INRMP, including a focus on timber stand improvement, will help to promote a healthy forest and forest stands at USAG WP.

**Fire Management**—The implementation of the INRMP will have beneficial impacts on fire management at USAG WP. The INRMP includes projects to help assess the fuel load on the installation, which will allow for adaptive management actions to best address fires. The finalization of the Integrated Wildland Fire Management Plan will also benefit fire management practices, including suppression and control, at USAG WP.

**Hazardous and Toxic Materials**—The implementation of the INRMP will have no impact on hazardous and toxic materials. All materials will continue to be managed and handled in accordance with federal and Army regulations. No adverse effects from the generation of hazardous and toxic materials is expected to occur.

**Socioeconomic Resources**—Implementation of the INRMP will have no impact on socioeconomics. The INRMP does not include measures that involve any activities that would contribute to changes in population, housing, industry earnings and employment, or personal income.

**Environmental Justice**—Implementation of the INRMP will have no impact on environmental justice.

**Cultural Resources**—Implementation of the INRMP and associated plans would have no impact on cultural resources. Actions in the INRMP will not lead to any actions that have the potential to significantly impact cultural resources.

**PUBLIC INVOLVEMENT:** The Sikes Act requires the preparation of an INRMP in cooperation with the United States Fish and Wildlife Service (USFWS) and the appropriate state fish and wildlife agency (New York State Department of Environmental Conservation [NYSDEC]). In addition, it is required that the resulting Plan reflect the mutual agreement of the parties concerning conservation, protection, and management of fish and wildlife resources. The USFWS and NYSDEC 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. USFWS and NYSDEC had the opportunity to review and comment on the document. The National Oceanic and Atmospheric Administration (NOAA) National Marine Fisheries Service reviewed the document.

The Sikes Act also requires public comment on the INRMP at its inception as well as during revisions when there is a mission change. A Notice of Availability was placed in the *Times Herald-Record*, *Pointer View*, *Putnam County News*, and *Cornwall Local* newspapers on 11 July 2018 to invite the public to comment on the Draft INRMP/EA for a period of 30 days. A copy of the Draft INRMP/EA was available at the Highland Falls Public Library and Julia L. Butterfield Memorial Library during the review period. In addition, a letter announcing the availability of the INRMP/EA was sent to the following interested parties at the following agencies, tribes, interested parties, and public venues:

|                           |   |
|---------------------------|---|
| State and County Agencies | NYSDEC Division of Coastal Resources                    |
|                           | NYSDEC Region 3   |
|                           | Orange County Department of Health                      |
|                           | Orange County Executive                                 |
|                           | Putnam County Executive                                 |
| Federal Agencies          | NOAA Office of General Counsel                          |
|                           | United State Environmental Protection Agency Region II  |
|                           | USFWS New York Field Office                             |
| Tribal                    | Stockbridge-Munsee Mohican Tribal Historic Preservation |
| Interested Parties        | Bascobel Restoration, Inc.                              |
|                           | Chapel of our Lady Restoration Inc.                     |
|                           | Hudson Highlands Land Trust                             |
|                           | Hudson River Keeper                                     |
|                           | Hudson River Valley Greenways Community Council         |
|                           | Putnam County Historical Society                        |
|                           | Scenic Hudson Inc.                                      |
| Public Venues             | The Alice Curtis Desmond and Hamilton Fish Library      |
|                           | Highland Falls Public Library                           |
|                           | Julia L. Butterfield Memorial Library                   |
|                           | Town of Cold Spring                                     |
|                           | Town of Highlands                                       |
|                           | Town of Philipstown                                     |
|                           | Village of Highland Falls                               |

Comments on the Draft Final INRMP were received from USFWS, NOAA National Marine Fisheries Service, and the Hudson Highlands Land Trust. Responses to comments were developed and comments were integrated into the Final INRMP where appropriate. Comments and responses are provided in Appendix H, Agency Coordination.

**FINDING OF NO SIGNIFICANT IMPACT:** Based on my review of the facts and analysis in this EA, I conclude that the Proposed Action will not have a significant impact on the quality of the human or natural environment or generate significant controversy either by itself or considering cumulative impacts. Accordingly, the requirements of the National Environmental Policy Act, the Council on Environmental Quality, and 32 Code of Federal Regulations 989, et seq. have been fulfilled, and an Environmental Impact Statement is not necessary and will not be prepared.

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Colonel Harry C. Marson  
Garrison Commander

DATE



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## 1. MANAGEMENT OVERVIEW

### 1.1 PURPOSE AND SCOPE

The purpose of this Integrated Natural Resources Management Plan (INRMP) is to guide the natural resources management program at the United States Army Garrison West Point (USAG WP), and to provide a solid foundation from which to build the program beyond the year 2018.

This INRMP is developed under, and proposes actions in accordance with, the applicable Department of Defense (DoD) and Army policies, directives, and instructions. [Army Regulation \(AR\) 200-1](#), *Environmental Protection and Enhancement*, provides the necessary direction and instruction for preparing an INRMP. Issues are addressed in this plan using guidance provided under legislation, Executive Orders (EOs), Directives, Manuals, and Instructions that include AR 200-1; [Department of Defense Manual \(DoDM\) 4715.03](#), *Integrated Natural Resources Management Plan Implementation Manual*; [Department of Defense Instruction \(DoDI\) 4715.03](#), *Natural Resources Conservation Program*; and the provisions of the Sikes Act, as amended ([16 United States Code §670a et seq.](#)).

The Sikes Act provides for agency cooperation between the DoD and Department of the Interior with the United States Fish and Wildlife Service (USFWS) and State fish and wildlife agencies for the planning and management of natural resources on military installations. Under the Sikes Act, the Secretary of Defense shall carry out a program to provide for the conservation and rehabilitation of natural resources on military installations. To facilitate the program, the Secretary of each military department shall prepare and implement an integrated natural resources management plan for each military installation in the United States under the jurisdiction of the Secretary. Consistent with the use of military installations to ensure the preparedness of the Armed Forces, the Secretaries of the military departments shall carry out the program to provide for the conservation and rehabilitation of natural resources on military installations; the sustainable multipurpose use of the resources, which shall include hunting, fishing, trapping, and nonconsumptive uses; and subject to safety requirements and military security, public access to military installations to facilitate the use. The Act requires the development and implementation of an INRMP for military installations in collaboration with the USFWS and State fish and wildlife agencies.

This guidance provides direction for DoD installations in establishing procedures for an integrated program for multiple-use management of natural resources (including biological and earth resources) on property and lands managed or controlled by DoD. Table 3-1 in Chapter 3 summarizes key legislation and guidance used to create and implement this INRMP.

It is DoD policy in accordance with DoDI 4715.03 and DoDM 4715.03, and pursuant to the Sikes Act, to implement and maintain natural resources conservation programs to ensure access to land, air, and water resources for realistic military training and testing while ensuring that the natural resources under the Secretary of Defense's stewardship and control are managed to support and be consistent with the military mission. This INRMP will allow USAG WP to achieve its goal to ensure the sustainability of desired military training area conditions and maintain ecosystem viability. In addition, this INRMP will ensure that natural resources conservation measures and Army activities on USAG WP lands are integrated, consistent with

federal stewardship requirements, and consistent with the U.S. Military Academy (USMA) mission “To educate, train, and inspire the Corps of Cadets so that each graduate is a commissioned leader of character committed to the values of Duty, Honor, Country and prepared for a career of professional excellence and service to the Nation as an officer in the United States Army” and the USAG WP mission to “Provide the services, programs, and infrastructure to sustain the West Point community.” The DPW serves to meet the needs of the garrison, while the Natural Resources Branch (NRB) manages biodiversity and natural resources to maximize the installation’s suitability for training in support of the mission. Overall, the vision of the USAG is to develop an empowered cohesive garrison team that supports the preeminent leader development institution in the world, sustains a community of excellence and preserves the national treasure of West Point.

## **1.2 MANAGEMENT PHILOSOPHY**

The Army recognizes that a healthy and viable natural resources base is required to support the military mission. To be effective, the natural conditions of the training areas on USAG WP must be maintained to provide realism. Areas that are obviously degraded by previous training activity detract from the realism of the current training activity, are costly to mitigate, and conflict with USAG WP’s pledged goal of environmental stewardship. The trainers, cadets, and soldiers who use USAG WP are being trained to be aware of the environmental effects of training and recognize that their actions in the field directly affect the long-term sustainability of the training lands and their ability to continue training. Training the leaders and cadets to understand their environmental stewardship responsibilities can help to prevent environmental degradation during training activities.

Per DoDI 4715.03, natural resources at USAG WP are managed primarily to support mission-related activities while sustaining the long-term ecological integrity of the resources and ecosystem services they provide. The USAG WP utilizes ecosystem management on the military lands to support present and future training and testing requirements while preserving, improving, and enhancing ecosystem integrity. Ecosystem management considers the ecosystem services of the natural resources on the installation. Ecosystem services are the benefits that flow from nature to people, such as water purification used as public water supply. The principles of ecosystem management include the following:

- Maintain and improve the sustainability and native biodiversity of ecosystems
- Consider ecological units and timeframes
- Support sustainable human activities
- Develop a vision of ecosystem health
- Develop priorities and reconciling conflicts
- Develop coordinated approaches to work toward ecosystem health
- Rely on the best science and data available
- Use goals and objectives to monitor and evaluate outcomes
- Use adaptive management
- Implement through installation plans and programs.

Over the long term, this approach maintains and improves the sustainability and biological diversity of terrestrial and aquatic, including marine, ecosystems while supporting sustainable economies, human use, and the environments required for realistic military training operation.

### **1.3 MISSION AND NATURAL RESOURCES MANAGEMENT HISTORY**

The mission of the United States Military Academy (USMA) is “To educate, train, and inspire the Corps of Cadets so that each graduate is a commissioned leader of character committed to the values of Duty, Honor, Country and prepared for a career of professional excellence and service to the Nation as an officer in the United States Army.” West Point also provides opportunities for Army reservists, Reserve Officer Training Corps (ROTC) students, active duty units, and other government agencies to conduct field training at USAG WP.

There are approximately 16,000 acres of land at USAG WP. This includes more than 14,000 acres of training area, including range impact/danger zones, available for seasonal field training and military field training (USMA 1996). Training areas are in use throughout the year, but are most heavily used from May until August to conduct Cadet Basic Training (CBT) and Cadet Field Training (CFT). Training activities, which include light infantry (i.e., foot traffic) and wheeled vehicles (e.g., commercial trucks and High Mobility Multipurpose Wheeled Vehicle (HMMVs)), train the cadets in basic individual soldier skills and small-unit operations and are generally short term and scattered throughout the training areas (USMA 1994a). Training activities include the use of the areas and equipment at USAG WP. These include training ranges for artillery (field, pistol, convoy, anti-tank, skeet and trap, long-range, mortars, and marksmanship), hand grenades, howitzer, ground assault, demolition, assault, ambush, rappelling, and unmanned aerial vehicle (UAV) or drone training. Training also includes areas used for confidence courses, obstacle courses, leadership reaction courses, and engagement skills.

The Army recognizes that a healthy and viable natural resources base is required to support the military mission. To be effective, the natural conditions of the training areas on USAG WP must be maintained to provide realism. Areas that are obviously degraded by previous training activity detract from the realism of the current training activity, are costly to mitigate, and conflict with USAG WP’s pledged goal of environmental stewardship. Vegetation is necessary for cover and concealment; therefore, areas that are stripped of their vegetation are no longer representative of the undisturbed lands that might be encountered during real conflicts (USMA no date [n.d.] a.). The relationship between soils and vegetation is very important in supporting the mission. In addition to providing cover and concealment, vegetation protects the soils from erosion. Eroded soils that are unable to support the vegetation result in a loss of realism and sustained use, represent a safety hazard to the cadets and soldiers, and may affect the quality of drinking water supplies. The forest and water resources at USAG WP have been managed for training for over 100 years in some locations, and have remained intact. Management is conducted with care to ensure long-term ecosystem sustainability. This INRMP helps to ensure that environmental considerations are an integral part of planning activities at USAG WP and that natural resources are protected in accordance with Army regulations and policies.

Ongoing military operations performed in support of the USAG WP mission may alter the environmental setting and condition of the natural resources. For example, standard military

practices such as the construction of ditches, foxholes, and roads may result in vegetation loss and soil erosion or compaction. While short-term changes in the environmental setting may still provide for relatively realistic training opportunities, the absence of long-term management measures to properly conserve and restore natural resources may impede the USAG WP's ability to continue to adequately train cadets and soldiers. In addition to the impacts mentioned above, environmental damage can also place other artificial constraints on training, such loss of training acreage, decreased tactical maneuverability, increased land and natural resources maintenance costs, increased safety hazards, and civil and/or criminal liability.

#### **1.4 GOALS AND OBJECTIVES**

A table of the goals, objectives, and projects of this INRMP, the timing and priority of these goals, and the indicators of their effectiveness is provided in Table 6-1, *United States Army Garrison West Point Goals and Implementation Plan*, in Chapter 6.

#### **1.5 REVIEW, REVISION, AND REPORTING**

The NRB will annually conduct a review of this INRMP in light of the preceding year's accomplishments. Review should also include consideration of the impact of new information from surveys as well as external developments such as new species listings or state environmental initiatives. These annual reviews serve to facilitate adaptive management of natural resources at an installation through review of the goals, objectives, and timelines presented in the INRMP. The schedule of activities as it appears in Chapters 5 and 6 and Table 6-1 will be the basis for monitoring plan implementation.

The Sikes Act directs the parties to review INRMPs for operation and effect on a regular basis, but not less than every 5 years. A review of the INRMP every 5 years does not necessarily mean that the INRMP needs to be revised. The formal review requires concurrence by each of the parties; however, the annual program review (APR) can be informal and is intended to keep INRMPs current and the parties informed. While the Sikes Act does not explicitly call for APRs and they do represent additional work load in the short term, USAG WP has determined APRs will be useful for expediting reviews for operation and effect every 5 years, thus potentially reducing workloads over the long term. Annual reviews will consist of a regularly scheduled meeting of representatives from the Task Force made up of the installation, the State, and other partners, as appropriate.

The annual review will be conducted at the installation and/or via conference call and will be initiated by USAG WP with a scope of assessment against seven focus areas. The seven focus areas were designed to measure INRMP effectiveness and partnership success. The outcome of the annual review meeting, highlighting the changes needed to the INRMP or new information for consideration during a future review for operation and effect, will be documented in a memo from the parties preparing the INRMP and addressed to the appropriate officials of each party. The focus of the USAG WP INRMP review will be the following areas:

**1. INRMP Project Implementation**

- a. Are INRMP projects, including follow-up inventorying and monitoring work, properly identified, developed, and submitted for funding?
- b. Has project funding been received, obligated, and expended?
- c. Have projects been completed and do they meet expected objectives?

**2. Listed Species and Critical Habitat**

- a. Are conservation efforts effective?
- b. Does the INRMP provide conservation benefits necessary to preclude critical habitat designation?
- c. Are Species at Risk identified and are steps being undertaken to preclude listing?
- d. Does the Garrison have sufficient knowledge of populations and operations in regards to locally-occurring species of conservation concern to effectively manage populations and mitigate potential impacts?

**3. Partnerships Effectiveness**

- a. Has the INRMP review team (i.e., DoD, U.S. Fish and Wildlife Service [USFWS], National Oceanic and Atmospheric Administration [NOAA] Fisheries Service, and the New York State Department of Conservation Division of Fish and Wildlife) been effective in ensuring the INRMP's implementation?
- b. Are other partnerships needed to meet the INRMP goals?
- c. Have other partnerships been effectively used to meet INRMP goals?

**4. Fish and Wildlife Management and Public Use**

- a. Are public recreational opportunities such as hunting, fishing, and wildlife viewing available to base residents, employees, and the general public in accordance with available natural and administrative resources?

**5. Team Adequacy**

- a. Is the installation's NRB team adequately resourced to fully implement the INRMP?
- b. Is the installation's NRB team adequately trained to fully implement the INRMP?

- c. Does the installation encourage retaining existing natural resources personnel to maintain corporate knowledge and manage resources with the most qualified professionals to support the military mission?
- d. Is the NRB team adequately resourced in terms of funding, equipment, and facilities to sufficiently implement the INRMP?

**6. Ecosystem Integrity**

- a. To what extent are the installation's native ecological systems currently intact?
- b. In what ways are an installation's various habitats susceptible to change or damage from different stressors?
- c. What stressors affect each habitat type?

**7. INRMP Impact on the Installation Mission**

- a. To what degree (i.e., high, medium, or low) is the INRMP and its associated actions supporting the installation's ability to sustain the current and potential future military mission?
- b. Is the NRB team sufficiently integrated into the military mission such that training and construction projects are adequately considered for potential impacts to natural resources and environmental awareness training is well supported throughout the organization?

The annual INRMP review process will be completed in accordance with DoDI 4715.03, DoD Memorandum on Guidelines for Streamlined INRMP Review, and the USFWS Guidelines for Coordination on INRMPs.

## 2. INSTALLATION OVERVIEW

### 2.1 MAPS

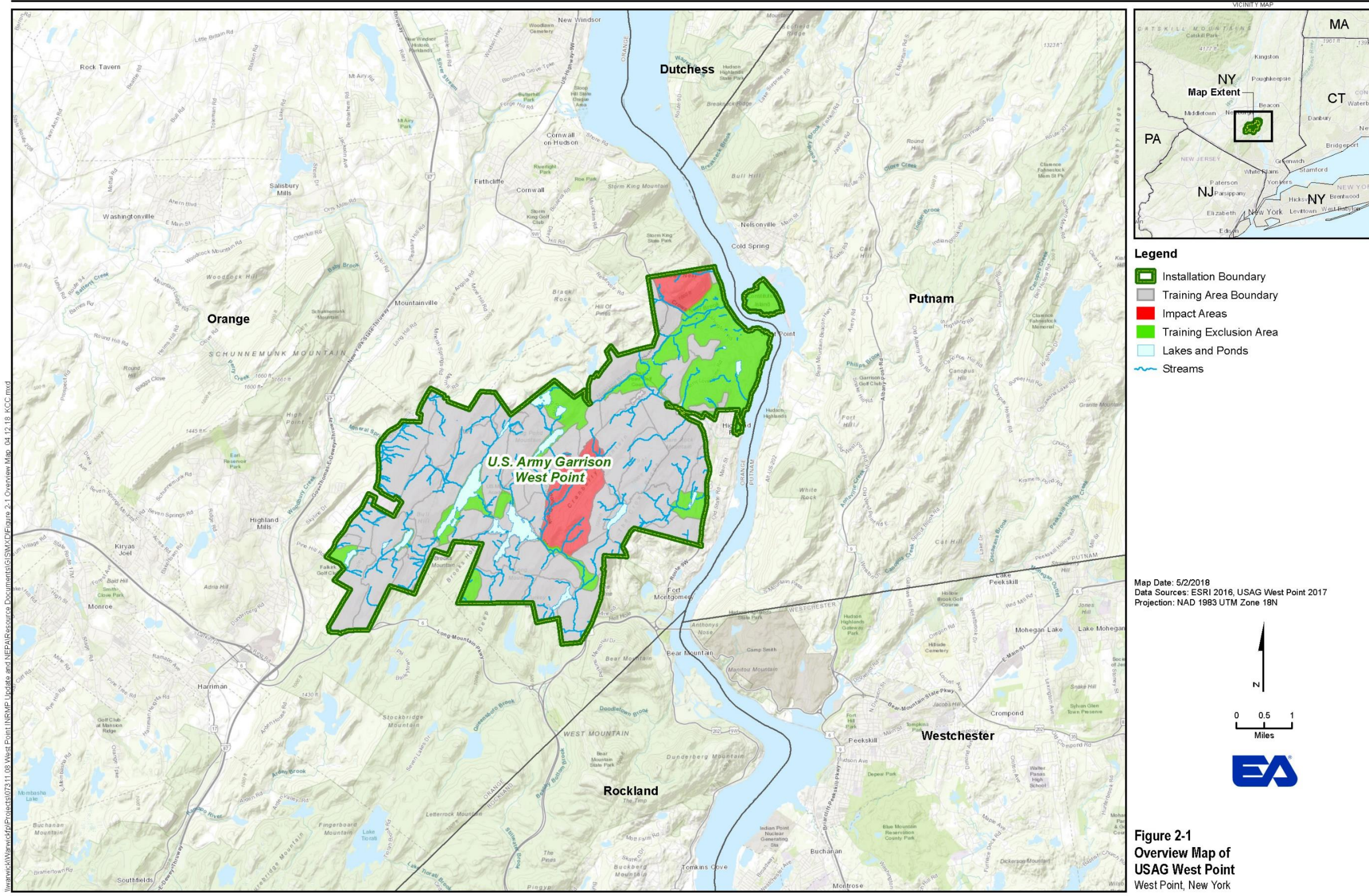
Maps of the USAG WP are provided below. A map of USAG WP (Figure 2-1) displays the installation boundary with major landmarks and features, and training areas, while Figure 2-2 shows an aerial map of the installation and Figure 2-3 provides the elevational gradient at USAG WP. Figure 2-4 shows the installation facilities. Figure 2-5 shows the regulated natural resources that present constraints at USAG WP such as critical habitat or special management areas, and major wetlands/waters that are (or are likely) Waters of the United States. Natural resources that are not regulated but are managed at USAG WP for stewardship and present constraints on the installation are presented on Figure 2-6. More detailed descriptions of the features presented on these figures are provided in Section 2.2, *General Installation Information*.



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Figure 2-1. Overview Map of USAG WP





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Figure 2-2. USAG WP Installation

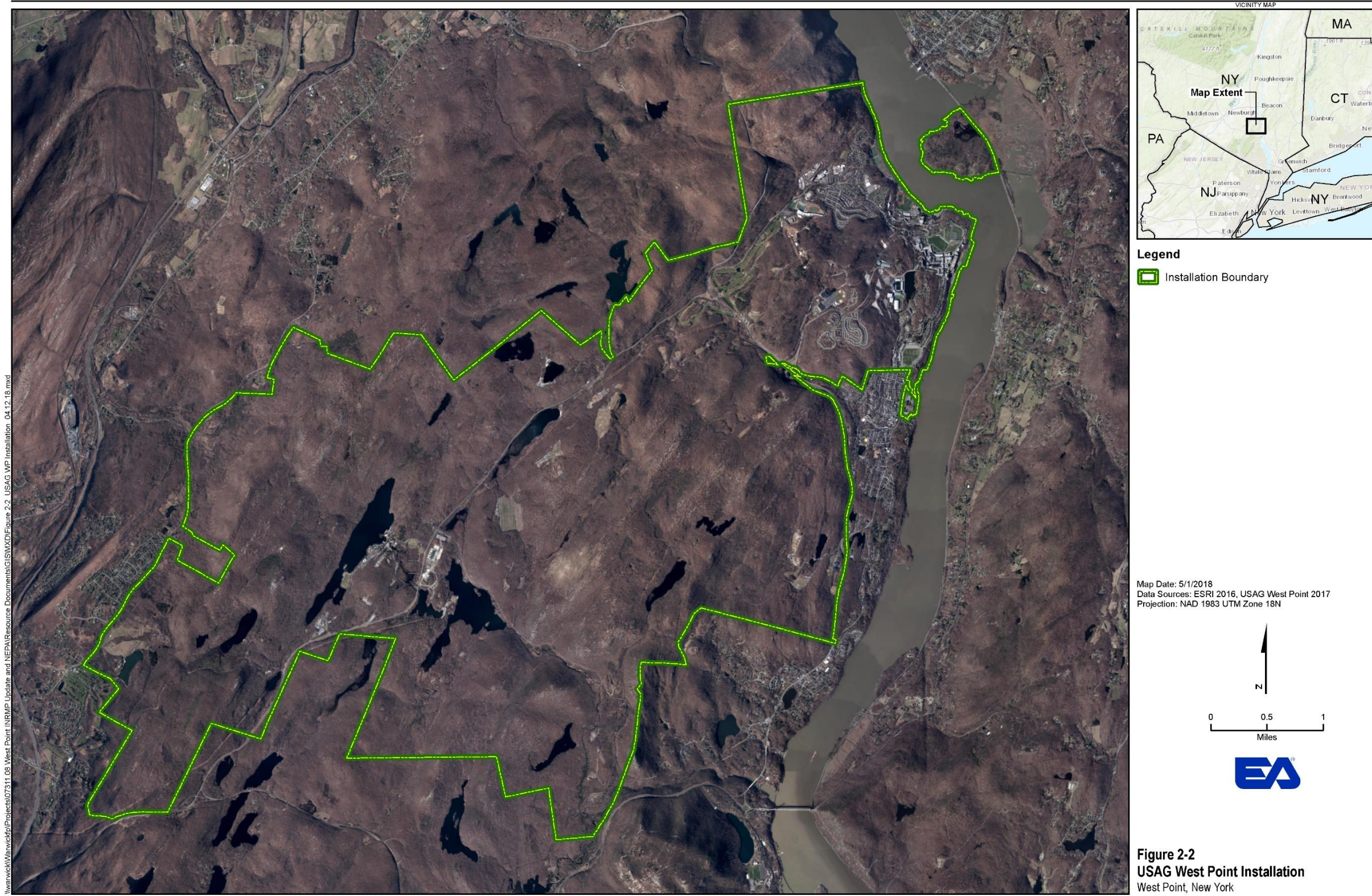


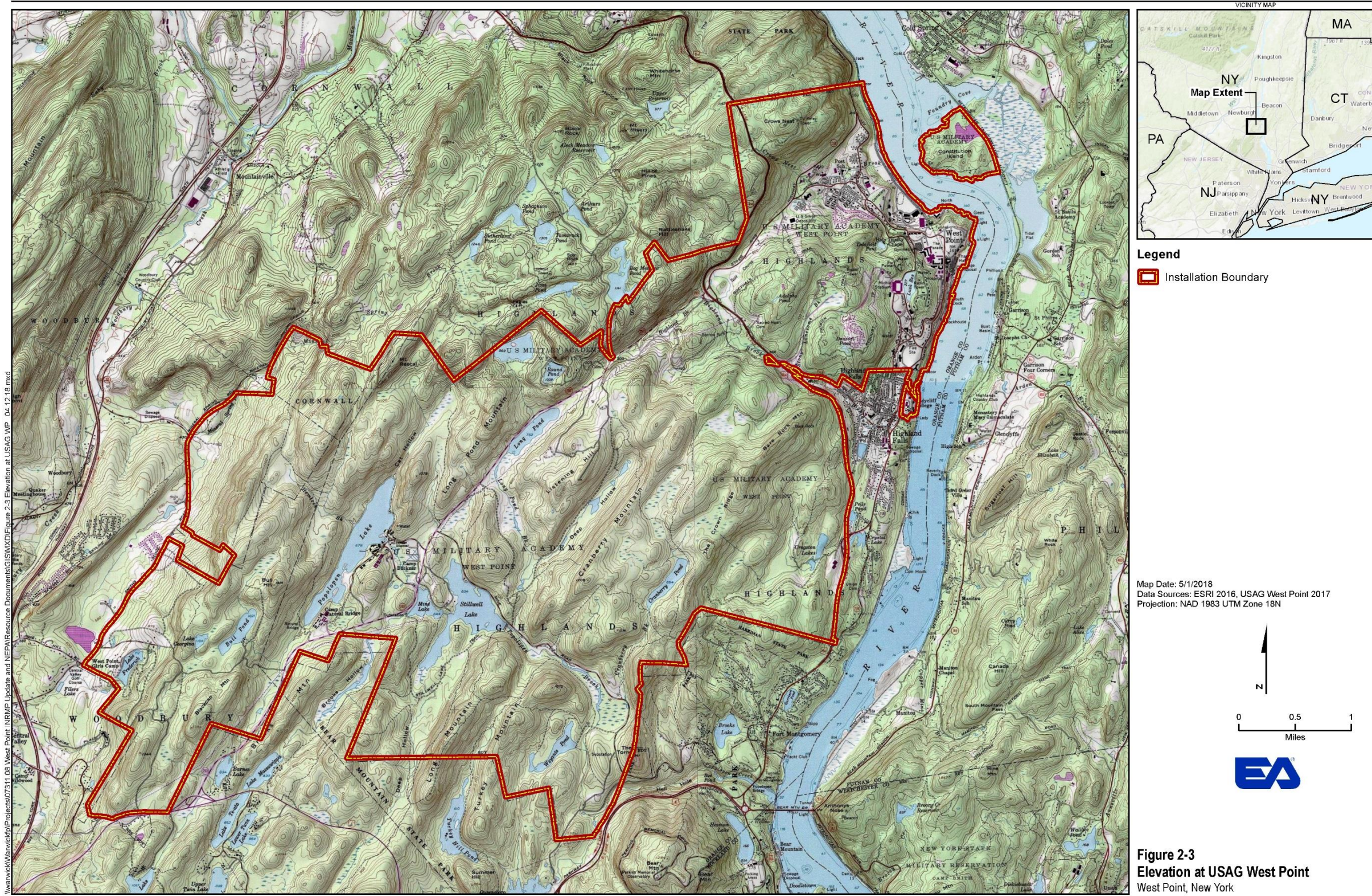
Figure 2-2  
USAG West Point Installation  
West Point, New York



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Figure 2-3. Elevation at USAG WP

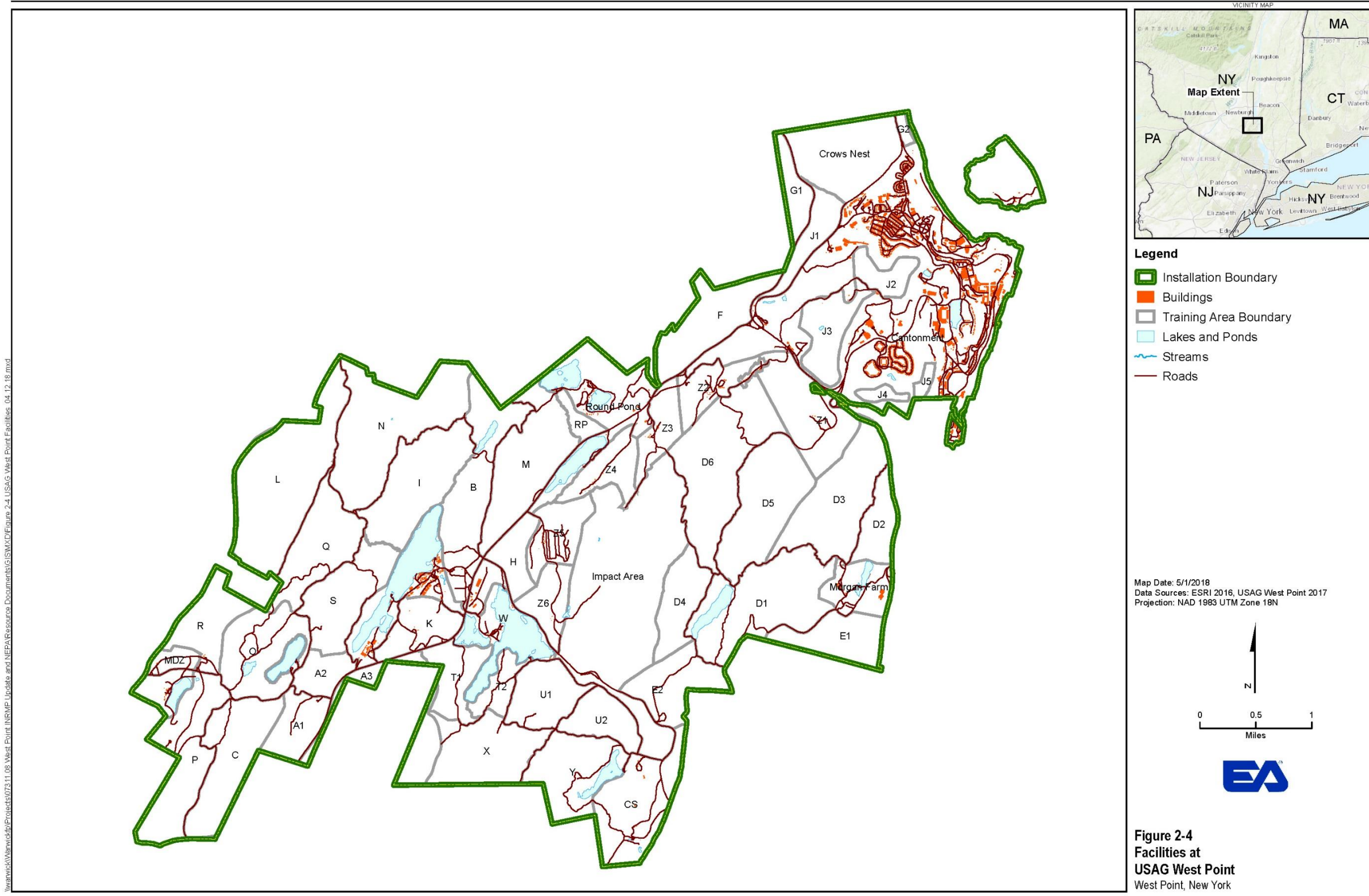




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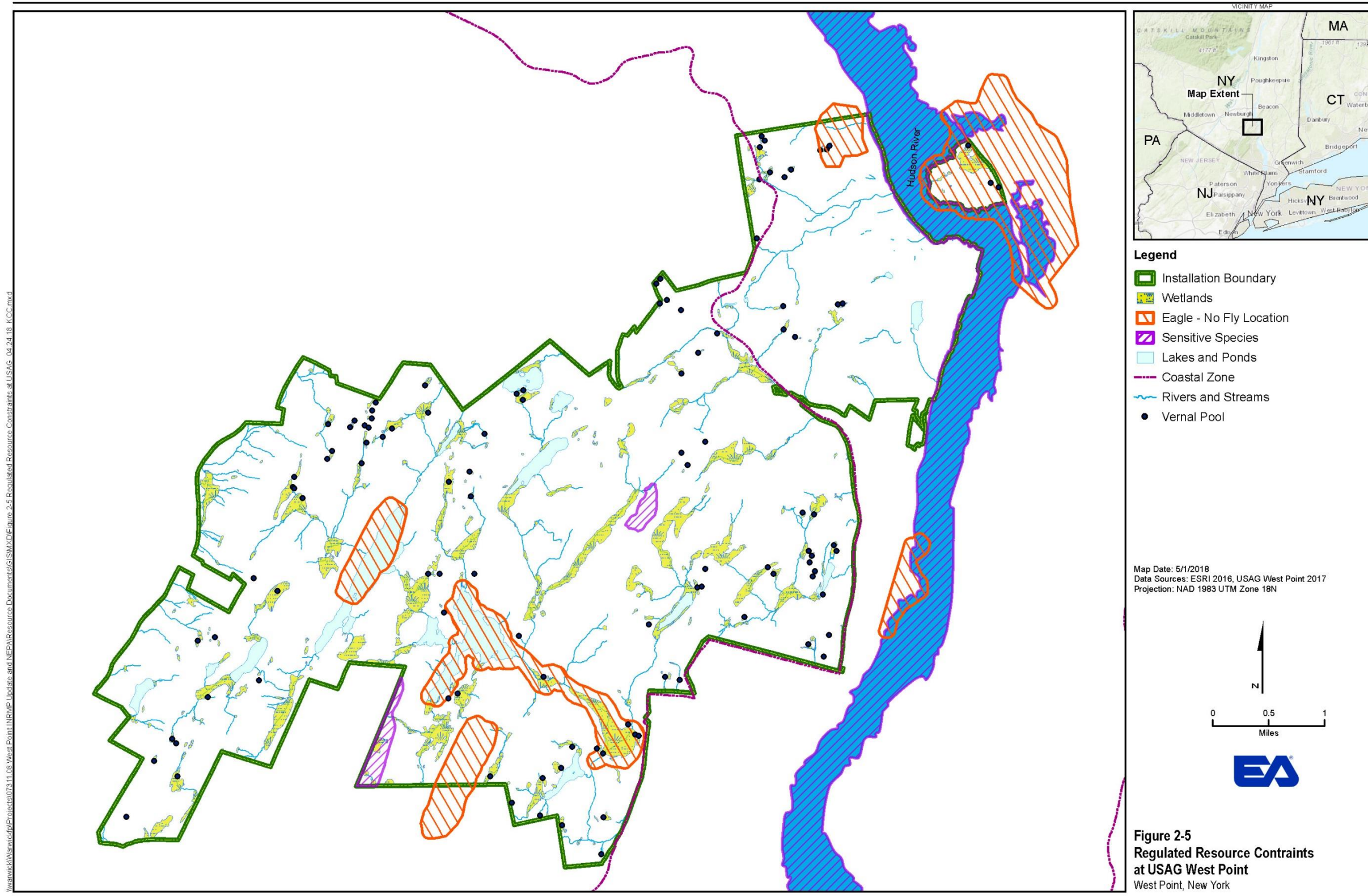
Figure 2-4. Facilities at USAG WP



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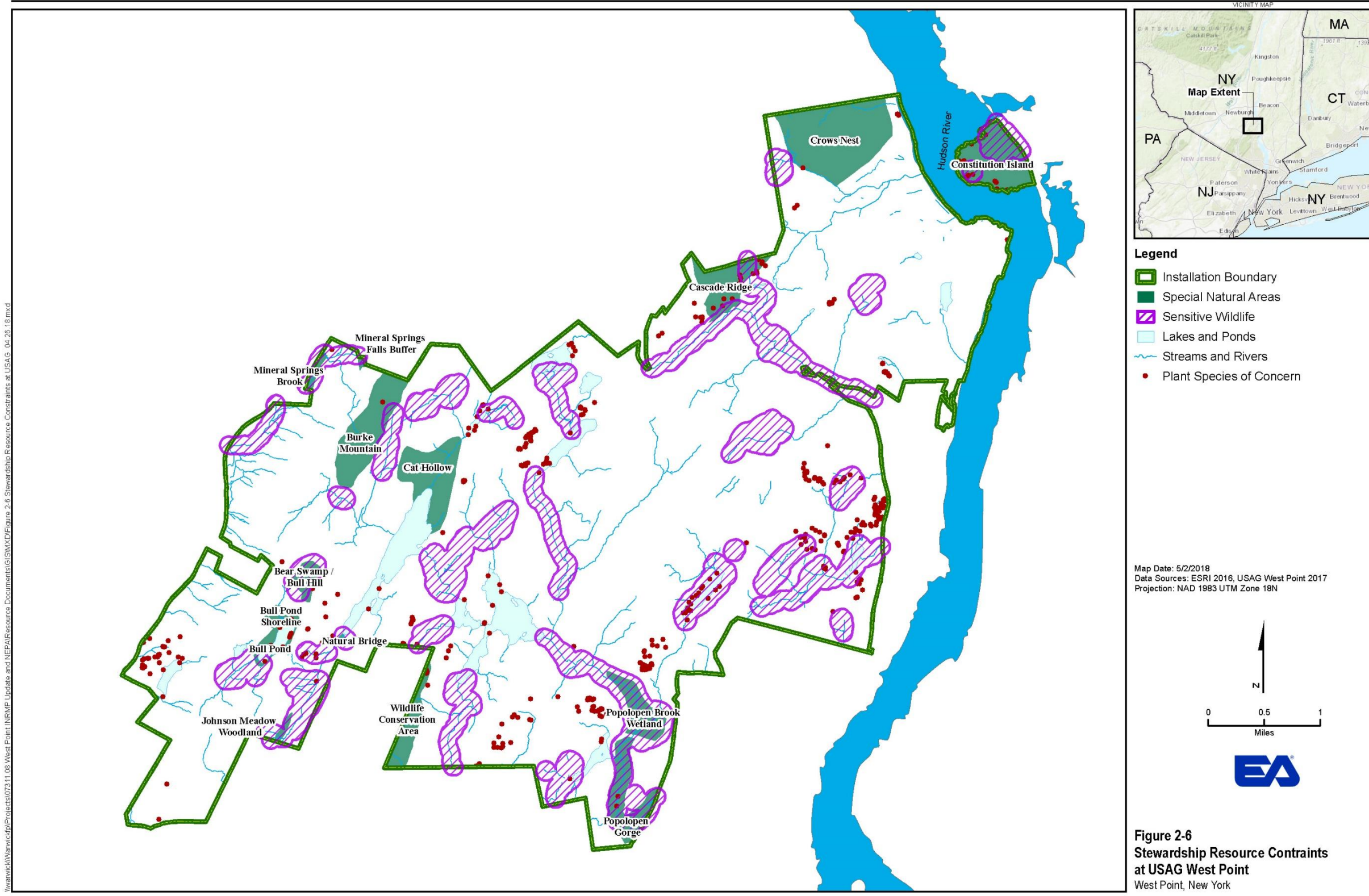
Figure 2-5. Regulated Resource Constraints at USAG WP



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Figure 2-6. Stewardship Resource Constraints USAG WP



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## 2.2 GENERAL INSTALLATION INFORMATION

West Point was first used for military activity during the revolutionary war, and the USMA was founded in 1802. The mission of the USMA is to “educate, train, and inspire the Corps of Cadets so that each graduate is a commissioned leader of character committed to the values of Duty, Honor, Country, and prepared for a career of professional excellence and service to the Nation as an officer in the United States Army.” USAG WP has a mission to “provides the services, programs, and infrastructure to sustain the West Point community.” Originally established as a military base, USAG WP provides medical, administrative, commissary, post exchange, and other logistical support to military personnel, both active and retired (USMA 1996). As an installation with a mission focused entirely on supporting USMA in training future cadets, the USAG WP and the USMA hold a unique mission and place in the U.S. Army.

USAG WP is located along the Hudson River approximately 50 miles north of New York City (Figure 2-1). The 16,000-acre installation, founded in 1802, is the home of the USMA and United States Corps of Cadets. The entire student body is comprised of 4,600 Cadets, 1,300 active military personnel, along with 3,300 civilian employees. Additional military officers, warrant officers, enlisted troops, retirees, and civilians live and work on USAG WP. The installation has approximately 9,300 military and civilian personnel and an inventory of nearly 3,000 family housing units. Approximately 1,000 Cadets graduate from the USAG WP each year as commissioned second lieutenant officers in the U.S. Army. USAG WP also provides training for active duty units, Army reservists, ROTC personnel, and other government agencies.

Several features of USAG WP present constraints to the mission and management of the installation (Figures 2-5 and 2-6):

- The topography of the installation often consists of slopes that are mainly greater than 20 percent. Those areas with slopes greater than 20 percent are considered unbuildable and would be inappropriate for buildings and many training facilities such as firing ranges (USMA 1996). Most of the land with slopes less than 20 percent are already developed. The topography of USAG WP lands, therefore, is a major limitation to uses of the property.
- The borders of USAG WP are developed to the east and west, and the installation is relatively small for the training activities within the installation boundary. The combination of the installation size and land uses on the boundary are a constraint to training activities.
- The potential to cause forest fires is a restriction on training activities. Because wildfire directly interferes with training and affects wildlife and vegetation, training activities involving pyrotechnic devices are restricted by type and timing depending upon the forest fire danger determination.
- Environmental degradation affects the military mission by decreasing realistic training opportunities, creating safety risks, and resulting in administrative restrictions on training (USMA n.d.b).

- Several areas within USAG WP’s training areas have been designated as Training Exclusion Areas. This designation generally prohibits training activities from occurring in these areas and is used to protect environmentally sensitive areas, protected species, administrative and recreational sites.

## 2.3 REGIONAL LAND USE AND SETTING

USAG WP lies in New York State (NYS), bordering the west bank of the Hudson River in the lower Hudson River Valley, approximately 50 miles north of New York City and 100 miles south of Albany (USMA 1994a). Its environmental setting is unique in that five physiographic provinces—the Appalachian Plateaus, Folded Appalachians (Valley and Ridge), New England, Piedmont, and Coastal Plain—converge within a 35-mile radius of the installation. USAG WP is located in the New England Province in an area known as the Hudson Highlands. The installation can be considered to consist generally of three parts: (1) the Main Post of cantonment area, (2) the reservation, and (3) Constitution Island (Figure 2-4). The Main Post, or the cantonment, is approximately 2,500 acres and is the academic, administrative, and community area along the Hudson River. The reservation is generally considered to be the 14,000-acre area to the west of the Main Post that serves as the field training facility for USAG WP. The Main Post and the reservation are separated by Route 9W. Both the Main Post and reservation lie entirely in Orange County, New York. Directly across the Hudson River from the Main Post is Constitution Island, located in the township of Philipstown, Putnam County, New York. Constitution Island is bounded by the Hudson River on three sides except the eastern border, where it is bounded by Metro-North railroad tracks (USMA 1994a).

The area surrounding USAG WP is dominated by residential, agricultural, recreational, and light industrial land uses (USMA 1984) (Figure 2-7). Adjacent to the main installation are Black Rock Forest and Storm King State Park (in the Towns of Cornwall and Highlands) to the north; the Hudson River to the east; Highland Falls, Fort Montgomery, and Bear Mountain/Harriman State Park in the Town of Highlands to the south; and Mineral Springs and Smith Clove Roads (in the Town of Woodbury) to the west. Constitution Island is bordered by the Hudson River to the west and Metro North Railroad and a National Audubon Society marshland to the east.

## 2.4 NATURAL ENVIRONMENT

This section presents a general description of the physical and biological environment of USAG WP. Discussions include both the reservation and Constitution Island.

### 2.4.1 Climate

The climate of the region including USAG WP is characterized as a humid, continental climate. Summers are warm and have periods of high humidity. The semi-permanent Bermuda High brings south-to-southwest warm and humid air to the area (USMA 1996). July is the hottest month, with an average maximum temperature of 86 degrees Fahrenheit (°F) (Table 2-1). Winters are cold with extended periods of snow cover and are influenced by the cold Hudson Bay air masses that are brought into the area (USMA 1996).



Photo: NRB



The coldest month of the year is January, which has an average low temperature of 18 °F and an average temperature of 27 °F (Table 2-1). Most winters are characterized by one or more warm periods when soils nearly or completely thaw.

**Table 2-1. Climate Summary for Highland Falls, New York**

| Month     | Average Normal Temperature (°F) - Monthly |         |         | Total Rain (mm) - Monthly |
|-----------|---|---------|---------|---------------------------|
|           | Maximum                                   | Minimum | Average |                           |
| January   | 36.0                                      | 18.3    | 27.1    | 82                        |
| February  | 38.8                                      | 20.3    | 29.5    | 76                        |
| March     | 48.0                                      | 28.6    | 38.3    | 94                        |
| April     | 60.6                                      | 38.1    | 49.3    | 101                       |
| May       | 72.0                                      | 48.0    | 59.9    | 105                       |
| June      | 81.0                                      | 57.2    | 69.1    | 96                        |
| July      | 85.6                                      | 62.2    | 73.9    | 102                       |
| August    | 83.5                                      | 60.6    | 72.0    | 102                       |
| September | 75.4                                      | 52.9    | 64.0    | 99                        |
| October   | 64.6                                      | 41.9    | 53.2    | 92                        |
| November  | 52.3                                      | 34.0    | 43.2    | 104                       |
| December  | 39.9                                      | 23.7    | 31.8    | 94                        |

Notes: °F = Degrees Fahrenheit.  
mm = millimeters.

Source: Climate-Data.Org 2018

A third weather pattern that influences the climate of USAG WP is an air mass that flows inland from the North Atlantic Ocean bringing cool, cloudy, and damp weather to the region. Prevailing winds are generally westerly. Thunderstorms occur approximately 20 times per year; tornadoes have a frequency of occurring 3 to 4 times a year in the region, although no significant tornadoes have occurred at USAG WP for more than 20 years. Total annual precipitation is 47.7 inches (in.), with the least amount of precipitation occurring in January and February (3.4 in. each month) and the most occurring in May (4.7 in.) (Climate-Charts.com 2010).

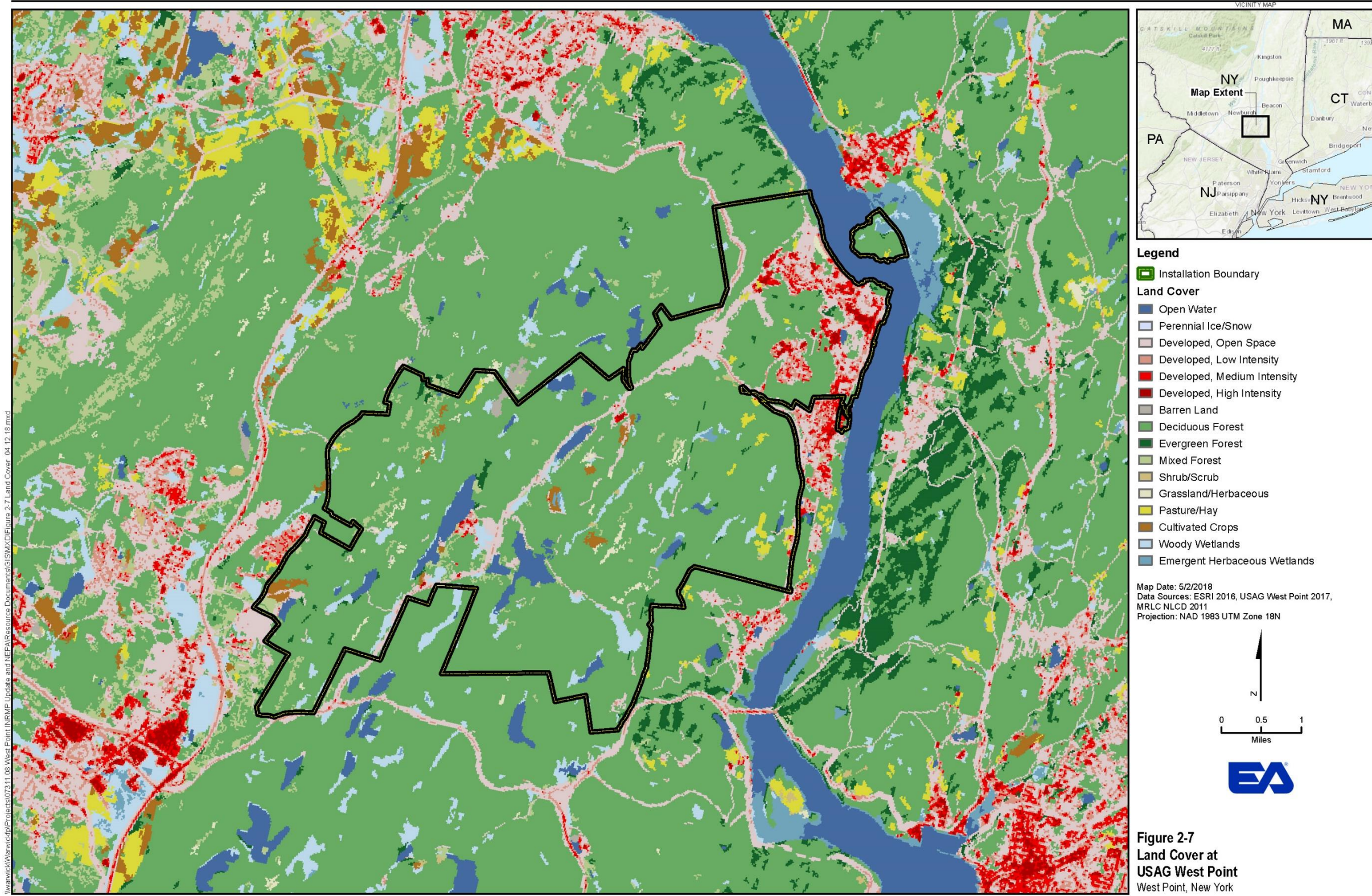
## 2.4.2 Topography

The topography of USAG WP reflects glacial forces and differential weathering of ancient rock that resulted in formation of the mountains known as the Hudson Highlands, which run in a northeast-southwest direction. This topography is best described as having moderately steep hills and numerous escarpments. The highest elevation (1,433 feet [ft]) on the reservation occurs at Burke Mountain and the lowest elevation (near sea level) occurs at the Hudson River. Slopes from 10 to 60 percent are common on the installation (Lewis 1962; Olsson 1981). Areas in between the hills are interspersed with small plains, basins, and narrow valleys with slopes less than 3 percent (Lewis 1962). The topography of the surrounding region is undulating and rugged. These characteristics, along with the alluvium and till deposits in the lowland areas and the relatively flat valley bottoms of the region, are the result of glaciation (USMA 1984). The topography of Constitution Island has small variations in elevation and consists of one hill rising to 140 ft above mean sea level (USMA 1994a). The western third of the island is steeply sloped toward the Hudson River while the eastern portion of the island slopes gradually, generally to the east.

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Figure 2-7. Land Cover Surrounding USAG WP





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### **2.4.3 Hydrology**

The surface water systems of USAG WP are composed of lakes, ponds, and streams scattered throughout the installation. USAG WP lies in the drainage basin of the Hudson River. The most important drainage on the installation is the Popolopen Brook watershed, which provides most of the useable water for the cantonment area. The Highland Brook watershed provides the water supply for the town of Highland Falls and Woodbury. Shallow soil, glacial geology, and abundant rainfall produce a regionally high water table, resulting in numerous wetlands, lakes, and ponds. Most of the lakes and ponds are the result of artificial dams that have raised water levels within former wetland areas.

Groundwater on USAG WP occurs in an unconsolidated aquifer consisting of alluvial deposits and a consolidated bedrock aquifer. Water within the unconsolidated aquifer occurs primarily in the sands and gravels of the stratified drift deposits. These deposits represent the most prolific sources of groundwater on the installation, but the deposits are thin and generally have fairly small well yields which average about 40 gallons per minute (gpm) (USMA 1984). Water in the unconsolidated aquifer usually occurs under water table conditions.

### **2.4.4 Ecoregions**

The terrestrial ecosystems of USAG WP lie within a variety of ecological classifications. Based on a classification system developed for the state of New York, USAG WP is located within an area of the Hudson Valley known as the Hudson Highlands, an ecozone consisting of Appalachian ridges and valleys that is in the New England Upland physiographic province (Reschke 1990; Edinger et al. 2002). The Hudson Highlands ecozone is bordered to the northeast by the Taconic Highlands ecozone, to the southwest by the Triassic Lowlands ecozone, and to the southeast by the Manhattan Hills ecozone.

Based on Bailey's (1994) ecoregional classification, USAG WP lies within the Hudson Valley section of the Eastern Broadleaf Forest (Oceanic) ecoregional province. According to a description of this ecoregional province by McNab and Avers (1994), the largely undeveloped and forested Hudson Highlands are characterized by Kuchler vegetation types of northern hardwood and Appalachian oak forests, and regionally by central hardwoods, transition hardwoods, and northern hardwoods.

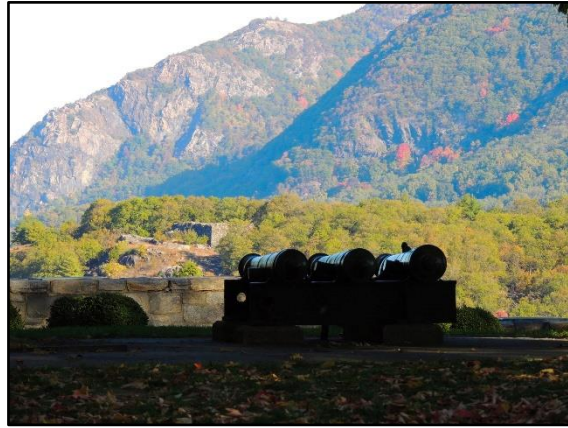
## **2.5 INSTALLATION HISTORY**

### **2.5.1 Pre-Military Land Use**

The lands that now constitute USAG WP were historically used for tree harvesting, agriculture, and settlement. During the 19<sup>th</sup> and 20<sup>th</sup> centuries, much of the land was deforested to provide timber to the charcoal and brick industries in the region (Barbour, S. 1995a). After being acquired by the U.S. government in the 1930s and 1940s, most of the lands have been used to support the military mission of USAG WP.

## 2.5.2 Installation Military History

USAG WP is the oldest continuously occupied military post in the United States (USMA 1984). Founded in 1802 at the urging of Thomas Jefferson, USMA has held the mission of educating and training cadets to provide the Nation with “leaders of character who serve the common defense” (USMA 1984). Constitution Island is the oldest occupied portion of USAG WP. During the Revolutionary War, Constitution Island, then known as Martelaer's Rock, was fortified by George Washington's troops to keep out the British (Headquarters, U.S. Department of the Army HQDA 1985). In 1777, the British occupied the island for 3 weeks until it was retaken by colonists, who rebuilt fortifications on the island and started stronger fortification at Fort Putnam on what is now the West Point reservation (HQDA 1985).



Constitution Island as viewed from Trophy Point (foreground). Photo: West Point Museum

From the early 1800s until 1908, Constitution Island was owned by the Warner Family, who donated the island to the Army (USMA 1994a). In 1916, the Constitution Island Association was founded to preserve and protect the history and traditions of this unique American site. Today, Constitution Island is used primarily by the Constitution Island Association for tours and for cadet outdoor recreation and training (USMA1994a). The first troops were stationed at USAG WP on 20 January 1778, and a regular garrison there after the end of the Revolutionary War (USMA 1984). It was not until 1801 that Congress created the Military Academy at West Point. It was then occupied by the U.S. Army Corps of Engineers (USACE) and held the mission “to train military technicians for all branches of the military, to encourage the study of military art, and to encourage the practical study of every science” (USMA 1984). The Academy consisted of 5 officers and 10 cadets and was increased in size to 2,400 acres (USMA 1984; USMA 1994b).

In April 1812, in the face of war with England, Congress increased the size of the Corps of Cadets to 250 (USMA 1984). It was after this war that the mission of the Academy was changed to focus on civil engineering to equip the cadets with the ability to serve an expanding nation (USMA 1984). In addition to military training, course work included architecture and civil engineering. By 1835, land at USAG WP included what is now the North Athletic Field and the higher ground that surrounds it. By 1850, it included officers' quarters along Wilson Road to the south and Professors Row to the north (USMA 1989).

The next major action to affect the Academy was the Civil War, during which many West Point graduates served in the armies of the Union and the Confederacy. At the end of the Civil War, technical and engineering schools were being established throughout the country. West Point responded by separating the Academy from USACE and by shifting its curriculum from civil engineering to a more diversified educational program (USMA 1984). By 1880, USAG WP included the area of enlisted and civilian quarters and gardens along Washington Road (USMA

1989). In 1902, West Point became the New West Point, which provided a liberal education with practical training in minor tactics and fieldwork to 580 cadets. By 1910, land at West Point included most of what exists today (USMA 1989). Following World War I, the curriculum focused on international tactics and physical education (USMA 1984). By 1935, the Corps of Cadets had increased to 2,000. Following World War II and the Korean War, the Academy’s curriculum changed to focus on modern technology and national security and international relations (USMA 1984). The Congress increased the Corps of Cadets to 2,781 (USMA 1984). Two recent major changes that have occurred at USAG WP are the decision to end compulsory chapel in 1973 and the decision to admit women in 1976 (USMA 1984). In response to the admittance of women, Congress increased the Corps of Cadets to 4,500 (USMA 1984).

## 2.6 CURRENT MILITARY MISSIONS

Table 2-2 displays the current installation users and the primary mission of these units.

**Table 2-2. Current Installation User and Missions**

| Installation Users   | Primary Mission  | Garrison Resources Utilized  |
|--|--|--|
| United States Corps of Cadets<br><br>Active Army<br><br>Army National Guard<br>U.S. Army Reserve<br>Reserve Officers Training Corps  | “To educate, train, and inspire the Corps of Cadets so that each graduate is a commissioned leader of character committed to the values of Duty, Honor, Country and prepared for a career of professional excellence and service to the Nation as an officer in the United States Army.” | <ul style="list-style-type: none"> <li>• West Point Range and Maneuver Training Area</li> <li>• Small arms training for live fire training occurs on all ranges</li> <li>• Land for maneuver training</li> <li>• Airspace use for helicopter and parachute team training, as well as unmanned aerial vehicle training</li> <li>• Water-borne activities in the Cadet Field Training include (U.S. Military Academy 1994a): Amphibious assault training at White Oak Island, Training Area W and Stilwell Lake</li> </ul>   |
| All other Department of Defense activities such as, but not limited to:<br>U.S. Navy and Navy Reserve, U.S. Marine Corps and Marine Corps Reserve,<br>U.S. Air Force, Air National Guard and Air Force Reserve<br><br>Other non-Department of Defense agencies, including the Federal Bureau of Investigations<br><br>Tenant organizations, including the Directorate of Cadet Activities, Office of the Directorate of Intercollegiate Athletics, Medical Activities, and U.S. Army Operational Group<br><br>Commercial vendors, including lodging and food service | Provide opportunities for Army reservists, Reserve Officer Training Corps students, active duty units, and other government agencies to conduct field training   | <ul style="list-style-type: none"> <li>• Confidence course and scuba diving at Popolopen Lake, and pontoon bridging techniques at Stilwell Lake.</li> <li>• Special Forces use of Lake Georgina, Bull Pond, and Lake Frederick to teach rubber boat assault/infiltration techniques</li> <li>• The Federal Bureau of Investigations is currently building a facility at USAG WP</li> <li>• Building and facility space used for mission-related non-Department of Defense purposes</li> <li>• Building and facility space used to house tenant organizations that provide services at USAG WP</li> <li>• Facilities used for provision of privatized services on the installation</li> </ul> |
| Notes: USAG WP = U.S. Army Garrison West Point.  |  |  |

## **2.7 PUBLIC AND AFFILIATES ACCESS**

The grounds of the Main Post at USAG WP are accessible to the general public through guided tours, and the West Point Visitor Center and West Point Museum are open to the general public on a daily basis. For the tour, U.S. citizens must provide a valid form of photo identification, while foreign nationals must provide a passport or visa. Visitors to USAG WP who are not taking tours must obtain a Local Access Card for entry. Entrance to the cantonment area for sporting events, cultural events, and parades also requires valid government-issued photo identification, and civilian entrance is only permitted at the Thayer Gate and Stony Lonesome gate during these events. All traffic into the Main Post is controlled at all times at access gates. Access to the USAG WP Training Areas is strictly controlled for safety and security reasons. Limited manpower resources for law enforcement and visitor control restrict the degree to which public participation in outdoor recreation activities is feasible. Mine Torne Road, a paved secondary road open to the public except during certain periods of range firing, passes along Popolopen Brook and the associated large wetland that has been designated a significant wildlife habitat by NYS. This road is a popular spot for individual general public birders and local bird clubs.

USAG WP allows some use of the installation by the general public for hunting and trapping. West Point allows limited hunting, during big game season only, by members of the general public. However West Point does not permit fishing, small game hunting, waterfowl, or migratory bird hunting by members of the general public. Members of the general public who wish to hunt big game (deer, black bear, and coyote) at USAG WP must hold a valid NYS Big Game Hunting License, and must apply for a permit to hunt at West Point. Numbers of general public hunting permits, season days, and take are managed to match both natural and administrative resources. Current restrictions for hunting by the general public on USAG WP can be found on the USAG WP hunting and fishing website. Currently, this information is managed on the USAG WP hunting and fishing online permitting and registration website (iSportsman).

As part of public access, USAG WP regularly provides access and long-term study sites to academic and government scientists engaged in ecological research. USAG WP also provides access to reports and survey data available in the NRB archives to researchers.



### 3. INTEGRATION OVERVIEW

This chapter describes how this INRMP is coordinated and integrated into the installation’s real property master plan, range complex master plan, and any other strategic installation planning and outlines who is responsible for what as it relates to natural resources.

#### 3.1 AUTHORITIES AND RESPONSIBILITIES

Table 3-1 below provides an overview of applicable laws and regulations and their relationship to the implementation of the INRMP and its integrated plans and components. Overall authority for compliance with environmental regulations and laws at USAG WP is the responsibility of the Garrison Commander.

**Table 3-1 Laws and Regulations and Their Relationship to Integrated Natural Resources Management Plan Implementation**

|   | <b>Law/Reg/MOU #</b>   | <b>Law/Reg/MOU Title</b>   | <b>Responsible/<br/>Administering<br/>Agency(s)</b>     | <b>Responsible Directorate<br/>&amp; Personnel Position<br/>Title(s)</b> |
|---|--|--|---|--|
| 1 | DoD Financial Management Regulation 7000.14-R, Vol. 11A, Ch.16 | Accounting for Production and Sale of Forest Products, August 2002                             | DoD   | DPW Forester   |
| 1 | DoD Financial Management Regulation 7000.14-R, Vol. 11A, Ch.16 | Accounting for Production and Sale of Forest Products, August 2002                             | DoD   | DPW Forester   |
| 2 | 7 U.S.C.§ 426-426b   | Animal Damage Control Act  | USDA  | DPW NRB Manager; Pest Management Coordinator                             |
| 3 | 16 U.S.C. 4701–4751  | Aquatic Nuisance Prevention and Control  | DoD, NYSDEC, and International Partners (As Applicable) | DPW NRB Manager; Pest Management Coordinator                             |
| 4 | 16 U.S.C. §§668-668d   | Bald and Golden Eagle Protection Act   | USFWS   | DPW NRB Manager  |
| 5 | 42 U.S.C. § 7401-7642  | Clean Air Act  | Environmental Protection Agency (USEPA)                 | DPW Compliance Branch Chief  |
| 6 | DoDD 4715.21   | Climate Change Adaptation and Resilience   | DoD   | DPW Compliance Branch Chief  |
| 7 | 33 U.S.C. §1251 et. seq.                                       | Clean Water Act  | USEPA   | DPW Compliance Branch Chief  |
| 8 | 16 U.S.C. §1451 et. seq.                                       | Coastal Zone Management Act, as amended  | NOAA  | DPW NEPA Coordinator   |
| 9 | 40 Code of Federal Regulations (CFR) Parts 1500- 1508          | Council on Environmental Quality Regulations for Implementing the Procedural Provisions of the | All Federal Agencies (As Applicable)                    | DPW NEPA Coordinator   |

|    | <b>Law/Reg/MOU #</b>                   | <b>Law/Reg/MOU Title</b>   | <b>Responsible/<br/>Administering<br/>Agency(s)</b> | <b>Responsible Directorate<br/>&amp; Personnel Position<br/>Title(s)</b> |
|----|--|--|---|--|
|    |  | National Environmental Policy Act (NEPA)   |   |  |
| 10 | 42 U.S.C. §9601-9675                   | Comprehensive Environmental Response, Compensation and Liability Act                   | USEPA   | DPW Compliance Branch Chief  |
| 11 | DoDI 4715.03                           | Conservation Program for Natural Resources, 18 March 2011                              | DoD   | DPW NRB Manager  |
| 12 | DoDI 5525.17                           | CLEP, 17 October 2013  | DoD   | DES  |
| 13 | DoD and USFWS MOU                      | Conservation of Migratory Birds MOU (Partners in Flight)                               | DoD, USFWS  | DPW NRB Manager; Pest Management Coordinator                             |
| 14 | DoD and the Pollinator Partnership MOU | Conservation of Pollinators MOU  | DoD and the Pollinator Partnership                  | DPW NRB Manager; Pest Management Coordinator                             |
| 15 | DoDI 6055.06                           | DoD Fire and Emergency Services Program, December 21, 2006                             | DoD   | DPW NRB Manager; DES   |
| 16 | DoD 5400.7-R                           | DoD Freedom of Information Act Program, September 4, 1998                              | DoD   | Public Affairs Office  |
| 17 | 16 U.S.C. §1531-1543                   | Endangered Species Act of 1973, as amended   | USFWS   | DPW NRB Manager  |
| 18 | 32 CFR § 989                           | Environmental Impact Analysis  | DoD   | DPW NEPA Coordinator   |
| 19 | DoDI 4715.17                           | Environmental Management Systems   | DoD   | DPW Compliance Branch Chief  |
| 20 | EO 13443                               | Facilitation of Hunting Heritage and Wildlife Conservation                             | DoD   | DPW NRB Manager; MWR   |
| 21 | 7 U.S.C. §136 et. seq.                 | Federal Insecticide, Fungicide, and Rodenticide Act, as amended                        | USEPA   | DPW Installation Pest Management Coordinator                             |
| 22 | 7 U.S.C. § 2801                        | Federal Noxious Weed Act of 1974   | Secretary of Agriculture                            | DPW NRB Manager; Pest Management Coordinator                             |
| 23 | 33 U.S.C. § 1251-1376                  | Federal Water Pollution Control Act of 1977 (Clean Water Act), as amended              | USEPA   | DPW NRB Manager; DPW Compliance Branch Chief                             |
| 24 | 16 U.S.C. §2901 – 2911                 | Fish and Wildlife Conservation Act of 1980   | USFWS   | DPW NRB Manager  |
| 25 | EO 11988                               | Floodplain Management, May 24, 1977  | DoD   | DPW  |
| 26 | 16 U.S.C. §1601 et. seq.               | Forest and Rangeland Renewable Resources Planning Act of 1974                          | Secretary of Agriculture                            | DPW NRB Manager  |
| 27 | EO 13148                               | Greening the Government through Leadership in Environmental Management, April 21, 2000 | DoD   | DPW; DPW Compliance Branch Chief   |
| 28 | 10 U.S.C. §2671                        | Hunting, Fishing and Trapping on Military Lands  | DoD   | DPW NRB Manager; MWR   |
| 29 | EO 13112                               | Invasive Species, February 3, 1999   | DoD, NYSDEC, and                                    | DPW NRB Manager; Pest Management Coordinator                             |

|    | <b>Law/Reg/MOU #</b>                    | <b>Law/Reg/MOU Title</b>   | <b>Responsible/<br/>Administering<br/>Agency(s)</b>                    | <b>Responsible Directorate<br/>&amp; Personnel Position<br/>Title(s)</b> |
|----|---|--|--|--|
|    |   |  | other Federal Agencies (As Applicable)                                 |  |
| 30 | 16 U.S.C. §701, 702                     | Lacey Act of 1900  | Secretary of the Interior  | DPW NRB Manager;<br>DES  |
| 31 | U.F.C. 3-210-10                         | Low Impact Development   | DoD  | DPW; DPW Compliance Branch Chief   |
| 32 | 16 U.S.C. §1361 et. seq.                | Marine Mammal Protection Act of 1972   | U.S. Fish and Wildlife Service & National Marine Fisheries Service     | DPW NRB Manager  |
| 33 | P.L. 94-265, as amended at P.L. 109-479 | Magnuson-Stevens Fishery Conservation and Management Act   | Regional Fishery Management Councils (both Federal and State Agencies) | DPW NRB Manager  |
| 34 | 16 U.S.C. §718-718k                     | Migratory Bird Hunting Stamp Act   | USFWS  | DPW NRB Manager; Pest Management Coordinator;<br>DES                     |
| 35 | 16 U.S.C. §703 et. seq.                 | Migratory Bird Treaty Act, as amended  | USFWS  | DPW NRB Manager  |
| 36 | P.L. 107-314, Sec. 315                  | National Defense Authorization Act for Fiscal Year 2003: Incidental Taking of Migratory Birds during Military Readiness Activities | DoD  | DPW NRB Manager  |
| 37 | P.L. 108-136, Sec. 318                  | National Defense Authorization Act for Fiscal Year 2004: Military Readiness and Conservation of Protected Species                  | DoD  | DPW NRB Manager  |
| 38 | P.L. 91-190, 42 U.S.C. §4321-4347       | National Environmental Policy Act of 1969, as amended  | DoD  | DPW NEPA Coordinator   |
| 39 | 16 U.S.C. §§1241-1249                   | National Trails Systems Act of 1986  | DoD  | MWR; ITAM  |
| 40 | 32 CFR 190                              | Natural Resources Management Program for the Department of Defense   | DoD  | DPW NRB Manager  |
| 41 | EO 11989                                | Off-Road Vehicles on Public Lands, May 24, 1977  | DoD  | MWR  |
| 42 | 16 U.S.C. §4601                         | Outdoor Recreation on Federal Lands  | DoD  | MWR  |
| 43 | 10 U.S.C. §2667(d)(4)                   | Outleasing for Grazing and Agriculture on Military Lands   | Department of Defense  | DPW NRB Manager  |
| 44 | 50 CFR 13 para 12-4                     | Permit Procedures of the USFWS   | USFWS  |  |

|    | <b>Law/Reg/MOU #</b>  | <b>Law/Reg/MOU Title</b>   | <b>Responsible/<br/>Administering<br/>Agency(s)</b>     | <b>Responsible Directorate<br/>&amp; Personnel Position<br/>Title(s)</b> |
|----|---|--|---|--|
| 45 | PL 106-224, 7 U.S.C. §7702  | Plant Protection Act   | USDA  | DPW NRB Manager  |
| 46 | 43 U.S.C. § 1701 et. Seq., 18 U.S.C. §641, and 18 U.S.C. §1361    | Protection of Fossils on Federal Lands   | DoD   | DPW NRB Manager  |
| 47 | DoD and USFWS MOU   | Promote the Conservation of Migratory Birds  | DoD   | DPW NRB Manager; Pest Management Coordinator                             |
| 48 | EO 11990  | Protection of Wetlands, May 24, 1977   | DoD, USFWS, and USACE                                   | DPW NRB Manager  |
| 49 | EO 12962  | Recreational Fisheries, June 7, 1995   | DoD and NYSDEC  | DPW NRB Manager; MWR   |
| 50 | 42 U.S.C. 6901-6992 k   | Resources Conservation and Recovery Act  | USEPA   | DPW Compliance Branch Chief  |
| 51 | EO 13186  | Responsibilities of Federal Agencies to Protect Migratory Birds, January 10, 2001                                  | USFWS   | DPW NRB Manager; Pest Management Coordinator                             |
| 52 | 33 U.S.C. §401 et. seq.   | Rivers and Harbors Act of 1899   | USACE   | DPW NRB Manager; DPW Compliance Branch Chief                             |
| 53 | 16 U.S.C. §670a-f   | Sikes Act  | USFWS, NYSDEC   | DPW NRB Manager  |
| 54 | Sikes Act Tripartite MOU  | Cooperative Integrated Natural Resources Management Program on Military Lands                                      | DoD, USFWS, and Association of Fish & Wildlife Agencies | DPW NRB Manager  |
| 55 | 16 U.S.C. §2001   | Soil and Water Conservation Act  | Secretary of Agriculture                                | DPW NRB Manager; DPW Compliance Branch Chief; ITAM                       |
| 56 | EO 13423  | Strengthening Federal Environmental, Energy, and Transportation Management, 24 January 2007                        | DoD   | DPW  |
| 57 | 10 U.S.C. §2665   | Timber Sales on Military Lands   | DoD   | DPW Forester   |
| 58 | 50 CFR 10-16  | Taking, Possession, Transportation, Sale, Purchase, and Barter, Exportation and Importation of Wildlife and Plants | USFWS   | DPW NRB Manager; DES   |
| 59 | Title I of P.L. 102-440, signed October 23, 1992 (106 Stat. 2224) | Wild Bird Conservation Act   | USFWS   | DPW NRB Manager; Pest Management Coordinator                             |
| 60 | AR 200-1  | Natural Resources – Land, Forest and Wildlife Management   | DoD   | DPW NRB Manager  |
| 61 | USMA 215-5  | USAG WP Recreational Activities  | USMA  | Morale, Welfare, and Recreation  |

|         | <b>Law/Reg/MOU #</b> | <b>Law/Reg/MOU Title</b>                                | <b>Responsible/<br/>Administering<br/>Agency(s)</b> | <b>Responsible Directorate<br/>&amp; Personnel Position<br/>Title(s)</b> |
|---------|----------------------|---|---|--|
| Notes:  |                      |   |   |  |
| AR      | =                    | Army Regulation   |   |  |
| CFR     | =                    | Code of Federal Regulations                             |   |  |
| CLEP    | =                    | Conservation Law Enforcement Program                    |   |  |
| DES     | =                    | Directorate of Emergency Services                       |   |  |
| DoD     | =                    | Department of Defense                                   |   |  |
| DoDD    | =                    | Department of Defense Directive                         |   |  |
| DPW     | =                    | Directorate of Public Works                             |   |  |
| EO      | =                    | Executive Order   |   |  |
| ITAM    | =                    | Integrated Training Area Management                     |   |  |
| MOU     | =                    | Memorandum of Understanding                             |   |  |
| MWR     | =                    | Morale, Welfare and Recreation                          |   |  |
| NEPA    | =                    | National Environmental Policy Act                       |   |  |
| NOAA    | =                    | National Oceanic and Atmospheric Administration         |   |  |
| NRB     | =                    | Natural Resources Branch                                |   |  |
| NYSDEC  | =                    | New York State Department of Environmental Conservation |   |  |
| PL      | =                    | Public Law  |   |  |
| USACE   | =                    | U.S. Army Corps of Engineers                            |   |  |
| USAG WP | =                    | U.S. Army Garrison West Point                           |   |  |
| U.S.C.  | =                    | U.S. Code   |   |  |
| USDA    | =                    | U.S. Department of Agriculture                          |   |  |
| USEPA   | =                    | U.S. Environmental Protection Agency                    |   |  |
| USFWS   | =                    | U.S. Fish and Wildlife Service                          |   |  |
| USMA    | =                    | U.S. Military Academy                                   |   |  |

### 3.2 EXTERNAL STAKEHOLDERS

Table 3-2 lists the external stakeholders, the relationships of these agencies and partners to the INRMP, and the documents or agreements that outline the partnership. USAG WP is within the USFWS Northeast Region (Region 5), New York State Department of Environmental Conservation (NYSDEC) Wildlife Management Unit 3P, NOAA North Atlantic Region, and the U.S. Environmental Protection Agency Region 2.

**Table 3-2 External Stakeholders**

| <b>External Stakeholder</b>  | <b>Type</b>                                | <b>Document/Agreement &amp; Hyperlink</b>   | <b>Brief Description</b>  |
|--|--|---|---|
| New York State<br>Department of<br>Environmental<br>Conservation                         | Required Partnership –<br>Signatory Agency | SWAP  | INRMP developed and updated in coordination with State to address SWAP goals where mutually agreed.   |
| USFWS Local Field Office   | Required Partnership –<br>Signatory Agency | Species Recovery Plans for the Indiana bat ( <i>Myotis sodalis</i> ), Northern long-eared bat ( <i>Myotis septentrionalis</i> ), bog turtle ( <i>Clemmys muhlenbergii</i> ), and small whorled pogonia ( <i>Isotria medeoloides</i> )   | INRMP developed and updated in coordination with USFWS local office to address Recovery goals where mutually agreed.  |
| NOAA National Marine Fisheries Service   | Consultative Party                         | Recovery for the Atlantic sturgeon ( <i>Acipenser oxyrinchus oxyrinchus</i> ) and shortnose sturgeon ( <i>Acipenser brevirostrum</i> )  | INRMP developed and updated in coordination with NOAA local office to address Recovery goals where mutually agreed.   |
| New York SHPO<br><br>Advisory Council on<br>Historic Preservation                        | Consultative Parties                       | Programmatic Agreement Among the USAG WP, the New York SHPO and ACHP Regarding Operations, Maintenance, and Development Activities (ACHP 1987)<br><br>2013 Programmatic Agreement Between the USAG WP and the SHPO for the Privatization of Army Lodging<br><br>2008 Programmatic Agreement Regarding the Residential Community Initiative Implementation | Agreement of process to review proposed projects to determine if an undertaking as defined in 36 Code of Federal Regulations § 800.16(y); define the area of potential effects and identify historic properties; evaluate effects of the undertaking and steps taken or considered to avoid or minimize the adverse effects; and comment periods.<br><br>Management of current and future family housing and ancillary facilities at West Point, many of which are contributing resources to the National Historic Landmark District. |
| Stockbridge- Munsee<br>Community<br><br>Delaware Tribe of Indians<br><br>Delaware Nation | Consultative Parties                       | 2014 Memorandum of Agreement (MOA) Consultation Procedures  | All tribal consultation for this INRMP and natural resource management actions that may impact cultural resources is overseen by the Cultural Resources Manager and is discussed in the USAG WP Integrated Cultural Resources Management Plan. The Cultural Resources Manager also oversees access to sites and resources of religious importance.  |

| External Stakeholder   | Type               | Document/Agreement & Hyperlink | Brief Description  |
|--|--------------------|--------------------------------|--|
| Northeast Regional Office of the National Park Service<br><br>Orange County, New York<br><br>Putnam County, New York<br><br>Scenic Hudson<br><br>Hudson Highlands Land Trust<br><br>National Trust for Historic Preservation<br><br>The Hudson River Keeper<br><br>Orange County Land Trust<br><br>Open Space Institute<br><br>Black Rock Forest Consortium                                  | Interested Parties |                                | Natural Resource management agencies, counties, and trusts have an interest in the land management of nearby lands at USAG WP. They are considered interested parties. |
| Notes: ACHP = Advisory Council on Historic Preservations<br>INRMP = Integrated Natural Resources Management Plan<br>MOA = Memorandum of Agreement<br>NOAA = National Oceanic and Atmospheric Administration<br>SHPO = State Historic Preservation Officer<br>SWAP = State Wildlife Action Plan<br>USAG WP = United States Army Garrison West Point<br>USFWS = U.S. Fish and Wildlife Service |                    |                                |  |

### 3.3 INTERNAL INTEGRATION

This INRMP is intended to be compatible with other USAG WP planning documents. In preparing this document, other plans consulted are listed below. These documents can be found either as appendices to this INRMP or as Component Plans (Appendix B). Plans are listed below in Table 3-3.

#### 3.3.1 Installation Plans

Plans consulted from USAG WP as part of the preparation of this document are noted below in Table 3-3.

**Table 3-3 Installation Plans at United States Army Garrison West Point**

| <b>Responsible Directorate</b>  | <b>Installation Plan (Date of Approval)</b>  | <b>Personnel Position Title(s)</b> | <b>Integration Methods</b>      | <b>Contact Frequency</b> |
|---|--|------------------------------------|---------------------------------|--------------------------|
| Natural Resources   | Integrated Natural Resources USAG WP, West Point New York, Tetra Tech, March 2011                    | NRB Manager                        | Revision                        | Every 5 years            |
| Directorate of Public Works   | Integrated Cultural Resources Management Plan (In revision, expected 2018)                           | Cultural Resources Officer         | Annual review, email            | Annually or as needed    |
| Natural Resources   | Integrated Wildland Fire Management Plan (2011)  | NRB Manager                        | Annual review                   | Annually or as needed    |
| DPW   | Integrated Pest Management Plan (June 2015)  | Pest Management Coordinator        | Meetings, emails, annual review | Annually or as needed    |
| Natural Resources   | Forest Management Plan, USAG WP 2015-2020 (2015)   | DPW Forester                       | Meetings, emails, annual review | Annually or as needed    |
| Morale, Welfare, and Recreation   | United States Military Academy REG 215-5, USAG WP Recreational Activities, 2011 (2017 draft version) | Outdoor Recreation Officer         | Meetings, emails, annual review | Annually or as needed    |
| Natural Resources   | Endangered Species Management Plan (ESMP): Atlantic Sturgeon (2018)                                  | NRB Manager                        | Meetings, emails, annual review | Annually or as needed    |
| Natural Resources   | ESMP: Atlantic Sturgeon (2018)   | NRB Manager                        | Meetings, emails, annual review | Annually or as needed    |
| Natural Resources   | ESMP: Shortnose Sturgeon (2018)  | NRB Manager                        | Meetings, emails, annual review | Annually or as needed    |
| Natural Resources   | ESMP: Northern Long-Eared Bat (2018)   | NRB Manager                        | Meetings, emails, annual review | Annually or as needed    |
| ITAM  | Summary of ITAM Needs (2017)   | ITAM Manager                       | Meetings, emails, annual review | Annually or as needed    |
| ITAM  | West Point Military Reservation 2018 Workplan Summary Report   | ITAM Manager                       | Meetings, emails, annual review | Annually or as needed    |
| DPW Master Planning   | Final West Point Installation Planning Standards (2017)  | Master Planning Division Chief     | Meetings, emails, annual review | Annually or as needed    |
| Notes: DPW = Directorate of Public Works<br>ESMP = Endangered Species Management Plan<br>ITAM = Integrated Training Area Management<br>NRB = Natural Resources Branch<br>USAG WP = United States Army Garrison West Point |  |                                    |                                 |                          |



### 3.3.2 Internal Coordinating Offices

Internal coordinating offices for USAG WP that relate to management of resources in this INRMP are noted below in Table 3-4.

**Table 3-4. Internal Contacts at United States Army Garrison West Point**

| Organization and Title  | Frequency of Contact |            |         |        |
|---|----------------------|------------|---------|--------|
|   | Yearly               | 3-6 Months | Monthly | Weekly |
| USAG WP, Natural Resources Branch Chief   |                      |            |         | X      |
| USAG WP, Installation Forester  |                      |            |         | X      |
| USAG WP, NEPA Coordinator   |                      |            |         | X      |
| USAG WP, Cultural Resource Manager  |                      |            | X       |        |
| USAG WP, Operations and Maintenance Chief   |                      |            | X       |        |
| USAG WP, Grounds Maintenance Chief  |                      |            |         | X      |
| USAG WP, ITAM   |                      |            | X       |        |
| USAG WP, Range Control  |                      |            |         | X      |
| USAG WP, DPW Director   | X                    |            |         |        |
| USAG WP, Deputy DPW Director  | X                    |            |         |        |
| USAG WP, DPW, Chief of Engineering  |                      |            |         | X      |
| USAG WP, Outdoor Recreation Director  |                      |            | X       |        |
| USAG WP, DPTMS  | X                    |            |         |        |
| USAG West Point Master Planning   |                      |            | X       |        |
| USAG WP, Garrison Commander   | X                    |            |         |        |
| USAG WP, Deputy Garrison Commander  | X                    |            |         |        |
| USAG WP, DMI  |                      | X          |         |        |
| USAG WP, Fire Department  |                      |            | X       |        |
| USAG WP, Public Affairs   |                      | X          |         |        |
| IMCOM   |                      |            | X       |        |
| USFWS   |                      |            | X       |        |
| NYSDEC, Wildlife Biologist  |                      |            | X       |        |
| NYSDEC, Region III, Regional Director   | X                    |            |         |        |
| Black Rock Forest Consortium, Executive Director  |                      | X          |         |        |
| NOAA Fisheries, Section 7 Shortnose Sturgeon Fish Biologist   |                      | X          |         |        |
| Integrated Statistics, Inc., (NOAA Affiliate), Environmental Specialist   |                      | X          |         |        |
| Palisades Interstate Parks Commission, Science Director   |                      | X          |         |        |
| Notes: DMI = Department of Military Instruction<br>DPTMS = Directorate of Plans, Training, Mobilization, and Security<br>DPW = Directorate of Public Works<br>IMCOM = Installation Management Command<br>ITAM = Integrated Training Area Management<br>NEPA = National Environmental Policy Act<br>NOAA = National Oceanic and Atmospheric Administration<br>NYSDEC = New York State Department of Environment Conservation<br>USAG WP = United States Army Garrison West Point<br>USFWS = U.S. Fish and Wildlife Service |                      |            |         |        |

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## 4. PROGRAM ELEMENTS

Program elements provide the categories of natural resources and the actions needed to meet the goals and objectives for the management of these resources in accordance with DoD policies. Specific management objectives and strategies have been identified in a number of subject areas that affect the natural resources present on and immediately adjacent to the USAG WP. This chapter outlines the general extent and conditions of natural resources found at USAG WP and lists the goals and objectives for future natural resources management. The goals are the primary focal point for implementation of the INRMP. A goal should reflect the values of the installation by expressing a vision of the desired condition for the installation's natural resources in the foreseeable future. Each goal is supported by one or more objectives. An objective indicates a management initiative or strategy that will be used to achieve the stated goal. Projects or tasks are the individual component actions required to achieve an objective. Project statements describe the specific methods and procedures that will be used to achieve the objective supported.



Bull Pond Recreation Area.

The first INRMP for USAG WP was developed in 1995, and the document was revised in 2003, and 2011. This 2018 INRMP Revision represents the fourth iteration of the INRMP document for USAG WP. Management objectives established in this INRMP were initially developed during a thorough evaluation of the natural resources present at USAG WP. In accordance with AR 200-1 and the principles of adaptive ecosystem management, subject areas were identified and management alternatives developed by an interdisciplinary team of ecologists, biologists, geologists, planners, and environmental scientists. The revision of this INRMP involved a complete

review of the original subject areas and management alternatives accomplished during time since the last INRMP revision. This revised section presents the preferred management alternatives based on the professional opinions of USAG WP NRB staff, USFWS, and the NYSDEC.

Priorities communicated through the USAG WP upper command and training site staff as they relate to the overall military mission were also taken into consideration. Through these evaluations, the original natural resources planning and management goals have been reevaluated to ensure they represent the most current theories on adaptive ecosystem-based planning. Selection of these management goals has been tempered with the fact that the operational mission at USAG WP takes primacy over natural resources management. However, through the multiple-use adaptive paradigms used, sound ecological management on the installation should supplement the operational effectiveness and safety of the military missions. Ecosystem management provides a means for the Army to conserve biodiversity and to provide high-quality military readiness. The INRMP is a mechanism through which the USAG WP can maintain sustainable land use through ecosystem management.

The specific “management issues” identified in the previous INRMPs have been reviewed and updated in this revision. These management issues related to a number of subject areas that affect the natural resources present on and immediately adjacent to each installation. The purpose of this section is to identify actions and objectives for each installation to obtain workable and useful solutions for each management issue identified. The implementation of these goals is discussed in Chapter 5, *Implementation*. Some of the projects described in this section will be accomplished through interactive partnerships with federal, state, and local organizations. NRB staff will initiate partnerships based on the benefits to the regional ecosystem and the local environment.

#### 4.1 NATURAL RESOURCES MANAGEMENT

Natural Resources Management through the implementation of the USAG WP INRMP Program helps ensure the implementation of year-round, cost-effective management activities and projects that meet the requirements of the installation and natural resources regulations. Natural resources management is crucial to the mission.

**Program Data Management:** Natural Resources Management is addressed primarily through the implementation of this INRMP, and through resources-specific plans, such as the Integrated Pest Management Plan and Endangered Species Management Plan. Natural resources management is also integrated into management activities associated with the Integrated Training Area Management (ITAM) program; as such, the goals in this INRMP for more general natural resources management are coordinated with the goals and objectives of the ITAM program. Program data management resources applicable to Natural Resources Management are outlined in Appendix C, Table C-1, *Program Data Management*.

**Supplemental References:** No specific or supplemental plans provide methods for the ITAM program and general natural resources management. Management objectives for natural resources are as described in the Program Elements. Supplemental resources applicable to Natural Resources Management are outlined in Appendix C, Table C-2, *Supplemental References*.

**Program History:** The lands at USAG WP have been subject to natural resources surveys and management actions for over 100 years. Edgar A. Mearns, an Assistant Surgeon for the U.S. Army who was stationed at West Point from 1872 to 1884, was a noted naturalist who made many forays throughout the Hudson Highlands documenting the flora and fauna. A report of his findings in the Bulletin of the American Museum of Natural History provides a historical perspective on the rich biodiversity present on USAG WP and in the Hudson Highlands in general (Mearns 1898). The first Forest Management Plan (FMP) for USAG WP was written in 1905 upon the recommendation of Gifford Pinchot, head of what was then the federal Bureau of Forestry. The West Point Cadet Fishing Club has been active since at least the 1940s, stocking trout in West Point’s lakes and streams. The Club often solicited management assistance from USFWS through the 1940s and 1950s. USAG WP hired its first full-time natural resources manager in 1958 and NRB staff have been present since that time.

**Current Condition:** Natural Resources Management at USAG WP is undertaken by a dedicated NRB manager, who coordinates with other installation offices to ensure protection of

natural resources in the operation of USAG WP. Natural resources staff coordinate with installation organizations to ensure there is an understanding of management goals and actions developed in the INRMP and to ensure that management actions developed in the INRMP are consistent with current management instructions and plans.

**Program Goals, Objectives, and Projects:** The goals, projects, and objectives for Natural Resources Management are outlined in Table 6-1, *United States Army Garrison West Point Goals and Implementation Plan*, in Chapter 6.

**Program Management Units:** Program management for natural resources is dependent on the resources being managed. The appropriate units for the planning and implementation of the natural resources management goals, projects, and objectives would be those used for the implementation of the ITAM program. Landing zones, the forward arming and refueling point, bivouac areas, maneuver trails, specialty courses, and mortar firing point/observation point are examples of management units for the ITAM program

## 4.2 GEOSPATIAL INFORMATION SYSTEMS

Geospatial Information Systems (GIS) are used at USAG WP to manage and catalog information acquired in natural resources management. The 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, as well as potential areas to avoid during training activities. Managers can implement the capabilities of a GIS to watershed, wetlands, wildlife, threatened species, and various other natural resources management applications. GIS data were utilized in the INRMP to analyze current land use situations and evaluate options for future management practices.

**Program Data Management:** GIS data have been collected for natural resources, cultural resources, and for other operational purposes. All GIS data are maintained and collected using ESRI ArcGIS. Program data management resources applicable to GIS are outlined in Appendix C, Table C-1, *Program Data Management*.

**Supplemental References:** No additional supplemental references have been developed at USAG WP for the management of GIS data. Data are maintained to meet Spatial Data Standards for Facilities, Infrastructure, and Environment (SDSFIE). Supplemental resources applicable to Natural Resources Management are outlined in Appendix C, Table C-2, *Supplemental References*.

**Program History:** GIS data were previously managed using an enterprise system that was maintained by a contractor. A centralized enterprise system allowed for efficient management of data and coordination between offices and divisions at USAG WP. This centralized system helped to ensure that GIS data were consistent and up to date.

**Current Condition:** GIS data are routinely collected at USAG WP for natural resources, cultural resources, and other management objectives. Due to mandated changes in the enterprise system at USAG WP, GIS data are currently not maintained in a centralized network server. Data are maintained by a contractor. Because data are no longer kept in a centralized system,

discrepancies are present. One goal of this INRMP is to provide a schedule for updating and confirming natural resources GIS data on a regular schedule.

**Program Goals, Objectives, and Projects:** The goals, projects, and objectives for GIS are outlined in Table 6-1, *United States Army Garrison West Point Goals and Implementation Plan*, in Chapter 6.

**Program Management Units:** GIS is managed in the appropriate units for the resources being considered, but all GIS data are kept using ArcGIS and in accordance with all standards for SDSFIE.

### 4.3 CONSERVATION LAW ENFORCEMENT

DoDI 5525.17, Conservation Law Enforcement Program, ensures that installations remain in compliance with appropriate environmental, natural, and cultural resources laws and regulations. Conservation law enforcement also includes regulating hunting and fishing programs on the installation. In New York, NYSDEC is responsible for enforcing fishing and hunting regulations. USAG WP will, at a minimum, follow NYS game laws, seasons, and bag limits. USAG WP may implement additional harvest restrictions to protect fish and game resources as determined by an analysis of local conditions. However, any installation-imposed alteration to the State game laws shall not be less restrictive than those imposed by the State. The USAG WP works with NYSDEC and local authorities to enforce conservation laws. DoDI 5525.17 states that with an INRMP, the Conservation Law Enforcement section will provide specific goals and objectives to ensure compliance with laws and regulations to support the overarching goals of the INRMP (DoDI 5525.17 2(b)). There are a number of federal statutes and directives addressing specific requirements pertaining to natural resources. A comprehensive list of these regulations can be found in Appendix C.

Effective enforcement of laws and regulations applicable to natural resources contributes to the protection of those resources, promotes public safety, and ensures an equitable opportunity for participation in outdoor recreational activities, such as hunting and fishing.

**Program Data Management:** USAG WP collects data on hunting and fishing activities to ensure that take limits are in accordance with practices to conserve natural resources at USAG WP. Surveys and studies help the Directorate of Public Works (DPW) Environmental Management Division (EMD) determine fish and game harvest quotas, size limits, bag limits, and season lengths using the best available science. These data can be used to inform future management and quotas. Data on hunting, trapping, and fishing activities are collected at USAG WP using the hunting and fishing online permitting and registration system and website, and through the use of a deer check station. Program data management resources applicable to Conservation Law Enforcement are outlined in Appendix C, Table C-1, *Program Data Management*.

**Supplemental References:** Methods for conservation law enforcement at USAG WP are managed under USMA Regulations 215-5 (Appendix B1). Monitoring methods for the program, including the survey of quotas and harvests, is overseen by NRB. Supplemental resources

applicable to Conservation Law Enforcement are outlined in Appendix C, Table C-2, *Supplemental References*.

**Program History:** Prior to the Conservation Law Enforcement Program (CLEP), the Director, Morale, Welfare and Recreation (MWR); the Provost Marshal's Office (PMO); and Range Control had some responsibility for enforcement activities, which were carried out by trained Military Police. The Director, MWR maintained records of written warnings, suspensions, or revocations; the PMO provided an officer designated for this duty full time, and other officers were rotated in during times of increased need, such as during deer hunting season. As is currently the practice, Range Control maintains absolute control of access to all Training Areas, ranges, and danger areas no matter what the hunting, fishing, or trapping activity.

**Current Condition:** The PMO has overall responsibility for security and law enforcement on the installation, and oversees the CLEP in accordance with DoDI 5525.17, *Conservation Law Enforcement Program*. Conservation Law Enforcement Officers (CLEOs) are responsible for enforcing the use of natural resources in accordance with USMA Regulation 215-5, NYS regulations as set by the NYSDEC and outlined in USMA 215-5, and the actions outlined in this INRMP. Procedures for enforcing hunting, fishing, and trapping laws and regulations are provided in USMA Regulation 215-5. The 2011 and 2017 draft version of USMA Regulation 215-5 are provided in Appendix B1. The DPW EMD; the Directorate of Emergency Services/Police Chief (Chief CLEO); the Directorate of Plans, Training, Mobilization, and Security (DPTMS); and the Garrison Safety Office have some responsibility for implementing the CLEP at USAG WP.

Enforcement procedures at USAG WP can involve the issuance of warnings and citations, or suspension or revocation based on the offense (a list of offenses and their actions is provided in USMA 215-5). Written warnings may be issued for relatively minor infractions such as failure to sign-in from a hunting area or failure to display USMA backtag or parking permit. Violators of USMA Reg. 215-5 and/or federal fish and wildlife laws are issued citations from the CLEOs and administrative action is taken by the Deputy Garrison Commander.

Violators of state fish and wildlife laws are referred to the local NYS Environmental Conservation Officer. Enforcement actions are also taken by USMA against violators of state laws if the violation occurs in an area of the reservation under exclusive or concurrent federal jurisdiction. Violators receiving suspensions or revocations will be notified by letter from the Deputy Garrison Commander. Failure to comply with a suspension may subject the violator to further actions including barring civilians from access to the installation.

**Program Goals, Objectives, and Projects:** The goals, projects, and objectives for Conservation Law Enforcement are outlined in Table 6-1, *United States Army Garrison West Point Goals and Implementation Plan*, in Chapter 6.

**Program Management Units:** Conservation Law Enforcement is managed at USAG WP using the West Point Hunting Map, which is available to recreational users on the USAG WP hunting and fishing online permitting and registration system and website (currently iSportsman). The installation is divided into units to facilitate an easy understanding of hunting, fishing, and trapping regulations and enforcement.

#### 4.4 CLIMATE CHANGE

Resources management and the adaptation for climate change is directed in accordance with DoDD 4215.21, *Climate Change Adaptation and Resilience*, released in 2016. This directive establishes policies to provide resources to assess and manage the risk of climate change at DoD installations. In 2014, DoD released a Climate Change Adaptation Roadmap (DoD 2014), which provides a pathway for installations to meet objectives related to the assessment of climate change impacts and the adoption of climate change considerations in management and operations. DoDM 4715.03 also stresses the importance of adopting an adaptive management approach to natural resources management to help ensure the resilience of the ecological systems at military installations. Potential effects of climate change that may occur at USAG WP are outlined on Table 4-1.

**Table 4-1. Climate Change Potential Effects**

| Threat   | Natural Resources Affected   | INRMP Management Reference  |
|--|--|---|
| Increased wildfire potential   | Vegetation, game and non-game species, listed species,   | Implementation of measures in the Integrated Wildland Fire Management Plan, including the potential use of prescribed burns   |
| Storm severity and flooding  | Recreation, grounds maintenance, wetlands and floodplains, fisheries management, soils, vegetation | Wetland and floodplain protection and buffers, raingardens and storm water management, vegetation management, timber stand improvements and grounds maintenance of hazard trees, erosion and sedimentation control measures, facility design that incorporates risk of increased flooding |
| Increase in invasive species (changes in temperature, precipitation, and atmospheric carbon dioxide) | Listed species, vegetation, game and non-game wildlife, wetlands                                   | Active monitoring of invasive introductions and quick management measures   |
| Changes in seasonality   | Listed species, game and non-game wildlife, recreation, vegetation                                 | Measures to support pollinators and listed species populations, incorporation of more heat and drought tolerant plant species in landscaping plans  |

Adaptive management gives USAG WP and, specifically, the Natural Resources Manager, the ability to react to challenges posed by climate change and to incorporate new management techniques while ensuring the future goals and long-term ecosystem vitality are achieved at the installations. Climate change has the potential to alter species phenology and distribution, fire regimes, and hydrology, and also increase habitat fragmentation, pollution, and the abundance of invasive species. Climate change and associated storm and weather events outside a normal range of variation have the potential to impact species and other natural resources. The 2015 New York State Wildlife Action Plan noted that climate change was cited 420 times as a threat to species of greatest conservation need in NYS (NYSDEC 2015). Threats from climate change included increased storm, habitat shifts, increased drought, and increased temperature extremes. Vulnerability assessments were completed for New York to examine at-risk species, the vulnerability of key habitats, and management strategies in the face of climate change (NYSDEC 2015).

As part of efforts to plan for the potential effects of climate changes, USAG WP has begun to consider potential effects in future planning and natural resources management. USAG WP has



instituted a program to identify areas of the installation that are at risk for flooding, and mitigates for potential impacts through engineering upgrades and relocation of uses to less flood-prone areas. This is done to aid in avoiding structural damage and ecological harm caused by flooding events. For example, recently built or renovated shoreline assets at USAG WP, including the Target Hill Wastewater Treatment Plant, athletic fields have been built to withstand increased flooding. Areas identified as having high potential effects for increased flooding are also not being considered for the construction of new buildings. USAG WP is also incorporating plant species that require less care and water as a consideration in landscaping designs. These lists have been developed to include species with higher tolerance for heat and drought, with less need for horticultural care.

#### **4.5 SOILS, EROSION, AND SEDIMENTATION**

Soils on USAG WP were formed from glacial till and alluvium derived from glacially transported sediment and locally occurring crystalline bedrock (Olsson 1981) (Figure 4-1). These soils are characterized as shallow (zero to 24 in.), stony, and boulder-strewn and are less than 6 ft deep (Engineer Intelligence Study 1958; Olsson 1981; USMA 1989; USMA 1994b). Peat deposits range in thickness from 2 to 19 ft. The soils on hilltops and hillsides are well drained and contain only shallow soils with frequent outcrops (Olsson 1981). According to the Orange County Soil Survey, 43 soil mapping units occur on USAG WP grounds. A table of these soils is included in Appendix D.

In general, soil fertility at USAG WP is low, with exposed bedrock on summits and steep slopes. The Hollis-Rock Outcrop Association is the dominant soil on West Point (Olsson 1981). Soils in this association are steeply sloping, excessively drained and well-drained, medium-textured soils overlying crystalline bedrock, on mountainous uplands. The Soil Survey of Orange County, New York, describes the soils of the Hollis-Rock Outcrop Map Unit as “mostly forested, good habitat for wildlife and unsuited to farming or community development. The soils are shallow and are well drained to excessively drained. The rate of water movement is moderate or moderately rapid.” Because of the high amount of vertical relief on much of the reservation, the potential for soil erosion, especially from rapidly moving waters in some areas, is a concern (Coleman 1995).

The soil survey for Orange County also indicates that there is a moderate to severe potential for erosion for over half of the soil mapping units that occur on USAG WP. Because of a high degree of topographic variation within soil mapping units, there is considerable variation in erosion potential among locations within units. Most problems associated with soil erosion on USAG WP result from ground disturbance and the removal of vegetation on moderate to severe slopes or on long gradual slopes.

**Program Data Management:** Soils at USAG WP were mapped using the U.S. Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS) soil data mapper. Previous soil surveys have also been completed at USAG WP. Soil erosion is monitored regularly at USAG WP. Program data management resources applicable to Soils, Erosion, and Sedimentation are outlined in Appendix C, Table C-1, *Program Data Management*.

**Supplemental References:** Several management plans for USAG WP include measures to prevent soils erosion and sedimentation. These include plans that oversee training area management, the management of roads and grounds, and other activities where earth-moving may occur. Regulatory guidance for best management practices (BMPs) from NYSDEC also provide guidance on soils. Supplemental resources applicable to Soils, Erosion, and Sedimentation are outlined in Appendix C, Table C-2, *Supplemental References*.

**Program History:** Past management activities at USAG WP have sought to reduce erosion and sedimentation and to restore areas where soil erosion had occurred as a result of training and other mission activities. Past activities completed under the ITAM Work Plan to address erosion have included diverting water away from helicopter landing areas where it may cause sedimentation, reconfiguring water crossings, fixing ruts and revegetating denuded areas, and improving trails. In addition, USAG WP has been implementing BMPs and sediment and erosion controls in areas where exposure of soils is unavoidable.

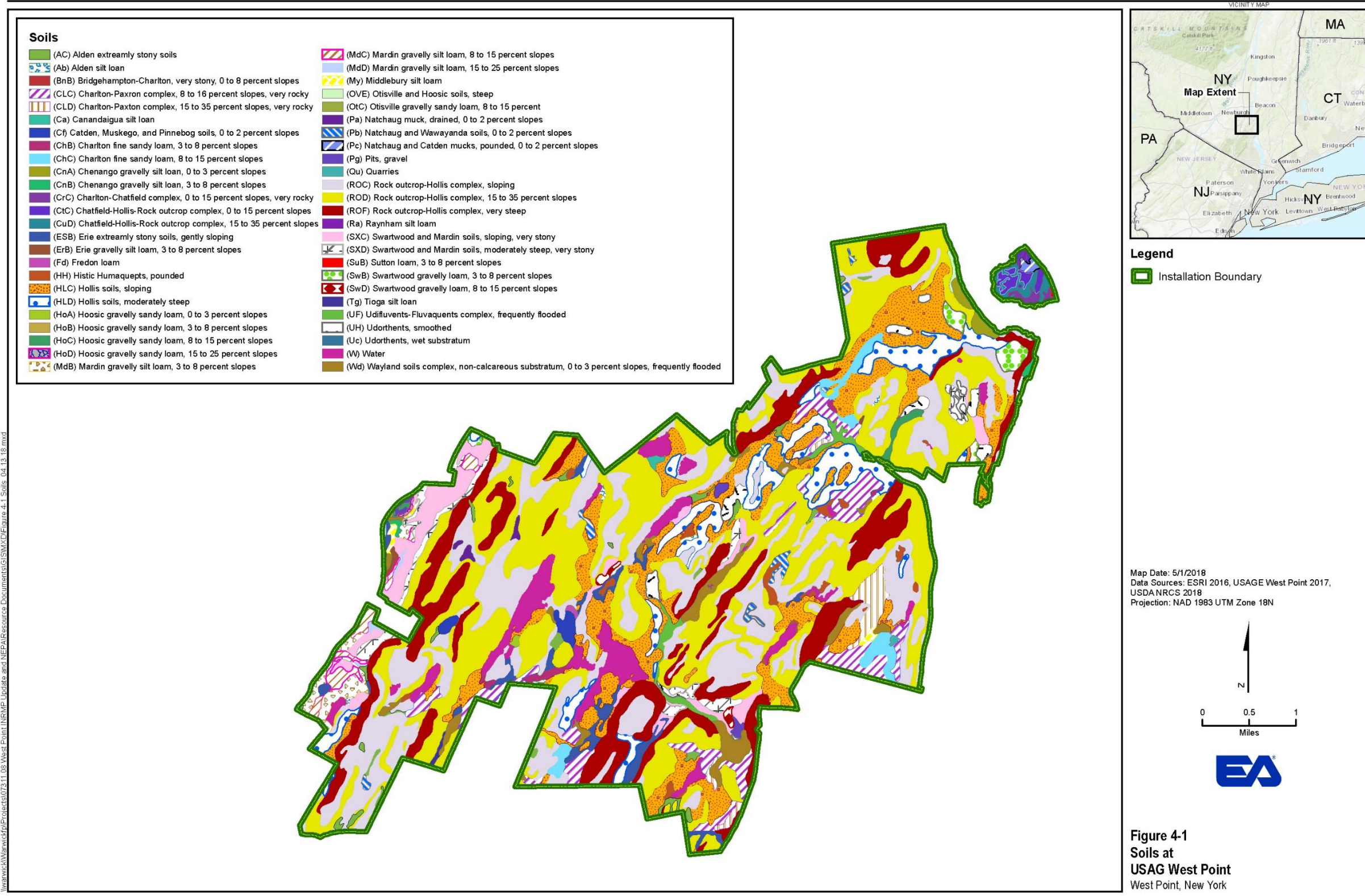
**Current Conditions:** Soil erosion at USAG WP would be expected to be low; however, it is a problem in localized areas that are heavily used throughout the year, or where land disturbance has occurred (Coleman 1995). Soil erosion problems on USAG WP have resulted in difficulties in accessing training areas at various locations due to road washouts and erosion from rain and snowmelt. Maneuver exercises consist primarily of light infantry foot traffic. These exercises typically have much less of an impact on the magnitude of soil erosion than the use of tracked vehicles, which are not used at USAG WP. However, areas that are used repeatedly for training activities show an increase in the amount of ground cover damage and soil erosion. The majority of the current or planned projects detailed in the Annual ITAM Work Plan and in the goals, objectives, and projects for this INRMP are designed to address problems resulting from erosion due to land disturbance. Because of the potential for erosion of disturbed areas on USAG WP, it is necessary that a comprehensive soil resources management approach be followed. The current policy of addressing problem erosion areas as they occur through the Land Rehabilitation and Maintenance (LRAM) program will be continued. In addition, a management approach designed to avoid the disturbance of potential problem erosion areas will be developed, when possible, in a manner consistent with mission objectives.

USAG WP has an active stormwater management program in place to continuously manage erosion. USAG WP strictly adheres to stormwater management regulations for both pre-and post-construction through the DPW Environmental Compliance Branch. Prior to construction, construction sites are evaluated for the need for a Stormwater Pollution Prevention Plan (SWPPP), mitigations are proposed and reviewed, and implementation is monitored and enforced. Upon completion of construction of a project, USAG WP implements water diversion practices to prevent waterway erosion, and stream courses are managed to prevent excessive erosion.

**Program Goals, Objectives, and Projects:** The goals, projects, and objectives for Soils, Erosion, and Sedimentation are outlined in Table 6-1, *United States Army Garrison West Point Goals and Implementation Plan*, in Chapter 6.

**Program Management Units:** Soils are managed in accordance with the procedures outlined by the ITAM program. Erosion issues are addressed in specified areas where needed, but

Figure 4-1. Soils at USAG WP



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erosion and sediment control measures are implemented on the scale of a project area when impacts are occurring.

## 4.6 GEOLOGY

USAG WP lies in the Hudson Highlands, a low, rugged mountain range. The Hudson Highlands are a hill formation that begins in Reading, Pennsylvania, and run northeasterly through New Jersey and New York to Connecticut and Massachusetts. They form a zone of folded and faulted metamorphic and igneous rocks subjected to extensive weathering and erosion (Figure 4-2). The Hudson Highlands belong to the Reading Prong, a 160-mile-long, 25-mile-wide southwest-trending salient of the New England Upland (Curran and Justis 1974). This province is characterized by glacially dissected peneplains and low mountains underlain by a complex sequence of igneous and metamorphic rocks (Curran and Justis 1970).

The geology of USAG WP has been influenced by thrust faulting, folding, dike injection, jointing, uplift, and erosion that have occurred throughout geologic time. Surficial geologic formations on the installation predominantly consist of glacial till and areas of exposed or nearly exposed bedrock. Linear deposits of outwash sand and gravel, and more localized kame deposits are more apparent in the western most areas of the installation (Cadwell 1989). During glacier retreat, features were formed along the valley walls. The most prominent features were the kame terraces. In all but the flat, marshy areas, bedrock can be observed (Hamilton et al. 1980). Precambrian-age granite, diorite, gneiss, and schist compose the majority of the crystalline bedrock underlying USAG WP (USMA 1996). A thin veneer layer of Pleistocene-age glacial deposits, both stratified and unstratified, overlies the igneous and metamorphic bedrock sequence and is found along the Hudson River (USMA 1996).

Faults mapped at the surface near and within the habitation area at the USMA include the Long Pond, the Crown Ridge and the Highland Brook faults. The habitation area includes most of the developed areas of USMA. The Long Pond fault trends northeast-southwest along the northwestern boundary of the habitation area and the Storm King Highway (New York Route 218). The Crown Ridge fault also trends northeast-southwest and extends through Lusk Reservoir. The Highland Brook fault trends northwest-southeast along Route 9W and the Storm King Highway between the Long Pond and Crown Ridge faults (Tetra Tech 2011). The largest earthquakes that caused strong ground shaking in southeastern New York include four earthquakes that occurred in 1737, 1783, 1884, and in 1895. Other significant earthquakes that were felt at West Point include the 1944 Messina, New York, earthquake and the 1985 Westchester, New York, earthquake. No reports of damage at the USMA as a result of any historic earthquake has been identified (Tetra Tech 2011).

**Program Data Management:** Soils at USAG WP were mapped using the USDA NRCS soil data mapper. Previous soil surveys have also been completed at USAG WP. Soil erosion is monitored regularly at USAG WP. Program data management resources applicable to Geology are outlined in Appendix C, Table C-1, *Program Data Management*.

**Supplemental References:** There are no supplemental resources for the management of geologic resources. Soil management activities would be anticipated to minimize impacts on geologic resources.

**Program History:** The USAG WP grounds have a history of mining activities that would have impacted the geology of the installation. Local magnetite deposits, in the form of metasomatic deposits found along the borders of some of the granitic intrusions that occur on and around USAG WP, supported an iron ore mining industry in the 1700s. The Forest of Dean Mine, which was located where Stilwell Lake now stands, was one of the richest and most important iron ore mines in colonial New York (Ransom 1966). Several smaller iron ore mines were also located on USAG WP. Two iron ore furnaces also operated on USAG WP during the mid to late 1700s. The Forest of Dean Furnace operated from 1770 to 1777, and the Queensboro Furnace operated from 1783 to 1800. Remnants of the Queensboro Furnace are still visible near Camp Shea in the southeastern part of USAG WP. Furnace operations required large amounts of charcoal to melt iron ore, and large areas of surrounding forests were cut heavily to support furnace operations (USMA 1994a). During the Revolutionary War and into the 1800s iron ore mining continued on USAG WP. By 1800 the furnaces and smaller mines on the installation had shut down. The Forest of Dean Mine continued to operate and was not shut down until 1931 (USMA 1994a).

**Current Conditions:** Activities that occur at USAG WP are unlikely to impact geologic resources; as such, there is not active management of these resources. Because USAG WP is within a fault area and has experienced past earthquakes, seismic retrofitting is required when repairs or alterations of a building reaches 50 percent of the building value. These measures help to ensure seismic stability of buildings on the installation. However, activities that protect soils resources, including those outlined above in the *Soils* program element, would minimize any potential impacts to geology.

**Program Goals, Objectives, and Projects:** Because management of geologic resources is not actively undertaken at USAG WP, no goals, objectives, or projects for geology are included in this INRMP.

**Program Management Units:** Geologic resources are not actively managed at USAG WP.

## **4.7 WATER RESOURCES**

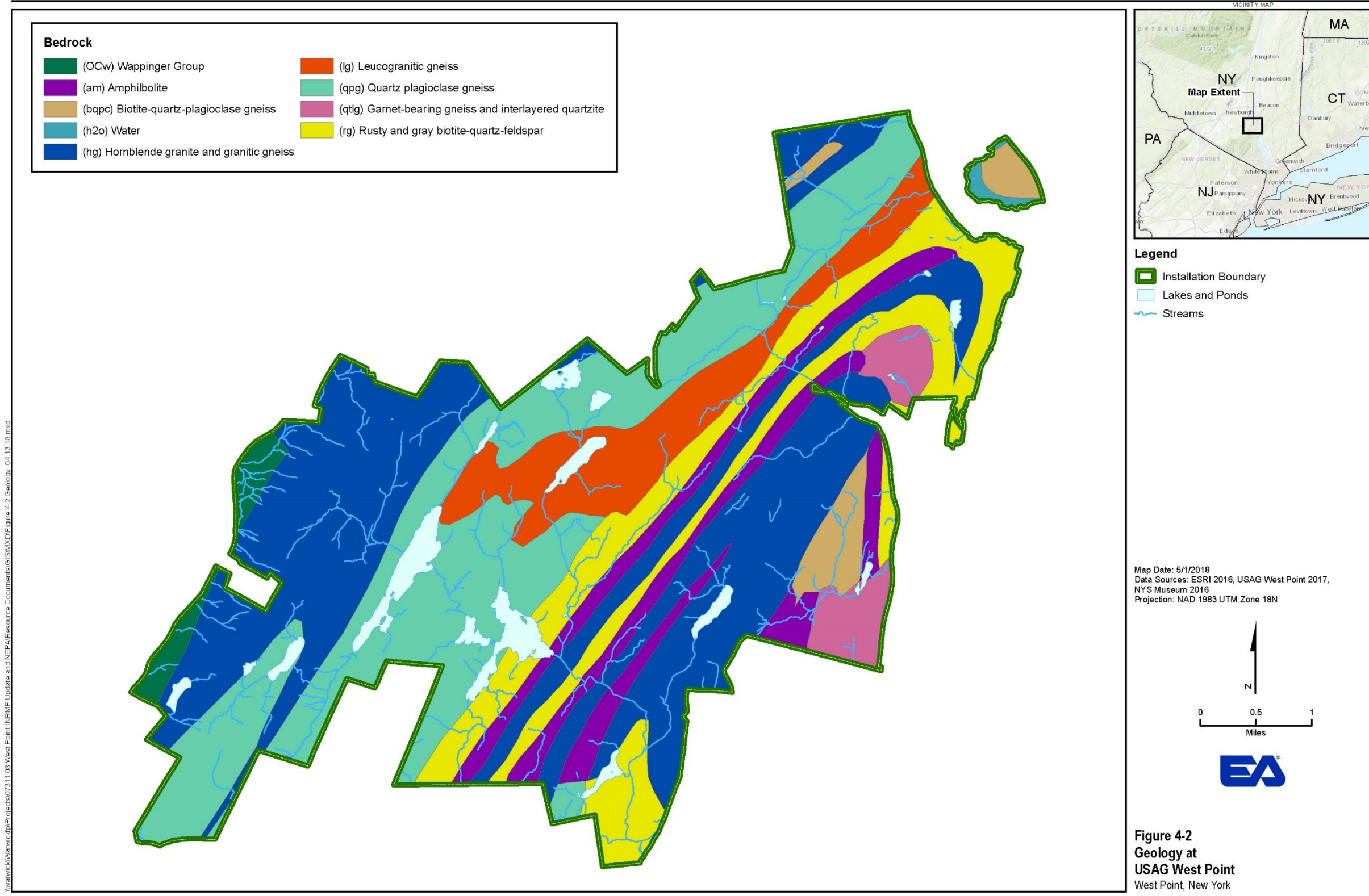
The major uses of USMA's water resources are potable water supply, recreation, training, and aquatic habitat. The water resources of USAG WP can be divided into four main categories: groundwater, surface water, wetlands, and vernal pools. Each has its own physical and chemical components, which in turn regulate the aquatic flora and fauna that comprise the biological communities.

### **4.7.1 General Water Conservation**

All watercourses and waterbodies at USAG WP are protected resources with jurisdiction shared between the NYSDEC and the USACE. State and federal clean water protection regulations require a permit prior to disturbance of the waters, stream bed, and banks. USAG WP seeks permits for individual projects which may disturb these waters. For routine maintenance and repair of specific culverts, crossings, and structures, the USAG WP received a permit from NYSDEC authorizing these activities.



Figure 4-2. Geology at USAG WP



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Lake Frederick.

Treated wastewater from the Target Hill WWTP discharges to the Hudson River under permit, and all stormwater runoff from the cantonment flows directly or indirectly to the Hudson. The ecological and human health importance of maintaining healthy waterbodies at USAG WP is reinforced by several federal and state laws/regulations. In addition, AR 200-1 promotes the importance of maintaining healthy waterbody systems on the installation. Mine Lake has a direct outfall from the wastewater treatment plant at the motor pool. The Buckner WWTP discharges to Popolopen Brook at the border of USAG WP in Camp Shea.

Waters at USAG WP provide habitat, drinking water, and training and recreational opportunities. The Popolopen Brook watershed provides most of the useable water for the cantonment area while the Highland Brook watershed provides the water supply for the town of Highland Falls and Woodbury. Training activities at USAG WP include amphibious training and scuba diving; these activities are conducted in the waters of USAG WP. In addition, waters at USAG WP are used for recreation, including fishing, boating, and swimming.

**Program Data Management:** As part of managing water resources at USAG WP, GIS data and water quality data are periodically collected. Water quality data are provided in Appendix E. Program data management resources applicable to General Water Conservation are outlined in Appendix C, Table C-1, *Program Data Management*.

**Supplemental References:** Although there are not specific management guidelines for water resources at USAG WP, management practices to protect water resources are included in most installation management plans. In addition, several state regulations for water resources apply at USAG WP. Supplemental resources applicable to General Water Conservation are outlined in Appendix C, Table C-2, *Supplemental References*.

**Program History:** In previous INRMPs, development of a comprehensive water quality sampling/monitoring program was considered to be the most important management approach for the water resources at USAG WP. Water quality data do not indicate the existence of any water quality problems, and USAG WP is in compliance with all applicable laws and regulations regarding water quality. In addition, water quality problems would not be expected for several reasons—the waterbodies are located in forested ecosystems in the upper reaches of the watersheds, where there is little human activity or disturbance to the headwaters that would result in water quality degradation. Indeed, the water quality of Lusk Reservoir, which receives its water from the Popolopen Brook watershed, and is a monitored source of drinking water, continues to be very good. Reservation wide, there is a general lack of problems with fish health, and the spawning populations of trout in Mineral Springs and Trout Brooks indicate near pristine water quality.

## **Current Conditions:**

*Groundwater:* USAG WP groundwater occurs in an unconsolidated aquifer consisting of alluvial deposits and a consolidated bedrock aquifer. Water within the unconsolidated aquifer occurs primarily in the sands and gravels of the stratified drift deposits. These deposits represent the most prolific sources of groundwater on the installation, but the deposits are thin and generally have fairly small well yields which average about 40 gpm (USMA 1984). Recharge to the aquifer is primarily from local precipitation, but hydrologic communication occurs between the alluvial and the bedrock aquifers and some upward seepage from the bedrock aquifer occurs in low-lying areas. The unconsolidated glacial till deposits on the installation exhibit poor sorting and a high clay percentage, which results in low porosity and permeability. As a result, the glacial tills typically have low well yields, averaging around 2.0 gpm. Well yields in the aquifer are generally sufficient for small demands such as domestic use (McMaster et al. 1984).

Most potable water at USAG WP is supplied by surface water sources. Thirty-two small-diameter, shallow wells supply potable water to outlying range, bivouac, and recreational facilities (Kirkpatrick, Personal Communication 2010). The wells most likely draw water from the stratified alluvial sand and gravel deposits, and the upper weathered bedrock aquifers. Well depths are generally from 25 to 40 ft and have fairly low yields of from 3.5 to 6.0 gpm (McMaster et al. 1984).

*Surface Water:* The surface water systems of USAG WP are composed of lakes, ponds, and streams scattered throughout the installation. USAG WP lies in the drainage basin of the Hudson River. Shallow soil, glacial geology, and abundant rainfall produce a regionally high water table, resulting in numerous wetlands, lakes, and ponds. Most of the lakes and ponds are the result of artificial dams that have raised water levels within former wetland areas. Twelve surface drainage systems are present on the reservation (Figure 4-3). The major surface drainage system, as well as the major source of potable water on USAG WP, is the Popolopen Brook system, which discharges into the Hudson River just upstream of the Bear Mountain Bridge. The surface drainage system on Constitution Island generally consists of simple overland flow, with the exception of one small, intermittent stream that drains a centrally located wetland, and flows into the Hudson. Surface water habitats on USAG WP include 17 ponds and small lakes covering 565.7 acres, as well as 11 stream reaches (many of which are tributaries to the Hudson River) extending approximately 35 miles. Stilwell and Popolopen lakes are the major lentic (standing water) habitats on USAG WP. Significant lotic (moving water) habitats onsite are Popolopen and Highland brooks and, bordering USAG WP to the east, is the Hudson River.

The Hudson River is an important ecological and commercial river system, and the most important waterway associated with USAG WP. Flowing approximately 304 miles from its source at Lake Tear of the Clouds in the Adirondack Mountains to its mouth in Upper New York Bay, the river system drains a watershed of approximately 13,514 square miles. The channel is relatively narrow and deep with depths ranging from 49 to 197 ft. The section of the Hudson River adjacent to USAG WP is classified Class B, as reflected in 6 New York Codes Rules and Regulations (NYCRR) Part 858.3 stream classification definitions are provided below in Appendix E, Table E1.

The Hudson River estuary is a very important habitat for many fish species. Species of management concern found in the Hudson off USAG WP are protected under the Magnuson-Stevens Fishery Resources Conservation Act of 1996; USAG WP has statutory compliance requirements.

Waterbody-specific descriptions, including physical, chemical, and biological parameters are described in detail below. The NYS Surface Water Classifications, classification and physical characteristics of West Point waterbodies are presented on Table 4-2 and 4-3 below; additional details on the characteristics and on water quality in waterbodies at USAG WP are provided in Appendix E.

**Table 4-2. Lakes and Ponds at USAG WP**

| Waterbody           | Classification | Size (Acres) | Depth (ft) |         | Est. Volume (ft <sup>3</sup> ) |
|---------------------|----------------|--------------|------------|---------|--------------------------------|
|                     |                |              | Max        | Average |                                |
| Beaver Pond         | C              | 8            | 6          | 3.5     | 1,219,680                      |
| Bull Pond           | A              | 29           | 79         | 25      | 31,581,000                     |
| Lower Cragston Lake | B              | 8            | 8          | 5       | 1,742,400                      |
| Cranberry Pond      | A              | 24           | 20         | 7       | 7,318,080                      |
| Dassori Pond        | B              | 1            | 3          | 2       | 87,120                         |
| Delafield Pond      | B              | 2            | 20         | 11      | 958,320                        |
| Lake Frederick      | B              | 19           | 25         | 12      | 9,931,680                      |
| Lake Georgina       | A              | 6            | 15         | 8       | 2,090,880                      |
| Long Pond           | A              | 41           | 21         | 8       | 14,287,680                     |
| Lusk Reservoir      | A              | 13           | 28         | -       | -                              |
| Mine Lake           | A              | 24           | 12         | 6       | 6,272,640                      |
| Popolopen Lake      | A              | 149          | 31         | 10      | 64,904,400                     |
| Round Pond          | B(t)           | 13           | 29         | 12      | 6,795,360                      |
| Stilwell Lake       | A              | 129          | 46         | 20      | 112,384,800                    |
| Weyants Pond        | A              | 31           | 9          | 6       | 8,102,160                      |
| Wilkins Pond        | A              | 40           | 9          | 6       | 10,454,400                     |

Notes: See Appendix E for a description of waterbody classifications.  
ft = feet  
Sources: Adirondack Lakes Survey Corp., 1987; USMA, 1984; USMA, 1994a; Linck, 1994.

Streams at USAG WP generally have good water quality and have been assessed by NRB staff using both a weighted biotic index and an Ephemeroptera, Plecoptera and Trichoptera (EPT) index. A biotic index provides a standardized way to assess a stream's condition based on the macroinvertebrate species present and their tolerance to pollution. Biotic Indicator values presented on Table 4-3 below were weighted to adjust for certain species. The EPT index is another standardized way to compare streams by assessing three orders of benthic macroinvertebrate insects that can be easily identifiable and sorted. Trout Brook is considered a NYS regional reference stream and provides a benchmark to compare other streams. Streams with an EPT index value greater than 405 can be considered in good or pristine conditions, while those with lower scores may become impaired.

**Table 4-3. Streams at USAG WP**

| Waterbody  | Classification | Length (miles) | Weighted Biotic Indicator | EPT     |
|--|----------------|----------------|---------------------------|---------|
| Bayonet Course Brook   | A              | 1.2            | -                         | -       |
| Bear Swamp Outflow   | A              | 0.7            | -                         | -       |
| Brooks Hollow Brook  | A              | 0.37           | 3                         | 124     |
| Bull Pond Outlet   | A              | 0.51           | 0                         | 0       |
| Cascade Brook  | A(t)           | 0.76           | 0                         | 0       |
| Cat Hollow Brook   | A              | 1              | 6                         | 565     |
| Cragston Creek   | C              | 1.61           | 3-5                       | 48-419  |
| Cranberry Brook  | A              | 1.43           | -                         | -       |
| Crown Brook  | C(t)           | 1.01           | 0                         | 100     |
| Crow's Nest Brook  | C              | 1.62           | 1-3                       | 145-544 |
| Deep Hollow Brook  | A              | 1.07           | 2                         | 103     |
| Delafield Pond Outlet  | U              | 0.16           | 2                         | 32      |
| Hemlock Brook  | A              | 2.98           | 0                         | 0       |
| Highland Brook   | A(t), B(t)     | 2.68           | 3-5                       | 140-516 |
| Johnston Meadow Brook  | A              | 1.22           | 3                         | 66      |
| Kingsley Farm Brook  | B              | 0.58           | 4-5                       | 454-744 |
| Lake Georgina Outflow  | A              | 0.4            | -                         | -       |
| Long Pond Brook  | A              | 1.21           | -                         | -       |
| Mineral Springs Brook  | C(t)           | 1.4            | 1                         | 27      |
| Popolopen Brook  | A(t), C(t)     | 2.89           | 2-3                       | 38-1227 |
| Queensboro Brook   | A(t)           | 1.03           | 3                         | 63      |
| Sinclair Pond Brook  | C              | 2              | 2                         | 18-371  |
| Stony Lonesome Brook   | A(t)           | 1.05           | 3                         | 224     |
| Trout Brook  | C              | 0.83           | 5                         | 405     |
| Wilkins Hollow Brook   | A              | 1.01           | 6                         | 212     |
| Notes:<br>EPT = Ephemeroptera, Plecoptera and Trichoptera<br>For a description of the NYS Stream classifications, please see Appendix E. |                |                |                           |         |

General current guidelines for maintaining and managing water resources at USAG WP are provided below.

*Maintaining a Forested Watershed:* Maintaining a predominantly forested watershed will reduce the quantity of nonpoint source pollutants transported to surface waterbodies. There are no plans for deforestation at USAG WP other than the creation of scattered small upland openings coincident with selective timber harvest and reversion of some sections of Areas R and L back to old field habitat by removal of saplings and brush.

*Maintaining Riparian Buffers:* Vegetated riparian buffers serve many important functions in protecting water resources. The primary management measure for riparian buffer areas are as follows:

- Review projects for potential impacts to waters. Seek to avoid impacts prior to design. Mitigate unavoidable impacts.



- Maintain 100-ft vegetative buffers with a sufficient diversity of canopy, ground, and shrub species around all waterbodies where practical.

Control Pollutant Inputs: Pollutants such as metals, organic contaminants, and chlorides adversely affect the health of waterbodies. The most effective method of reducing pollutant levels in waterbodies is to limit the use of these substances in the surrounding watershed, particularly in the adjacent riparian areas. West Point Occupational Health regularly monitors the waters used for swimming and no closures have been necessary for several years.

The chemical attributes of waterbodies at USAG WP are generally in good condition. General management measures to be implemented for controlling pollutants include the following:

- No pesticides are applied to wetlands or waterbodies unless the use in these sites is specifically approved on the label and the proposed action is coordinated with the NRB. The NRB reviews pesticide applications that includes restricted pesticides, may contaminate surface or groundwater, include more than 640 acres of application, includes aerial application, or may impact endangered or protected species or habitats (USAG WP 2015).
- Turf management chemicals for the USAG WP golf course will be applied *minimally* and in conformance with appropriate standards and will not be applied in riparian buffer areas.
- Minimize the potential for soil and water pollution by implementing an Integrated Pest Management (IPM) approach in turf disease, insect, and weed control strategies.
- Onsite wastewater treatment systems will be operated, inspected, and maintained to prevent the discharge of pollutants to surface and ground waters and, to the extent practicable, reduce the discharge of pollutants into ground waters that are closely hydrologically connected to surface waters. USAG WP monitors all discharges resulting from both stormwater and the sanitary treatment process, physically and chemically to the Hudson River through the compliance programs associated with those utility systems.
- When re-configuring streams, incorporate stream improvements. Check dams can be used to trap sediments and reduce the transport capacity of a stream.
- Follow stormwater BMPs for forestry, construction and operation of the Garrison.

Control Nuisance Species: A normal distribution of aquatic species in waterbodies is essential for maintaining overall aquatic ecosystem health and diversity. USAG WP controls the introduction and spread of nuisance aquatic species through user education, chemical and mechanical control methods, monitoring programs, and a boat stewardship program. Large population increases are relatively common in algal species. Green algal blooms are occasionally triggered at USAG WP, most commonly during drought conditions. Although they may make mechanical removal difficult, green algal blooms do not pose a health risk and may provide benefits to fisheries by encouraging the growth of zooplankton populations. However, blue-green algae can be detrimental to potable water production due to the presence of odors and toxins and

can pose a health hazard. At USAG WP, blue-green algae is a problem in Lake Frederick, and the lake is sometimes aerated to discourage blooms. The best approach for controlling algal populations involves prevention, reducing nutrient inputs to waterbodies, and controlling water temperatures (by establishing riparian buffer areas and by maintaining a primarily forested watershed). Once algal populations have begun to increase in a waterbody, algicides, artificial circulation, and dilution/flushing are standard control techniques that may be tried.

***Reduction of Dams:*** USAG WP has a management objective to reduce the number of dams in its inventory. Based on survey results, some dams present at USAG WP are no longer structurally sufficient, do not provide a strong benefit to the installation in terms of water supply or training use, and would be costly to repair or replace. In these cases, USAG WP is considering the removal of these dams. Potential sites include the Weyants, Georgina, and Cragston dams. Prior to removal, these basins would be extensively studied and a management plan for the basin formulated to retain some aquatic and wetland habitat and manage the transition for lake bottom to upland. All such actions would be subject to environmental review and permitting as necessary.

**Program Goals, Objectives, and Projects:** The primary goal of water resources management at USAG WP is to protect the waterbodies on the installation. The objectives defined for meeting this goal are: identify and restore degraded aquatic habitats; protect aquatic and riparian habitats; and prevent degradation of water quality. The goals, projects, and objectives for General Water Conservation are outlined in Table 6-1, *United States Army Garrison West Point Goals and Implementation Plan*, in Chapter 6.

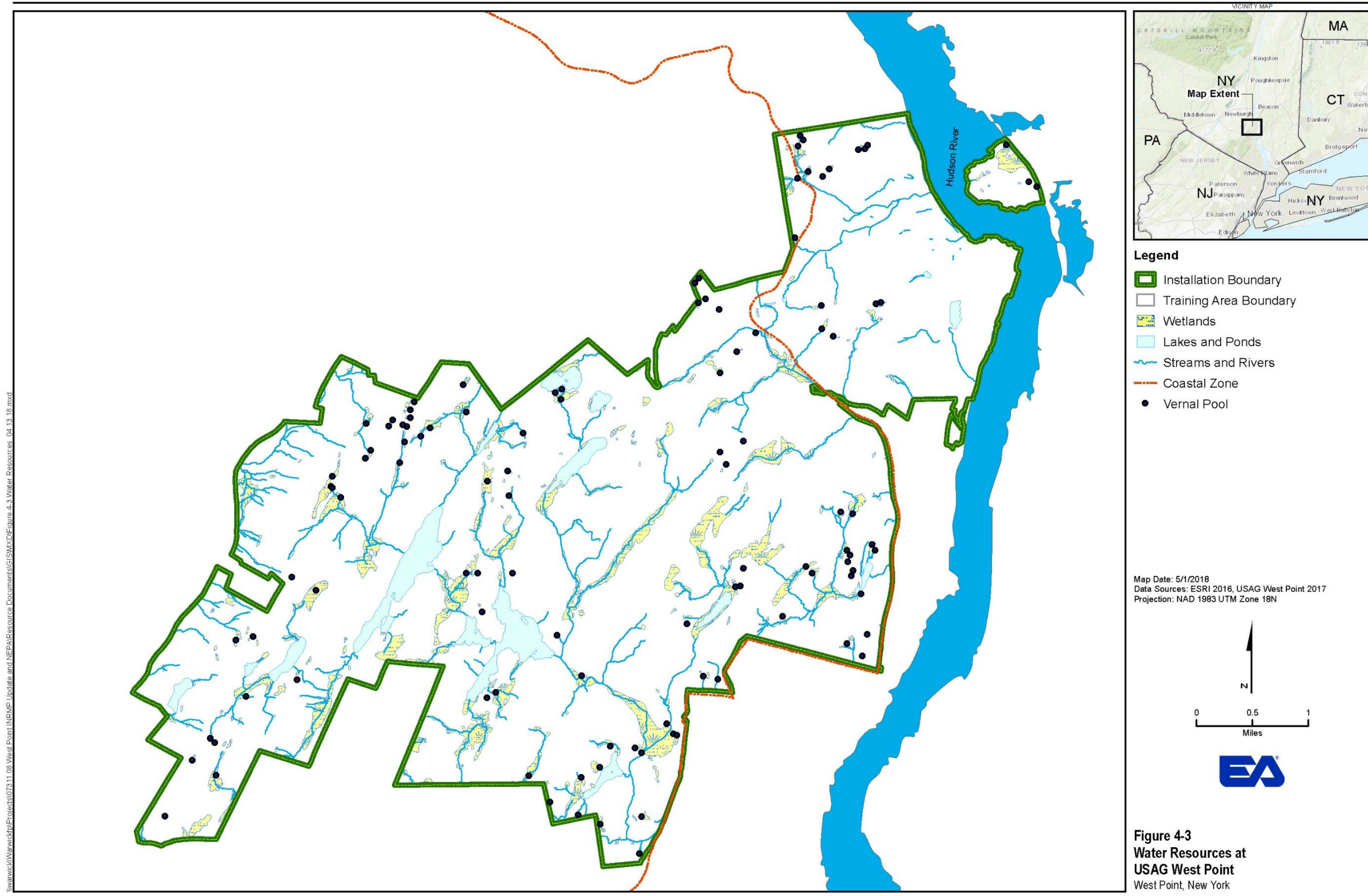
**Program Management Units:** Program management for water resources is dependent on the resources being managed. Examples of appropriate units are watershed, lake area, wetland area, or riparian buffer area.

#### **4.7.2 Coastal and Marine Resources**

The Coastal Zone Management Act (CZMA) (United States Code [U.S.C.] Title 16, Chapter 33) defines the coastal zone of a given area as “the coastal waters (including the lands therein and thereunder) and the adjacent shorelands (including the waters therein and thereunder) strongly influenced by each other and in proximity to the shorelines of the several coastal states, and includes islands, transitional and intertidal areas, salt marshes, wetlands and beaches” (U.S.C. Title 16, Chapter 33). Coastal zones are important because of the diverse biological and hydrological functions which occur in the areas. These functions include water and land forms interacting as integrated ecological units, estuaries, brackish and saline water, shorelands, dunes, offshore islands, barrier islands, and freshwater wetlands within estuarine drainages. These interrelated features are crucial to coastal fish and wildlife and their habitats and coastal waters in general.

“Coastal waters,” as defined in the CZMA, are the waters within the territorial jurisdiction of the United States consisting of the Great Lakes, their connecting waters, harbors, roadsteads, and estuary-type areas such as bays, shallows, and marshes. These also include water adjacent to the shorelines, which contain a measurable quantity or percentage of sea water, including sounds,

Figure 4-3. Water Resources at USAG WP



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bays, lagoons, bayous, ponds, and estuaries (U.S.C. Title 16). The CZMA was enacted to “preserve, protect and where possible, to restore or enhance, the resources of the Nation’s coastal zone for this and succeeding generations” (U.S.C. Title 16, Chapter 33). One of the main provisions of the Act is to manage coastal development to minimize the loss of life and property caused by improper development in flood-prone, storm surge, geological hazard, and erosion-prone areas, and in areas likely to be affected by or vulnerable to sea level rise, land subsidence, and saltwater intrusion; and by the destruction of natural protective features such as beaches, dunes, wetlands, and barrier islands (U.S.C. Title 16, Chapter 33). In doing so, the CZMA encourages the states to exercise their full authority over the lands and waters in the coastal zone by assisting the states, in cooperation with federal and local governments and other vitally affected interests, in developing land and water use programs for the coastal zone. These include unifying policies, criteria, standards, methods, and processes for dealing with land and water use decisions of more than local significance (U.S.C. Title 16, Chapter 33).

The very northeastern portion of USAG WP falls within the coastal zone as defined by the NYS Coastal Management Program (NYSCMP), which is administered by the New York Department of State (NYSDOS). The NYSCMP has established statewide boundaries in accordance with the requirements of the CZMA of 1972, as amended, and its subsequently issued rules and regulations (see Figure 4-3). The NYSCMP establishes coastal zone boundaries, provides an organizational structure to implement the program, and establishes a set of statewide policies enforceable on all state and federal agencies which manage resources along the state’s coastline, all of which aim to protect owners and their property and provide a method to consistently manage all coastal activities.

Any federal agency considering undertaking an activity is required to submit a coastal zone consistency determination and other necessary information and data to NYSDOS. Federal consistency provisions apply to activities both in the state’s coastal area and outside of the coastal area when the activities would affect coastal resources or coastal land and water uses. These regulations establish the procedures to be followed to assure that federal agency activities are consistent with the enforceable policies of the NYSCMP. Federal consistency provisions preclude federal agencies from undertaking activities when it is determined they are not consistent with the State's coastal policies or special management area plans that are approved elements of the NYSCMP.

**Program Data Management:** USAG WP does not collect data as part of actions related to the coastal zone.

**Supplemental References:** Although the NYSCMP does not apply to federally owned land, NYS will use the existing A-95 review process or its successor to suggest reasonable mitigation measures and/or alternatives so ensure DoD activities are consistent with the State’s Program. Activities may include, but are not limited to (NYDOS 2017): location, design, and acquisition of new or expanded defense installations; plans, procedures, and facilities for handling or storage use zones; and establishment of impact, compatibility, or restricted use zones. Activities within the NYSCMP boundary are regulated by NYSDOS regulations. Supplemental resources applicable to the Coastal Zone and Marine Resources are outlined in Appendix C, Table C-2, *Supplemental References*.

**Program History:** USAG WP has historically maintained resources within the coastal zone in a manner consistent with the requirements of the NYSCMP and the CZMA.

**Current Conditions:** The portion of the New York Coastal Zone that bisects USAG WP is part of the Hudson River Valley Region. The Hudson River Valley is significant due to the tidal action, varying salinity, and abundant diversity of fishes that inhabit the area (NYDOS 2017). USAG WP manages natural resources on the installation and within the coastal zone to provide protection of shoreline resources. Resources within the coastal zone include threatened and endangered species, flora and fauna, and wetlands.

The portion of the Hudson River adjacent to USAG WP also falls within the Hudson Highlands Significant Coastal Fish and Wildlife Habitat area. This area is unique in that is the deepest and narrowest segment of the Hudson River which provides suitable habitat for several important coastal migratory fishes, including Atlantic sturgeon (*Acipenser oxyrinchus oxyrinchus*) and shortnose sturgeon (*Acipenser brevirostrum*). The area is also used by wintering bald eagles (*Haliaeetus leucocephalus*). A habitat impairment test must be met for any activity that is subject to consistency review under federal and state laws, or under applicable local laws contained in an approved local waterfront revitalization program. If the proposed action is subject to consistency review, then the habitat protection policy applies, whether the proposed action is to occur within or outside the designated area (NYDOS 2012).

**Program Goals, Objectives, and Projects:** The goals, projects, and objectives for Coastal and Marine Management are outlined in Table 6-1, *United States Army Garrison West Point Goals and Implementation Plan*, in Chapter 6.

**Program Management Units:** Coastal zone areas are managed by NYS-defined boundaries for coastal zones and Significant Coastal Fish and Wildlife Habitat areas.

### 4.7.3 Wetlands

Aquatic resources, such as wetlands, vernal pools, rivers, streams, lakes, and ponds are of critical importance to the protection and maintenance of living resources, since they provide essential breeding, spawning, nesting, and wintering habitats for many fish and wildlife species. The aquatic resources also enhance the quality of surface waters by impeding erosive forces of moving water and trapping waterborne sediment and associated pollutants, maintaining baseflow to surface waters through the gradual release of stored flood waters and groundwater, and providing a natural means of flood control and storm damage protection through the absorption and storage of water during high-runoff periods.

DoD natural resources policy states that wetlands will be protected. All activities that affect wetlands require an environmental analysis in accordance with AR 200-1 and applicable federal and state laws and regulations. EO 11990 requires that federal agencies minimize any significant action that contributes to the loss or degradation of wetlands and that action be initiated to enhance their natural value. Department of the Army policy is to avoid adverse impacts on existing aquatic resources and offset those adverse impacts that are unavoidable. Additionally, the Army will strive to achieve a goal of no net loss of values and functions to existing wetlands, and permit no overall net loss of wetlands on Army-controlled lands. The Department of the



Army will also take a progressive approach toward protecting existing wetlands, rehabilitating degraded wetlands, restoring former wetlands, and creating wetlands in an effort to increase the quality and quantity of the Nation's wetland resources (HQDA 1995).

The NYS Legislature passed the Freshwater Wetlands Act in 1975 with the intent to preserve, protect, and conserve freshwater wetlands and their benefits, consistent with the general welfare and beneficial economic, social, and agricultural development of the state. To be protected under the Freshwater Wetlands Act, a wetland must be 12.4 acres (5 hectares) or larger. Wetlands smaller than this may be protected if they are considered of unusual local importance. Around every wetland is an "adjacent area" of 100 ft that is also regulated to provide protection for the wetland. At USAG WP, there is a 100-ft buffer zone established around all wetlands and vernal pools. A permit is required to conduct any regulated activity in a protected wetland or its adjacent area.



Pope Creek Marsh.

Additionally, compensatory mitigation often is required for significant impacts to wetlands. This may include creating or restoring wetlands to replace the benefits lost by the proposed project.

USACE also protects wetlands, irrespective of size, under Section 404 of the Clean Water Act. USACE permits are required under Section 10 of the Rivers and Harbors Act of 1899 prior to commencing any work or building any structures in a navigable water of the United States. Also, USACE permits are required under Section 404 of the Clean Water Act for the discharge of dredge or fill material into waters of the United States, including wetlands. The regulations established at Title 33 of the Code of Federal Regulations, Parts 320–330, prescribe the statutory authorities and general and special policies and procedures applicable to the review of applications for USACE permits. Before commencing any new work in waters of the United States, a district engineer must be contacted and a permit obtained, as appropriate (HQDA 1995).

**Program Data Management:** Wetlands at USAG WP have been surveyed and are maintained to prevent loss of wetlands. A table providing more information on known wetlands at USAG WP is provided in Appendix F. Program data management resources applicable to Wetlands are outlined in Appendix C, Table C-1, *Program Data Management*.

**Supplemental References:** Although not managed in a resources-specific plan, several management and guidance documents at USAG WP relate to the management of wetland resources. Supplemental resources applicable to Wetlands are outlined in Appendix C, Table C-2, *Supplemental References*.

**Program History:** Several wetlands, vernal pool, and additional aquatic resources studies have been conducted at USAG WP. An inventory of wetlands occurring on USAG WP and Constitution Island was completed by USACE in 1993 and by NRB staff between 1994 and 1996. The inventory includes location, USFWS wetland class, and acreage for all wetlands

known to occur on USAG WP and Constitution Island. In 1998 J.G. Barbour conducted a comprehensive survey of vernal pools on the reservation (Barbour, J.G. 1998). Barbour assessed the vernal pools and put them into groups by applying a combination of the above criteria. These groups were labeled A (strongest indicator) through E (weakest indicator). Additionally, rapid bioassessment protocols for assessing the ecological integrity of macroinvertebrate communities within streams at USAG WP are conducted every few years on several streams on the USMA reservation during the summers as part of monitoring to assess vernal pools. These inventories, surveys, and assessments aid in decision-making at USAG WP and effective management of these unique aquatic resources.

**Current Conditions:** Approximately 300 wetlands spanning approximately 1,010 acres have been inventoried at USAG WP (see Figure 4-3). Most wetlands on USAG WP are small interconnected forested wetlands and are unimpaired. Some wetlands are limited in habitat value by land use, or negative adjacent features (railroads, roads, impact zones, etc.).

Predominant USFWS (Cowardin et al. 1992) class information, along with acreage, was determined for each of the wetlands identified in the inventory (see Appendix F). Based on this class system, the predominant wetland class identified at USAG WP are palustrine forested (PFO) wetlands, followed by palustrine emergent (PEM), and palustrine shrub scrub (PSS), respectively. Several wetland areas are comprised of a mosaic of wetland classes; for example, the largest wetland (WP-C53), located adjacent to Popolopen Brook, is 71.6 acres in size and consists of PFO, PSS, and PEM (USACE 1993).

Ninety-nine vernal pools have been identified and approximately located on USAG WP. Vernal pools occur within most of the training areas. Because vernal pools are temporary bodies of water, they do not support fish populations. Several species of wildlife, including some that have evolved breeding strategies that are intolerant of fish predation on their eggs and larvae, are totally dependent on vernal pools for their survival. Many of these species also use the areas immediately surrounding the pools outside the breeding season.

The main goal of the USAG WP wetland and vernal pool management approach is to continue to implement a program that is consistent with DoD natural resources policy. A wetland management policy with the objective of maintaining no net loss of wetland habitat will be continued at USAG WP. Activities occurring both in or adjacent to wetlands or vernal pools that would result in negative impacts on the habitats will be avoided, when possible, in a manner consistent with mission objectives. Where impacts on wetlands or vernal pools are not avoidable, mitigation of the impacts will be implemented. In a manner consistent with EO 11990, wetland management objectives at USAG WP will take a progressive approach toward protecting existing wetlands, rehabilitating degraded wetlands, and (if applicable) restoring former wetlands. Management objectives to protect vernal pools will involve continuation of current monitoring efforts to determine characteristics and trends in vernal pool habitats. Monitoring information will be used to develop specific management strategies. Limiting activities that occur in areas immediately adjacent to vernal pools is an objective of vernal pool management on USAG WP.

**Program Goals, Objectives, and Projects:** The goal of aquatic habitat management at USAG WP is to maintain healthy aquatic ecosystems to provide pristine water quality and superior

fisheries resources. Aquatic ecosystems are abundant at USAG WP, with more than 30 surface waterbodies and more than 300 wetland areas. These ecosystems serve a vital role in supporting the military mission, providing drinking water, and affording recreational opportunities at the installation. Habitat protection is the primary objective for maintaining healthy aquatic ecosystems and protecting the balance of physical, chemical, and biological characteristics within each waterbody.

The goals, projects, and objectives for Wetlands are outlined in Table 6-1, *United States Army Garrison West Point Goals and Implementation Plan*, in Chapter 6.

**Program Management Units:** Wetland boundaries are regularly verified and mapped as needed in support of West Point projects and training needs

#### **4.7.4 Floodplains**

Riparian areas are critical at USAG WP and are typically contained within the floodplain. Robust riparian floodplains can help to minimize the impacts of flooding on downstream human environments, human safety, and natural resources. Several additional benefits of riparian areas include the following:

- Riparian areas typically have high levels of species productivity and greater species diversity than upland sites. The diversity of species is critical in providing protection from extreme changes in environmental conditions such as those created by floods or forest fires.
- Riparian habitats provide water and food requirements for many wildlife species. Riparian areas provide habitat for many wildlife species (e.g., amphibians, beaver, muskrat, waterfowl) for breeding and rearing young, as well as providing areas for escape, hiding, and resting cover. Riparian areas also form natural travel corridors for wildlife species.
- Vegetation in the riparian area protects the water quality by reducing sediment, nutrient, and contaminant loading from activities occurring in the surrounding watershed.
- Vegetation provides stream bank/shoreline stabilization to the waterbody. The roots of the riparian vegetation anchor shoreline sediments and protect the shoreline from the erosive forces of water movement.
- For lotic stream systems, the riparian areas act as a temperature regulator by shading the water surface and maintaining necessary temperatures for cold-water aquatic species.
- The riparian areas also supply large organic debris to the stream system, which influences the instream channel structure, such as the occurrence of pools and riffles, and provides habitat for several aquatic species.

- The vegetated riparian area attenuates flood waters and reduces the erosive nature of the water before reaching upland areas. Some riparian areas may store water during floods and slowly release it to downstream areas, lowering flood peaks.

**Program Data Management:** The 100-year floodplain is the area adjoining a river, stream, or watercourse covered by water in the event of a 100-year flood. It is mapped by the Federal Emergency Management Agency and is used to determine need and rates for flood insurance. The 100-year floodplain on USAG WP property is provided in Figure 4-3. Most of the waterbodies at USAG WP are surrounded by forested areas and are generally well buffered. These riparian areas are considered to be in good condition due to the generally low impact activities associated with them. Program data management resources applicable to Floodplains are outlined in Appendix C, Table C-1, *Program Data Management*.

**Supplemental References:** Floodplains and riparian areas are managed through measures in other resources management plans at USAG WP. No references have been developed specifically for the management of floodplains and riparian areas at USAG WP. Supplemental resources applicable to Floodplains are outlined in Appendix C, Table C-2, *Supplemental References*.

**Program History:** Riparian areas are critical at USAG WP due to the large number of surface waterbodies on the installation. Most of the waterbodies at USAG WP are surrounded by forested areas and are generally well buffered. These riparian floodplain areas are considered to be in good condition due to the generally low impact activities associated with them. Past management efforts for floodplains and riparian areas have been focused on maintaining riparian buffers and controlling invasive aquatic species. Japanese knotweed (*Polygonum cuspidatum*) control has been an ongoing maintenance objective at USAG WP. Several large past infestations were noted at Cranberry Pond, the stream between Popolopen and Mine lakes, at the Range 4 transfer station, and on the Post. Knotweed can contribute to flooding problems, especially when the dead stems fall into streams and block culverts or small channels. In thick stands, it can be a fire hazard. Recreational fishing opportunities can be greatly reduced in the streams where this grows, as the stems tend to be very thick at streamside. Experimental control has been conducted in the past in the floodplain at Cranberry Pond in 2001, including spraying and cutting. In a 2002 survey, control was deemed to have reduced the stand; at this point additional control options were considered for the residual plants. In 2005, the experiment was deemed a partial success, as annual spraying is still necessary.

**Current Conditions:** The goal of floodplain and riparian management at USAG WP is to protect the floodplain and thus protect water quality and fisheries resources. USAG WP is rich with surface water resources; much of the floodplain within USAG WP surrounds larger waterbodies on the installation, including Stilwell and Popolopen lakes (Figure 4-3). Many of the larger wetland complexes at USAG WP that are associated with these waterbodies are also within the floodplain. Portions of the cantonment area fall within the floodplain of the Hudson River. Management of floodplain resources in this area is crucial to protecting human health, safety, and welfare as well as the property of USAG WP during flood events. General floodplain and riparian area management measures are provided below and are primarily aimed at maintaining adequate riparian buffer areas.

**Maintaining Adequate Riparian Buffers:** For small (first- and second-order) streams, the riparian buffer will be measured from the center of the stream and extend approximately 100 ft on either side of the waterbody. For large (third-order and higher) streams and rivers, the 100-ft riparian buffer will be measured from the streambank. Similar buffer areas will be maintained adjacent to lakes and ponds. The objective of the 100-ft buffer zone along streams and around lakes, ponds, and wetlands is to avoid any activity or condition that might adversely affect the primary waterbody or wetland. Restrictions against disruptive activities within buffer zones are included in the USMA Range and Training Complex Regulation, and particular consideration will be given by NRB personnel when reviewing project proposals involving buffer zones. Formal and informal monitoring by NRB personnel will identify buffer zone sites in need of specific protection/rehabilitation measures. Any activity within the banks of streams will be carefully considered and coordination with NYS sought for all streams under NYSDEC jurisdiction.

**Maintaining Species Diversity:** Encourage diverse species composition in the riparian areas, particularly with respect to canopy species.

**Controlling Nuisance Species:** A normal distribution of aquatic and terrestrial species in and around waterbodies is essential for maintaining overall aquatic ecosystem health and diversity at USAG WP.

**Protecting Riparian Habitat:** The area immediately surrounding a waterbody plays a vital role in protecting water quality and aquatic habitat. Activities will be limited to those that would cause little or no impact on water quality and aquatic habitats within riparian buffer zones.

**Program Goals, Objectives, and Projects:** The goals, projects, and objectives for Floodplains are outlined in Table 6-1, *United States Army Garrison West Point Goals and Implementation Plan*, in Chapter 6.

**Program Management Units:** Program management for floodplains and riparian areas is dependent on the resources being managed. Examples of appropriate units are watershed or riparian buffer area.

## **4.8 SENSITIVE SPECIES**

Table 4-4 below outlines the federally listed species that are believed to occur at USAG WP, and their potential to occur. Federally-listed species are discussed below in Section 4.8.1, *Threatened and Endangered Species*. Bald eagles (*Haliaeetus leucocephalus*) and golden eagles (*Aquila chrysaetos*) are covered below in Section 4.8.2, *Bald and Golden Eagle Protection Act*, while migratory birds are discussed in Section 4.8.3, *Migratory Bird Treaty Act Covered Species*. State-listed species and rare species are discussed in Section 4.8.4, *Species of Concern*.

**Table 4-4. Federally Listed Species with the Potential to Occur at United States Army Garrison West Point**

| Scientific Name   | Common Name             | Federal Status | Installation Presence   | Existing USFWS or NOAA NMFS Consultation/Conference | Hyperlink/location of ESMC or INRMP discussion |
|---|-------------------------|----------------|---|---|--|
| <i>Alasmidonta heterodon</i>  | Dwarf wedge mussel      | FE             | Not known in watershed; adjacent (within 50 miles), but unknown at USAG WP. In NYS is only known to occur in the Neversink River, a tributary of the Delaware River separated from the Hudson River. Not considered a probable resident | --  | --   |
| <i>Acipenser brevirostrum</i>   | Shortnose sturgeon      | FE             | Overwintering, migrating, and opportunistically foraging at USAG WP; resident. Life stages present include adult, juvenile, young-of-the-year, and post yolk-sac larvae.  | --  | Appendix B2                                    |
| <i>Acipenser oxyrinchus oxyrinchus</i>  | Atlantic Sturgeon       | FE             | Passage to and from spawning habitat by adults, access to foraging and rearing areas by juveniles and subadults, and some foraging by juveniles and subadults. Life stages present include adults, subadults, and juveniles.            | --  | Appendix B3                                    |
| <i>Clemmys muhlenbergii</i>   | Bog turtle              | FE             | Has not been found in past surveys; potential habitat, and historic habitat   | --  | --   |
| <i>Myotis sodalis</i>   | Indiana bat             | FE             | Isolated occurrences, not verified. Found within 50 miles of USAG WP, transient if present, unlikely  | --  | --   |
| <i>Myotis septentrionalis</i>   | Northern long-eared bat | FT             | Captured individuals during past surveys; resident  | --  | Appendix B4                                    |
| <i>Isotria medeoloides</i>  | Small whorled pogonia   | FT             | Not known, but habitat is present at USAG WP. Surveys planned for 2018  | --  | --   |
| Notes: ESMC = Endangered Species Management Component.<br>FE = Federally Endangered.<br>FT = Federally Threatened.<br>INRMP = Integrated Natural Resources Management Plan.<br>NOAA NMFS = National Oceanic and Atmospheric Administration National Marine Fisheries Service<br>USAG WP = United States Army Garrison West Point.<br>USFWS = U.S. Fish and Wildlife Service |                         |                |   |   |  |



#### 4.8.1 Threatened and Endangered Species

The Endangered Species Act (ESA) was passed in 1973 to protect and recover species in danger of becoming extinct as well as to protect their habitats. Under the ESA, species may be listed as federally endangered or federally threatened depending on the likelihood of the species becoming extinct throughout all or a significant portion of its range. A status of federal candidate can also be applied under the ESA. Candidate species receive no statutory protection under the ESA, but the USFWS encourages conservation efforts for these species because they may warrant future protection under the ESA. Species that are federally listed at USAG WP may also be protected under 6 NYCRR Part 182, *Endangered and Threatened Species of Fish and Wildlife; Species of Special Concern; Incidental Take Permits*. AR 200-1, Chapter 4-3 requires that installations prepare and implement an Endangered Species Management Component of the INRMP, and that management of listed species is incorporated into installation planning.

The ESA requires all federal agencies to aid in the conservation of listed species under Section 7(a)(1). Conservation, as defined by the ESA, means the use of all methods and procedures necessary to bring any listed species to the point where protections pursuant to the ESA are no longer necessary. Section 7(a)(2) of the ESA requires federal agencies to consult with the USFWS and NOAA Fisheries to ensure that they are not undertaking, funding, permitting, or authorizing actions likely to jeopardize the continued existence of listed species or destroy or adversely modify designated critical habitat. Section 7 also establishes the requirement for federal agencies to confer with USFWS and NOAA Fisheries on actions that may similarly affect proposed species and/or critical habitat. USAG WP will continue to coordinate and consult with the USFWS and NOAA Fisheries on any proposed project that may affect a federally listed or proposed species, and/or critical habitat. Under the ESA (4)(a)(3)(B)(i), critical habitat shall not be designated on lands or geographical areas controlled or owned by the DoD that are subject to an INRMP under the Sikes Act; this does not exclude DoD from compliance with consultation requirements set forth in Section 7 of the ESA.

In 1994 the DoD developed a Memorandum of Understanding (MOU) on implementing the ESA. The purpose of the MOU was to establish a general framework for greater cooperation and participation among the agencies exercising their responsibilities under the ESA. As part of this MOU, signatories agreed to: (1) use its authorities to further the purposes of the ESA by carrying out programs for the conservation of federally listed species, including implementing appropriate recovery actions that are identified in recovery plans; (2) identify opportunities to conserve federally listed species and the ecosystems upon which they depend within existing programs and authorities; (3) determine whether its respective planning processes effectively help conserve threatened or endangered species; and (4) use existing programs, or establish a program, to evaluate and reward the performance of personnel who are responsible for planning or implementing programs to conserve or recover listed species or the ecosystems on which they depend.

Climate change, discussed in greater detail in Section 4.4, has the potential to impact federally listed species at USAG WP, but the potential impacts are largely unknown. Several of the federally listed species at USAG WP are found within relatively narrow habitat requirements; changes or loss to these habitats may impact populations. Potentially warming temperatures of

caves may impact bat hibernation, as both the Indiana bat and Northern long-eared bat have a limited range of cave temperatures for hibernation. Changes of even a few degrees in crucial hibernacula can result starvation for hibernating bats (USFWS 2006).

**Program Data Management:** Surveys for potential federally listed species at USAG WP have been completed over several years at USAG WP. Surveys and their associated data, as well as GIS data on federal species, has been maintained as part of the Natural Resources program. Program data management resources applicable to Threatened and Endangered Species are outlined in Appendix C, Table C-1, *Program Data Management*.

**Supplemental References:** Management of federally listed species at USAG WP is completed in accordance with the requirements of the ESA and state protections. Species-specific Endangered Species Management Plans (ESMPs) direct management actions at USAG WP. Supplemental resources applicable to Threatened and Endangered Species are outlined in Appendix C, Table C-2, *Supplemental References*.

**Program History:** NRB staff and contractors have undertaken several surveys for federally listed species with the potential to occur on the installation.

**General Surveys:** Listed species surveys have been completed every 3-5 years to assess the presence or absence of potentially-present listed species and have been conducted in response to new listing or identification of new potentially-present species. For example, in 1991 and 1992, in accordance with the requirements of AR 200-3 and the ESA, a survey of threatened and endangered fauna and flora on USAG WP properties was conducted by the Biological Survey Unit of the NYS Museum (NYS Museum 1994). The survey did not include the USAG WP section of the Hudson River. Results of the survey indicated that no species listed under the ESA as endangered or threatened were found to be permanent residents of or to breed on USAG WP. Results of the study indicated the presence of suitable habitat for the state and federally endangered Indiana bat and the then federally threatened peregrine falcon, which is no longer federally listed. In 2006, an analysis of the potential habitat for selected threatened and endangered species was completed at USAG WP (Batcher 2006). Using existing GIS data sets, the study identified potentially suitable habitat areas on the reservation for 30 animal species listed as endangered, threatened, or special concern by NYSDEC or USFWS.

**Bog Turtle (*Clemmys muhlenbergii*) Surveys:** Several formal surveys for bog turtles have been conducted at USAG WP. Bog turtle habitat was first surveyed in 1999 as part of a general herpetological survey, as part of vernal pool surveys in 1996 and 1997, and again in 2000 and 2001. Box traps set in the only fen habitat at USAG WP in 2003 failed to locate one in 1,674 survey trap-nights. Searches again in 2006 and 2010 at Range 11 and Weyants Pond also did not result in the discovery of any individuals. In 2011, Phase I and Phase II Bog Turtle Habitat Surveys were completed at USAG WP as required by USFWS for proposed projects in regions where bog turtles are known to occur. There are no historic records of bog turtles occurring at USAG WP but anecdotal observations of bog turtles crossing roads within the vicinity of USAG WP had been previously reported. Phase I bog turtle surveys completed on more than 18 wetland areas within USAG WP, and Phase II visual surveys were completed on 6 of these wetlands. No bog turtles were discovered during the Phase II visual surveys and it was noted that there are likely no bog turtle populations at USAG WP (Greene Environmental Consultants

2011). Presence-absence surveys for bog turtles at selected wetlands were conducted in 2013. Surveys were conducted at 18 wetlands within USAG WP to search for evidence of bog turtles. No bog turtles were observed during the more than 177 person-hours of survey, but several wetlands were identified as potential habitat (Natural Resources Consulting Service 2013).

*Bat Surveys:* Several bat surveys have been completed at USAG WP and are generally completed every few years. In January 1993, the Post biologist observed eight to nine bats in a bore hole in Zints mine that he believed to be Indiana bats (*Myotis sodalis*). This appears to be an anomaly and has never been repeated in subsequent surveys. During a 1999 survey, Indiana bats were detected acoustically, and a male Indiana bat was captured (Gannon and Sherwin 2001). However, the validity of this sighting has been questioned due to sampling technology and the physiological similarity of the Indiana bat to other species. An NYSDEC telemetry study of spring emergence indicated a female bat tracked back to USAG WP, but airspace restrictions limited helicopter tracking at USAG WP and the roost was never located. Extensive mist net surveys completed in 2003 and 2008 did not document any Indiana bats present on the installation (Jaycox 2003; Stearns and Wheeler 2008). Acoustical surveys for Indiana bat were completed in 2009 at USAG WP; six species were detected, including the federally listed Northern long-eared bat (*Myotis septentrionalis*) (Britzke 2010).

Summer surveys for Indiana bat and Northern long-eared bat were most recently collected in 2015 as part of a mist net survey that resulted in the capture of bats of five species, including Northern long-eared bats. An acoustic survey identified six species, but no Indiana bats were recorded (Pittsburgh Wildlife and Environmental, Inc. 2015).

*Small Whorled Pogonia (Isotria medeoloides):* A rare plant survey of USAG WP included a substantial effort to locate populations of the small whorled pogonia, which is known to occur close to USAG WP. The survey effort also included searches for other federally listed species. No federally listed plant species were observed during the survey, although one area was determined to have potential as habitat for the small whorled pogonia (Werier and Barbour 2012). The site was observed to be heavily browsed by deer.

**Current Conditions:** Currently, seven federally listed species are identified as either known at USAG WP, or as having the potential to occur. Four of these species have been observed at USAG WP or in the adjacent waters of the Hudson River. The extent of the dwarf wedgemussel in New York is limited to the Delaware River Watershed; this species does not occur in the Hudson River watershed and is not discussed in this INRMP (New York Natural Heritage Program [NYNHP] 2017a). Table 4-4 lists those federally listed species documented at USAG WP and candidates for possible future inclusion on the federal endangered species list. Adherence to the goals set for threatened and endangered species management will ensure that the installation remains in compliance with the ESA and applicable state regulations.

The management objectives in this INRMP are designed to fulfill the recommendations put forth in ESA Section 7(a)(1) regarding agency actions and consultations; USFWS serves as a partner on the INRMP review team, and NOAA Fisheries is a consulting party in the INRMP process. As part of the coordination with these agencies and in accordance with Section 7 requirements, USAG WP has developed ESMPs for the three federally listed species known to occur on or in the waters surrounding the installation. ESMPs for the Northern long-eared bat, Atlantic

sturgeon, and shortnose sturgeon are provided in Appendix B2 through B4. Although the Indiana bat was recorded at USAG WP in 1999, questions regarding correct identification of the species due to acoustic sampling being relatively new, paired with a lack of observation during several subsequent studies, likely indicate this species is only a rare visitor at USAG WP, if present at all. No ESMP for the management of this species has been developed at USAG WP.

*Bog Turtle (Clemmys muhlenbergii)*: The bog turtle is classified as endangered by NYSDEC and is also listed as federally threatened (NYSDEC 2010a). The bog turtle is New York's smallest turtle, reaching a maximum length of 4.5 in. This is a semi-aquatic species, preferring habitat with cool, shallow, slow-moving water; deep, soft muck soils; and tussock-forming herbaceous vegetation. In New York, the bog turtle is generally found in open, early successional types of habitats such as wet meadows or open calcareous boggy areas generally dominated by sedges (*Carex* spp.) or sphagnum moss. Like other cold-blooded or ectothermic species, it requires habitats with a good deal of solar penetration for basking and nesting. Plants such as purple loosestrife (*Lythrum salicaria*) and reed (*Phragmites australis*) can quickly invade such areas resulting in the loss of basking and nesting habitat. The primary threats to this species are loss or degradation of habitat and illegal collecting. Extensive survey of USAG WP for the presence of bog turtles has not resulted in observations of the species, but potential habitat exists at USAG WP.

Based upon the lack of discovery of bog turtles during previous formal surveys, it is believed that the bog turtle does not occur at USAG WP. However, as this can be a cryptic species, NRB staff will continue to perform planning level surveys for this species as needed and will make efforts to better quantify suitable bog turtle habitat on the reservation. Prior to any proposed wetland disturbance, USAG WP will survey the site for habitat suitability and bog turtle presence.

*Indiana Bat (Myotis sodalis)*: Indiana bats are classified as federally and state endangered. They are small, with an average weight of just 0.25 ounces, with a wingspan between 9 and 11 in. Indiana bats have dark brown fur and are similar in appearance to several other bat species. Hibernation during the winter months occurs in caves with air flow and stable temperatures between 32 and 50 °F; these conditions are only found in a few caves (USFWS 2007a). Indiana bat populations that hibernate at midwinter sites with roosts in temperature ranges between 37.4 and 45 increased in size while those hibernating in temperatures outside this range decreased (Tuttle and Kennedy 2002). In summer months, the bats use wooded areas, roosting under loose tree bark on dead or dying trees (USFWS 2006). As noted above, several surveys have been completed for the Indiana bat. Although the fact that no Indiana bats were captured on USAG WP during surveys does not provide definitive proof that they are not using the site, it is unlikely that Indiana bats inhabit the reservation. In addition, bat populations have been decimated in recent years by white nose syndrome, and active further management activities will be pursued. USAG WP implements conservation measures to protect Indiana bats, where feasible.

A fungal infection known as white-nose syndrome was first detected in New York in 2006. The fungal growth appears on the face and wings of bats and may cause skin lesions. This causes the bats to awaken during hibernation to groom and burns winter fat stores; it is ultimately fatal to infected bats (USFWS 2014). There are no range-wide population estimates prior to the outbreak of white-nose syndrome, but the fungus has caused precipitous declines of up to 90 to

100 percent at infected hibernacula. White-nose syndrome impacts several bat species, and is likely to result in the future federal listing of additional bat species. Management actions undertaken at USAG WP to prevent the spread of white-nose syndrome include human exclusion from mines and other biosecurity measures.

Northern long-eared bat (*Myotis septentrionalis*):

The northern long-eared bat is federally and state threatened. Northern long-eared bats are between 3 and 3.7 in., with a wingspan of 9 to 10 in. with a brown backside and tawny underside. They are distinguishable by their long ears. Similar to Indiana bats, northern long-eared bats hibernate in caves during the winter with steady temperatures, high humidity, and no air currents. Summer roosting habitat requirements are more flexible than those of the Indiana bat, and Northern long-eared bats roost under bark or in tree cavities, caves, or crevices. Northern long-eared bats may also use buildings. Pregnant



Northern long-eared bat with visible signs of white-nose syndrome. Source: USFWS 2015a

females also form summer maternity colonies where females give birth and raise young. As with Indiana bats, the population of northern long-eared bats has been decimated by white-nose syndrome (USFWS 2015a). northern long-eared bats have been captured during past surveys on the installation. USAG WP limits access to known hibernacula sites. A known hibernaculum is present on the installation and is listed by the NYNHP, but is not available for training or access, and has been properly secured. USAG WP does visit the hibernacula site when the NYSDEC requests a visit, but visits are carefully planned, and strict biosecurity measures are followed.

The USFWS released a Section 4(d) rule under the Endangered Species Act for the northern long-eared bat, which was published on 16 January 2016 in the Federal Register. The 4(d) rule defines take and the range map for the species and provides management guidelines to allow for protection of areas impacted by white-nose syndrome while still allowing certain activities to be completed by landowners and managers within the species range without formal consultation (USFWS 2016a). USFWS has not designated critical habitat for the northern long-eared bat, as summer habitat is not limited or threatened range-wide. An ESMP was prepared for the Northern long-eared bat at USAG WP in 2018 as part of this INRMP revision (Appendix B4).

Small Whorled Pogonia (*Isotria medeoloides*): Small whorled pogonia is a federally threatened and state-endangered member of the orchid family named for the whorl of leaves found both near the top of the stem and below its greenish-yellow flower. It is typically found in older growth hardwood stands with an open understory, often near streams. This species prefers acidic soils and areas with a thin duff layer of dead leaves (USFWS 2016b). Populations of the small whorled pogonia tend to be small, with fewer than 20 individuals. This species has been threatened by habitat loss due development and certain types of forestry practices. Populations also can be impacted by recreational activities and trampling (USFWS 2016b). To date, small whorled pogonia has not been observed at USAG WP, but the installation includes areas of

potential habitat, and known populations occur in nearby natural areas. Surveys for this species are planned in 2018 and every 3 years after that, unless populations are found at USAG WP.

*Shortnose Sturgeon (Acipenser brevirostrum)*: This federally and state endangered fish occurs at USAG WP in the Hudson River. Previous studies suggested that sturgeon use of the river offshore from the Academy was minimal, largely restricted to the migration of adult fish between feeding areas in freshwater near Kingston to wintering habitat in brackish waters near Haverstraw, and that juvenile sturgeon use occurred most frequently in the freshwater-saltwater interface (Haley et al. 1996). Since that time, sampling efforts have revealed more widespread use of the river for summering adults, and place juvenile sturgeon habitat in close association with the salt front as it moves up and down the river. Both adult and juvenile sturgeon have been captured within 20 kilometers of USAG WP. The USFWS Maryland Fishery Resources Office maintains the anadromous fish database for the Hudson River and reports 36 shortnose sturgeon captures from Cornwall to Cold Spring between 2000 and 2003 during the months July to November (Lyttle 2008).

Shortnose sturgeon can be found at USAG WP year-round. Adult fish may be found offshore outside of breeding and wintering periods from July to November. Their primary nocturnal foraging habitat is vegetated flats at depths ranging from 1 to 5 meters. This habitat is present on the east shore of the Hudson, north and south of Constitution Island. Foraging may also take place over margin-fine (silty clay) flats, but invertebrate density in this habitat is relatively low, making it only minimally attractive. This type of substrate occurs at USAG WP along the west shore of the Hudson to include both North and South dock areas, and offshore of Constitution Island. Adults may also feed on the recently introduced zebra mussel. The zebra mussel occurs on any suitable hard surface, and has been documented in this reach, but is limited by salinity. Adult sturgeon rest during the day at depth (13–42 meters). This depth and the preferred habitat is abundant throughout the Highlands (Lyttle 2008). Juvenile sturgeon congregate over sand or gravel at depths exceeding 9 meters. This habitat exists primarily northwest of Academy grounds and along the eastern shore south of Constitution Island. Margin-fine substrate may be used for foraging. Wintering habitat occurs in deep water upriver from the salt front and may occur off USAG WP (Lyttle 2008).

Although primary sturgeon habitat remains identified both north and south of USAG WP, adult, sub-adult, and juvenile life stages are found in this seasonally brackish reach. Young-of-the-year and post yolk-sac shortnose sturgeon could also be present in the freshwater portion of USAG WP. Preferred foraging areas for adult fish may occur north and south of Constitution Island (July to November). Juvenile sturgeon feeding areas may occur along the western shore north of Academy grounds, and south of Constitution Island along the eastern shore at depths greater than 9 meters. Resting habitat for all life stages occurs throughout the USAG WP reach at depths ranging from 9 to 42 meters. Juvenile fish are salt tolerant and are associated with the salt front and may occur throughout the year. No sturgeon spawning occurs at USAG WP. The NRB prepared an ESMP for the shortnose sturgeon in 1997 and updated the plan in 2003 and 2018, as part of this INRMP revision (Appendix B2).

*Atlantic Sturgeon (Acipenser oxyrinchus oxyrinchus)*: The Atlantic sturgeon is a large anadromous fish, weighing up to 800 pounds, which as adults enter the Hudson from May to June to spawn. Spawning takes place over a broad swath of the freshwater Hudson as far north



as Catskill, but there has been some evidence that there is also spawning farther upstream of river kilometer 193. Spawning requires a hard-bottom substrate. Females quickly return to the sea following breeding; males may remain till autumn. The young sturgeon remain in the estuary from 2 to 8 years, eventually congregating in the brackish tidal portion of the river from Newburgh to Haverstraw. Atlantic sturgeon may be found offshore of USAG WP any time of the year. Habitat at USAG WP is not suitable for Atlantic sturgeon spawning because of the salinity and water depth, but adult sturgeon pass through the area while traveling to and from spawning grounds that occur upriver (NMFS 2016). Males in spawning condition may be present around USAG WP while moving upriver and downriver while searching for females in spawning condition (NMFS 2016). Juvenile and subadult sturgeon are found around USAG WP, where they may use the area to access foraging and rearing habitat. Juveniles and subadult Atlantic sturgeon may also use the waters around USAG WP for foraging (NMFS 2016).

The species is in decline, and although the Hudson River population is one of the healthiest in the nation, stocks of this fish are the lowest in 120 years. Population decline is due to overharvest, both directly and as bycatch; habitat destruction due to dredging and dam building; and pollution. To protect this species, NYS closed the commercial harvest of this species in 1996, and the New York Bight distinct population segment, which includes the Hudson River, was listed as federally endangered in 2012. The Hudson River at USAG WP is considered critical habitat for the Atlantic sturgeon. A benchmark stock assessment conducted in 2017 concluded that the New York Bight distinct population segment was considered depleted, not overfished, and that the biomass was likely 75 percent of 1998 levels (Atlantic States Marine Fisheries Commission 2017). An ESMP was prepared for the Atlantic sturgeon at USAG WP in 2018 as part of this INRMP revision (Appendix B3).

**Program Goals, Objectives, and Projects:** The goals, projects, and objectives for Threatened and Endangered Species are outlined in Table 6-1, *United States Army Garrison West Point Goals and Implementation Plan*, in Chapter 6.

**Program Management Units:** Federally listed species and their habitat are managed by species-specific measures, as well as general habitat conservation measures.

#### **4.8.2 Bald and Golden Eagle Protection Act**

Although bald eagles were removed from the endangered species list in June 2007 because their populations recovered sufficiently, they remain a state-listed threatened species and are provided state protection. In addition, the protections under the BGEPA and the MBTA continue to apply. The BGEPA (16 U.S.C. 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 and civil 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.” The Act defines “take” as “pursue, shoot, shoot at, poison, wound, kill, capture, trap, collect, molest or disturb.”

The MBTA (16 U.S.C. 703-712) prohibits the taking of any migratory bird or any part, nest, or egg, except as permitted by regulation. The MBTA was enacted in 1918; a 1972 agreement

supplementing one of the bilateral treaties underlying the MBTA had the effect of expanding the scope of the Act to cover bald eagles and other raptors. Implementing regulations define “take” under the MBTA as “pursue, hunt, shoot, wound, kill, trap, capture, possess, or collect.”

The bald eagle (*Haliaeetus leucocephalus*) is known to breed in the lower Hudson River valley, and a nest is known on Constitution Marsh, in close proximity to Constitution Island and the Main Post. As of 2018, an active eagle nest is present on the installation (Pray personal communication 2018). Bald eagles in southeastern New York are known to locate their nests in large coniferous trees, between 10 and 180 ft above the ground, near large waterbodies that are undisturbed by human presence (Ehrlich et al. 1988). The golden eagle (*Aquila chrysaetos*) is state-endangered. Its habitat includes open country, prairies, tundra, open coniferous forest, barren areas, and eastern deciduous mountain forests, and it nests 10 to 100 ft from the ground on cliffs and in trees (Ehrlich et al. 1988).

Sightings of bald eagles roosting and perching have been recorded by NRB staff in all months of the year, with the most sightings occurring on Constitution Island. Other sightings have been in the vicinity of the Popolopen Brook drainage. Golden eagles are regular visitors to USAG WP. Bald and golden eagles are managed at USAG WP in accordance with federal, state, and local regulations and the USFWS National Bald Eagle Management Guidelines (USFWS 2007b).

**Program Data Management:** As part of management for bald eagles to ensure protection at USAG WP, surveys are completed at roosts, and loafing and foraging areas. Nests near USAG WP are also monitored to ensure mission activities are kept away from these areas. Golden eagles have been observed in nest-building activities at USAG WP, but no actual nesting has occurred. NRB staff monitors golden eagles. Program data management resources applicable to BGEPA Species are outlined in Appendix C, Table C-1, *Program Data Management*.

**Supplemental References:** Management of bald and golden eagles in accordance with BGEPA is completed at USAG WP through management measures for eagles and the implementation of flight restrictions in areas known to be used by bald eagles. Supplemental resources applicable to BGEPA are outlined in Appendix C, Table C-2, *Supplemental References*.

**Program History:** USAG WP has completed several monitoring efforts and surveys of bald eagle wintering areas. Monitoring of winter areas began in 1996 and has been ongoing since that time. In January 1996, USAG WP initiated a joint-monitoring effort with NYSDEC’s Endangered Species Unit to survey wintering bald eagles in the lower Hudson River valley and vicinity (McGowan and Nye 1996). The objective of the study was to document the distribution of eagles during the winter season (November to March), identify critical habitat areas, and document eagle use of the reservation and vicinity. During the first 3 months of the survey, 96 bald eagle observations were made in the USAG WP section of the study area (consisting of the installation and the immediately surrounding area). Constitution Island and the North Crow’s Nest site were identified to be important day-perch areas. Constitution Island was further identified to support a high bald eagle use, with 36 observations made during the 10 full-day and 3 half-day survey periods. The study results indicated that eagles were using parts of the reservation as important sites for night roosting, including Crow’s Nest, training areas, and Crown Ridge.

Surveys in the 2000s were completed to try to verify roosting areas, including roosting at Crown Ridge, Long Mountain, and at Training Area X. Altogether, more than 700 sightings were made from 1996 to 2010. High concentrations of eagles were documented in several years, including 99 eagle sightings in 2003 and 2004 when the Hudson River was frozen well into spring, 50 eagle sightings from 2005 to 2006, and recent 2018 surveys that have documented more than 52 individuals at a single roost site. Golden eagles have also been observed in surveys and are regular winter visitors at USAG WP.

**Current Conditions:** Bald and golden eagles are managed at USAG WP in accordance with federal, state, and local regulations and the USFWS National Bald Eagle Management Guidelines (USFWS 2007b). As noted above under Program History, bald eagle monitoring has been ongoing at USAG WP for several years, and current efforts continue monitoring at sites identified during previous surveys. NRB personnel conduct three roost surveys a year, collaborate with USGS on an annual state-wide eagle survey, complete nest surveys, and occasionally stake out game carcasses, usually every three years. Eagles at USAG WP have been most often associated with the Hudson River and Constitution Island, followed by Stilwell Lake, Popolopen Lake, Popolopen Brook, Long Mountain, Long Pond, and Crown Ridge. Over time, eagles have become common at USAG WP; in February 2018 roosting surveys resulted in the count of 52 individuals at a single roost site, and eagles have now been documented nesting on the installation (Pray personal communication 2018).

The golden eagle is also now a regular visitor to the USAG WP and is most often seen in the winter, usually near Long Mountain, the Popolopen Brook Corridor, and on Crow's Nest. These are usually immature birds but adults are seen at times, most often corresponding with migration. A pair has been observed nest building on Long Mountain and on Storm King in the Palisade Park, but in both cases the nests were abandoned by spring in favor of migration. It is likely the nests are simply pair-building activity, not actual nesting.

**Nesting:** Bald eagles require isolation from humans during the breeding season to reproduce successfully. These conditions are more prevalent on Constitution Island than on the main reservation. In 2010, a successful eagle nest was established near the island on adjacent land. Bald eagles are frequently sighted in the vicinity of Constitution Island.

**Roost Sites:** The primary roost site on Long Mountain is in remote country and is seldom visited in the winter. Currently, the site is surveyed at dusk at least once a month during the winter. Eagle use is typically constant, with 2 to 6 eagles usually sighted, but may increase to more than 20 during spring migration. Both bald and golden eagles have been observed engaged in nest-building activity at Long Mountain but have failed to remain onsite later than early March in each case. It is thought that these instances were simply pair-bonding behavior, and not actual nest-building attempts. The Range Master Plan puts the top of the ridge off-limits to foot traffic from 1 December to 13 March. The current bald eagle management plan and any future iterations, will prohibit military aircraft from flying below 1,000 ft from 1 December to 31 March across any identified eagle concentration point to include unique foraging, loafing, and roosting sites.

The Crown Ridge roosting site is still regularly monitored, but eagles are seldom sighted, flying or perched. It appears the site may be only occasionally used, usually in late winter during

migration when there is a surge in eagle numbers on the reservation and competition at preferred roosts pushes birds into less desirable habitat. Other roosting may occasionally occur on the reservation. On two occasions eagles were observed very early in the morning perched in trees on the shore of Popolopen Lake or nearby Hemlock Brook. In both instances a deer carcass had been left on the frozen lake, and it is suspected that the eagles had roosted overnight near the food source.

In response to the previous surveys, in 2001 USAG WP developed an ESMP for bald eagles found on USAG WP property (Beemer 2001). As a result of the delisting, the ESMP is no longer applicable and the management actions have been updated to ensure compliance with the BGEPA and MBTA. Bald and golden eagles are considered protected species at USAG WP; USAG WP will continue to prevent disturbance of eagles and to monitor known populations and areas of use. In addition to management actions specifically developed for protection of eagles, large evergreen trees are protected from harvest or other disturbance to allow for potential roosting and/or nesting activity.

**Program Goals, Objectives, and Projects:** The goals, projects, and objectives for BGEPA are outlined in Table 6-1, *United States Army Garrison West Point Goals and Implementation Plan*, in Chapter 6.

**Program Management Units:** Management activities, including monitoring and the implementation of flying restrictions, is based on known areas of bald eagle use. This includes areas where nesting occurs; no nests are currently present at USAG WP but are found in the vicinity. Areas for foraging, loafing, and roosting are managed at USAG WP to prevent disturbance to eagles.

### 4.8.3 Migratory Bird Treaty Act Covered Species

Migratory birds are protected through the Migratory Bird Treaty Act (MBTA), DoD Migratory Bird Readiness Rule, EO 13186, Bald and Golden Eagle Protection Act (BGEPA), ESA, NEPA, and the Sikes Act. Federal regulations and EO 13186 provide the framework for regulation of migratory bird take and possession. Federal permits are required to take, possess, transport, and dispose of migratory birds, bird parts, feathers, nests, or eggs.

Under EO 13186, federal agencies are required, to the extent practical, to initiate measures to conserve migratory birds and to minimize the intentional and/or unintentional take of migratory birds during/through agency actions. USAG WP properties are used by more than 100 species of breeding migratory birds and are the winter residence of, or visited by, another 140 species. The sound natural resources management practices employed by USAG WP ensure the continued health of those migratory species and

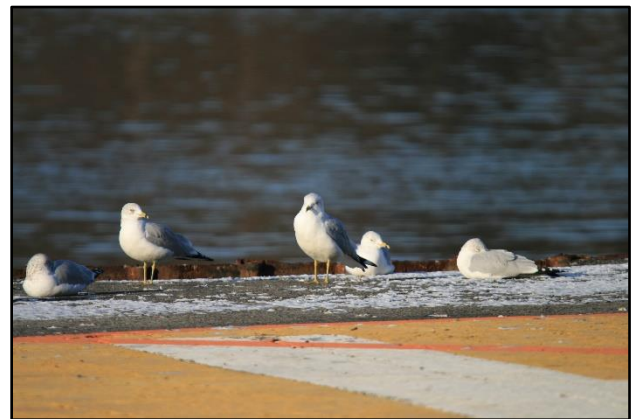


Photo: NRB.

their habitats on the installation. Further, the training activities that occur at USAG WP are unlikely to result in the intentional or unintentional take of any migratory bird species.

DoD has partnered with USFWS and state fish and wildlife organizations to implement measures for the conservation of migratory bird species and habitats. A component of conserving migratory species is a base-specific knowledge of which species may be present on an installation, when they are present, and the hazards presented by these species. The DoD Partners in Flight program maintains a database of Bird Species of Concern from different priority species lists. Birds protected under the MBTA are also listed by the NYSDEC *Checklist of Amphibians, Reptiles, Birds, and Mammals of New York State* (NYSDEC 2010b).

**Program Data Management:** Bird count data are collected annually at USAG WP and compiled to keep a larger record of bird species. In addition, a checklist of bird species found at USAG WP has been developed, and GIS layers for bird counts are maintained by the installation. Program data management resources applicable to MBTA Covered Species are outlined in Appendix C, Table C-1, *Program Data Management*.

**Supplemental References:** USAG WP does not generally undertake species-specific management strategies for migratory species unless dictated by current conditions; surveys at USAG WP are general point-count surveys rather than species surveys. Bird conservation measures are incorporated into all NEPA documentation for projects with the potential to impact migratory birds, such as brush-mowing projects. Habitat management and coordination with ITAM and other programs helps to ensure protection of migratory bird species at USAG WP. New construction at USAG WP is also reviewed to ensure that projects include measures to promote bird-friendly design while discouraging these species in areas where they may be incompatible. For example, projects are designed to remove flat spaces to prevent nesting in poor locations. Bird-friendly design measures include light fixtures that point down and landscaping that keeps bird species away from building façade. Supplemental resources applicable to MBTA Covered Species are outlined in Appendix C, Table C-2, *Supplemental References*.

**Program History:** USAG WP has kept surveys from bird counts for annually to monitor bird populations, including migratory birds, at the installation. In 1988, NRB completed a checklist of bird species found at USAG WP, with assistance from two local birders. This checklist is available online as a resource for recreational birders. Bird counts have been completed annually.

The Cornell Laboratory of Ornithology developed an automated acoustic and internet technology that uses digital autonomous recording units to record sound files as a method to complement point counts for monitoring the presence of migratory bird species (Rosenberg 2007). During Fall 2005 and Spring 2006, Cornell Lab of Ornithology collected 27,000 hours of digital recordings on USAG WP for the purposes of monitoring species that vocalize infrequently, improving the accuracy of existing census methods, producing acoustic datasets for training purposes, and monitoring flight-calls of migrant birds for predicting migration and stopover use on DoD installations. In 2013, locations of golden-winged warblers were recorded as part of a larger survey of rare species at USAG WP.

**Current Conditions:** USAG WP is home to a diverse assemblage of bird species, including both resident and migrant species. Two hundred and forty-nine species of birds have been observed on or near USAG WP. Of these, 110 species have been identified as breeding on the installation, with another 10 non-breeders considered as winter residents. Bird species observed at USAG WP are listed in Section 4.9.4, *Non-Game Management*. In spring and fall, raptors and passerines migrate through USAG WP along many of the northeast-southwest ridges of the reservation and along the Hudson River.

USAG WP's varied habitat provides environments for many avian families. Avian families represented on the installation include the following: Gaviidae (loons), Podicipedidae (grebes), Phalacrocoracidae (cormorants), Ardeidae (herons), Threskiornithidae (ibises, spoonbills), Anatidae (swans, geese, ducks), Cathartidae (American vultures), Accipitridae (kites, hawks, eagles), Falconidae (falcons, caracara), Phasianidae (grouse, ptarmigans), Rallidae (rails, gallinules, coots), Charadriidae (plovers), Scolopacidae (sandpipers), Laridae (skuas, jaegers, gulls, terns), Columbidae (pigeons, doves), Cuculidae (cuckoos, anis), Tytonidae (barn owls), Strigidae (typical owls), Caprimulgidae (nightjars), Apodidae (swifts), Trochillidae (hummingbirds), Alcedinidae (kingfishers), Picidae (woodpeckers), Tyrannidae (tyrant flycatchers), Alaudidae (larks), Hirundinidae (swallows), Corvidae (jays, crows, magpies), Paridae (titmice, chickadees), Sittidae (nuthatches), Certhiidae (creepers), Troglodytidae (wrens), Musicapidae (thrushes), Mimidae (mimic thrushes), Bombycillidae (waxwings), Laniidae (shrikes), Sturnidae (starlings), Vireonidae (vireos), Emberizidae (warblers, sparrows), Fringillidae (finches), and Passeridae (weavers).

**Program Goals, Objectives, and Projects:** The goals, projects, and objectives for MBTA Covered Species are outlined in Table 6-1, *United States Army Garrison West Point Goals and Implementation Plan*, in Chapter 6.

**Program Management Units:** Migratory birds are managed by management of associated habitat, unless conditions dictate species-specific management objectives.

#### **4.8.4 Species of Concern**

While not specifically defined in the ESA, species of concern are those that are not federally-listed as threatened or endangered but are declining and appear to be in need of conservation in order to sustain the military mission in the near-term or foreseeable future. This includes state-listed species. Species of concern are not protected under the ESA. Because candidate species may be listed in the future, installations are required to avoid taking actions that result in the need to list candidates as threatened or endangered and are encouraged to participate in conservation agreements with USFWS. Although not required, installations are encouraged to develop ESMPs for candidate species (HQDA 1995). Several species are present at USAG WP are currently being considered by the USFWS to determine listing eligibility; these species are not yet candidates but are under review by USFWS. The USFWS has begun the process to consider listing for the following species known to occur at USAG WP: wood turtle (*Glyptemys insculpta*), spotted turtle (*Clemmys guttata*), monarch butterfly (*Danaus plexippus*), and golden-winged warbler (*Vermivora chrysoptera*). In addition, it is anticipated that the spread of white-nose syndrome will likely result in the consideration of several bat species for listing, including the tricolored bat (*Perimyotis subflavus*).



At a minimum, installations are required to document the distribution of candidate species on the installation and monitor their status. The ESA does not waive sovereign immunity to state laws protecting state-listed species; therefore, USAG WP is not subject to state endangered species regulations. Further, it is a violation of the Anti-Deficiency Act (31 U.S.C. § 1341) for federal agencies to pay a fee or a tax or to use appropriated funds to comply with state or local laws and procedures for which congress has not explicitly waived sovereign immunity. As such, a state may not attach conservation measures for state-listed species when administering permits associated with programs ceded to the state.

Although not required, DoD and Army policy is to provide for the protection and conservation of state-protected species when practicable under DoDI 4715.03, Enclosure 3(3)(d). In addition, installations are encouraged to cooperate with state authorities in efforts to conserve these species. USAG WP manages for state-listed and rare species when practicable, and will continue to voluntarily monitor, provide data, and grant access to study sites on the installation to academic and state researchers. USAG also will continue to protect species from construction and operationally-inflicted harm to the greatest extent practicable. When conflicts between the military mission and conservation of state-protected species occur, USAG WP will conduct consultations with the appropriate authority to determine if any conservation measures can be feasibly implemented to mitigate impacts.

Much work has been done to better understand the rare animal species found at USAG WP, in New York, and in the United States. Some species, including the peregrine falcon (*Falco peregrinus*), osprey (*Pandion haliaetus*), and red-shouldered hawk (*Buteo lineatus*), have recovered enough to be downgraded from endangered species lists. Other species have done the opposite, becoming rarer and eventually requiring inclusion on the protected species lists. New resident and visitor species have been discovered at USAG WP, and those previously identified have been more intensively studied. Table 4-5 lists those state-listed species documented at USAG WP, as well as species listed as “special concern” by NYS and candidates for possible future inclusion on the federal endangered species list. Species with no status listed are those that are considered in need of conservation and are present at USAG WP.

Rare plants in the state of New York have been designated as such by the NYNHP based on the number of individuals of a particular species that are estimated to occur within the state. On USAG WP, since the NYNHP ranking itself does not mandate protection and the legal protection under NYS law does not prohibit plant disturbance by property owners, the protection and management of rare plants is viewed by the Army as a matter of responsible stewardship.

**Table 4-5. State Species of Concern at United States Army Garrison West Point**

| Group   | Scientific Name                  | Common Name                 | Species Status | Installation Presence and Priority     |
|---------|----------------------------------|-----------------------------|----------------|--|
| Mammals | <i>Neotoma magister</i>          | Allegheny Woodrat           | E              | Historic, potential to occur, unlikely |
| Mammals | <i>Sylvilagus transitionalis</i> | New England Cottontail      | SC             | Adjacent, potential to occur, unlikely |
| Mammals | <i>Myotis leibii</i>             | Eastern Small-Footed Myotis | SC             | Resident                               |
| Mammals | <i>Perimyotis subflavus</i>      | Tri-Colored Bat             | PL             | Resident                               |

| Group     | Scientific Name                                   | Common Name                 | Species Status | Installation Presence and Priority   |
|-----------|---|-----------------------------|----------------|--------------------------------------|
| Birds     | <i>Podilymbus podiceps</i>                        | Pied-Billed Grebe           | T              | Occasional, Resident                 |
| Birds     | <i>Caprimulgus vociferus</i>                      | Whip-Poor-Will              | SC             | Probable nesting, uncommon, Resident |
| Birds     | <i>Chordeiles minor</i>                           | Common Nighthawk            | SC             | Occasional                           |
| Birds     | <i>Rallus elegans</i>                             | King Rail                   | T              | Rare, resident                       |
| Birds     | <i>Sterna antillarum</i>                          | Least Tern                  | T              | Rare                                 |
| Birds     | <i>Gavia immer</i>                                | Common Loon                 | SC             | Occasional, transient                |
| Birds     | <i>Botaurus lentiginosus</i>                      | American Bittern            | SC             | Uncommon                             |
| Birds     | <i>Ixobrychus exilis</i>                          | Least Bittern               | T              | Probable breeding, uncommon          |
| Birds     | <i>Aquila chrysaetos</i>                          | Golden Eagle                | E              | Occasional, winter resident          |
| Birds     | <i>Circus cyaneus</i>                             | Northern Harrier            | T              | Occasional                           |
| Birds     | <i>Pandion haliaetus</i>                          | Osprey                      | SC             | Uncommon/occasional                  |
| Birds     | <i>Haliaeetus leucocephalus</i>                   | Bald Eagle                  | T              | Common, resident                     |
| Birds     | <i>Falco peregrinus</i>                           | Peregrine Falcon            | E              | Transient                            |
| Birds     | <i>Accipiter cooperii</i>                         | Cooper's Hawk               | SC             | Uncommon, rare in winter             |
| Birds     | <i>Accipiter gentilis</i>                         | Northern Goshawk            | SC             | Uncommon/occasional                  |
| Birds     | <i>Accipiter striatus</i>                         | Sharp-Shinned Hawk          | SC             | Common/occasional                    |
| Birds     | <i>Buteo lineatus</i>                             | Red-Shouldered Hawk         | SC             | Uncommon                             |
| Birds     | <i>Melanerpes erythrocephalus</i>                 | Red-Headed Woodpecker       | SC             | Occasional, rare in winter           |
| Birds     | <i>Icteria virens</i>                             | Yellow-Breasted Chat        | SC             | Occasional, historic                 |
| Birds     | <i>Lanius ludovicianus</i>                        | Loggerhead Shrike           | E              | Rare                                 |
| Birds     | <i>Poocetes gramineus</i>                         | Vesper Sparrow              | SC             | Rare/occasional                      |
| Birds     | <i>Eremophila alpestris</i>                       | Horned Lark                 | SC             | Occasional in winter                 |
| Birds     | <i>Vermivora chrysoptera</i>                      | Golden-Winged Warbler       | SC, PL         | Uncommon                             |
| Reptile   | <i>Carphophis amoenus</i>                         | Eastern Wormsnake           | SC             | Resident                             |
| Reptile   | <i>Crotalus horridus</i>                          | Timber Rattlesnake          | T              | Resident, high priority              |
| Reptile   | <i>Heterodon platyrhinus</i>                      | Eastern Hognose Snake       | SC             | Resident                             |
| Reptile   | <i>Clemmys guttata</i>                            | Spotted Turtle              | SC, PL         | Resident                             |
| Reptile   | <i>Glyptemys insculpta</i>                        | Wood Turtle                 | SC, PL         | Resident                             |
| Reptile   | <i>Terrapene carolina</i>                         | Eastern Box Turtle          | SC             | Resident                             |
| Amphibian | <i>Acris crepitans</i>                            | Northern Cricket Frog       | E              | Potential habitat, historic          |
| Amphibian | <i>Lithobates kauffeldi</i>                       | Atlantic Coast Leopard Frog | -              | Potential habitat                    |
| Amphibian | <i>Ambystoma opacum</i>                           | Marbled Salamander          | SC             | Resident                             |
| Amphibian | <i>Ambystoma laterale</i>                         | Blue-spotted Salamander     | SC             | Resident                             |
| Fish      | <i>Anguilla rostrata</i>                          | American Eel                | -              | Resident                             |
| Fish      | <i>Umbra pygmaea</i>                              | Eastern Mudminnow           | -              | Resident                             |
| Fish      | <i>Enneacanthus gloriosus</i>                     | Bluespotted Sunfish         | -              | Resident                             |
| Insects   | <i>Argia translata</i>                            | Dusky Dancer                | -              | Resident                             |
| Insect    | <i>Danaus plexippus</i>                           | Monarch Butterfly           | PL             | Common                               |
| Insects   | <i>Enallagma laterale</i>                         | New England Bluet           | -              | Resident                             |
| Insects   | <i>Nasiaeschna pentacantha</i>                    | Cornet Darner               | -              | Resident                             |
| Insect    | <i>Rhionaeschna mutata</i>                        | Spatterdock Darner          | -              | Resident                             |
| Plant     | <i>Agrimonia rostellata</i>                       | Woodland Agrimony           | T              | Location at USAG WP                  |
| Plant     | <i>Aplectrum hyemale</i>                          | Puttyroot                   | E              | Historic, one occurrence in 1882     |
| Plant     | <i>Asclepias purpurascens</i>                     | Purple Milkweed             | T              | Nine populations, seen in 2011       |
| Plant     | <i>Bartonia paniculata</i> ssp. <i>paniculata</i> | Screw-Stem                  | E              | Historic, not seen since 1990        |
| Plant     | <i>Betula nigra</i>                               | River Birch                 | R              | Two populations, seen in 2009        |

| Group | Scientific Name                         | Common Name             | Species Status | Installation Presence and Priority                     |
|-------|---|-------------------------|----------------|--|
| Plant | <i>Bidens bidentoides</i>               | Delmarva Beggarticks    | R              | One population, seen in 2011                           |
| Plant | <i>Callitriche terrestris</i>           | Terrestrial Starwort    | T              | One population, seen in 2011                           |
| Plant | <i>Carex bicknellii</i>                 | Bicknell's Sedge        | R              | Three populations, seen in 2011                        |
| Plant | <i>Carex bushii</i>                     | Bush's Sedge            | R              | Three populations, seen in 2011                        |
| Plant | <i>Carex cumulata</i>                   | Clustered Sedge         | T              | Five populations, seen in 2011                         |
| Plant | <i>Carex emmonsii</i>                   | Emmons's Sedge          | R              | Nine populations, seen in 2011                         |
| Plant | <i>Carex frankii</i>                    | Frank's Sedge           | E              | One population, seen in 2011                           |
| Plant | <i>Carex glaucoidea</i>                 | Blue Sedge              | T              | Two populations, not seen since 2003, may be erroneous |
| Plant | <i>Carex lupuliformis</i>               | False-Hop Sedge         | T              | Two populations, seen in 2011                          |
| Plant | <i>Carex merritt-feraldii</i>           | Fernald's Sedge         | T              | One population, seen in 2011                           |
| Plant | <i>Carex molesta</i>                    | Troublesome Sedge       | T              | One population, seen in 2011                           |
| Plant | <i>Carex nigromarginata</i>             | Black-Margined Sedge    | T              | Six populations, seen in 2011                          |
| Plant | <i>Carex retroflexa</i>                 | Reflexed Sedge          | T              | Ten populations, seen in 2011                          |
| Plant | <i>Carex reznicekii</i>                 | Reznicek's Sedge        | E              | One population, seen in 2011                           |
| Plant | <i>Carex willdenowii</i>                | Willdenow's Sedge       | E              | Ten populations, seen in 2011                          |
| Plant | <i>Ceratophyllum echinatum</i>          | Prickly Hornwort        | R              | Five populations, seen in 2011                         |
| Plant | <i>Chenopodium standleyanum</i>         | Standley's Goosefoot    | R              | One population, seen in 1992                           |
| Plant | <i>Corydalis flavula</i>                | Yellow Corydalis        | R              | Widespread at USAG WP                                  |
| Plant | <i>Crocianthemum propinquum</i>         | Low Frostweed           | T              | One population, seen in 2011                           |
| Plant | <i>Crotalaria sagittalis</i>            | Rattlebox               | E              | Historic, seen in late 1800s                           |
| Plant | <i>Cyperus echinatus</i>                | Globe Flatsedge         | E              | One population, seen in 2011                           |
| Plant | <i>Cyperus erythrorhizos</i>            | Red-Root Flatsedge      | R              | One population, specimen collected in 1992             |
| Plant | <i>Cyperus houghtonii</i>               | Houton's Flatsedge      | R              | One population, specimen collected in 1970             |
| Plant | <i>Cyperus lupulinus ssp. lupulinus</i> | Great Plains Flatsedge  | T              | Two populations, seen in 2011                          |
| Plant | <i>Cyperus odoratus</i>                 | Fragrant Flatsedge      | T              | One population, specimen collected in 1994             |
| Plant | <i>Elatine americana</i>                | American Waterwort      | E              | Known in 3 lakes, collected in 2011                    |
| Plant | <i>Eleocharis aestuum</i>               | Tidal Spikerush         | E              | Historic, seen in 1936, potentially erroneous          |
| Plant | <i>Endodeca serpentaria</i>             | Virginia Snakeroot      | T              | Six populations, seen in 2011                          |
| Plant | <i>Hottonia inflata</i>                 | Featherfoil             | T              | Two populations, seen in 2008                          |
| Plant | <i>Lechea racemulosa</i>                | Illinois Pinweed        | R              | Eleven populations, seen in 2011                       |
| Plant | <i>Lespedeza frutescens</i>             | Violet Bush-Clover      | R              | Ten populations, seen in 2011                          |
| Plant | <i>Lilaeopsis chinensis</i>             | Eastern Grasswort       | T              | Historic, seen in 1828-1843                            |
| Plant | <i>Liparis liliifolia</i>               | Lily-Leaved Twayblade   | E              | Historic, seen in 1883                                 |
| Plant | <i>Lycopus rubellus</i>                 | Stalked Bugleweed       | E              | One population, seen in 2011                           |
| Plant | <i>Najas muenscheri</i>                 | Muenscher's Water-Nymph | E              | Historic, seen in 1936                                 |
| Plant | <i>Oxalis violacea</i>                  | Violet Wood-Sorrel      | T              | Three populations, seen in 2008                        |
| Plant | <i>Podostemum ceratophyllum</i>         | Riverweed               | T              | Three populations, seen in 2011                        |
| Plant | <i>Polygala nuttallii</i>               | Nuttall's Milkwort      | T              | One population, seen in 2011                           |

| Group   | Scientific Name  | Common Name                | Species Status | Installation Presence and Priority |
|---|--|----------------------------|----------------|------------------------------------|
| Plant   | <i>Polygonum tenue</i>                                   | Slender Knotweed           | R              | Nine populations, seen in 2011     |
| Plant   | <i>Ranunculus micranthus</i>                             | Small-Flowered Crowfoot    | R              | Thirteen populations, seen in 2011 |
| Plant   | <i>Sagittaria montevidensis</i><br><i>ssp. spongiosa</i> | Spongy-Leaved Arrowhead    | R              | Historic, seen in 1936             |
| Plant   | <i>Scirpus georgianus</i>                                | Georgia Bulrush            | E              | One population, seen in 2011       |
| Plant   | <i>Utricularia geminiscapa</i>                           | Hiddenfruit Bladderwort    | R              | Four populations, seen in 2011     |
| Plant   | <i>Utricularia radiata</i>                               | Small Floating Bladderwort | T              | Six populations, seen in 2011      |
| Plant   | <i>Viola bicolor</i>                                     | Field Pansy                | E              | Two populations, seen in 2011      |
| Notes: E = State Endangered.<br>P = Potential for Future Listing.<br>R = Rare species.<br>SC = State Species of Concern.<br>T = State Threatened.<br>USAG WP = United States Army Garrison West Point.<br><br>Sources: NYNHP 2017a; NYNHP 2017b; Werier and Barbour 2012. |  |                            |                |                                    |

**Program Data Management:** The management of sensitive species on USAG WP aims to identify, protect, and preserve endangered, threatened, and rare species on the reservation in accordance with applicable laws and regulations and Army policy on responsible stewardship. Program data management resources applicable to Special Concern Species are outlined in Appendix C, Table C-1, *Program Data Management*.

**Supplemental References:** USAG WP has several management documents specific to the state-listed species or rare species that include recommendations for the management of areas to support these species. Supplemental resources applicable to Species of Concern are outlined in Appendix C, Table C-2, *Supplemental References*.

**Program History:** USAG WP has kept species information from numerous species surveys for several years to monitor populations at the installation. Surveys have included mammal, birds, fish, herptile, butterfly, dragonfly, damselfly, crayfish, and mollusc species.

**Previous Surveys:** Several surveys have been completed in the past that have documented the presence of species of concern at USAG WP, and surveys are conducted every few years to keep records of species of concern up to date. In 1991 and 1992, in accordance with the requirements of AR 200-1 and the ESA, a survey of threatened and endangered fauna and flora on USAG WP properties was conducted by the Biological Survey Unit of the NYS Museum (NYS Museum 1994). The survey found that the bald eagle, a state threatened species, is a frequent winter visitor to both the reservation and Constitution Island. Three additional bird species—golden eagle, red-shouldered hawk, and osprey—were observed in forested areas on the reservation during the survey but were not considered residents. The only state-listed terrestrial animal species found to be a permanent resident of the West Point reservation was the timber rattlesnake (*Crotalus horridus*).

Surveys for bat species in 1999 and 2000 resulted in the discovery of two female lactating Eastern small-footed bats (*Myotis leibii*) (Gannon and Sherwin 2001); two lactating females were also found in 2002 (Jaycox 2003; Gannon and Sherwin 2001). Eastern small-footed bats were documented in acoustic surveys in 2009 and in both acoustic and mist-net surveys in 2015 (Britzke 2010; Pittsburgh Wildlife & Environmental, Inc., 2015).

A survey was conducted in 1997 and 1998 to document abundance of cerulean warblers (*Setophaga cerulea*) and other forest-nesting birds at USAG WP; subsequent bird counts have provided additional documentation of the warbler. Surveys for the Allegheny woodrat (*Neotoma magister*) were completed in 1981 to confirm any possibility of an extant population, but no individuals were found. A 1994 survey at USAG WP also did not return any observations of the woodrat on the installation. Surveys for odonates and butterflies have been conducted over several years at USAG WP. A 4-year survey of odonates began in 1994, which identified 14 that were considered rare or noteworthy (Soltesz 2000). A butterfly inventory initiated in 1995 identified eight species rare for NYS and six that are considered regionally rare (Barbour, J.G. 1997; Barbour, S. 1997). A survey of moths was completed in 1999, in which two moth species considered rare were identified (Barbour, J.G. 2000). A follow-up survey was conducted in 2002 that documented several additional species, including three regionally rare species. Mollusc surveys in 2000 and 2001 identified three species considered rare in New York, and one species new to science (Prezant and Chapman 2002).

Inventories to document the presence of rare plants have been conducted over several years at USAG WP. A survey in 1994/1995 found 63 special status species, which was expanded to 73 species after an additional survey (Barbour, S. 1996; Barbour, J.G. 2001). A plan for the protection of these rare species was developed in 1996 and is updated annually (USAG WP 2010). Rare plant surveys were collected in 2003 and 2006 at specific sites, and annual visits were completed to some sites for monitoring purposes. Extensive surveys completed in 2011 were used to verify the presence of populations of rare species previously recorded and to determine the validity of earlier identifications of some rare plants (Werier and Barbour 2012).

Timber rattlesnakes have been managed at USAG WP for many years, with the first surveys conducted in the 1990s. USAG WP has contracted with a local rattlesnake expert to track and monitor timber rattlesnake populations at West Point since 1993. Using radio telemetry equipment and field surveys, hibernacula and high-use summer areas have been identified. Past poaching of dens was known at USAG WP in the 1960s and 1970s, but the survey identified populations within or adjacent to USAG WP. Two areas with hibernacula were placed off-limits to training to prevent negative troop/rattlesnake interactions. USAG WP was also involved in a 12-year timber rattlesnake recovery effort, which included removing gravid females and placing them in an incubator, then moving snakes to depleted den areas. These snakes were monitored for 8 years (Stechert 2001). Monitoring of timber rattlesnake populations at USAG WP is ongoing.

**Current Conditions:** Currently, USAG WP conducts occasional surveys to identify the presence of rare species and species of concern. The locations of populations are mapped and maintained as a GIS database. The maps are provided to military trainers and other program managers so that disturbance to these species is minimized or avoided completely. Species are generally managed using measures to conserve habitat that support species of concern, rather

than species-specific management measures. Species that are managed by species-specific measures include the timber rattlesnake, bald and golden eagles (which are discussed in Section 4.8.2, *Bald and Golden Eagle Protection Act*), and wood and spotted turtles.

*Timber Rattlesnake (Crotalus horridus)*: The timber rattlesnake is listed as “threatened” by NYS, and the species and its hibernacula and gestation areas are of special interest for protection. Five extant timber rattlesnake dens have been identified within, or very near, the West Point reservation boundary, with one extinct population also known from USAG WP lands. Two areas with hibernacula have been placed off-limits to training to prevent negative troop/rattlesnake interactions. Approximately 100 acres are delineated as a training exclusion area to protect this species. There are occasional conflicts between humans and snakes at



Photo: NRB.

USAG WP. Most commonly, snakes are accidentally killed when crossing or basking on roadways. During summer months, military and civilian personnel occasionally encounter rattlesnakes on the reservation, and while regulations prohibit harming or harassing the snakes, negative results sometimes happen. Snakes sometimes find their way into housing areas in the cantonment area, and these snakes are promptly relocated by the NRB.

The West Point community, troops, civilians, and contractors are made aware of the special status of the timber rattlesnake through the ITAM program, though the National Environmental Policy Act (NEPA) process, as well as through community announcements through the *Pointer View* and the DPW customer service representative. Signs are posted, where needed, indicating the presence of sensitive areas and a flyer distributed to the West Point community explaining the protected status and retiring nature of the species to help alleviate misconceptions held by many people. Community members are educated to alert NRB to any rattlesnake conflict, and not to move or harm the snake in any way. When a rattlesnake is encountered on-post, NRB holds the equipment and permits required to relocate the snake. All construction projects are reviewed for impact on rattlesnakes, and mitigation measures are included in plans if required.

Troops encountering snakes are trained to shift operations away from the snake if possible, or to contact NRB for removal if unavoidable. All snakes are released back to their home territories. In addition to sightings associated with known hibernacula and summer ranges, rattlesnake sightings do occur at locations far removed from these sites. Many of these sightings are likely due to errors in identification, but a few are documented sufficiently to be verifiable. All such sightings will be recorded, and the habitat investigated for potential hibernacula or gestation areas. USAG WP conducts annual checks of known hibernacula and gestation areas to ensure viability and to document and mitigate disturbance, if any. Reports of rattlesnake occurrence are investigated for use by hibernating or gestating snakes.

*Spotted Turtles (Clemmys guttata) and Wood Turtles (Clemmys insculpta)*: Spotted turtles and wood turtles are listed as “Species of Special Concern” by NYS; however, USFWS has been



petitioned to include them as federally listed species. Historically, spotted turtles have been documented at 15 locations at USAG WP and are generally stable populations; wood turtles have been documented in Deep Hollow Brook, Popolopen Brook, Long Pond Brook, and Highland Brook, and they are likely present in Zint's Brooks. Similarly to the timber rattlesnake, road mortality is a problem in some parts of USAG WP. In August 2017, a Planning Level Survey was conducted to measure the extent of occurrence and relative abundances of these species. During this effort, nine wood turtles were captured and no spotted turtles were captured, though one was observed during the survey. As part of the Planning Level Survey, it was recommended that training maneuvers be limited in the vicinity of known wood and spotted turtle habitat and that additional surveys for wood and spotted turtles be conducted at USAG WP (USACE 2017). The study also recommended restoring and improving nesting habitat for wood turtles through the placement of suitable substrates and other features needed for nesting (USACE 2017). A survey was also completed in 2014 to test for lead blood levels in wood turtles from an artillery range at USAG WP.

*Mammals:* The Allegheny woodrat (*Neotoma magister*) was historically found at USAG WP, but is believed to be extirpated in the wild. Surveys are still completed periodically for this species, as habitat is still available at USAG WP and populations are known in the region. New England cottontails (*Sylvilagus transitionalis*) are habitat specialists that rely on early-successional habitats or thickets (Litvaitis 2001). This species is known from Cold Spring, in the vicinity of USAG WP, and has potential habitat on Constitution Island. New England cottontail was considered a candidate for listing from 2006 until 2015, when the USFWS removed the candidate status and determined the species no longer meets the definition of threatened or endangered (USFWS 2015b). The species is listed as special concern in New York. Eastern small-footed bats (*Myotis leibii*) observed at USAG WP have included several occurrences of lactating females, including some individuals captured in Special Natural Areas (Jaycox 2003; Pittsburgh Wildlife & Environmental, Inc., 2015). The protection afforded these areas will serve to protect this bat species.

*Birds:* Several bird species that are considered rare or species of concern occur at USAG WP, including both residents and transitory species. Birds that have been observed in the past include the pied-billed grebe (*Podilymbus podiceps*), which is occasionally found in ponds, sloughs, and lakes at USAG WP. The least bittern (*Ixobrychus exilis*) has only been known from a few locations at USAG WP, including constitution marsh, where it is a confirmed breeder. Peregrine falcons (*Falco peregrinus*) have historically nested at USAG WP, but no nesting has been observed in recent history. Managing habitat at USAG WP provides protection to many bird species of concern at USAG WP. Protecting wetlands will continue to provide suitable habitat for the American bittern (*Botaurus lentiginosus*) and forest openings benefit whip-poor-wills (*Caprimulgus vociferus*) on Long Mountain, Deep Hollow, and Popolopen Brook marsh. The golden-winged warbler (*Vermivora chrysoptera*) survives in early successional habitat and open wetlands at USAG WP (Popolopen Brook Marsh), but is facing potential "genetic swamping" from a sympatric species, the blue-winged warbler (*Vermivora cyanoptera*). Maintenance of open wetland and shrubby areas should continue to benefit this species. USAG WP's forest management practice of selective cutting ensures that sufficient super-canopy trees the cerulean warbler prefers for nesting will be maintained and the species should continue to thrive at USAG WP. A list of bird species at USAG WP is found in Table 4-8.

***Other Herptiles:*** Eastern box turtles (*Terrapene carolina*) have been found at many locations on the reservation in the habitats with which they are associated, including marsh edges, old field habitat, and thickets. The eastern hognose snake (*Heterodon platyrhinos*) (documented at four locations) and the eastern wormsneak (*Carphophis amoenus*) (documented at two locations) tend to be secretive at USAG WP and any sightings will continue to be documented. Marbled salamanders (*Ambystoma opacum*) are known to occur at nine sites and Jefferson salamanders (*Ambystoma jeffersonianum*) are documented at one. Both salamander species are dependent on vernal pools and pools they are known to use will be closely monitored. Blue-spotted salamanders (*Ambystoma laterale*) are also present at USAG WP. Populations of blue-spotted salamanders and Jefferson salamanders have interbred, creating hybrid populations. This has led to populations with polyploid females; these females have multiple sets of chromosomes (Massachusetts Natural Heritage and Endangered Species Program 2007).

***Fish:*** Fish species are present in the lakes and streams of USAG WP, including the Hudson River. The American eel (*Anguilla rostrata*) was first petitioned for listing in 2004, and the USFWS completed reviews of petitions for listing in 2007, 2011, and 2015. Past reviews, including the most recent review in 2015 concluded that the species does not warrant listing (USFWS 2015c).

***Insects:*** Invertebrate surveys of USAG WP identified the presence of several rare species. Additional surveys and monitoring efforts may be implemented to determine changes in population status. The database for odonates, butterflies, moths, and other insects will be updated as additional surveys are conducted.

***Plants:*** On USAG WP, since the NYNHP ranking itself does not mandate protection and the legal protection under NYS law does not prohibit plant disturbance by property owners, the protection and management of rare plants is viewed by the Army as a matter of responsible stewardship. Some of these species, or groups of species, are believed to be restricted to specific habitats, including rich woodlands, ponds and streams, swamps or marshes, estuarine wetlands, burned areas, and in “northern” woods (cool sites with some boreal species, such as the Bull Hill Grotto) (Barbour, S. 1996). During past surveys, many of these species were found in disturbed sites, revealing that rare plants are not always found in pristine habitats. Disturbed areas on the reservation containing rare plants included roadsides, cut-and-fill areas, openings, scraped roadbanks, mowed fields and lawns, a horse corral, and burned hilltops. Protection of habitat that supports rare species and continued surveys for these species will be used to manage populations. The Rare Plant Management Plan (USAG WP 2010) provides management measures for each species, including notifying site managers of the presence of populations of these plants. Rare plants are included on the Constraints Map (Figure 2-6), which provides a tool for training managers to work around or minimize activities that could impact species.

**Program Goals, Objectives, and Projects:** The goals, projects, and objectives for Species of Concern are outlined in Table 6-1, *United States Army Garrison West Point Goals and Implementation Plan*, in Chapter 6.

**Program Management Units:** Management of rare species and species of concern is done on the community or guild level and a focus on maintaining ecosystem functions as a means to protect species. On USAG WP, for example, most rare plants are dependent upon specific

habitats for their survival, including grasslands and savannas, mature deciduous forests, wetlands, firebreak margins, and talus slopes.

## 4.9 FISH AND WILDLIFE

### 4.9.1 Recreation

The outdoor recreation program at USAG WP is designed to provide the cadets, military, and civilian staff, and residents with ample resources and opportunities to participate in enjoyable outdoor-related activities. The outdoor recreation program at USAG WP includes a variety of activities including hunting, fishing, trapping, boating, hiking, birdwatching, horseback riding, cross-country skiing, and camping. USAG WP also provides hunting and fishing opportunities specifically set aside for disabled, youth, and cadet sporting use. USAG WP provides these opportunities through both physical and administrative resource provisions. The level of enjoyment that is derived from these activities is directly related to the quality of natural resources at USAG WP. Maintaining a quality outdoor recreation program is dependent on proper management of the natural resources and efficient program administration and oversight.

Outdoor recreation activities occur throughout USAG WP, but because the primary mission of USAG WP is military training, outdoor recreation on military lands is secondary. Outdoor recreation activity in designated training areas is prohibited during times of actual training use, and the dud/danger areas are always off-limits. When not in training use, the training areas are available for outdoor recreation activities under the access approval by the Range Control Office. All major waterbodies on USAG WP may be used for outdoor recreation. Those areas, which also provide for training, however, assign training as a higher priority. All outdoor recreation activities that occur on the installation must be scheduled so as not to interfere with the military mission.

The management of game species and fisheries is further discussed in Section 4.9.2, *Fisheries Management*, and Section 4.9.3, *Game Management*. Management of other natural resources in areas used for outdoor recreation are discussed in their respective sections. MWR is responsible for management of recreational activities and recreational sites, except hunting, fishing, and trapping sales, which are managed jointly by NRB and MWR.

**Program Data Management:** Areas where outdoor recreation occurs at USAG WP are mapped to provide clear guidelines for area restrictions for hunting and fishing. Hunters, trappers, and anglers are required to sign in and out, and are required to report their harvest; most of these activities are completed through the USAG WP hunting and fishing online permitting and registration system and website (currently iSportsman). Data are compiled annually to create harvest reports. Program data management resources applicable to Recreation are outlined in Appendix C, Table C-1, *Program Data Management*.

**Supplemental References:** Recreational activities are regulated by USMA Regulation 215-5, *Recreational Activities*, as well as NYS regulations. USAG WP is located in Wildlife Management Unit (WMU) 3P. Supplemental resources applicable to Recreation are outlined in Appendix C, Table C-2, *Supplemental References*.

**Program History:** Hunting, fishing, and trapping, as well as other recreational activities, have been part of the history of USAG WP. Both historically and currently, management of these Resources is completed through surveys of harvest data and population data to ensure healthy game and fish populations. More information on biological surveys for game and fish species is provided in these respective sections.

**Current Conditions:** All hunting, fishing, and trapping on USAG WP lands must be compliant with USMA Regulation 215-5 (Recreational Activities), the USMA Cooperative Plan for Fish and Wildlife Management, applicable federal laws, and the NYS Environmental Conservation Law. Both the current 2011 and 2017 draft version of the USMA Regulation 215-5 are provided in Appendix B1. Hunting, fishing, and trapping programs are administered by the Community Recreation Division with cooperation and assistance from the NRB, Provost Marshal, and Range Control. Eligibility to hunt, fish, or trap at West Point is determined by USMA Regulation 215-5, AR 215-2, and AR 200-1. Those eligible to hunt, fish, and trap on the reservation are detailed in USMA Regulation 215-5, *Hunting, Fishing, Trapping and Boating* (USMA 2011, Appendix B1) and include active military personnel (active and retired) and their families, DoD civilian personnel and their families, retirees, service disabled, cadets, Medal of Honor Recipients (and their families), and guests of military and DoD civilian personnel. Public access to the training areas for outdoor recreation is limited to trapping and hunting for deer, black bear, and coyote. The general public must obtain a permit from NRB for hunting and trapping access to the installation. All hunting, trapping, and fishing on USAG WP must be in accordance with NYS regulations and USAG WP regulations as stated in USMA Regulation 215-5. Hunting, fishing, and trapping areas are outlined on Figures 4-4 through 4-6. The 2018 fee schedule for hunting and fishing is provided on table 4-6.

**Hunting:** USAG WP established hunting areas for the recreational pursuit of both small and large game (Figure 4-4). Small game species include turkey, waterfowl, raccoon, squirrel, rabbit, grouse, ring-necked pheasants, woodcock, and coyote. Large mammals hunted include white-tailed deer and black bear. USAG WP issues permits for hunting and tracks all hunting activities and harvest through use of deer check stations and USAG WP hunting and fishing registration and permitting website (currently iSportsman). Permits for hunting at USAG WP are available on this website, as well as at the Round Pond Recreation Area and at Outdoor Recreation. All hunters must also obtain an NYS hunting license.

Season and bag limits follow those prescribed by the Environmental Conservation Law of NYS and any applicable federal laws, except where USAG WP's restrictions are more stringent (USMA 2011). Violators to hunting regulations may be subject to disciplinary action under the Uniform Code of Military Justice and may be permanently barred from USMA (USMA 2011). Violations of NYS law outside the jurisdiction of Installation Conservation Officers will be referred to State Environmental Conservation Officers. USAG WP will seek legal options for trespassing and violations of game laws. For the most recent hunting season, harvest, permit, and reporting information and current regulations for hunting at USAG WP, please visit USAG WP hunting and fishing registration and permitting system and website (<https://westpoint.isportsman.net/default.aspx>).

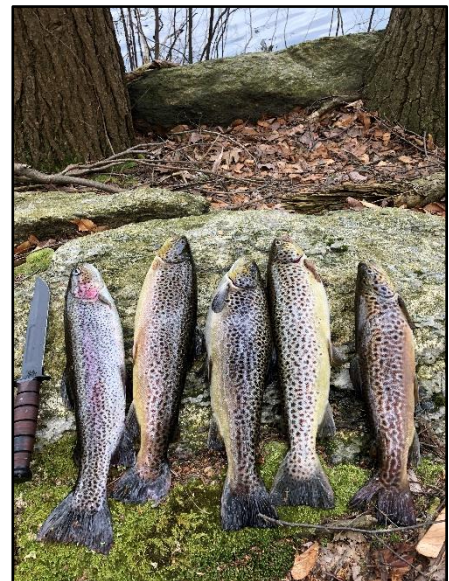
**Table 4-6. 2018 Fee Schedule for Hunting and Fishing at USAG WP**

| Permit Type                            | Permit Type                  | Fee     |
|--|------------------------------|---------|
| General Pass <sup>1</sup>              | Hunting Permit               | \$20.00 |
|  | Fishing Permit               | \$20.00 |
|  | Trapping Permit              | \$20.00 |
|  | Sportsman Permit             | \$35.00 |
| Discount Pass <sup>2</sup>             | Discount Hunting Permit      | \$12.00 |
|  | Discount Fishing Permit      | \$12.00 |
|  | Discount Trapping Permit     | \$12.00 |
|  | Discount Sportsman Permit    | \$21.00 |
| Veteran Daily Pass <sup>3</sup>        | Daily Veteran Fishing Pass   | \$5.00  |
| Daily/Monthly/Weekly Pass <sup>4</sup> | Daily Hunt/Fish Permit       | \$5.00  |
|  | Weekly Hunt/Fish Permit      | \$10.00 |
|  | Monthly Hunt/Fish Permit     | \$15.00 |
| General Public Pass <sup>5</sup>       | General Public Access Permit | \$40.00 |
| Guest Pass <sup>4,6</sup>              | Daily Guest Pass             | \$5.00  |
|  | Season Guest Pass            | \$30.00 |

<sup>1</sup> - General (Non-Discount) Pass – available to Active Duty Military Members, Civilians working at West Point, Dependents of Active Duty Military Members or Civilians Working at West Point, and Retired Individuals.  
<sup>2</sup> - Discount Pass – available to Special Discount may be applied to Cadets, Recreationalists under 16, Recreationalists over 65, and Veterans with 100% Service Related Disability.  
<sup>3</sup> - Pass is available only to Veterans honorably discharged and only available for purchase in person directly from Round Pond or Lake Frederick  
<sup>4</sup> - Pass is available only to all individuals except members of the General Public  
<sup>5</sup> - Pass is available only to members of the General Public.  
<sup>6</sup> - Guest passes are issued to guest sponsors – eligible individuals already in possession of General or Discount pass, not to individual guests.

**Fishing:** The waters at USAG WP offer a variety of angling opportunities for both coldwater and warmwater species. Trout are either stocked or are native to a number of streams and ponds on the reservation, and there are a number of waterbodies that provide excellent bass fishing, as well as healthy populations of panfish, and catfish. Other species that can be caught in USAG WP waters include eels, suckers, perch, pickerel, and walleye.

All anglers 16 years and older must have an NYS fishing license and a West Point fishing permit to fish in USAG WP waters and must have a military identification. NYS licenses are not available for sale at USAG WP and must be obtained prior to purchasing a West Point permit. Restrictions on fishing at USAG WP are more stringent than NYS Fish and Wildlife Law in some locations. Areas with more restrictive limits than the general state limits are due to the low productivity of many of the waterbodies on USAG WP. Fish in these waters require more years to grow to catchable sizes. Fish species and fishing areas as well as the most up-to-date permit, and size and catch limit information are provided on the USAG WP hunting and



Bull Pond Trout. Photo: NRB

fishing registration and permitting website (<https://westpoint.isportsman.net/default.aspx>). Fishing at USAG WP is not open to the general public.

*Trapping:* Trapping at USAG WP is primarily conducted as a wildlife management tool and is permitted on the reservation for the removal or control of problem and nuisance animals. Sport trapping as a recreational activity is secondary to nuisance control, and these species are not managed for sport. When adequate population control of nuisance species is not achieved through sport trapping, USAG WP engages in depredation programs to meet these goals and prevent damage to facilities. There are five established trapping units on the reservation. Trapping at USAG WP requires a West Point trapping permit and an NYS trapping license. Individuals who wish to trap at USAG WP can obtain a trapping license through Natural Resources. For a current list of species available for trapping, tagging, and sign-out requirements for trapping, please visit the USAG WP hunting and fishing registration and permitting website (<https://westpoint.isportsman.net/default.aspx>).

*Boating:* All USAG WP waters may be used for boating, with some restrictions on waterbody and boat type. Gasoline-powered boats may only be used on Stilwell and Popolopen lakes as long as a daily permit is obtained from the Round Pond Recreation Office. Boats with electrically powered trolling motors may be used on all USAG WP waterbodies except Lusk Reservoir, where only boats with oars or paddles may be used. Boats are available for rent from the Community Recreation Division of MWR. For current boat rentals and restriction information, please see the USAG WP hunting and fishing registration and permitting website (<https://westpoint.isportsman.net/default.aspx>).

*Off-Road Vehicles:* The use of recreation off-road vehicles is prohibited at USAG WP. The steepness and heavily wooded nature of the terrain makes such use impractical without causing significant environmental damage. Unauthorized use is prevented by the system of access gates that are controlled by Range Control.

*Other Recreation:* Other outdoor recreation opportunities on the installation include swimming, boating, jogging, hiking, birding, camping, cycling, picnicking, skiing, ice skating, and horseback riding (USMA 1989). These opportunities are open to the cadets, military personnel (active and retired) and their families, and DoD civilian employees and their families. There is no public access to these recreation programs. The following locations provide recreational opportunities beyond hunting and fishing:

- *Round Pond Recreation Area.* Round Pond Recreation Area has a lake, beach, playgrounds, picnic areas, and campsites. The site is not available to the public, and is managed by Round Pond Recreation Area, a branch of MWR.
- *Lake Frederick Recreation Area.* Lake Frederick is a popular and well-utilized recreation site on the western edge of the reservation that provides a meeting house, a mess hall, and several cabins. The site is used for camping and swimming in the summer, but is used in August for bivouac training for incoming cadets. In the remainder of the year, the area is used for scout camping, including the annual scout camporee, and for outdoor education by local elementary schools. Lake Frederick is not open to public access.



- *Bull Pond Cottages.* Bull Pond offers two full-service cottages and a boat house from May to October, located exclusively on a mountain-top pond. Access is by seasonal lottery limited to active duty military personnel and their families, Reservists and National Guard members, and DoD civilian employees of USAG WP.

Public Access: Access to the Main Post at USAG WP is controlled at the gates. The general public may access the site through guided tours provided through the Visitors Center, with valid government-issued photo identification, or a passport or visa for foreign nationals. The Visitor Center and Museum are open daily to the public. During special events, civilians may enter the site through the Thayer Gate or Stony Lonesome Gate with valid government-issued photo identification. Access to the training areas and other portions of USAG WP is strictly controlled for safety and security reasons. Limited manpower resources for law enforcement and visitor control restrict the degree to which public participation in outdoor recreation activities is feasible. Public access to the training areas for outdoor recreation is limited to trapping and deer hunting. Fishing by the general public is not permitted at USAG WP. Trapping permits are issued to the general public primarily to control nuisance wildlife, and generally only involve the issuance of a small number of permits.

Public access for other kinds of recreation at USAG WP is also limited. Mine Torne Road is open to the public except during certain periods of range firing. Popolopen Brook and a state-designated significant wildlife habitat wetland are located along the road. The proximity of the road to the wetland makes it a popular spot for birding by both individuals and birding clubs. Long Pond provides swimming, boating, and picnicking facilities. This area is leased to the Town of Highlands for exclusive use by town residents and is not available to USAG WP personnel. Most other recreational programs and areas at USAG WP are not open to the public.

Funding and Fee Collection: Hunting, fishing, and trapping on USAG WP lands are aimed at personnel and cadet use, with limited public access. Fees from special permits for hunting, fishing, and trapping are deposited into the USMA Wildlife Conservation Fund Account (i.e., 21X account), which can only be used for wildlife projects associated with hunting and fishing. A recreational activity fee is also collected for hunting, fishing, and trapping on USMA lands. Funds generated from this fee are deposited into the Installation MWR Fund (USMA 2011).

**Program Goals, Objectives, and Projects:** The goals, projects, and objectives for Recreation are outlined in Table 6-1, *United States Army Garrison West Point Goals and Implementation Plan*, in Chapter 6.

**Program Management Units:** Hunting, trapping, and fishing are managed according to the units provided on Figures 4-4 through 4-6, and the recreational areas outlined on the USAG WP hunting and fishing registration and permitting website.

#### **4.9.2 Fisheries Management**

The fisheries management strategies for the streams, lakes, ponds, and reservoirs at USAG WP are designed to enhance the fishing opportunities for West Point anglers while promoting sustainable populations of the species most suitable for each waterbody. The best long-term approach, and the efficient use of resources for achieving this goal, is to establish and maintain

the biological integrity of the waterbodies. Biological integrity is the ability to support and maintain “a balanced, integrated, adaptive community of organisms having a species composition, diversity, and functional organization comparable to that of natural habitat of the region” (Karr and Dudley 1981; Karr et al. 1986). The lack of sustainable populations in waterbodies is often the result of habitat degradation, poor water quality, and overfishing. Per AR 200-1, the fisheries management program on Army installations must provide for the management of the fish populations and their habitats for ecological, recreational, and scientific purposes. The fisheries program at USAG WP will emphasize the maintenance and restoration of habitat favorable to the production of indigenous fish, particularly federally listed species protected under the ESA. In addition, the fisheries are to be managed to conserve both game and non-game species.

Recreation, including licensing requirements for fishing, is discussed above in Section 4.9.1, *Recreation*, and on the USAG WP hunting and fishing registration and permitting website (<https://westpoint.isportsman.net/default.aspx>). The 2018 fee schedule for fishing is provided in Table 4-6.

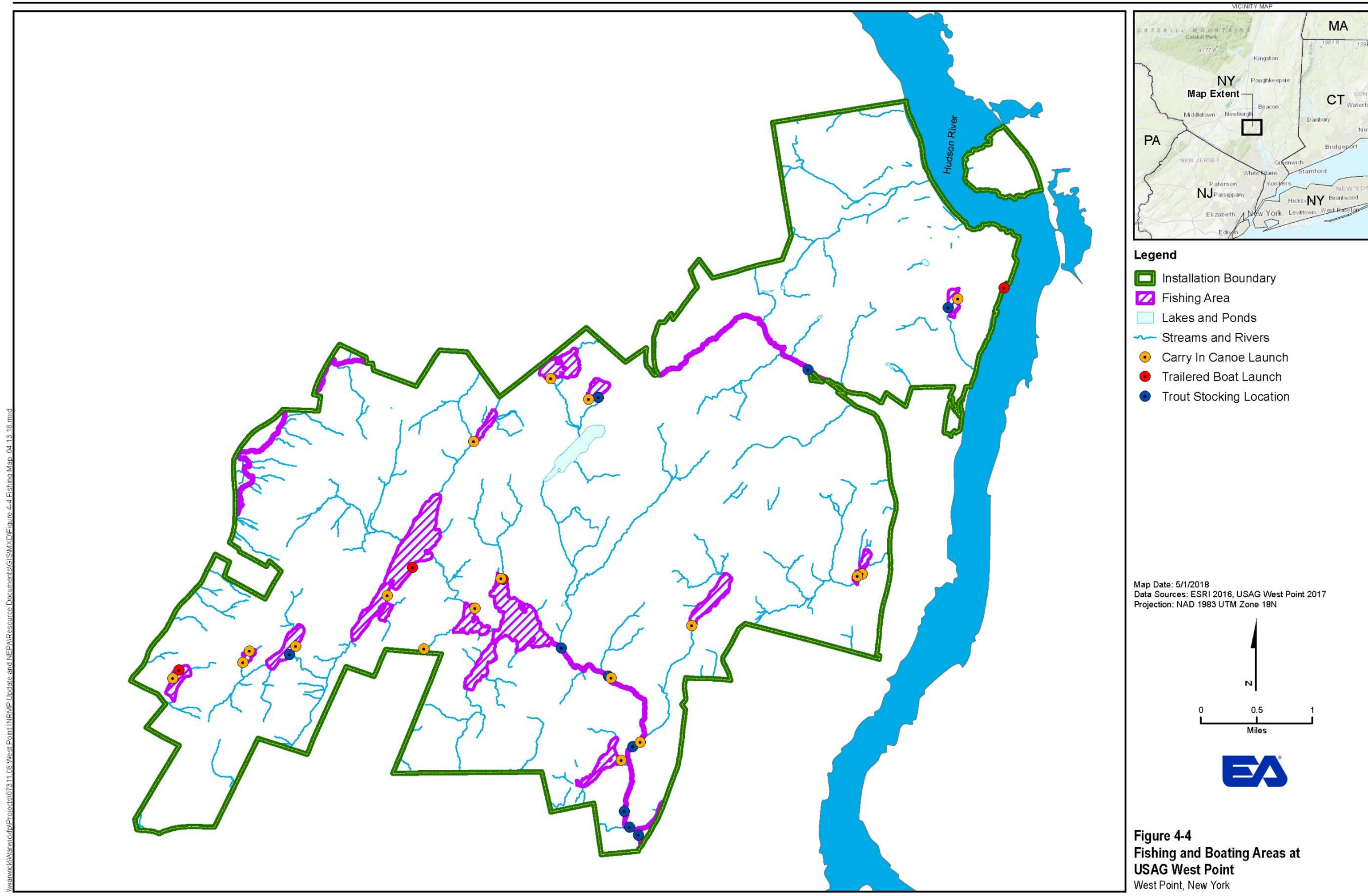
**Program Data Management:** Not all waterbodies at USAG WP are maintained as fisheries, and fisheries resources are surveyed frequently to assess population health and maintain healthy fisheries. Anglers are not required to submit catch data, but can voluntarily provide this information. Program data management resources applicable to Fisheries Management are outlined in Appendix C, Table C-1, *Program Data Management*.

**Supplemental References:** Fisheries at USAG WP are regulated by USMA Regulation 215-5, *Hunting, Fishing, Trapping, and Boating*, as well as NYSDEC regulations and license requirements for fishing. Fisheries at USAG WP are managed to maintain population levels indicative of high-quality fisheries. If populations are found to be lower than would support fishing levels, site- and species-specific management measures are implemented to protect fishery resources, such as catch and release restrictions. Supplemental resources applicable to Fisheries Management are outlined in Appendix C, Table C-2, *Supplemental References*.

**Program History:** Fisheries at USAG WP have been monitored since the 1950s to understand fish populations and provide appropriate management actions and harvest levels. Previous surveys of waterbodies at USAG WP include surveys by the Adirondack Lakes Survey Corporation (1987), Cornell University (1988–1995), USFWS (as part of cooperative agreement), and Natural Resources personnel. A creel survey of selected lakes (Round Pond, Wilkins Pond, Mine Lake, Stilwell Lake, and Popolopen Lake) was conducted in 1999 to determine the quality of fishing, harvest levels, and sustained yield for trout (Linck 1999). In addition, fish harvest data have also been collected from completed USMA fishing report forms since 1981. Annual surveys ended in 2010 and now completes population sampling surveys and fish tagging. NRB personnel still periodically monitoring fishing pressure through creel surveys and angler counts. These records provide a general list of fish species found on USAG WP. A list of fish species commonly found in the Hudson River is included in Section 4.9.4, *Non-Game Management* below.

**Current Conditions:** Habitat protection and the availability of suitable habitat is essential for productive fisheries and the successful management of the fisheries (U.S. Environmental

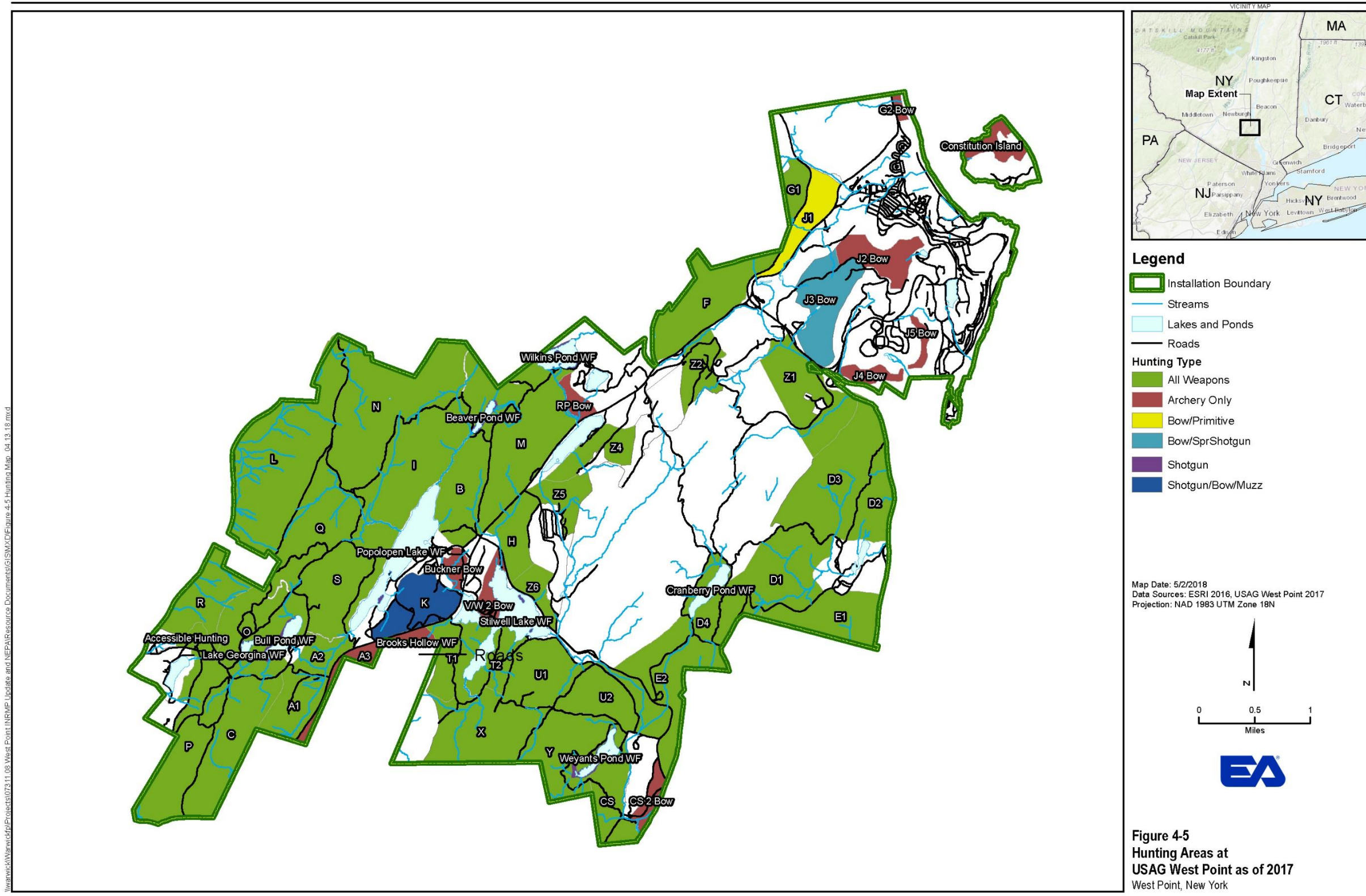
Figure 4-4. Fishing and Boating at USAG WP as of 2017



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Figure 4-5. Hunting Areas at USAG WP as of 2017

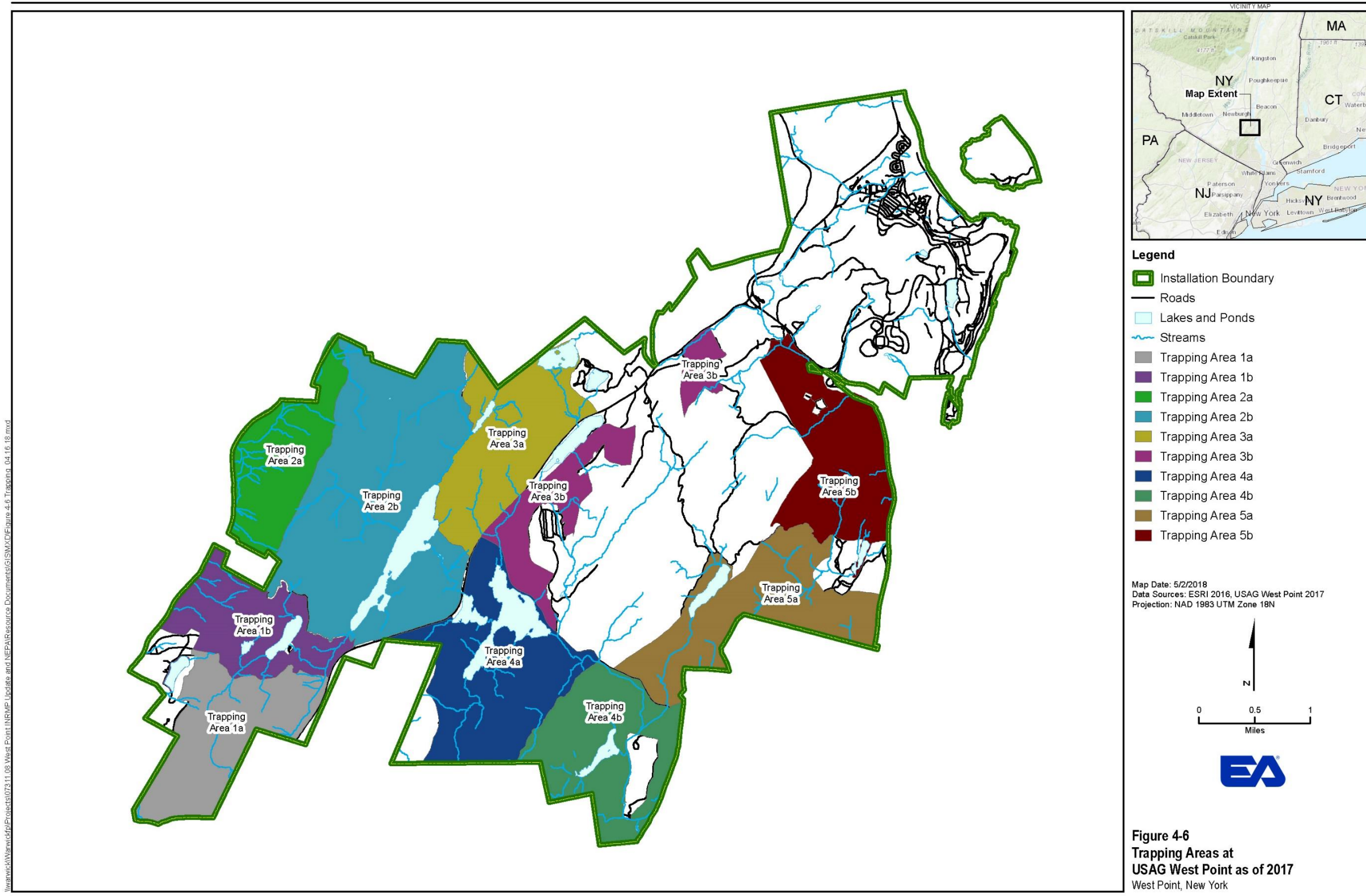


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Figure 4-6. Trapping Areas at USAG WP as of 2017



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Protection Agency [USEPA] 1993). The condition of the surrounding watershed has a significant role in determining the quality of the water and the physical habitat. The implementation of watershed management practices improves and protects the quality of the water resources and, therefore, must be incorporated into the fisheries management program.

*Stocking:* Several waterbodies are stocked at USAG WP for recreational fishing and to support populations of naturally occurring fish species. In general, fish are not stocked in a body of water at USAG WP if the species cannot naturally reproduce in USAG WP's lakes, ponds, and streams. If all habitat variables, except reproductive variables, exist in an area, the species may be stocked when funds and fish are available. Trout are annually stocked in Bull Pond, Round Pond, Lusk Reservoir, Popolopen and Queensboro brooks, and Highland Brook. Channel catfish are stocked in Lake Frederick, Mine Lake, Popolopen Lake, and Round Pond. Hybrid tiger muskellunge are stocked in Popolopen Lake annually and are being considered for stocking in Stilwell Lake in the future. Grass carp have also been stocked in several waterbodies over the years for the purposes of weed control.

The stocking strategy applied at USAG WP is a combination of two individual strategies known as: (1) put, grow, and take; and (2) put-and-take. The put, grow, and take strategy stocks fish of subharvestable size, anticipating that these fish will grow to harvestable size and survive in the waterbody for an extended period of time. The put-and-take strategy stocks fish of harvestable size in waterbodies with significant fishing pressure where the fish are not expected to grow significantly before being caught, or in waterbodies that will support the fish for only a limited period of time because of environmental conditions. Trout stocking involves stocking a large number of fish 8 to 9 in. in size that are expected to grow larger in time. Larger fish are also stocked for immediate catch. This meets the objective by providing large fish each year, while supplementing current populations to improve the long-term availability of larger-sized fish. Stocking in streams provides stream trout fishing opportunities and the fish necessary to establish a naturally reproducing population. Fish for stocking are purchased using the proceeds from the sale of fishing and hunting permits.

*Inventory and Monitoring of Fish Species:* Inventorying and monitoring procedures are essential for collecting the data necessary to establish baseline conditions, and for measuring the performance and effectiveness of management measures already in place. Inventorying and monitoring is used to evaluate the environmental parameters indicative of ecological integrity and include the integrity of the biological communities found in the waterbody; and instream and riparian habitat quality, water quality, and an assessment of the overall condition of the watershed.

The monitoring methods at USAG WP are designed to be consistent among waterbody types (i.e., lakes/ponds and streams) and from year to year. This consistency allows the comparison of data among waterbodies of a similar type, as well as the evaluation of temporal status and trends occurring for each waterbody. The inventorying and monitoring data are evaluated frequently to ensure continued success of the program. Management measures that are not leading to the desired objective will be reevaluated to determine the corrective action needed to ensure success. Management measures that produce the desired results will be continued for as long as they are successful at meeting their objectives.

**Program Goals, Objectives, and Projects:** The goals, projects, and objectives for Fisheries Management are outlined in Table 6-1, *United States Army Garrison West Point Goals and Implementation Plan*, in Chapter 6.

**Program Management Units:** Fisheries are generally managed by waterbody but are also managed according to species. Management decisions for stocking levels and other actions are determined by surveys of species within waterbodies at USAG WP.

### 4.9.3 Game Management

USAG WP maintains a robust hunting, fishing, and trapping program, and several species are managed as game species on the installation in support of these activities. Details on the recreational restrictions on game hunting and trapping are discussed above in Section 4.9.1, *Recreation*. Funding for Management is focused on maintaining healthy and viable populations of big-game species, small game, and furbearers at USAG WP. Close monitoring of populations and harvest is used to manage bag limits yearly. Trapping and hunting is also used to manage populations of nuisance species.

Big game species at USAG WP include black bear (*Ursus americanus*) and white-tailed deer (*Odocoileus virginianus*). The main goal of big-game management at USAG WP is to maintain and control populations compatible with the range they occupy, land management objectives, and the military mission of the installation, and to provide quality recreational opportunities. Small-game species are also managed at USAG WP. The goals of the small game species management program are to maintain viable populations of small game (i.e., waterfowl, turkey, ruffed grouse, gray squirrel, rabbit, woodcock) and provide recreational opportunities. A specific objective to achieve these goals is continuing to create and maintain a diversity of habitats on the reservation, many of which would be suitable to several species of small game.

Furbearers, including beaver, raccoon, opossum, skunk, mink, coyote, gray fox, red fox, fisher, bobcat, muskrat, and river otter, are managed for trapping at USAG WP. The goals of furbearer management are to reduce or eliminate nuisance populations in a manner consistent with land use and training objectives and ensure that healthy populations continue to exist so that they are appreciated for their aesthetic and ecological values. Recreational fur trapping is permitted when it is consistent with these goals. A nuisance individual or species is generally defined as one that causes unacceptable damage to a natural or man-made element, such as disruption of a hydrologic regime, destruction of vegetation, or flooding of a road, range, or training area.

**Program Data Management:** Game species at USAG WP are actively surveyed and monitored by the NRB to ensure that yearly harvest limits are maintaining healthy populations. Surveys of both populations and harvests are taken annually and are available on the USAG WP hunting and fishing registration and permitting website, and GIS data are collected to track areas where hunting and trapping is in place. Program data management resources applicable to Game Management are outlined in Appendix C, Table C-1, *Program Data Management*.

**Supplemental References:** Hunting regulations are set by USAG WP based on data collected on populations and are also subject to state regulations. Management of game species populations and habitat is completed to promote habitats. Species outlined in the NYSDEC

State Wildlife Action Plan as Species of Greatest Conservation Need are managed accordingly. Supplemental resources applicable to Game Management are outlined in Appendix C, Table C-2, *Supplemental References*.

**Program History:** The following objectives have been employed in past management programs for game species.

**Black Bears:** Black bears have not required active management in the past, but increasing incidences of bears in conflict with humans has changed management needs. In 2001, there was a sizeable increase in bear sightings at USAG WP, and bears have become more frequent visitors in recent years. NRB staff have worked in past years to manage problem bears. In 2007, USAG WP sought assistance from the NYSDEC in trapping a problem bear in Stony Lonesome; however, these efforts were unsuccessful. In 2016, NYSDEC assisted NRB staff with capture of a young female bear that had become a nuisance. NYSDEC lent USAG WP a bear trap.



*Deer check station at USAG WP.*

Once captured, the bear was sedated, biological data were collected, and the bear was tagged. Once the bear had recovered it was released; during the release additional hazing measures were employed by NYSDEC staff to create a strong negative association with humans and the installation. However, the bear returned to USAG WP a matter of weeks later. In 2017, two bears were captured on the Post a day before graduation, a period of high visitation. NYSDEC staff captured the bears and released them.

Bear hunting was first authorized in WMU 3P, which includes the entirety of USAG, in 1991. Bear populations at USAG WP have continued to increase over the years, and bears are considered a nuisance species at USAG WP. Take of black bears has been liberalized by NYS and an early season has been added annually in some Wildlife Management Units, including 3P. At USAG WP, annual black bear take is generally 3 to 4 bears.

**White-Tailed Deer:** In past years, USAG WP supported excessively high densities of deer. Severe browsing throughout the reservation was observed, resulting in the elimination of ground cover in many areas and reduced tree regeneration. Several problems with deer in the cantonment area have been reported, such as damage to landscaped and garden areas and deer-vehicle collisions. Other issues with deer include deer jumping off of roadways, and deer falling into waterbodies on the Post and at the golf course.

USAG WP has completed biological monitoring of deer populations annually to set harvest limits. Data from previous years can be compared to provide population and health trends for deer. From 1976 to 2008, the following data were collected: yearling buck frequency (percentage of 1½-year-old deer in the antlered buck harvest), average yearling male antler beam

diameter, and yearling buck average dressed weight. Other past management that has been used at USAG WP to assess deer populations include the use of exclosures to determine the impact of deer on forest regeneration. Exclosures are located in a variety of forest conditions and typically have a control plot associated with them. Exclosure plot data collected from 2000 to 2005 illustrated a decline of seedlings in control plots for deer browse, a marked decline in northern red oak, and impeded growth of seedlings.

Concerns regarding deer browse, collisions, disease, and other nuisance issues resulting from high deer density have been discussed at USAG WP since the later 1970s. Bowhunting in Area J3 was first allowed in the 1970s, but take was low until the 1980s. In 1980, Areas J2 and J3 were opened for bowhunting. Additional areas (G2, J4, J5, and J6) on the Main Post followed in 1982, and J3 was approved for shotgun deer hunting. Boundaries have been altered in these areas over time due to development, and Area G2 was removed due to unexploded ordnance concerns, G2 was returned to hunting availability following a UXO survey. The West Point community is alerted to the presence of the hunting areas through notices in the *Pointer View*, the *Post Bulletin*, email bulletin boards, community mayor briefings, and on Channel 8 TV and WKDT radio.

In 1999, NYS implemented a program called Deer Management Assistance Permits (DMAPs) to address the issue of bow hunters forgoing the opportunity to shoot a doe early in the season for fear of missing out on an antlered buck, which does not adequately reduce the deer population. Other past deer hunting programs included a wintertime nuisance deer hunt, and opening of special areas for a special season, and a trap and transfer program. USAG WP does not currently participate in the DMAPs program or any of these past programs.

*Small Game and Furbearers:* Management of habitat, including supporting open clearings and using nest boxes, has been ongoing at USAG WP to support small game. Starting in 2005, USAG WP obtained a nuisance goose depredation permit to allow for the culling of up to 50 geese from the reservation. This program has been generally considered successful and is ongoing.

**Current Conditions:** Management of game species at USAG WP is completed under the following current conditions and current management practices.

*Black bear:* The estimated bear population for the 16,000-acre reservation of USAG WP varies but is estimated to be 12 to 15 bears. Bear occurrences are more notable in the spring, when young bears strike out from their mothers in search of territory; many of these bears become problem bears as they search for food. The management of black bears on USAG WP is in accordance with NYS laws and regulations pertaining to bear management and hunting; bears are heavily managed in the state as they are currently one of the most reported nuisance species. The main objectives for black bear management are to monitor bear activities on the reservation to determine what level of management is, or will be, necessary and to minimize nuisance bears. Management objectives at USAG WP are attained through population control, aversion condition, and reward management. To discourage a presence of nuisance bears on the installation, USAG WP has purchased a number of bear-proof dumpsters, and uses hazing techniques on problem bears, such as pepper spray and pyrotechnics, as necessary. Other hazing



techniques include commanding voice and attitude to frighten away bears, sirens, bear barrels, rubber buckshot (used by law enforcement on-post only), and capture and hazing.



Photo: NRB

Rewards reduction measures employed at USAG WP include treating trash with items that make food unpalatable to bears, such as ammonia and cayenne, keeping trash indoors, or installing bear-proof waste containers or garbage corrals. The accumulation of food waste at USAG WP serves as an attractant to bears. Methods to reduce food waste and thus lessen the presence of food in trash receptacles is an indirect approach to minimizing the impact of bears on the military mission. As part of management efforts, the *Pointer View* posts bear safety articles every year to alert residents how to prevent bear conflicts.

Population control through trapping, relocation, or depredation is not actively pursued in New York as a way to reduce local bear populations. New York predominantly manages bear populations through sport hunting. Although bear hunting is permitted at USAG WP, bears were not traditionally widely pursued, as the meat is not sought after and the cape is costly to prepare. However, through the rise in nuisance bear occurrences and public outreach efforts, more hunters are pursuing bears as interesting game. Bear hunting is also encouraged as a public service to the community. Bears are typically taken in small numbers by deer hunters who encounter a bear while after deer. Annual take of bears is recorded and available on the USAG WP hunting and fishing registration and permitting website (currently iSportsman). In 2017, four bears were taken at USAG WP, and bear take is typically three to four bears per year. Bears are managed in accordance with the Bear Management Document (Appendix B5).

*White-Tailed Deer:* White-tailed deer are intensely managed on both the reservation and Main Post. For white-tailed deer, specific management objectives include maintaining a population that does not damage native and ornamental vegetation or cause conflict with humans and provides a safe, high-quality hunting experience for the USAG WP community. The primary means of managing white-tailed deer on the West Point reservation is through implementation of a regulated hunting program. The most current information on the hunting program at USAG WP is provided on the USAG WP hunting and fishing registration and permitting website.

Harvest limits are calculated each year to adjust the population size and structure to maintain a deer population that is not stressed and does not cause conflict with other USMA management program and military objectives. For example, a deer population that is too large (i.e., not existing within the carrying capacity of the reservation) is likely to overbrowse and damage understory vegetation, which can adversely impact forest ecology and regeneration. It is important to note that forest regeneration is important not only for ecosystem viability, but also to support the military mission. In maintaining a deer population that does not conflict with other natural resources management programs or the military mission, USAG WP managers

have determined that regulated hunting is the most effective (cost and otherwise) method. To control deer population growth by setting appropriate harvest limits, the size and physical condition of the population must be known.

To determine the physical condition of the deer population, biological data collected during the hunting season are compared by age class and sex to data collected in previous years. The biological data collected during the deer season includes: dressed weight (all internal organs removed), antler beam diameter (measured 1 in. above the burr), number of antler points, sex, and age. Another method used to determine the intensity of West Point deer harvests is the calculation of a winter range carrying capacity. The target capacity is usually one where the deer population survives into spring with the least mortality due to harsh winter conditions. To measure carrying capacity, a dynamic concept that is difficult to assess accurately, the amount and quality of available forage existing on the range must be determined. Carrying capacity is related to mast crop production and available forage; at USAG WP, land management objectives require the desired population level to exist below the subsistence carrying capacity. Carrying capacity is also managed adaptively by considering regeneration surveys, harvest, and other mortality. USAG WP also determines a “cultural” carrying capacity, which reflects the level at which human users of USAG WP desire the deer population. This number reflects residents who enjoy deer and those who see them as a nuisance, hunters who seek a high-quality population, and safety managers concerned about deer collisions and disease. This number also considers trainers who do not want a park-like atmosphere for training activities.

The Main Post hunting areas are still very popular with USAG WP personnel with the J2/J3 Bow Area serving as the most popular bowhunting area on USMA. Hunting Area J3 is often one of the 10 most heavily used areas during the Regular Firearms Season, despite rifles not being permitted there.

USAG WP and the adjacent Black Rock Forest work cooperatively with NYSDEC to determine permit levels for WMU 3P. Permit levels are determined after selection of the desired adult female harvest level—a rate that either allows the herd to grow, decreases its size, or stabilizes it at its current level. These rates can be influenced by many factors, such as winter mortality, winter severity, birthing rates and fawn mortality, deer usage of neighboring properties, and forage conditions and mast production. Key indicators of a deer herd below the West Point biological range carrying capacity are yearling male dressed weights of 90 pounds or more, yearling male antler beam diameters of greater than 15 millimeters, fawn harvest sex ratios of 1:1 (males to females) or ones favoring females, and fawn dressed weights of 50 pounds or more, and yearling male take greater than 50 percent of the total adult male take.

USAG WP currently engages in several deer survey and management practices, including periodic census, using spotlighting, and track counts. An aerial infrared survey of the installation was completed in 2017 and 2018. Management of hunting resources at USAG WP also includes the human dimension of hunting. NRB personnel also engage in periodic human dimensions survey and focus group meetings to gauge hunter satisfaction with the hunting program and to determine needs. NRB is planning to complete another human dimensions survey as early as summer 2018.

*Small Game:* Management of small game at USAG WP is largely undertaken through habitat manipulation, with limited population control measures. Habitat that supports small game

includes the creation of forest openings 1 to 2 acres in size. These clearings increase habitat diversity and availability for small game species as well as some non-game species that add to the ecological communities found at USAG WP. Old field and brushy areas up to 20 acres are mowed to create a matrix of open space and small brush islands. Open areas in Training Areas R and L are maintained by brush cutting and mowing. Mowing is generally completed annually at some fields to reduce woody vegetation and invasive regrowth to meet ecological and training needs. Maintenance of open areas improves the insect populations that are necessary to provide young turkey poults with the abundant supply of insects that are required for hearty growth. Maintaining open areas also provides habitat suitable for rabbits.

In addition to creating forest openings and maintaining open areas through brush cutting, other habitat manipulation methods will be employed to provide suitable small game habitat, including several measures discussed in Section 4.10.1 *Flora and Habitat*. The preservation of snags in forested areas, maintenance of healthy aspen stands for grouse, and use of nest boxes near open-water habitats for cavity nesting waterfowl are all beneficial for small game. Nest boxes for wood duck have increased the number of wood duck at USAG WP, and are also used by other wildlife species. The deer population at USAG WP is stable and in balance, with signs of good forest recovery. Maintaining current population levels benefits small game, since deer browsing has severely limited ground cover in many areas, resulting in less brood and breeding cover and feeding opportunities for many species.

Population control is employed to manage populations of geese. Depredation of nuisance geese under a permit has been completed since 2005. Populations occurring at Round Pond, Wilkins Pond, Lake Frederick, the golf course, Range 11, and Popolopen Lake are captured when needed. Round ups are conducted when they are in their eclipse plumage and flightless. Every year has seen a reduction in the number of geese visiting the recreation areas and beaches, and a lessening in the need for control. Egg addling is also completed at USAG WP.

Currently 250 to 300 ring-necked pheasants (*Phasianus colchicus*) are stocked annually in three events, based on dates of high hunter availability. Pheasants are released each fall in suitable habitat to provide additional hunting opportunities. This Asian species was first naturalized in the U.S. in the 1800s and was common in Orange County, New York, as recently as the 1960s. Winter survival of released ring-necked pheasants has been noted at USAG WP but is rare. No natural breeding population of pheasants is likely to exist at USAG WP; therefore, stocking is conducted as put and take. Pheasants are highly sought after, as upland game hunting on the installation is generally limited, particularly for hunters with dogs. Pheasant hunting is also a good activity for hunters new to the sport, as they are likely to meet with success. The cadet hunting club arranges to reserve a hunting area for this activity and is given the opportunity to arrange a private stocking as part of this reservation. Stocking is announced and mapped on USAG WP hunting and fishing registration and permitting website. Funds for the purchase of pheasants comes from the sale of USAG WP hunting and combination hunt/fish permits, and numbers of pheasants stocked are recorded annually.

*Furbearers:* The goals of furbearer management on USAG WP are to reduce or eliminate nuisance populations in a manner consistent with land use and training objectives and ensure that healthy populations continue to exist so that they are appreciated for their aesthetic and ecological values. Recreational fur trapping is permitted when it is consistent with these goals,

and trapping is also employed as a management tool to address nuisance furbearer species. Current limits and restrictions for furbearer trapping are provided on the USAG WP hunting and fishing registration and permitting website.

Trapping limits are set based on population evaluations and cases of nuisance furbearers. The trapping of other furbearers is assessed on a case-by-case basis, whereby animals are removed if they present a nuisance problem. Nuisance raccoons, woodchucks, and skunks on the Main Post are trapped and removed regularly. In addition to volunteer recreational trapping, nuisance animals are trapped or shot by NRB staff outside of the trapping season when population reduction is necessary to prevent damage to USAG WP facilities or roads. The trapping of nuisance individuals on an as-needed basis will be continued. USAG WP occasionally works with the U.S. Department of Agriculture Animal Plant Health Inspection Service (APHIS) and other agencies and contractors to address nuisance species. APHIS provides assistance with management tools to manipulate conditions to prevent bear conflicts, and may assist NRB with coyote, beaver, goose, and other bird nuisances in the future. The Pest Control office shares responsibility with NRB for the removal of nuisance wildlife species. A pest control contractor assists in the removal of skunks, raccoons, opossums, woodchucks, and bats. Benefits of this program include preventing or minimizing damage to natural and man-made resources in a cost-effective manner and providing recreational opportunities, although the program typically only attracts low numbers of recreational trappers.

**Program Goals, Objectives, and Projects:** The goals, projects, and objectives for Game Management are outlined in Table 6-1, *United States Army Garrison West Point Goals and Implementation Plan*, in Chapter 6.

**Program Management Units:** Management of game species is done by species, and by hunting area. Populations and harvest are dictated by survey and monitoring data.

#### 4.9.4 Non-Game Management

The primary goal of this program is to maintain diversity of habitat appropriate to the region to provide for the greatest diversity of species. The basis of managing a rich assemblage of non-game wildlife is to provide an array of habitats that are structurally and biologically diverse. These habitat types on USAG WP include wetlands, vernal pools, riparian areas, open-water systems, grasslands, shrublands, woodlands, forests, and talus slopes. In managing for a diversity of habitats and diversity within those habitats, the potential exists for numerous non-game species to be found on the installation.



Photo: NRB.

**Program Data Management:** In developing long-term census information on the fauna of USAG WP, several surveys, checklists, and programs have been developed and implemented. NRB staff also keep track of incidental field observations of non-game wildlife. Program data

management resources applicable to Non-Game Management are outlined in Appendix C, Table C-1, *Program Data Management*.

**Supplemental References:** Non-game wildlife at USAG WP is surveyed regularly to ensure that training, recreation, and management activities are not impact populations of non-game wildlife. USAG WP is home to several rare species of wildlife. Supplemental resources applicable to Non-Game Management are outlined in Appendix C, Table C-2, *Supplemental References*.

**Program History:** Historic management and monitoring of non-game wildlife has closely aligned with the management of all habitat types on USAG WP, such as the management of forested, riparian, and wetland areas. Additionally, several faunal species have been conducted dating back to at least the early 1980s. Surveys of non-game species are conducted periodically to assess populations and species present at USAG WP.

Informal surveys for reptiles and amphibians have been completed by NRB staff since the mid-1980s. USMA has contributed reptile and amphibian data (e.g., sightings, species, length, nesting activity, and unusual behavior) to the New York Amphibian and Reptile Atlas developed by NYSDEC. Surveys for dragonflies and damselflies at USAG WP were completed during 3 years from 1994 to 1996. From 1995 to 1997, butterflies were surveyed at USAG WP. A supplemental survey of butterflies was conducted in 2002 to locate species that were not found during previous surveys but are reasonably expected to occur on the West Point Military Reservation based upon geographic range, and the presence of suitable habitat, larval host plants, and other resources on the West Point Military Reservation. Moths were surveyed in 1999, and again in 2002, with more than 172 additional species being found in the 2002 survey that had not been identified in the 1999 survey.

Surveys previous to 1998 had resulted in the observation of four species of molluscs at USAG WP. A comprehensive mollusc and crayfish survey of the drainages was conducted during 2000 and 2001 that resulted in the identification of 33 mollusc species, including one previously unknown to science (Prezant and Chapman 2002).

**Current Conditions:** USAG WP has conducted surveys for mammals, birds, reptiles, amphibians, fish, dragonflies, damselflies, butterflies, moths, molluscs, and crayfish. Provided below is a summary of non-game fauna at USAG WP.

- **Mammals**—Forty-eight species of mammals have been observed and/or documented on USAG WP, as listed on Table 4-7 below.

**Table 4-7. Mammals Observed at USAG WP**

| Scientific Name               | Common Name       |
|-------------------------------|-------------------|
| <i>Canis latrans</i>          | Coyote            |
| <i>Ursus americanus</i>       | Black bear        |
| <i>Odocoileus virginianus</i> | White-tailed deer |
| <i>Didelphis virginiana</i>   | Opossum           |
| <i>Procyon lotor</i>          | Raccoon           |
| <i>Lontra canadensis</i>      | River otter       |

| Scientific Name                  | Common Name                |
|----------------------------------|----------------------------|
| <i>Martes pennanti</i>           | Fisher                     |
| <i>Mustela vison</i>             | Mink                       |
| <i>Mephitis</i>                  | Striped skunk              |
| <i>Erethizon dorsatum</i>        | Porcupine                  |
| <i>Vulpes vulpes</i>             | Red fox                    |
| <i>Urocyon cinereoargenteus</i>  | Gray fox                   |
| <i>Lynx rufus</i>                | Bobcat                     |
| <i>Castor canadensis</i>         | Beaver                     |
| <i>Sorex cinereus</i>            | Masked shrew               |
| <i>Sorex fumeus</i>              | Smoky shrew                |
| <i>Sorex hoyi</i>                | Pigmy shrew                |
| <i>Blarina brevicauda</i>        | Short-tailed shrew         |
| <i>Condylura cristata</i>        | Star-nose mole             |
| <i>Parascalops breweri</i>       | Hairy-tailed mole          |
| <i>Myotis lucifugus</i>          | Little brown myotis        |
| <i>Myotis septentrionalis</i>    | Northern long-eared myotis |
| <i>Lasiurus borealis</i>         | Red bat                    |
| <i>Lasiurus cinereus</i>         | Hoary bat                  |
| <i>Lasionycteris noctovagans</i> | Silver-haired bat          |
| <i>Myotis leibii</i>             | Small-footed bat           |
| <i>Pipistrellus subflavus</i>    | Eastern pipistrelle        |
| <i>Eptesicus fuscus</i>          | Big brown bat              |
| <i>Mustela frenata</i>           | Long-tailed weasel         |
| <i>Mustela ermine</i>            | Ermine                     |
| <i>Marmota monax</i>             | Woodchuck                  |
| <i>Tamias striatus</i>           | Eastern chipmunk           |
| <i>Sciurus carolinensis</i>      | Gray squirrel              |
| <i>Tamiasciurus hudsonicus</i>   | Red squirrel               |
| <i>Glaucomys volans</i>          | Southern flying squirrel   |
| <i>Glaucomys sabrinus</i>        | Northern flying squirrel   |
| <i>Peromyscus maniculatus</i>    | Deer mouse                 |
| <i>Peromyscus leucopus</i>       | White-footed mouse         |
| <i>Clethrionomys gapperi</i>     | Red-backed vole            |
| <i>Microtus pennsylvanicus</i>   | Meadow vole                |
| <i>Microtus pinetorum</i>        | Pine vole                  |
| <i>Ondatra zibethicus</i>        | Muskrat                    |
| <i>Rattus norvegicus</i>         | Norway rat                 |
| <i>Mus musculus</i>              | House mouse                |
| <i>Zapus hudsonius</i>           | Meadow jumping mouse       |
| <i>Napeozapus insignis</i>       | Woodland jumping mouse     |
| <i>Sylvilagus floridanus</i>     | Eastern cottontail         |

- **Birds**—Two hundred and forty-nine species of birds have been observed on or near USAG WP. Of these, 110 species have been identified as breeding on the installation,



with another 10 non breeders considered as winter residents. Birds at USAG WP are listed on Table 4-8.

**Table 4-8. Bird Species of USAG WP**

| Scientific Name                 | Common Name               | Season <sup>1,2</sup> |          |          |          |
|---------------------------------|---------------------------|-----------------------|----------|----------|----------|
|                                 |                           | Sp                    | Su       | Fa       | Wi       |
| <b>Loons - Grebes</b>           |                           |                       |          |          |          |
| <i>Gavia stellata</i>           | Red-throated loon         | <i>o</i>              |          | <i>o</i> | <i>o</i> |
| <i>Gavia immer</i>              | Common loon               | <i>o</i>              |          | <i>o</i> | <i>o</i> |
| <i>Podilymbus podiceps</i>      | Pied-billed grebe         | <i>o</i>              | <i>o</i> | <i>o</i> |          |
| <i>Podiceps auritus</i>         | Horned grebe              | <i>o</i>              |          | <i>o</i> | <i>r</i> |
| <i>Podiceps grisegena</i>       | Red-necked grebe          | <i>r</i>              |          | <i>r</i> |          |
| <b>Cormorants</b>               |                           |                       |          |          |          |
| <i>Phalacrocorax auritus</i>    | Double-crested cormorant  | <i>u</i>              | <i>u</i> | <i>o</i> |          |
| <i>Phalacrocorax carbo</i>      | Great cormorant           | <i>u</i>              |          | <i>u</i> | <i>u</i> |
| <b>Bitterns - Herons - Ibis</b> |                           |                       |          |          |          |
| <i>Botaurus lentiginosus</i>    | American bittern          | <i>u</i>              | <i>u</i> |          |          |
| <i>Ixobrychus exilis</i>        | Least bittern *           | <i>u</i>              | <i>u</i> | <i>u</i> |          |
| <i>Ardea herodias</i>           | Great blue heron *        | <i>c</i>              | <i>c</i> | <i>c</i> | <i>o</i> |
| <i>Egretta albus</i>            | Great egret               | <i>u</i>              | <i>c</i> | <i>u</i> |          |
| <i>Egretta thula</i>            | Snowy egret               | <i>u</i>              | <i>u</i> | <i>u</i> |          |
| <i>Egretta caerulea</i>         | Little blue heron         | <i>r</i>              | <i>r</i> |          |          |
| <i>Egretta tricolor</i>         | Tricolored heron          |                       | <i>r</i> |          |          |
| <i>Butorides striatus</i>       | Green heron *             | <i>c</i>              | <i>c</i> | <i>c</i> |          |
| <i>Nycticorax</i>               | Black-crowned night-heron |                       | <i>o</i> |          |          |
| <i>Plegadis falcinellus</i>     | Glossy ibis               | <i>o</i>              |          | <i>o</i> |          |
| <b>Swans - Geese - Ducks</b>    |                           |                       |          |          |          |
| <i>Cygnus olor</i>              | Mute swan *               | <i>c</i>              | <i>c</i> | <i>c</i> | <i>c</i> |
| <i>Chen caerulescens</i>        | Snow goose                | <i>c</i>              |          | <i>c</i> |          |
| <i>Branta bernicla</i>          | Brant                     | <i>u</i>              |          | <i>u</i> | <i>u</i> |
| <i>Branta canadensis</i>        | Canada goose *            | <i>a</i>              | <i>a</i> | <i>a</i> | <i>a</i> |
| <i>Aix sponsa</i>               | Wood duck *               | <i>c</i>              | <i>c</i> | <i>c</i> | <i>u</i> |
| <i>Anas crecca</i>              | Green-winged teal         | <i>c</i>              |          | <i>c</i> |          |
| <i>Anas rubripes</i>            | American black duck *     | <i>c</i>              | <i>u</i> | <i>c</i> | <i>c</i> |
| <i>Anas platyrhynchos</i>       | Mallard *                 | <i>a</i>              | <i>c</i> | <i>a</i> | <i>c</i> |
| <i>Anas acuta</i>               | Northern pintail          | <i>u</i>              |          | <i>u</i> |          |
| <i>Anas discors</i>             | Blue-winged Teal          | <i>u</i>              |          | <i>u</i> |          |
| <i>Anas clypeata</i>            | Northern shoveler         | <i>o</i>              |          | <i>o</i> |          |
| <i>Anas strepera</i>            | Gadwall                   | <i>u</i>              |          | <i>u</i> |          |
| <i>Anas americana</i>           | American wigeon           | <i>o</i>              |          | <i>o</i> |          |
| <i>Aythya valisineria</i>       | Canvasback                | <i>u</i>              |          | <i>u</i> | <i>u</i> |
| <i>Aythya americana</i>         | Redhead                   | <i>u</i>              |          | <i>u</i> |          |
| <i>Aythya collaris</i>          | Ring-necked duck          | <i>u</i>              |          | <i>u</i> | <i>o</i> |
| <i>Aythya marila</i>            | Greater scaup             | <i>o</i>              |          | <i>o</i> |          |
| <i>Aythya affinis</i>           | Lesser scaup              | <i>o</i>              |          | <i>o</i> |          |
| <i>Clangula hyemalis</i>        | Oldsquaw                  | <i>o</i>              |          | <i>o</i> | <i>o</i> |
| <i>Melanitta nigra</i>          | Black scoter              | <i>o</i>              |          | <i>o</i> |          |
| <i>Melanitta perspicillata</i>  | Surf scoter               | <i>r</i>              |          | <i>r</i> |          |
| <i>Melanitta deglandi</i>       | White-winged scoter       | <i>r</i>              |          | <i>r</i> |          |
| <i>Bucephala clangula</i>       | Common goldeneye          | <i>o</i>              |          | <i>o</i> | <i>c</i> |
| <i>Bucephala albeola</i>        | Bufflehead                | <i>o</i>              |          | <i>o</i> | <i>c</i> |
| <i>Lophodytes cucullatus</i>    | Hooded merganser *        | <i>u</i>              | <i>o</i> | <i>o</i> |          |
| <i>Mergus merganser</i>         | Common merganser          | <i>c</i>              | <i>o</i> | <i>c</i> | <i>c</i> |

| Scientific Name                     | Common Name            | Season <sup>1,2</sup> |          |          |          |
|-------------------------------------|------------------------|-----------------------|----------|----------|----------|
|                                     |                        | Sp                    | Su       | Fa       | Wi       |
| <i>Mergus serrator</i>              | Red-breasted merganser | <i>o</i>              |          | <i>o</i> |          |
| <i>Oxyura jamaicensis</i>           | Ruddy duck             | <i>o</i>              |          | <i>o</i> |          |
| <b>Vultures - Hawks - Falcons</b>   |                        |                       |          |          |          |
| <i>Coragyps atratus</i>             | Black vulture          | <i>o</i>              | <i>o</i> | <i>o</i> | <i>r</i> |
| <i>Cathartes aura</i>               | Turkey vulture *       | <i>c</i>              | <i>c</i> | <i>c</i> | <i>o</i> |
| <i>Pandion haliaetus</i>            | Osprey                 | <i>u</i>              | <i>o</i> | <i>u</i> |          |
| <i>Haliaeetus leucocephalus</i>     | Bald eagle             | <i>u</i>              | <i>o</i> | <i>o</i> | <i>u</i> |
| <i>Circus cyaneus</i>               | Northern harrier       | <i>o</i>              |          | <i>o</i> |          |
| <i>Accipiter striatus</i>           | Sharp-shinned hawk *   | <i>c</i>              | <i>o</i> | <i>c</i> | <i>o</i> |
| <i>Accipiter cooperii</i>           | Cooper's hawk *        | <i>u</i>              | <i>u</i> | <i>o</i> | <i>r</i> |
| <i>Accipiter gentilis</i>           | Northern goshawk       | <i>u</i>              | <i>o</i> | <i>u</i> | <i>o</i> |
| <i>Buteo lineatus</i>               | Red-shouldered hawk *  | <i>u</i>              | <i>u</i> | <i>u</i> | <i>u</i> |
| <i>Buteo platypterus</i>            | Broad-winged hawk *    | <i>c</i>              | <i>c</i> | <i>c</i> |          |
| <i>Buteo jamaicensis</i>            | Red-tailed hawk *      | <i>c</i>              | <i>c</i> | <i>c</i> | <i>c</i> |
| <i>Buteo lagopus</i>                | Rough-legged hawk      | <i>u</i>              |          | <i>u</i> | <i>u</i> |
| <i>Aquila chrysaetos</i>            | Golden eagle           |                       |          | <i>o</i> | <i>o</i> |
| <i>Falco sparverius</i>             | American kestrel *     | <i>c</i>              | <i>c</i> | <i>c</i> | <i>u</i> |
| <i>Falco columbarius</i>            | Merlin                 | <i>r</i>              |          | <i>r</i> | <i>r</i> |
| <i>Falco peregrinus</i>             | Peregrine falcon       | <i>o</i>              | <i>o</i> | <i>o</i> | <i>r</i> |
| <b>Grouse - Turkey</b>              |                        |                       |          |          |          |
| <i>Bonasa umbellus</i>              | Ruffed grouse *        | <i>a</i>              | <i>a</i> | <i>a</i> | <i>a</i> |
| <i>Meleagris gallopavo</i>          | Wild turkey *          | <i>a</i>              | <i>a</i> | <i>a</i> | <i>a</i> |
| <i>Phasianus colchicus</i>          | Ring-necked pheasant   | <i>o</i>              | <i>o</i> | <i>c</i> | <i>c</i> |
| <b>Rails - Plovers - Sandpipers</b> |                        |                       |          |          |          |
| <i>Rallus elegans</i>               | King rail              | <i>r</i>              |          | <i>r</i> |          |
| <i>Rallus limicola</i>              | Virginia rail *        | <i>u</i>              | <i>u</i> | <i>u</i> | <i>o</i> |
| <i>Porzana carolina</i>             | Sora                   | <i>u</i>              | <i>u</i> | <i>u</i> |          |
| <i>Gallinula chloropus</i>          | Common moorhen         | <i>u</i>              | <i>u</i> | <i>u</i> |          |
| <i>Fulica americana</i>             | American coot          | <i>u</i>              |          | <i>u</i> |          |
| <i>Pluvialis squatarola</i>         | Black-bellied plover   | <i>r</i>              |          | <i>r</i> |          |
| <i>Pluvialis dominica</i>           | Lesser golden plover   | <i>r</i>              |          | <i>r</i> |          |
| <i>Charadrius semipalmatus</i>      | Semipalmated plover    | <i>r</i>              |          | <i>r</i> |          |
| <i>Charadrius vociferus</i>         | Killdeer *             | <i>c</i>              | <i>c</i> | <i>c</i> |          |
| <i>Tringa melanoleuca</i>           | Greater yellowlegs     | <i>o</i>              |          | <i>o</i> |          |
| <i>Tringa flavipes</i>              | Lesser yellowlegs      | <i>o</i>              |          | <i>o</i> |          |
| <i>Tringa solitaria</i>             | Solitary sandpiper     | <i>o</i>              | <i>o</i> | <i>o</i> |          |
| <i>Actitis macularia</i>            | Spotted sandpiper *    | <i>c</i>              | <i>c</i> | <i>c</i> |          |
| <i>Arenaria interpres</i>           | Ruddy turnstone        | <i>r</i>              |          | <i>r</i> |          |
| <i>Calidris alba</i>                | Sanderling             | <i>o</i>              |          | <i>o</i> |          |
| <i>Calidris pusilla</i>             | Semipalmated sandpiper | <i>u</i>              |          | <i>u</i> |          |
| <i>Calidris minutilla</i>           | Least sandpiper        | <i>u</i>              |          | <i>u</i> |          |
| <i>Calidris melanotos</i>           | Pectoral sandpiper     | <i>r</i>              |          | <i>r</i> |          |
| <i>Calidris alpina</i>              | Dunlin                 | <i>r</i>              |          | <i>r</i> |          |
| <i>Limnodromus griseus</i>          | Short-billed dowitcher | <i>o</i>              |          | <i>o</i> |          |
| <i>Gallinago</i>                    | Common snipe *         | <i>u</i>              | <i>u</i> | <i>u</i> | <i>r</i> |
| <i>Scolopax minor</i>               | American woodcock *    | <i>c</i>              | <i>c</i> | <i>c</i> | <i>r</i> |
| <b>Gulls - Terns</b>                |                        |                       |          |          |          |
| <i>Larus atricilla</i>              | Laughing gull          | <i>r</i>              | <i>o</i> | <i>o</i> |          |
| <i>Larus philadelphia</i>           | Bonaparte's gull       | <i>o</i>              |          | <i>o</i> | <i>r</i> |
| <i>Larus delawarensis</i>           | Ring-billed gull       | <i>a</i>              | <i>a</i> | <i>a</i> | <i>a</i> |
| <i>Larus argentatus</i>             | Herring gull           | <i>c</i>              | <i>u</i> | <i>c</i> | <i>c</i> |
| <i>Larus glaucoides</i>             | Iceland gull           |                       |          |          | <i>o</i> |

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|---|---------------------------------|-----------------------|----------|----------|----------|
|   |                                 | Sp                    | Su       | Fa       | Wi       |
| <i>Larus fuscus</i>   | Lesser black-backed gull        |                       | <i>r</i> |          |          |
| <i>Larus hyperboreus</i>  | Glaucous gull                   |                       |          |          | <i>o</i> |
| <i>Larus marinus</i>  | Greater black-backed gull       | <i>c</i>              | <i>c</i> | <i>c</i> | <i>c</i> |
| <i>Sterna caspia</i>  | Caspian tern                    | <i>o</i>              |          | <i>o</i> |          |
| <i>Sterna maxima</i>  | Royal tern                      |                       | <i>r</i> | <i>r</i> |          |
| <i>Sterna forsteri</i>  | Forster's tern                  | <i>o</i>              |          | <i>o</i> |          |
| <i>Sterna antillarum</i>  | Least tern                      |                       | <i>r</i> | <i>r</i> |          |
| <i>Sterna fuscata</i>   | Sooty tern                      |                       | <i>r</i> | <i>r</i> |          |
| <b>Doves - Cuckoos - Owls - Goatsuckers - Swifts - Hummingbirds</b> |                                 |                       |          |          |          |
| <i>Columbia livia</i>   | Rock dove *                     | <i>a</i>              | <i>a</i> | <i>a</i> | <i>a</i> |
| <i>Zenaida macroura</i>   | Mourning dove *                 | <i>a</i>              | <i>a</i> | <i>a</i> | <i>a</i> |
| <i>Coccyzus erythrophthalmus</i>                                    | Black-billed cuckoo *           | <i>u</i>              | <i>u</i> | <i>u</i> |          |
| <i>Coccyzus americanus</i>  | Yellow-billed cuckoo *          | <i>u</i>              | <i>u</i> | <i>u</i> |          |
| <i>Tyto alba</i>  | Common barn owl *               | <i>o</i>              | <i>o</i> | <i>o</i> | <i>o</i> |
| <i>Otus asio</i>  | Eastern screech owl *           | <i>c</i>              | <i>c</i> | <i>c</i> | <i>c</i> |
| <i>Bubo virginianus</i>   | Great horned owl *              | <i>c</i>              | <i>c</i> | <i>c</i> | <i>c</i> |
| <i>Nyctea scandiaca</i>   | Snowy owl                       |                       |          |          | <i>r</i> |
| <i>Strix varia</i>  | Barred owl *                    | <i>u</i>              | <i>u</i> | <i>u</i> | <i>u</i> |
| <i>Chordeiles minor</i>   | Common nighthawk                | <i>o</i>              |          | <i>o</i> |          |
| <i>Caprimulgus vociferus</i>  | Whip-poor-will *                | <i>u</i>              | <i>u</i> | <i>u</i> |          |
| <i>Chaetura pelagica</i>  | Chimney swift *                 | <i>c</i>              | <i>c</i> | <i>c</i> |          |
| <i>Archilochus colubris</i>   | Ruby-throated hummingbird *     | <i>c</i>              | <i>c</i> | <i>c</i> |          |
| <i>Ceryle alcyon</i>  | Belted kingfisher *             | <i>c</i>              | <i>c</i> | <i>c</i> | <i>o</i> |
| <i>Melanerpes erythrocephalus</i>                                   | Red-headed woodpecker           | <i>r</i>              | <i>r</i> | <i>r</i> |          |
| <i>Melanerpes carolinus</i>   | Red-bellied woodpecker *        | <i>u</i>              | <i>u</i> | <i>o</i> | <i>o</i> |
| <i>Sphyrapicus varius</i>   | Yellow-bellied sapsucker        | <i>o</i>              | <i>o</i> | <i>o</i> | <i>r</i> |
| <i>Picoides pubescens</i>   | Downy woodpecker *              | <i>c</i>              | <i>c</i> | <i>c</i> | <i>c</i> |
| <i>Picoides villosus</i>  | Hairy woodpecker *              | <i>c</i>              | <i>c</i> | <i>c</i> | <i>c</i> |
| <i>Colaptes auratus</i>   | Yellow-shafted flicker *        | <i>a</i>              | <i>a</i> | <i>a</i> | <i>u</i> |
| <i>Dryocopus pileatus</i>   | Pileated woodpecker *           | <i>c</i>              | <i>c</i> | <i>c</i> | <i>c</i> |
| <i>Contopus borealis</i>  | Olive-sided flycatcher          | <i>u</i>              |          | <i>u</i> |          |
| <i>Contopus virens</i>  | Eastern wood-pewee *            | <i>c</i>              | <i>c</i> | <i>c</i> |          |
| <i>Empidonax flaviventris</i>                                       | Yellow-bellied flycatcher       | <i>u</i>              |          | <i>u</i> |          |
| <i>Empidonax virens</i>   | Acadian flycatcher              | <i>r</i>              | <i>r</i> |          |          |
| <i>Empidonax alnorum</i>  | Alder flycatcher *              | <i>o</i>              | <i>o</i> | <i>o</i> |          |
| <i>Empidonax traillii</i>   | Willow flycatcher *             | <i>u</i>              | <i>u</i> | <i>u</i> |          |
| <i>Empidonax minimus</i>  | Least flycatcher                | <i>c</i>              | <i>c</i> | <i>c</i> |          |
| <i>Sayornis phoebe</i>  | Eastern phoebe *                | <i>c</i>              | <i>c</i> | <i>c</i> |          |
| <i>Myiarchus crinitus</i>   | Great crested flycatcher *      | <i>c</i>              | <i>c</i> | <i>c</i> |          |
| <i>Tyrannus tyrannus</i>  | Eastern kingbird *              | <i>c</i>              | <i>c</i> | <i>c</i> |          |
| <b>Lark - Swallows - Jays - Crows</b>                               |                                 |                       |          |          |          |
| <i>Eremophila alpestris</i>   | Horned lark                     |                       |          |          | <i>o</i> |
| <i>Progne subis</i>   | Purple martin                   | <i>o</i>              |          | <i>o</i> |          |
| <i>Tachycineta bicolor</i>  | Tree swallow *                  | <i>a</i>              | <i>a</i> | <i>a</i> |          |
| <i>Stelgidopteryx serripennis</i>                                   | Northern rough-winged swallow * | <i>u</i>              | <i>u</i> | <i>u</i> |          |
| <i>Riparia riparia</i>  | Bank swallow *                  | <i>u</i>              | <i>u</i> | <i>u</i> |          |
| <i>Hirundo pyrrhonota</i>   | Cliff swallow *                 | <i>u</i>              | <i>u</i> | <i>u</i> |          |
| <i>Cyanocitta cristata</i>  | Blue jay *                      | <i>a</i>              | <i>a</i> | <i>a</i> | <i>a</i> |
| <i>Corvus brachyrhynchos</i>  | American crow *                 | <i>a</i>              | <i>a</i> | <i>a</i> | <i>a</i> |
| <i>Corvus ossifragus</i>  | Fish crow *                     | <i>u</i>              | <i>u</i> | <i>u</i> |          |
| <i>Corvus corax</i>   | Common raven                    | <i>o</i>              | <i>o</i> | <i>o</i> | <i>u</i> |

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|  |                                | Sp                    | Su       | Fa       | Wi       |
| <b>Titmice - Nuthatches - Wrens</b>    |                                |                       |          |          |          |
| <i>Parus atricapillus</i>              | Black-capped chickadee *       | <i>a</i>              | <i>a</i> | <i>a</i> | <i>a</i> |
| <i>Parus hudsonicus</i>                | Boreal chickadee               |                       |          |          | <i>r</i> |
| <i>Parus bicolor</i>                   | Tufted titmouse *              | <i>c</i>              | <i>c</i> | <i>c</i> | <i>c</i> |
| <i>Sitta canadensis</i>                | Red-breasted nuthatch          | <i>u</i>              |          | <i>u</i> | <i>u</i> |
| <i>Sitta carolinensis</i>              | White-breasted nuthatch *      | <i>u</i>              | <i>u</i> | <i>u</i> | <i>u</i> |
| <i>Certhia americana</i>               | Brown creeper *                | <i>u</i>              | <i>u</i> | <i>u</i> | <i>u</i> |
| <i>Thryothorus ludovicianus</i>        | Carolina wren *                | <i>u</i>              | <i>u</i> | <i>u</i> | <i>u</i> |
| <i>Troglodytes aedon</i>               | House wren *                   | <i>c</i>              | <i>c</i> | <i>c</i> | <i>c</i> |
| <i>Troglodytes</i>                     | Winter wren                    | <i>o</i>              |          | <i>o</i> | <i>o</i> |
| <i>Cistothorus palustris</i>           | Marsh wren *                   | <i>o</i>              |          | <i>o</i> |          |
| <b>Kinglets - Thrushes - Thrashers</b> |                                |                       |          |          |          |
| <i>Regulus satrapa</i>                 | Golden-crowned kinglet         | <i>u</i>              | <i>u</i> | <i>u</i> |          |
| <i>Regulus calendula</i>               | Ruby-crowned kinglet           | <i>c</i>              | <i>u</i> | <i>c</i> |          |
| <i>Poliptilla caerulea</i>             | Blue-gray gnatcatcher *        | <i>u</i>              | <i>u</i> | <i>u</i> |          |
| <i>Sialia sialis</i>                   | Eastern bluebird *             | <i>u</i>              | <i>u</i> | <i>u</i> | <i>o</i> |
| <i>Catharus fuscescens</i>             | Veery *                        | <i>u</i>              | <i>u</i> | <i>u</i> |          |
| <i>Catharus minimis</i>                | Gray-cheeked thrush            | <i>o</i>              |          | <i>o</i> |          |
| <i>Catharus ustulatus</i>              | Swainson's thrush              | <i>o</i>              |          | <i>o</i> |          |
| <i>Catharus guttatus</i>               | Hermit thrush *                | <i>o</i>              | <i>o</i> | <i>o</i> |          |
| <i>Hylocichla mustelina</i>            | Wood thrush *                  | <i>u</i>              | <i>u</i> | <i>u</i> |          |
| <i>Turdus migratorius</i>              | American robin *               | <i>a</i>              | <i>a</i> | <i>a</i> | <i>u</i> |
| <i>Dumetalla carolinensis</i>          | Gray catbird *                 | <i>a</i>              | <i>a</i> | <i>a</i> | <i>r</i> |
| <i>Mimus polyglottos</i>               | Northern mockingbird *         | <i>c</i>              | <i>c</i> | <i>c</i> | <i>c</i> |
| <i>Toxostoma rufum</i>                 | Brown thrasher *               | <i>c</i>              | <i>c</i> | <i>c</i> |          |
| <b>Waxwing - Shrikes - Starling</b>    |                                |                       |          |          |          |
| <i>Bombycilla cedrorum</i>             | Cedar waxwing *                | <i>u</i>              | <i>u</i> | <i>u</i> |          |
| <i>Lanius excubitor</i>                | Northern shrike                | <i>r</i>              |          |          | <i>r</i> |
| <i>Lanius ludovicianus</i>             | Loggerhead shrike              | <i>r</i>              |          |          | <i>r</i> |
| <i>Sturnus vulgaris</i>                | European starling *            | <i>a</i>              | <i>a</i> | <i>a</i> | <i>a</i> |
| <b>Vireos - Wood Warblers</b>          |                                |                       |          |          |          |
| <i>Vireo griseus</i>                   | White-eyed vireo               | <i>o</i>              | <i>o</i> | <i>o</i> |          |
| <i>Vireo solitarius</i>                | Solitary vireo                 | <i>u</i>              |          | <i>u</i> |          |
| <i>Vireo flavifrons</i>                | Yellow-throated vireo *        | <i>c</i>              | <i>c</i> | <i>c</i> |          |
| <i>Vireo gilvus</i>                    | Warbling vireo *               | <i>c</i>              | <i>c</i> | <i>c</i> |          |
| <i>Vireo philadelphicus</i>            | Philadelphia vireo             | <i>u</i>              |          | <i>u</i> |          |
| <i>Vireo olivaceus</i>                 | Red-eyed vireo *               | <i>c</i>              | <i>c</i> | <i>c</i> |          |
| <i>Vermivora pinus</i>                 | Blue-winged warbler *          | <i>c</i>              | <i>c</i> | <i>c</i> |          |
| <i>Vermivora chrysoptera</i>           | Golden-winged warbler *        | <i>u</i>              | <i>u</i> | <i>u</i> |          |
| <i>Vermivora peregrina</i>             | Tennessee warbler              | <i>c</i>              |          | <i>c</i> |          |
| <i>Vermivora celata</i>                | Orange-crowned warbler         | <i>r</i>              |          | <i>r</i> |          |
| <i>Vermivora ruficapilla</i>           | Nashville warbler              | <i>o</i>              | <i>r</i> | <i>o</i> |          |
| <i>Parula americana</i>                | Northern parula                | <i>o</i>              |          | <i>o</i> |          |
| <i>Dendroica petechia</i>              | Yellow warbler *               | <i>c</i>              | <i>c</i> | <i>c</i> |          |
| <i>Dendroica pensylvanica</i>          | Chestnut-sided warbler *       | <i>u</i>              | <i>u</i> | <i>u</i> |          |
| <i>Dendroica magnolia</i>              | Magnolia warbler               | <i>u</i>              | <i>r</i> | <i>u</i> |          |
| <i>Dendroica tigrina</i>               | Cape may warbler               | <i>o</i>              |          | <i>u</i> |          |
| <i>Dendroica caerulescens</i>          | Black-throated blue warbler *  | <i>o</i>              | <i>r</i> | <i>o</i> |          |
| <i>Dendroica coronata</i>              | Myrtle warbler                 | <i>u</i>              |          | <i>u</i> | <i>r</i> |
| <i>Dendroica virens</i>                | Black-throated green warbler * | <i>o</i>              |          | <i>o</i> |          |
| <i>Dendroica fusca</i>                 | Blackburnian warbler           | <i>o</i>              | <i>o</i> | <i>o</i> |          |
| <i>Dendroica pinus</i>                 | Pine warbler *                 | <i>u</i>              | <i>u</i> | <i>u</i> |          |

| Scientific Name                  | Common Name               | Season <sup>1,2</sup> |    |    |    |
|----------------------------------|---------------------------|-----------------------|----|----|----|
|                                  |                           | Sp                    | Su | Fa | Wi |
| <i>Dendroica discolor</i>        | Prairie warbler *         | u                     | u  | u  |    |
| <i>Dendroica palmarum</i>        | Palm warbler              | u                     |    | u  |    |
| <i>Dendroica castanea</i>        | Bay-breasted warbler      | u                     |    | u  |    |
| <i>Dendroica striata</i>         | Blackpoll warbler         | u                     |    | u  |    |
| <i>Dendroica cerulea</i>         | Cerulean warbler *        | u                     | u  | u  |    |
| <i>Mniotilta varia</i>           | Black and white warbler * | c                     | c  | c  |    |
| <i>Setophaga ruticilla</i>       | American redstart *       | c                     | c  | c  |    |
| <i>Helmitheros vermivorus</i>    | Worm-eating warbler *     | u                     | u  | u  |    |
| <i>Seiurus aurocapillus</i>      | Ovenbird *                | c                     | c  | c  |    |
| <i>Seiurus noveboracensis</i>    | Northern waterthrush      | u                     | u  | u  |    |
| <i>Seiurus motacilla</i>         | Louisiana waterthrush *   | u                     | c  | u  |    |
| <i>Oporornis formosus</i>        | Kentucky warbler          | r                     |    |    |    |
| <i>Oporornis agilis</i>          | Connecticut warbler       |                       |    | o  |    |
| <i>Oporornis philadelphia</i>    | Mourning warbler          | u                     |    | u  |    |
| <i>Geothlypis trichas</i>        | Common yellowthroat *     | c                     | c  | c  |    |
| <i>Wilsonia citrina</i>          | Hooded warbler *          | u                     | u  | u  |    |
| <i>Wilsonia pusilla</i>          | Wilson's warbler          | u                     |    | u  |    |
| <i>Wilsonia canadensis</i>       | Canada warbler            | u                     | o  | u  |    |
| <i>Icteria virens</i>            | Yellow-breasted chat      | o                     | o  |    |    |
| <b>Tanagers - Sparrows</b>       |                           |                       |    |    |    |
| <i>Piranga olivacea</i>          | Scarlet tanager *         | u                     | u  | u  |    |
| <i>Cardinalis</i>                | Northern cardinal *       | c                     | c  | c  | c  |
| <i>Pheucticus ludovicianus</i>   | Rose-breasted grosbeak *  | u                     | u  | u  | u  |
| <i>Passerina cyanea</i>          | Indigo bunting *          | c                     | c  | c  |    |
| <i>Pipilo erythrophthalmus</i>   | Eastern towhee *          | u                     | u  | u  | r  |
| <i>Spizella arborea</i>          | American tree sparrow     | u                     |    | c  | c  |
| <i>Spizella passerina</i>        | Chipping sparrow *        | c                     | c  | c  | u  |
| <i>Spizella pusilla</i>          | Field sparrow *           | u                     | u  | u  | c  |
| <i>Pooecetes gramineus</i>       | Vesper sparrow            | r                     | o  | r  |    |
| <i>Passerculus sandwichensis</i> | Savannah sparrow          | o                     | o  | o  | r  |
| <i>Passerella iliaca</i>         | Fox sparrow               | u                     |    | u  |    |
| <i>Melospiza melodia</i>         | Song sparrow *            | c                     | c  | c  | c  |
| <i>Melospiza lincolni</i>        | Lincoln's sparrow         | r                     |    | r  |    |
| <i>Melospiza georgiana</i>       | Swamp sparrow *           | u                     | u  | u  | o  |
| <i>Zonotrichia albicollis</i>    | White-throated sparrow    | c                     |    | c  | c  |
| <i>Zonotrichia leucophrys</i>    | White-crowned sparrow     | u                     |    | u  | u  |
| <i>Junco hyemalis</i>            | Dark-eyed junco *         | c                     | r  | c  | c  |
| <i>Calcarius lapponicus</i>      | Lapland longspur          |                       |    |    | o  |
| <i>Plectrophenax nivalis</i>     | Snow bunting              |                       |    | r  | o  |
| <b>Blackbirds - Finches</b>      |                           |                       |    |    |    |
| <i>Dolichonyx oryzivorus</i>     | Bobolink *                | u                     | u  | u  |    |
| <i>Agelaius phoeniceus</i>       | Red-winged blackbird *    | c                     | c  | c  | u  |
| <i>Sturnella magna</i>           | Eastern meadowlark *      | u                     | u  | u  |    |
| <i>Euphagus carolinus</i>        | Rusty blackbird           | u                     | u  | u  |    |
| <i>Quiscalus quiscula</i>        | Common grackle *          | a                     | a  | a  | u  |
| <i>Molothrus ater</i>            | Brown-headed cowbird *    | c                     | c  | c  | u  |
| <i>Icterus spurius</i>           | Orchard oriole            | u                     | u  | u  |    |
| <i>Icterus galbula</i>           | Baltimore oriole *        | c                     | c  | c  |    |
| <i>Pinicola enucleator</i>       | Pine grosbeak             |                       |    |    | r  |
| <i>Carpodacus purpureus</i>      | Purple finch              | u                     | u  | u  | u  |
| <i>Carpodacus mexicanus</i>      | House finch *             | c                     | c  | c  | c  |
| <i>Loxia curvirostris</i>        | Red crossbill             |                       |    |    | r  |

| Scientific Name                  | Common Name            | Season <sup>1,2</sup> |          |          |          |
|----------------------------------|------------------------|-----------------------|----------|----------|----------|
|                                  |                        | Sp                    | Su       | Fa       | Wi       |
| <i>Loxia leucoptera</i>          | White-winged crossbill |                       |          |          | <i>r</i> |
| <i>Carduelis flammea</i>         | Common redpoll         |                       |          |          | <i>r</i> |
| <i>Carduelis hornemanni</i>      | Hoary redpoll          |                       |          |          | <i>r</i> |
| <i>Carduelis pinus</i>           | Pine siskin            |                       |          |          | <i>r</i> |
| <i>Carduelis tristis</i>         | American goldfinch *   | <i>c</i>              | <i>c</i> | <i>c</i> | <i>u</i> |
| <i>Coccythraustes vespertina</i> | Evening grosbeak       |                       |          | <i>u</i> | <i>u</i> |
| <i>Passer domesticus</i>         | House sparrow *        | <i>a</i>              | <i>a</i> | <i>a</i> | <i>a</i> |

Notes:  
\* - indicates probable nesting on the reservation  
<sup>1</sup> Sp - Spring (March, April, May)  
Su - Summer (June, July, August)  
Fa - Fall (September, October, November)  
Wi - Winter (December, January, February)  
<sup>2</sup> Relative abundance  
a - abundant (species encountered very often and numerous on the reservation)  
c - common (species easily found in their preferred habitat)  
u - uncommon (species less easily found, but regularly occurring at West Point)  
o - occasional (species that have been observed in the area, but sporadically at least once each year)  
r - rare (very infrequently observed species, likely to be seen at least once over a 5-year period)  
Source: USMA, 2003.

- **Reptiles**—Twenty-two species of reptiles have been documented on USAG WP. Reptiles at USAG WP are noted on Table 4-9 below.

**Table 4-9. Reptiles at USAG WP**

| Scientific Name                  | Common Name            |
|----------------------------------|------------------------|
| <i>Chelydra serpentina</i>       | Snapping turtle        |
| <i>Sternotherus odoratus</i>     | Stinkpot turtle        |
| <i>Clemmys guttata</i>           | Spotted turtle         |
| <i>Clemmys insculpta</i>         | Wood turtle            |
| <i>Chrysemys p. picta</i>        | Eastern painted turtle |
| <i>Chrysemys p. marginata</i>    | Midland painted turtle |
| <i>Trachemys scripta elegans</i> | Red-eared slider       |
| <i>Terrapene carolina</i>        | Eastern box turtle     |
| <i>Eumeces fasciatus</i>         | Five-lined skink       |
| <i>Nerodia sipedon</i>           | Northern water snake   |
| <i>Storeria dekayi</i>           | Northern brown snake   |
| <i>S. occipitamaculata</i>       | Red-bellied snake      |
| <i>Thamnophis sirtalis</i>       | Eastern garter snake   |
| <i>Thamnophis sauritus</i>       | Eastern ribbon snake   |
| <i>Heterodon platyrhinos</i>     | Eastern hognose snake  |
| <i>Diadophis punctatus</i>       | Ringneck snake         |
| <i>Coluber constrictor</i>       | Black racer            |
| <i>Elaphe obsoleta</i>           | Black rat snake        |
| <i>Lampropeltis triangulum</i>   | Milk snake             |
| <i>Agkistrodon c. mokasen</i>    | Northern copperhead    |



| Scientific Name           | Common Name        |
|---------------------------|--------------------|
| <i>Carpophis amoenus</i>  | Eastern wormsnake  |
| <i>Crotalus horridus</i>  | Timber rattlesnake |
| <i>Opheodrys vernalis</i> | Smooth green snake |

- **Amphibians**—Eighteen species of amphibians have been documented on USAG WP, with five others believed present, but not confirmed. Amphibians at USAG WP are noted on Table 4-10 below.

**Table 4-10. Amphibians of West Point**

| Scientific Name                  | Common Name                   |
|----------------------------------|-------------------------------|
| <i>Ambystoma maculatum</i>       | Spotted salamander            |
| <i>Ambystoma jeffersonianum</i>  | Jefferson salamander          |
| <i>Ambystoma opacum</i>          | Marbled salamander            |
| <i>Notophthalmus viridescens</i> | Red-spotted newt              |
| <i>Plethodon cinereus</i>        | Redback salamander            |
| <i>Plethodon glutinosus</i>      | Northern slimy salamander     |
| <i>Hemidactylium scutatum</i>    | Four-toed salamander          |
| <i>Pseudotriton ruber</i>        | Northern red salamander       |
| <i>Eurycea bislineata</i>        | Northern two-lined salamander |
| <i>Bufo americanus</i>           | American toad                 |
| <i>Bufo fowleri</i>              | Fowler’s toad                 |
| <i>Pseudacris crucifer</i>       | Spring peeper                 |
| <i>Hyla versicolor</i>           | Northern gray tree frog       |
| <i>Rana clamitans</i>            | Green frog                    |
| <i>Rana sylvatica</i>            | Wood frog                     |
| <i>Rana palustris</i>            | Pickerel frog                 |
| <i>Rana catesbeiana</i>          | Bullfrog                      |
| <i>Ambystoma laterale</i>        | Blue-spotted salamander       |
| <i>Desmognathus fuscus</i>       | Northern dusky salamander     |
| <i>Demognathus ochrophaeus</i>   | Alleghany dusky salamander    |
| <i>Gyrinophilus porphyricus</i>  | Spring salamander             |

- **Fish**—Forty-four fish species have been confirmed as present, historically recorded, or recently recorded on USAG WP. Fish commonly found in the Hudson River are listed on Table 4-11.

**Table 4-11. Fish Common to the Hudson River<sup>1</sup>**

| Scientific Name   | Common Name                     |
|---|---------------------------------|
| <i>Acipenser brevirostrum</i> <sup>2,5</sup>            | Shortnose sturgeon <sup>6</sup> |
| <i>Acipenser oxyrinchus oxyrinchus</i> <sup>2,3,5</sup> | Atlantic sturgeon               |
| <i>Alosa aestivalis</i> <sup>5</sup>                    | Blueback herring                |
| <i>Alosa pseudoharengus</i> <sup>5</sup>                | Alewife                         |
| <i>Alosa sapidissima</i> <sup>3,5</sup>                 | American shad                   |
| <i>Anchoa mitchilli</i> <sup>4</sup>                    | Bay anchovy                     |
| <i>Anguilla rostrata</i>                                | American eel                    |
| <i>Catostomidae</i>                                     | Suckers                         |
| <i>Centrarchidae</i>                                    | Sunfishes                       |

| Scientific Name  | Common Name     |
|--|-----------------|
| <i>Clupeidae</i>   | Herring         |
| <i>Fundulus heteroclitus</i> <sup>4</sup>  | Mummichog       |
| <i>Microgadus tomcod</i> <sup>3,5</sup>  | American tomcod |
| <i>Morone americana</i>  | White perch     |
| <i>Morone saxatilis</i> <sup>5,6</sup>   | Striped bass    |
| <i>Pomatomus saltatrix</i> <sup>7</sup>  | Bluefish        |
| <i>Trinectes maculatus</i> <sup>4</sup>  | Hogchoker       |
| Notes:   |                 |
| <sup>1</sup> This is a partial listing of common species that may be found in the Hudson River near West Point. The USWF and NYSDEC have identified a total of 66 species as residents or migrants.  |                 |
| <sup>2</sup> Federally listed endangered species.  |                 |
| <sup>3</sup> Species have shown a significant population decline in recent years.  |                 |
| <sup>4</sup> Species use river for spawning  |                 |
| <sup>5</sup> Use river as migratory pathway to spawn in upstream freshwater.   |                 |
| <sup>6</sup> The scientific name for striped bass and the common name for the Shortnose sturgeon have been changed to reflect current nomenclature. In the document referenced below (USMA, 1980), the names of these species are listed as <i>Roccus saxatilis</i> (striped bass) and short-nosed sturgeon. |                 |
| <sup>7</sup> Juveniles may forage offshore of West Point during periods of low freshwater flow.  |                 |
| Source: USMA, 1980.  |                 |

• **Invertebrates**—

— **Dragonflies and Damselflies**—One hundred one species of damselflies and dragonflies have been recorded on USAG WP (32 damselflies and 69 dragonflies). Odonates at USAG WP are noted on Table 4-12 below.

**Table 4-12. Odonata Observed at USAG WP**

| Scientific Name                  | Common Name                      |
|----------------------------------|----------------------------------|
| <b>Calopterygidae</b>            | <b>Broad-winged Damselflies</b>  |
| <i>Calopteryx aequabilis</i>     | River jewelwing                  |
| <i>Calopteryx maculata</i>       | Ebony jewelwing                  |
| <b>Lestidae</b>                  | <b>Spread-winged Damselflies</b> |
| <i>Lestes congener</i>           | Spotted spreadwing               |
| <i>Lestes dryas</i>              | Emerald spreadwing               |
| <i>Lestes eurinas</i>            | Amber-winged spreadwing          |
| <i>Lestes forcipatus</i>         | Sweetflag spreadwing             |
| <i>Lestes inaequalis</i>         | Elegant spreadwing               |
| <i>Lestes rectangularis</i>      | Slender spreadwing               |
| <i>Lestes vigilax</i>            | Swamp spreadwing                 |
| <b>Coenagrionidae</b>            | <b>Pond damselflies</b>          |
| <i>Amphiagrion saucium</i>       | Eastern red damselfly            |
| <i>Argia fumipennis violacea</i> | Violet dancer                    |
| <i>Argia translata</i>           | Dusky dancer                     |
| <i>Chromagrion conditum</i>      | Openwing dancer                  |
| <i>Enallagma aspersum</i>        | Azure bluet                      |
| <i>Enallagma civile</i>          | Familiar bluet                   |
| <i>Enallagma cyathigerum</i>     | Northern bluet                   |
| <i>Enallagma divagans</i>        | Turquoise bluet                  |

| Scientific Name                 | Common Name               |
|---------------------------------|---------------------------|
| <i>Enallagma durum</i>          | Big bluet                 |
| <i>Enallagma ebrium</i>         | Marsh bluet               |
| <i>Enallagma exsulans</i>       | Stream bluet              |
| <i>Enallagma geminatum</i>      | Skimming bluet            |
| <i>Enallagma hageni</i>         | Hagen's bluet             |
| <i>Enallagma laterale</i>       | New England bluet         |
| <i>Enallagma signatum</i>       | Orange bluet              |
| <i>Enallagma traviatum</i>      | Slender bluet             |
| <i>Enallagma vesperum</i>       | Vesper bluet              |
| <i>Ischnura kellicotti</i>      | Lilypad forktail          |
| <i>Ischnura posita</i>          | Fragile forktail          |
| <i>Ischnura verticalis</i>      | Eastern forktail          |
| <i>Nehalennia gracilis</i>      | Sphagnum sprite           |
| <i>Nehalennia irene</i>         | Sedge sprite              |
| <b>Aeshnidae</b>                | <b>Darners</b>            |
| <i>Aeshna canadensis</i>        | Canada darner             |
| <i>Aeshna clepsydra</i>         | Mottled darner            |
| <i>Aeshna mutata</i>            | Spatterdock darner        |
| <i>Aeshna tuberculifera</i>     | Black-tipped darner       |
| <i>Aeshna umbrosa</i>           | Shadow darner             |
| <i>Aeshna verticalis</i>        | Green-striped darner      |
| <i>Anax junius</i>              | Green darner              |
| <i>Anax longipes</i>            | Comet darner              |
| <i>Basiaeschna janata</i>       | Springtime darner         |
| <i>Boyeria vinosa</i>           | Fawn darner               |
| <i>Epiaeschna heros</i>         | Swamp darner              |
| <i>Gomphaeschna furcillata</i>  | Harlequin darner          |
| <i>Nasiaeschna pentacantha</i>  | Cyrano darner             |
| <b>Gomphidae</b>                | <b>Clubtails</b>          |
| <i>Arigomphus furcifer</i>      | Lilypad clubtail          |
| <i>Arigomphus villosipes</i>    | Unicorn clubtail          |
| <i>Dromogomphus spinosus</i>    | Black-shouldered spinyleg |
| <i>Gomphus exilis</i>           | Lancet clubtail           |
| <i>Gomphus lividus</i>          | Ashy clubtail             |
| <i>Gomphus spicatus</i>         | Dusky clubtail            |
| <i>Stenogomphurus rogersi</i>   | Sable clubtail            |
| <i>Stylogomphus albistylus</i>  | Least clubtail            |
| <b>Cordulegastridae</b>         | <b>Spiketails</b>         |
| <i>Cordulegaster diastatops</i> | Delta-spotted spiketail   |
| <i>Cordulegaster maculata</i>   | Twin-spotted spiketail    |
| <i>Cordulegaster obliqua</i>    | Arrowhead spiketail       |
| <b>Macromiidae</b>              | <b>Cruisers</b>           |
| <i>Didymops transversa</i>      | Stream cruiser            |
| <i>Macromia illinoensis</i>     | Illinois River cruiser    |
| <b>Corduliidae</b>              | <b>Emeralds</b>           |
| <i>Cordulia shurtleffi</i>      | American emerald          |
| <i>Dorocordulia lepida</i>      | Petite emerald            |
| <i>Dorocordulia libera</i>      | Racket-tailed emerald     |
| <i>Epicordulia princeps</i>     | Water prince              |
| <i>Helocordulia uhleri</i>      | Uhler's sunfly            |
| <i>Neurocordulia obsoleta</i>   | Umber shadowfly           |
| <i>Somatochlora linearis</i>    | Mocha emerald             |
| <i>Somatochlora tenebrosa</i>   | Clamp-tipped emerald      |

| Scientific Name                 | Common Name             |
|---------------------------------|-------------------------|
| <i>Somatochlora walshii</i>     | Brush-tipped emerald    |
| <i>Somatochlora williamsoni</i> | Williamson's emerald    |
| <i>Tetragoneuria canis</i>      | Beaverpond baskettail   |
| <i>Tetragoneuria cynosura</i>   | Common baskettail       |
| <b>Libellulidae</b>             | <b>Skimmers</b>         |
| <i>Celithemis elisa</i>         | Calico pennant          |
| <i>Celithemis eponina</i>       | Halloween pennant       |
| <i>Celithemis fasciata</i>      | Banded pennant          |
| <i>Celithemis martha</i>        | Martha's pennant        |
| <i>Erythemis simplicicollis</i> | Eastern pondhawk        |
| <i>Ladona deplanata</i>         | Blue corporal           |
| <i>Ladona exusta</i>            | White corporal          |
| <i>Ladona julia</i>             | Chalk-fronted corporal  |
| <i>Leucorrhinia frigida</i>     | Frosted whiteface       |
| <i>Leucorrhinia intacta</i>     | Dot-tailed whiteface    |
| <i>Libellula auripennis</i>     | Golden-winged skimmer   |
| <i>Libellula axilena</i>        | Bar-winged skimmer      |
| <i>Libellula cyanea</i>         | Spangled skimmer        |
| <i>Libellula incesta</i>        | Slaty skimmer           |
| <i>Libellula luctuosa</i>       | Pied skimmer            |
| <i>Libellula needhami</i>       | Needham's skimmer       |
| <i>Libellula pulchella</i>      | Twelve-spotted skimmer  |
| <i>Libellula quadrimaculata</i> | Four-spotted skimmer    |
| <i>Libellula semifasciata</i>   | Painted skimmer         |
| <i>Libellula vibrans</i>        | Great blue skimmer      |
| <i>Nannothemis bella</i>        | Elfin skimmer           |
| <i>Pachydiplax longipennis</i>  | Blue dasher             |
| <i>Pantala flavescens</i>       | Globe glider            |
| <i>Pantala hymenaea</i>         | Spot-winged glider      |
| <i>Perithemis tenera</i>        | Eastern amberwing       |
| <i>Plathemis lydia</i>          | Common whitetail        |
| <i>Sympetrum janae</i>          | Jane's meadowfly        |
| <i>Sympetrum semicinctum</i>    | Band-winged meadowfly   |
| <i>Sympetrum vicinum</i>        | Yellow-legged meadowfly |
| <i>Tramea carolina</i>          | Violet-masked glider    |
| <i>Tramea lacerata</i>          | Black-mantled glider    |

— **Butterflies and Moths**—During an initial survey, 76 species (approximately 8,100 individuals) were identified on USAG WP. A supplemental survey of butterflies was conducted to locate species that were not found during previous surveys; a total of 6 additional species were observed. Butterflies observed at USAG WP are noted on Table 4-13 below. Two hundred ninety-four moth species occur on West Point lands.

**Table 4-13. Butterflies Observed on USAG WP**

| Scientific Name              | Common Name       |
|------------------------------|-------------------|
| <i>Achalarus lyciades</i>    | Hoary edge        |
| <i>Ancyloxypha numitor</i>   | Least skipper     |
| <i>Anthocaris midea</i> *    | Falcate orangetip |
| <i>Asterocampa celtis</i> *  | Hackberry emperor |
| <i>Asterocampa clyton</i> *  | Tawny emperor     |
| <i>Atrytone logan</i>        | Delaware skipper  |
| <i>Atrytonopsis hianna</i> * | Dusted skipper    |

| Scientific Name                    | Common Name             |
|------------------------------------|-------------------------|
| <i>Battus philenor</i> **          | Pipevine swallowtail    |
| <i>Callophrys augustinus</i> **    | Brown elfin             |
| <i>Callophrys gryneus</i>          | Olive hairstreak        |
| <i>Celastrina ladon</i>            | Spring azure            |
| <i>Cercyonis pegagla</i>           | Common wood nymph       |
| <i>Chlosyne harrissii</i> **       | Harris' checkerspot     |
| <i>Coenonympha tullia</i>          | Common ringlet          |
| <i>Colias eurytheme</i>            | Orange sulfur           |
| <i>Colias philodice</i>            | Common sulfur           |
| <i>Danaus plexippus</i>            | Monarch                 |
| <i>Enodia anthedon</i>             | Northern pearly-eye     |
| <i>Epargyreus clarus</i>           | Silver-spotted skipper  |
| <i>Erynnis baptisiae</i>           | Wild indigo duskywing   |
| <i>Erynnis horatius</i> *          | Horace's duskywing      |
| <i>Erynnis icelus</i>              | Dreamy duskywing        |
| <i>Erynnis juvenalis</i>           | Juvenal's duskywing     |
| <i>Euphydyas phaeton</i>           | Baltimore               |
| <i>Euphyes conspicua</i> *         | Black dash              |
| <i>Euphyes dion</i> **             | Dion or sedge skipper   |
| <i>Euphyes vestris</i>             | Dun skipper             |
| <i>Everes comyntas</i>             | Eastern tailed blue     |
| <i>Hesperia leonardus</i> **       | Leonard's skipper       |
| <i>Hesperia metea</i> **           | Cobweb skipper          |
| <i>Hesperia sassacus</i>           | Indian skipper          |
| <i>Limenitis archippus</i>         | Viceroy                 |
| <i>Limenitis astyanax</i>          | Red-spotted purple      |
| <i>Lycaena phlaeas</i>             | Little copper           |
| <i>Megisto cymela</i>              | Little wood satyr       |
| <i>Nymphalis antiopa</i>           | Mourning cloak          |
| <i>Nymphalis vau-album</i>         | Compton's tortoiseshell |
| <i>Papilio glaucus</i>             | Tiger swallowtail       |
| <i>Papilio polyxenes</i> ***       | Black swallowtail       |
| <i>Papilio troilus</i>             | Spicebush swallowtail   |
| <i>Phoebis sennae</i>              | Cloudless sulfur        |
| <i>Phyciodes tharos</i>            | Pearl crescent          |
| <i>Pieris rapae</i>                | Cabbage butterfly       |
| <i>Poanes hobomok</i>              | Hobomok skipper         |
| <i>Poanes massasoit</i>            | Mulberry-wing           |
| <i>Poanes viator</i>               | Broad-winged skipper    |
| <i>Poanes zabulon</i>              | Zabulon skipper         |
| <i>Polites mystic</i>              | Long dash               |
| <i>Polites origenes</i>            | Crossline skipper       |
| <i>Polites peckius</i>             | Peck's skipper          |
| <i>Polites themistocles</i>        | Tawny-edged skipper     |
| <i>Polygonia comma</i> ***         | Comma                   |
| <i>Polygonia interrogationis</i>   | Question mark           |
| <i>Pompeius verna</i>              | Little glassy-wing      |
| <i>Pyrgus communis</i>             | Checkered skipper       |
| <i>Satyrium acadia</i>             | Acadian hairstreak      |
| <i>Satyrium calanus</i>            | Banded hairstreak       |
| <i>Satyrium caryaevoris</i>        | Hickory hairstreak      |
| <i>Satyrium edwardsii</i> *        | Edward's hairstreak     |
| <i>Satyrium favonius ontario</i> * | Northern hairstreak     |

| Scientific Name              | Common Name               |
|------------------------------|---------------------------|
| <i>Satyrium liparops</i>     | Striped hairstreak        |
| <i>Satyrium titus</i>        | Coral hairstreak          |
| <i>Satyrodes appalachia</i>  | Appalachian brown         |
| <i>Speyeria cybele</i>       | Great spangled fritillary |
| <i>Strymon melinus</i>       | Gray hairstreak           |
| <i>Thorybes bathyllus</i>    | Southern cloudywing       |
| <i>Thorybes pylades</i>      | Northern cloudywing       |
| <i>Thymelicus lineola</i>    | European skipper          |
| <i>Vanessa atlantica</i>     | Red admiral               |
| <i>Vanessa cardui</i>        | Painted lady              |
| <i>Vanessa virginiensis</i>  | American lady             |
| <i>Wallengrenia egeremet</i> | Northern broken dash      |
| Source: Barbour, 1995d.      |                           |
| Notes:                       |                           |
| * rare                       |                           |
| ** regionally rare           |                           |
| *** rare at West Point       |                           |

— **Molluscs and Crayfish**—There are 33 species of molluscs at USAG WP, including several rare species, and 2 species of crayfish that have been identified. Mollusc and crayfish species at USAG WP are noted below on Table 4-14.

**Table 4-14. Mollusc and Crayfish Species Collected from West Point Waters**

| Scientific Name                   | Common Name               |
|-----------------------------------|---------------------------|
| <i>Amnicola cf grana</i>          | --                        |
| <i>Amnicola limosus</i>           | Mud amnicola              |
| <i>Aplexa elongata</i>            | Lance aplexa              |
| <i>Cambarus bartonii</i>          | Common crayfish           |
| <i>Campeloma decisum</i>          | Pointed campeloma         |
| <i>Cipangopaulidina chinensis</i> | Chinese mystery snail     |
| <i>Elliptio complanata</i>        | Eastern elliptio          |
| <i>Ferrissia californica</i>      | Fragile ancyloid          |
| <i>Ferrissia walkeri</i>          | Creeping ancyloid         |
| <i>Fossaria obrussa</i>           | Golden fossaria           |
| <i>Fossaria rustica</i>           | --                        |
| <i>Gyraulus circumstriatus</i>    | Disk gyro                 |
| <i>Gyraulus parvus</i>            | Ash gyro                  |
| <i>Helisoma anceps</i>            | Two-ridge rams-horn snail |
| <i>Micromenetus dilatatus</i>     | Bugle sprite              |
| <i>Musculium partumeium</i>       | Swamp fingernailclam      |
| <i>Musculium securis</i>          | Pond fingerclam           |
| <i>Orconectes limosus</i>         | Spinycheek crayfish       |
| <i>Physella ancillaria</i>        | Pumpkin physa             |
| <i>Physella gyrina</i>            | Tadpole physa             |
| <i>Physella heterostropha</i>     | Pewter physa              |
| <i>Pisidium casertanum</i>        | Caserta pea mussel        |
| <i>Pisidium ferrugineum</i>       | Rusty peaclam             |
| <i>Pisidium henslowanum</i>       | Henslow's pea mussel      |
| <i>Pisidium cf. insigne</i>       | Tiny peaclam              |
| <i>Planobid sp. novo</i>          | --                        |



| Scientific Name                                     | Common Name          |
|---|----------------------|
| <i>Planorbella trivolvis</i>                        | Marsh ramshorn       |
| <i>Planorbella ventricosum</i>                      | Globular pea clam    |
| <i>Planorbella ventricosum</i> f. <i>rotundatum</i> | --                   |
| <i>Probythinella lacustris</i>                      | --                   |
| <i>Pseudosuccinea columella</i>                     | Mimic lymnea         |
| <i>Pyganodon cataracta</i>                          | Eastern floater      |
| <i>Sphaerium nitidum</i>                            | Artic fingernailclam |
| <i>Sphaerium simile</i>                             | Grooved fingerclam   |
| <i>Valvata tricainata</i>                           | Three-ridge valvata  |
| <i>Viviparus georgiannus</i>                        | Banded mysterysnail  |

In 2008, NYSDEC implemented regulations that banned the harvest, take, or possession of any native snakes, lizards, or salamanders at any time. Species that may be harvested include the diamondback terrapin, snapping turtle, eastern American toad, Fowler's toad, northern gray treefrog, northern spring peeper, western chorus frog, bullfrog, green frog, mink frog, wood frog, northern leopard frog, southern leopard frog, and pickerel frog.

***Habitat Management Techniques:*** Properly managing all habitat types, as discussed in this document, will benefit non-game species at USAG WP. General habitat management measures for non-game species include maintaining and/or creating edge and open areas, preserving snags and trees with natural cavities, erecting and maintaining nest boxes, maintaining dead woody materials on the forest floor, planting native trees and shrubs that could be used as habitat, and maintaining and improving unique trees and forest stands. Turtle egg-laying sites will be monitored for possible degradation and increased predation. NRB staff may attempt nest site protection measures to limit predation of turtle eggs.

***Other Surveying and Monitoring Efforts:*** To date, USAG WP has conducted surveys for odonates, butterflies, moths, molluscs, crayfish, bats, breeding birds, migratory birds, hawks, owls, and herptile species. One other survey to conduct on USAG WP lands is for raptors, as habitat conditions are favorable on both the reservation and Constitution Island. Several state-listed raptors have already been identified at USAG WP.

**Program Goals, Objectives, and Projects:** The goals, projects, and objectives for Non-Game Management are outlined in Table 6-1, *United States Army Garrison West Point Goals and Implementation Plan*, in Chapter 6.

**Program Management Units:** Non-game wildlife are managed by species or habitat area.

## 4.10 VEGETATION

### 4.10.1 Flora and Habitat

USAG WP is within the Hudson Valley in an area known as the Hudson Highlands. Regionally, the Highlands have been recognized as important terrestrial wildlife habitat. USAG WP has a diverse assemblage of flora; more than 1,000 vascular plant species have been identified on the installation. Hundreds of species of flora and the 32 vertebrate species listed by NYS as endangered, threatened, or special concern are found in the Highlands. Ten of the plant species

also have a federal status. More than 140 species of birds are known to nest in the region and approximately 95 neotropical migrants pass through each year. For the almost 75 species of neotropical migrants that nest in the Highlands, such as the red-eyed vireo (*Vireo olivaceus*), American redstart (*Setophaga ruticilla*), Canada warbler (*Wilsonia canadensis*), and eastern wood-peewee (*Contopus virens*), the large tracts of forest provide interior habitat necessary for reproductive success and long-term survival of the species. Open space in the Highlands provides feeding and migratory corridors to large mammals with extensive range requirements.

The West Point landscape has been described as elevated, rugged terrain with deep ravines and predominately glacial, acidic soils (till). Most of this landscape is forested, but many crests have few trees and support only woodlands, savannas, or grasslands. A few broad crests have extensive unvegetated granitic bedrock exposure with vascular plants growing only in cracks or pockets of shallow soil. Oaks are the most common trees throughout the reservation reflecting the rocky and well-drained qualities of the soil. There are a few areas of sugar maple-dominated forests. Crests and ridges are very dry and burn frequently from human-caused fires, generally associated with military training activities. Habitat types for USAG WP were described by Kakerback (1995); this analysis included 28 different natural heritage vegetation communities. A table of these communities and their descriptions is provided in Appendix G.

**Program Data Management:** Terrestrial vegetation communities and habitat have been outlined at USAG WP in several survey efforts. These installation-specific surveys provide information on the vegetation communities found at USAG WP. Due to fire and other environmental changes, the location of communities may vary, but the descriptions of these communities provide a comprehensive description of the types of vegetation communities on the installation. Program data management resources applicable to Flora and Habitat are outlined in Appendix C, Table C-1, *Program Data Management*.

**Supplemental References:** Management plans for wildland fire and forest management provide measures that directly or indirectly affect vegetation communities at USAG WP. These plans include management actions for active timber stands as well as directives for the management of wildland fire when it occurs. Supplemental resources applicable to Flora and Habitat are outlined in Appendix C, Table C-2, *Supplemental References*.

**Program History:** Surveys of the terrestrial flora and habitat of USAG WP have been completed to delineate the habitats on the installation and to facilitate the discovery of rare plant communities. The most recent survey for rare plants was conducted in 2010, and continued surveys for these species will be used to manage populations.

A survey completed in 1992–1993 to inventory USAG WP resulted in the observation of 520 vascular plant species new to the installation (representing 94 families and 277 genera of ferns, horsetails, trees, shrubs, and



*Pollinator garden in winter.*

flowering herbs), nearly doubling the previously recorded flora of the area (570 species) (Mitchell and Tucker 1993). While most of the plants found were those expected in the Hudson Highlands, there were a few exceptions of species outside their recorded ranges (e.g., *Woodwardia areolata*, *Betula cordifolia*). Results of the survey indicate that the botanical diversity at West Point is well within the range or higher than that of nearby areas such as Bear Mountain/Harriman State Park.

An additional 29 plant species, 11 of which have special status of concern, have been discovered since 1993 through formal rare plant investigations or through ongoing activities of NRB personnel. A complete listing of the vascular plants on USAG WP is on file at NRB. More detailed information from these surveys and on survey for bryophytes also completed at USAG WP is on file in the NRB.

The vegetation communities at USAG WP were also surveyed in 1993–1994, 1995, and 2004. The 1993–1994 survey was completed using methods and community categories from the NYNHP's *Ecological Communities of New York State* (Reschke 1990). This inventory was updated in 1995 by field-checking terrestrial communities previously described (Barbour, S. 1995a; Kakerback 1995).

In 1995, the reservation was classified into 28 terrestrial community types. Because the terrestrial system encompasses all upland habitats, these communities have been subdivided into open uplands, barrens and woodlands, forested uplands, and cultural categories. Ecological descriptions of each community, provided below, were taken from Kakerback (1995) *Ecological Communities of the West Point Military Reservation* and NYNHP's *Ecological Communities of New York State* (Reschke 1990). In 2004, the map was redrawn using guidelines devised by Edinger et al. (2002). A map of these terrestrial communities is provided as Figure 4-7, though some of the classifications (e.g., successional and cultural communities) have been grouped together for improved visual display.

**Current Conditions:** Flora and habitats have been classified into 28 different natural heritage vegetation community types (Appendix G). Fire and other natural and man-made disturbances frequently change the distribution of habitat types within USAG WP, but the communities described in 1995 persist on the installation. GIS data of these communities were most recently updated in 2004.

**Program Goals, Objectives, and Projects:** The primary goals of terrestrial habitat management at USAG WP are to maintain long-term desirable military training conditions, to manipulate habitats for the benefit of wildlife and flora, and to maintain or improve the biodiversity of wildlife and flora occurring on the reservation. These goals must, and can, be achieved without adversely impacting the military mission. Although recreational hunting is the second most common land use on the reservation, the ecosystem management approach serves to improve the diversity of wildlife, rather than the prevalence of particular species of game. The following section describes terrestrial habitat management practices to be implemented at USAG WP, the wildlife species that are intended to benefit from the practices, and management measures for the next 5 years. The goals, projects, and objectives for Flora and Habitat are outlined in Table 6-1, *United States Army Garrison West Point Goals and Implementation Plan*, in Chapter 6.

**Program Management Units:** Flora and habitat is managed in units according to the 28 natural heritage communities outlined by Kakerback in 1995, and updated in 2004.

#### 4.10.2 Forest Management

Forest management involves exercising influence over the ecological processes of a forest in an effort to provide specific sustainable products and amenities from the forest while maintaining its long-term health and vigor. The Army forest management program is required to support and enhance the immediate and long-term military mission and to meet natural resources stewardship requirements set forth in federal laws. Army policy further stipulates that forest resources must be managed for multiple uses, using an ecosystem management approach to optimize the benefits to the installation's natural resources. Ecosystem management provides a framework for holistic management of the resources rather than focusing emphasis on a single aspect or activity such as commercial timber production or game species management.



Photo: NRB.

Forest management enhances the USAG WP military mission by providing for a healthy forest over the long term. Practices such as periodic timber harvest, stand improvement activities, encouragement and protection of regeneration, and protection against fire, insects, and disease provide for sustainment of the forested environment desired for the conduct of military training. Conflict of forest management activities with the military mission is avoided by providing for review of management plans and activity schedules by the trainers.

The forest management program at USAG WP must also fully comply with all applicable federal laws, policies, and regulations pertaining to forest management. Federal laws, policies, and regulations that have the potential to impact forest management at USAG WP include AR 200-1; Public Law 86-797; the Sikes Act, as amended (16 U.S.C. § 670 a through o); 10 U.S.C. § 2665 (Sale of certain interest in land: logs); DoDI 7310.5 (Accounting for production and sale of lumber and timber products); EO 11990 (Protection of Wetlands); and the ESA of 1973, as amended (16 U.S.C. §§ 1531 et seq.).

**Program Data Management:** Managing complex forest ecosystems requires the flexibility to employ a variety of management practices that meet the desired vegetation conditions. No single set of prescriptions can be applied that will capture the dynamic nature of forest ecosystems. It should be noted that forest management is much more than the application of silvicultural treatments such as timber harvesting or stand improvements. An active part of managing forests is the collection of survey and inventory data to monitor forest stand health. To identify how conditions change in response to management practices, information from the forest stand inventories will continue to be collected and integrated with other inventories, such as burned area location and coverage; timber harvest areas; riparian, wetland, and water resources buffer

zones; stream corridors; ecological communities; wetlands; steep slopes and highly erodible soils; rare plants; threatened and endangered species; locations of cultural and archaeological resources; and soil and water resources. A GIS database consisting of these data layers is maintained and updated with each new inventory. Maps built from these data can be used to track temporal and spatial status and trends of the forest resources relative to other ecologically or geologically sensitive resources. Program data management resources applicable to Forest Management are outlined in Appendix C, Table C-1, *Program Data Management*.

**Supplemental References:** Forest management measures for USAG WP are guided by the FMP, but several other management documents are applicable to the management of forest resources, including those regarding the prevention of soil erosion during forest management. Supplemental resources applicable to Forest Management are outlined in Appendix C, Table C-2, *Supplemental References*.

**Program History:** Forest management has a long history at USAG WP, and NRB manages a robust forestry program. There has been a timber harvesting program at USAG WP since 1903 when a salvage logging operation was conducted to remove trees blown down or otherwise damaged by hurricane winds. That event highlighted a need for active forest management to maintain the woodlands in a healthy condition to support the military training mission. The first FMP for USAG WP was written in 1905 upon the recommendation of Gifford Pinchot, head of what was then the Federal Bureau of Forestry, and the USAG WP hired its first full-time Natural Resources Manager in 1958. Figure 4-8 shows areas on the reservation harvested since the inception of the program.

Beginning in 1956, legislation was passed that established a reimbursable fund for the DoD's forestry program, which allowed for military departments to retain receipts from sales of forest products such as timber, pulp wood, poles, pine straw, and firewood. The law spurred expansion of forestry programs and timber harvest. In 1982 a state entitlement program was developed in response to complaints by state and local officials that Army installations had removed large blocks of land from the local tax base. To compensate for the tax revenue loss, the state entitlement program required installations to distribute 25 percent of net proceeds from timber sales to the host states, which in turn distributed the money to the host counties. The revenues distributed to the states are intended to be used for roads and schools. The state share of the entitlement rose to 40 percent in 1984.

**Current Conditions:** Forestry management on military installations has evolved from a focus on soil stabilization and commercial forestry products, to a recognition of the value of installation forests as integral to Army training. Forests at USAG WP provide biological diversity, wildlife habitat, air and water quality, soil conservation, watershed protection, and opportunities for recreation. Today, USAG WP actively manages forest resources on the installation for timber stand management and sales, ecosystem health, and training purposes. Forest management practices, including timber harvest, are done in part to benefit the training environment and facilitate training objectives. Forestry activities, including providing skid trails, parking areas, and materials and sites for tactical concealment post-harvest all have a direct benefit to military training. Forested communities at USAG WP are noted in Appendix G.

*Timber Management and Harvest:* Per AR 405-90, installations are responsible for forestry management, and the district commander is responsible for selling timber. The district commander has delegated sale authority to installation commanders for sales with a value under \$1,000 and for total annual sales not exceeding \$20,000 in any fiscal year. Management of forests is completed under the goals and objectives of the FMP. A full description of the management methods and goals is provided in this plan (Appendix B). The general actions for forest management outlined in the FMP include the following:

- Complete an accurate inventory of stands every 10 years.
- Identify and address forest pests.
- Discontinue the use of girdling for timber stand improvement (TSI).
- Fell hazard trees.
- Replace the conifer component.
- Cutting is permissible in Special Natural Areas if it will result in an improvement in ecological function.
- USAG WP will undertake fire management, not fire suppression.
- Timber resources occurring on active construction sites shall be purchased by the project proponent and the proceeds forwarded to the Army forestry account. Timber value may not be used to defray the cost of projects.
- Management of stands using a selection silviculture system.
- Conversion over time of even-aged stands to more uneven-aged stands, with an expected decline in oak species in favor of shade-tolerant species, such as hemlock, sugar maple, and beech.
- The use of stand health as the primary consideration when selecting harvest areas
- An objective for high-quality saw log timber products.
- Timber is only harvested on approximately 7,000 acres of USAG WP that occur outside of danger and exclusion areas in stands with a site quality of two or better.
- Timber harvests not greater than 100,000 board feet per year during the duration of the INRMP period, with smaller sales possible. Management during the period of this INRMP will be focused on inventory and stand improvement.
- The designation of no-harvest areas in wetlands, and no routine harvests in riparian and wetland buffers. Specific trees are occasionally harvested in buffers to enhance wetland or wildlife values, in accordance with all applicable regulations.
- Actions to retain representation of all existing ecological communities at USAG WP, taking into account natural successional trends.
- Completion of all timber harvest in accordance with Timber Harvest Guidelines for New York.
- Timing logging operations to avoid periods of excessively wet soil conditions and outside of active season for endangered species, such as listed bat species.



- Snags, fallen trees, active den trees, active raptor nests, and most wolf trees are retained in harvest areas.
- Creation of a clearcut upland opening for every 40 acres of timber harvest to enhance habitat and species diversity.

*Timber Inventory and Forest Surveys:* At USAG WP, forest inventories have been conducted by the U.S. Forest Service in 1995, 2001, and again in 2008, with a timber cruise planned for 2018. These inventories were used to gather information for real estate reporting purposes and provide overall data for three broadly defined strata: pole timber, oak sawtimber, and mixed sawtimber. These inventories also included information on ground cover, shrub layers, seedling regeneration, general stand environment, stand location relative to various habitats and specific wildlife parameters (snags and den trees). Surveys are also routinely undertaken to protect forests and prevent unacceptable damage and degradation of the resources resulting from insects and disease, animal damage, invasive species, and wildfire.

*Timber Stand Improvement:* TSI is a form of intermediate stand treatment that generally does not involve the harvest of commercially valuable material. The lack of regional markets for trees less than 14-in. diameter means there is little commercial potential for TSI operations. TSI is employed when conditions of developing stands do not meet forest management objectives. It is used primarily to improve the timber quality of selected trees by removing other trees or vegetation, which provide competition for light, nutrients, and moisture. Under ecosystem management, however, TSI concentrates not just on promoting timber value but also on enhancing wildlife values and species diversity. Between 1976 and 2002, more than 1,350 acres were subject to TSI. As commercially viable timber stands become less prevalent at USAG WP due to stand age and the current timber market, TSI will be a greater focus of the forestry plan during this INRMP period. TSI objectives will be implemented to develop and improve USAG WP stands for future harvest.

*Firewood Program:* Firewood is distributed free of charge through the use of permits to USAG WP personnel. Wood resulting from landscaping and maintenance activities is stockpiled at a single location off Garrard Road by DPW's Roads and Grounds. Wood is available on a first-come-first-served basis. There is no limit to the volume of wood collected, but it is for personal use only. There is currently interest in considering a firewood permitting program for off-post firewood collection.

**Program Goals, Objectives, and Projects:** The projects, goals, and objectives for forest management are provided below. The goal of forest management at USAG WP is to maintain ecosystem viability while maintaining the forest cover required for military training and providing for the production of commercial forest products. Using an ecosystem management approach, the natural resources program can provide for the production of timber while at the same time providing for biodiversity, opportunities for recreation, natural beauty, wildlife habitat, protection of soil resources, air and water quality, and the viability and diversity of training lands. The goals, projects, and objectives for Forest Management are outlined in Table 6-1, *United States Army Garrison West Point Goals and Implementation Plan*, in Chapter 6.

**Program Management Units:** Forest management is undertaken at the forest stand level, with survey, inventory, and harvest being conducted within stands. A figure of the stand inventory at USAG WP is provided in Figure 4-9. The timber stand map differentiates stands according to species composition, tree size, and general site productivity. This map was derived from an ecological classification of USAG WP lands based on NYNHP ecological community definitions.

#### **4.10.3 Special Natural Areas**

*Natural Resources Conservation Program, 5 October 2017 (DoDI 4715.03)* specifies that “areas on DoD installations that contain natural resources that warrant special conservations efforts may be designated as special natural areas, where such conservation is consistent with the military mission.” It further states that “the INRMP shall address special management provisions necessary for the conservation of each area.” Special natural areas include “all areas officially recognized as having special attributes, including areas with botanical, ecological reserve, geological, natural resources, riparian, scenic, zoological, and watchable wildlife qualities.”

USAG WP has identified 12 sites that are to be specially managed because of their ecological or geological significance, unique geological structure, and/or aesthetic and educational value to the installation (Figure 4-10). With the designation of special natural area, USAG WP intends for the areas to remain as parts of training areas, if currently designated as such, but to make additional efforts to minimize impacts occurring as a result of training and other activities.

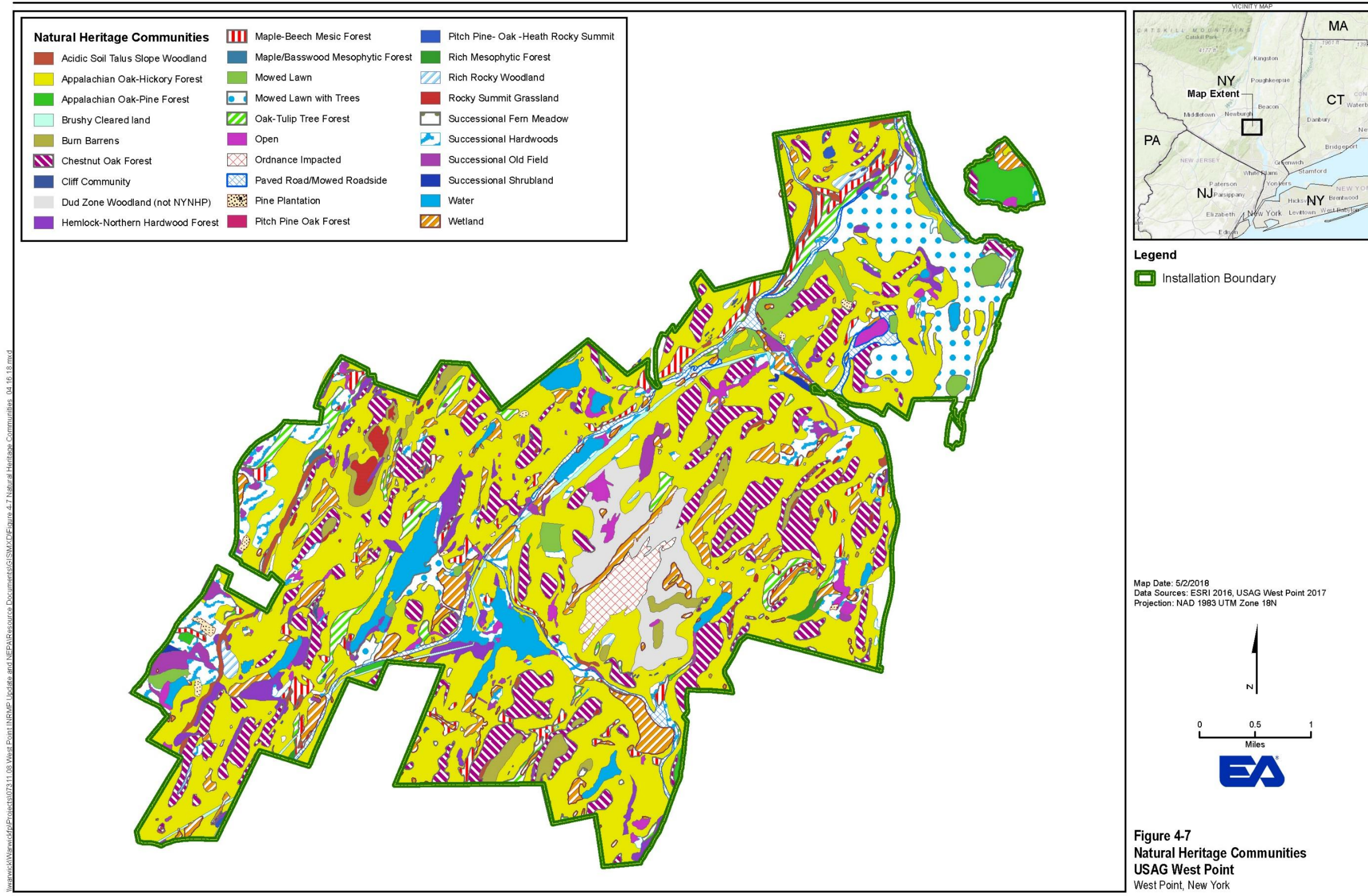
**Program Data Management:** A GIS layer providing the boundary of special natural areas is used to manage these areas. Some special natural areas are managed based on the unique natural resources present, as such other natural resources data, including GIS data and surveys, are used to manage these areas. Program data management resources applicable to Special Natural Areas are outlined in Appendix C, Table C-1, *Program Data Management*.

**Supplemental References:** Special natural areas are not managed under a specific plan, but are managed based on the resources that makes each area unique in the context of USAG WP and the region. Supplemental resources applicable to Special Natural Areas are outlined in Appendix C, Table C-2, *Supplemental References*.

**Program History:** Special natural areas have been designated at varying points in the history of USAG WP. Several of these areas include historic features, including military fortifications and other historic military resources. Currently, several Special Natural Areas are within training areas and are not managed separately from training areas unless resources protection requires restriction; high-impact training activities in these areas have been generally avoided. To minimize disturbance, past management has precluded timber harvest or TSI activities unless required by training. Areas with rare, threatened, or endangered species have been managed to protect species from recreation and training activities that may result in impacts to these species.

**Current Conditions:** Special Natural Areas at USAG WP are generally not of exceptional significance on a national or state basis, but are unique at USAG WP and/or in the region, and therefore warrant special consideration. Special natural areas are listed below in approximate

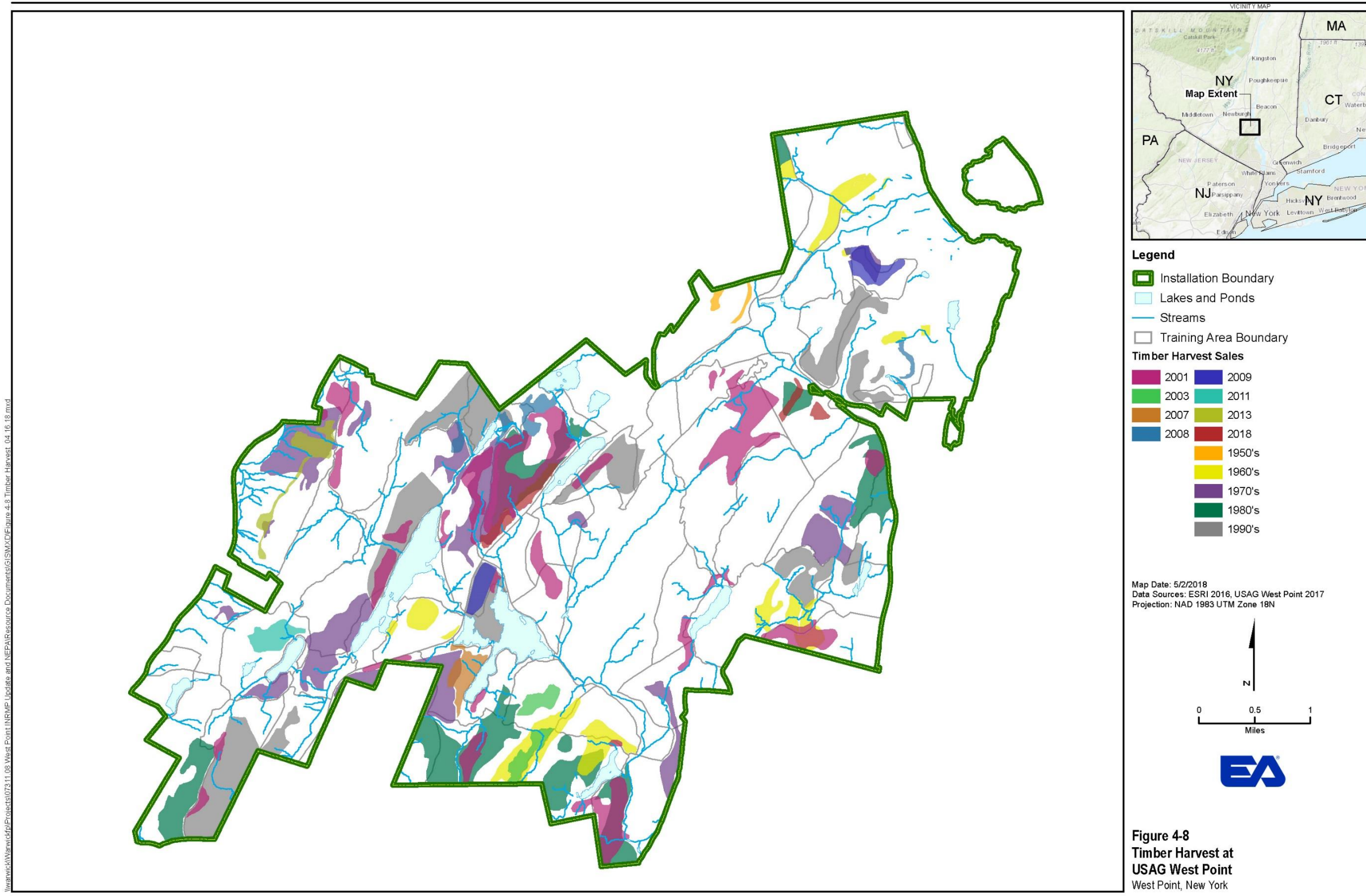
Figure 4-7. Natural Heritage Communities at USAG WP



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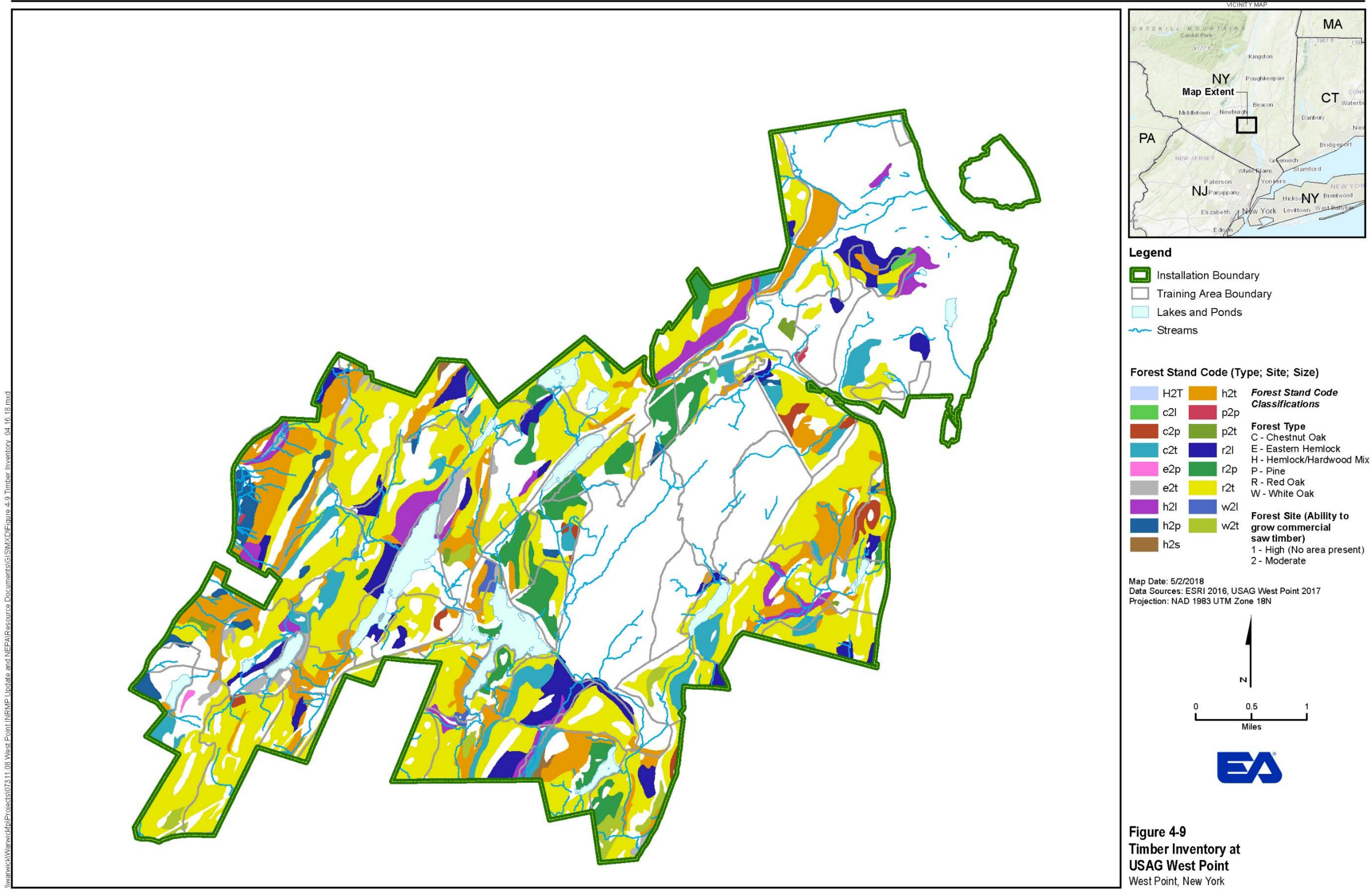
Figure 4-8. Timber Harvest at USAG WP



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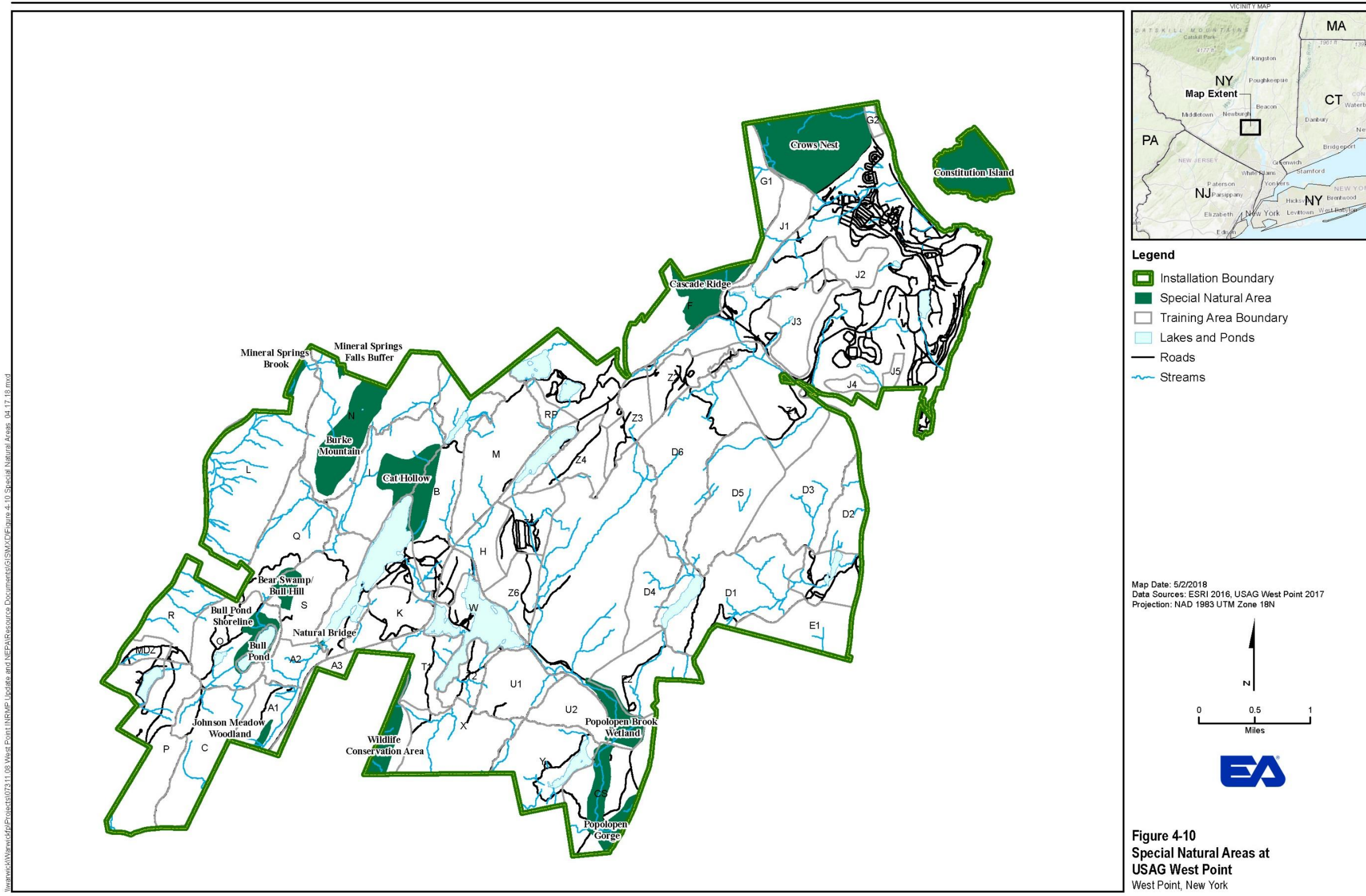
Figure 4-9. Timber Inventory at USAG WP



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Figure 4-10. Special Natural Areas at USAG WP



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order of priority, and an ecological characterization is provided for those sites that have been inventoried.

Constitution Island—Constitution Island is the highest (maximum elevation 140 ft) and largest (177 acres) of the Hudson River’s rocky islands. It is located on the east side of the Hudson River directly opposite West Point and is separated from the east shore by a large tidal marsh area. The area has both natural and cultural significance. Fortifications were constructed on the island in 1775 and 1778 by American colonists during the Revolutionary War, and remains of these fortifications are still present. Constitution Island supports a largely undisturbed matrix of forest, grasslands, and wetlands, including ecological communities not found in other areas of USAG WP. The site also provides habitat for a number of sensitive flora and fauna species.

Bear Swamp/Bull Hill—Bear Swamp (WP-B17) is a 13.1-acre wetland located at the base of Bull Hill and valued for its ecological diversity and scenic qualities. It is primarily a PFO wetland, but also contains 4.9 acres of PSS habitat. This wetland supports a diverse assemblage of flora and fauna, including several species uncommon at USAG WP or regionally rare such as netted chain fern (*Woodwardia areolata*) and Massachusetts fern (*Thelypteris simulata*). The presence of a dense eastern hemlock (*Tsuga canadensis*) and white pine (*Pinus strobus*) overstory with abundant sphagnum and deep-water pools also makes Bear Swamp a unique feature at USAG WP. Bull Hill Grotto is a unique geological feature approximately 720 ft southeast of Bear Swamp at the base of the steep northwest slope of Bull Hill (Barbour, S. 1995b). The west side of Bull Hill is a rounded granite escarpment with deep vertical cracks, a broken horizontal shelf about halfway upslope, and immense boulders at the base. The basal talus consists mostly of huge rock chunks 6.5 to 16.5 ft wide, with deep soil between rock that supports an unusually rich forest community. The upper slopes of Bull Hill support scrub-dominated communities, an oak-birch woodland savanna, and rich woodlands.

Popolopen Brook Wetland—The Popolopen Brook wetland (WP-C53), the largest wetland on USAG WP at 71.6 acres, is designated by NYSDEC as significant habitat in recognition of its support of wintering populations of waterfowl. This relatively undisturbed site has high aesthetic value since it has never been designated as a formal military training area. The wetland, located adjacent to Mine Torne Road above the confluence of Popolopen Brook and Cranberry Brook, is a mixed palustrine system consisting of interconnected emergent, scrub shrub, and forested wetland habitats (USACE 1993). As a result of these mixed habitats, Popolopen wetland contains a large diversity of vegetation, including sedge tussocks, shrub islands, and forested wetlands. The mix of community types in the wetland supports a variety of fauna including waterfowl and other bird species, making it a desirable watchable wildlife area. The wetland is also used by bald eagles for foraging.

Popolopen Brook Gorge—The Popolopen Brook is the largest of the streams at USAG WP. The approximately 1.5-mile length from Weyants Pond Road Bridge to the boundary with Bear Mountain State Park has rocky rapids, small waterfalls, deep ravines, and an occurrence of riverweed (*Podostemum ceratophyllum*), a rare plant. The area is also popular for fishing.

Wildlife Conservation Area—Portions of the reservation have been identified as having high value for wildlife and is set aside for stewardship purposes. These areas include habitat

components that are integral or critical to certain species and thus warrant protection from training and other human activities.

*Bull Pond Shoreline and Adjacent Hardwood Cove*—Bull Pond is a 29-acre, cold-water oligotrophic spring-fed lake located in Training Area O. The western shore is dominated by large oaks, while a hemlock stand dominates the eastern shore. It is estimated that the tallest trees on USAG WP are found within the hardwood cove dominated by oaks (*Quercus* spp.), tulip poplar (*Liriodendron tulipifera*), and sugar maple (*Acer saccharum*) at the northern end of the pond. The southern end of the lake is composed of swampy thickets with an adjacent 20-acre swamp bordering the southwest edge of the lake. There is an exceptionally rich diversity of shrubs and herbaceous species along the shoreline. The pristine nature of Bull Pond and the mature stands of oak and hemlock make this area ecologically valuable on USAGE WP. Few exotic plants have been identified in the area, including aquatic invasive species, and a rare species, small-floating bladderwort (*Utricularia radiata*) is present in the pond.

*Natural Bridge*—This area is considered a valuable resource for the unique geologic formation, the steep canyon-like stream channel, and the rich diversity of flora, including large concentrations of early spring flowers. The neutral marble on the bridge is an unusual occurrence on USAG WP. The marble comes into contact with biotite gneiss on the northern stream bank, which, on the downstream side of the bridge, is marked by large masses of brown biotite or phlopopite mica. A garnet-rich pegmatite occurs in the gneiss near the contact (Curran and Justus 1970). The upstream side of Natural Bridge forms a large marble grotto 30 ft wide and 10 ft high. The downstream side has a much smaller cavity in the marble; the stream exits the bridge from a deep pool extending under it. A 14-in.-wide, steeply dipping, metamorphosed basaltic dike is exposed at this entrance (Curran and Justus 1970). Wildflowers grow in most of the canyon-like area upstream of the bridge formation, and the area includes red trillium (*Trillium erectum*), wild ginger (*Asarum canadense*), and hepatica (*Anemone hepatica*) that are unusual for USAG WP in number and diversity. Several bat species, including the northern long-eared bat, were documented in the vicinity of natural bridge in 2015 during acoustic and mist-netting surveys (Pittsburgh Wildlife & Environmental, Inc., 2015). Northern long-eared bats captured in 2015 included a juvenile and a post-lactation female, indicating the presence of a nearby breeding colony (Pittsburgh Wildlife & Environmental, Inc., 2015).

*Mineral Springs Talus Buffer and Gorge*—The steep talus slope found at this site is an extension of the escarpment that forms Mineral Springs Falls, a local natural landmark in the neighboring Black Rock Forest. This area includes approximately 750 ft of Mineral Springs Brook west of the USAG WP and Black Rock Forest boundary, southeast to the steep cliff-and-talus formation. The steep rugged talus slope and stream valley are the outstanding topographic features, with intervening moderate slopes widening to the arbitrary south boundary of the special natural area. The slope is composed of many large boulders and is dominated by hemlock, chestnut oak (*Quercus montana*), and yellow birch (*Betula alleghaniensis*).

*Cascade Ridge*—Cascade Ridge is a steep mountain slope located on the western side of the Route 9W and Route 293 junction. It supports maple mesic and oak-tulip ecological communities with large specimen trees on the lower slope, cliff communities on the upper slope, and a chestnut oak community on the summit. The site contains several rare plant species and has been known as a nesting site for great horned owl (*Bubo virginianus*). Views of the cliff



communities are prevalent, and a historic stone road base is also present at the site. Portions of this site have been identified as having a high value for wildlife and have been set aside for stewardship.

Mineral Springs Brook—This site is valued both for its scenic quality and brown trout spawning habitat. Mineral Springs Brook is found in a steep, mature oak-forested valley and is lined on both sides with hemlocks and supports several hardwood communities. The brook itself is characterized as a small, freestone stream with numerous small pools interspersed with short riffles. The substrate is predominantly cobble and boulder with some stretches of gravel. Brown trout (*Salmo trutta*) fingerlings were collected from this stretch in June 1996 (Linck 1996), indicating successful spawning on this site. Larger brown trout were also captured at this site. Other species utilizing the brook include the American eel (*Anguilla rostrata*), green frog (*Rana clamitans*), and northern two-lined salamander (*Eurycea bislineata*). A bat survey conducted in 2002 documented six bat species at USAG WP.

Cat Hollow—Located in Training Areas B and I, Cat Hollow spans the area between the northern end of Popolopen Lake and the southern end of Beaver Pond. This special natural area is bisected by Cat Hollow Creek, which flows from Beaver Pond to Popolopen Lake. Cat Hollow supports diverse ecological communities, including mixed hardwood forest and pure hemlock stands (with some trees believed to be over 200 years old), maturing hardwood forests, drier oak forest, and ridgetop oak-heath savanna. A rocky summit grassland community on the summit supports several grass species. A bat survey conducted in 2002 documented six species at the site, including a lactating female small-footed bat (*Myotis leibii*) (Jaycox 2003).

Johnston Meadow Woodland—The primary conservation feature of the Johnston Meadow Woodland is the forested stream valley south of the mostly herbaceous wetland known as Johnston Meadow. Also included are low-elevation talus and non-talus slopes northwest of the stream valley, and a swamp southeast of the stream.

Crow's Nest—Crow's Nest is a rocky summit overlooking the Hudson River and lands to the south and east. It has historic military significance as a strategic vantage point during the American Revolution. The site includes a large elevational gradient and includes the summit and land west to Route 9 west, slopes south of Crow's Nest Road and the Crow's Nest Brook Gorge, as well as the upper portion of the North Vale and the cliff at the Storm King Park boundary. Several rare plant species and timber rattlesnake have been observed at the Crow's Nest, which is subject to frequent wildfire and has regenerating forest habitat. This area is designated a dud zone and is off-limits for most activities.

Burke Mountain—Burke Mountain is a broad, rocky ridge in the northwest corner of the reservation with rock exposures of the summit and its outer slopes, which are nearly unvegetated. Bedrock exposures include small outcrops, flatrock areas and ledges on the summit slopes, and very steep upper slopes of bare rock, heavily weathered and more rounded off than other ridges in the area. The ecology is fire-adapted and savannah-like, and contains a diversity of bird species common to open ground and cavity nesters as well as several rare plant species. The only water features are two basins on the north summit, and their overflow channels; the larger basin contains a vernal pool-shrub swamp (WP 6E), the smaller a very shallow and ephemeral

pool with state-rare cluster sedge (*Carex simulata*). These vernal pools are well-visited by breeding amphibians and spotted turtles.

**Program Goals, Objectives, and Projects:** The goals, projects, and objectives for Special Natural Areas are outlined in Table 6-1, *United States Army Garrison West Point Goals and Implementation Plan*, in Chapter 6.

**Program Management Units:** Special natural areas are managed on a site-by-site basis, as the management needs of each natural area may differ.

#### **4.10.4 Wildland Fire Management**

The occurrence of wildland fire is a real threat to military installations. Wildfire is also often a by-product of military training. As a result, wildland fires on or near military installations require suppression. Wildfire prevention and control is a matter of concern for military training and natural resources management at USAG WP. Wildfires have several undesirable aspects: they interfere with ongoing training activities; may make training areas unsuitable for training over the short or long term; produce smoke which contributes to air pollution and brings complaints from neighbors; can directly and indirectly impact habitats and species; impact the value of standing timber; and lead to soil erosion when the vegetative cover is sufficiently destroyed. In addition, areas that burn tend to have higher flammability in subsequent years than areas that have not burned.

From an ecological perspective, wildfire is beneficial to many wildlife species because it encourages new vegetation growth and enhances habitat diversity. Fires are also necessary for some plant species to regenerate, including pitch pine (*Pinus rigida*), which is located on the reservation. In addition, some of the rare plants at USAG WP appear to depend on recently burned areas for their survival. Burning is known to benefit aspen stands, an important species to ruffed grouse (*Bonasa umbellus*), and various passerine species, by encouraging the growth of root suckers. Despite the positive ecological benefits of wildfires, the general policy at USAG WP is to suppress fires when they occur due to the negative impacts of fire which outweigh these benefits. Wildfire prevention and control involves reducing the frequency of wildfires and suppressing and containing the spread of wildfires that do occur.

**Program Data Management:** A GIS layer that is updated annually is used to track areas that have burned at USAG WP since 1950. In addition, USAG WP has completed surveys to assess the fire risk of areas on the installation to better manage or to prevent fires that may have negative impacts to training, natural resources, and the human environment. Program data management resources applicable to Wildland Fire Management are outlined in Appendix C, Table C-1, *Program Data Management*.

**Supplemental References:** Management plans for wildland fire and forest management provide measures that directly or indirectly address wildland fire management at USAG WP. These plans include management actions for training activities and avoiding impacts of wildland fire to natural resources. Supplemental resources applicable to Wildland Fire Management are outlined in Appendix C, Table C-2, *Supplemental References*.

**Program History:** Because of the presence of several fire-driven ecosystems, as well as the potential for military training activities to cause fire, wildland fires occur within USAG WP nearly every year. Figure 4-11 shows the locations of recent forest fires at USAG WP. In 2008, USAG WP developed an Integrated Wildland Fire Management Plan (IWFMP), but the plan was never formalized and is still a draft (USMA 2008). The IWFMP was updated last in 2015, but is also still a draft document. (USMA 2015). The primary goal in developing an IWFMP would be the protection of life as the highest priority while safeguarding USAG WP and personal property.

**Current Conditions:** Virtually all wildfires at USAG WP are accidental and occur from the use of pyrotechnics during training activities or start at roadsides. The complete prevention of wildfires is impossible without significantly restricting the military mission during the fire season (normally from April through October). However, there are a number of measures that can be taken to minimize the number, the extent, and the effects of wildfires. These measures include monitoring fire danger conditions; implementing fire reporting procedures, fire-related training restrictions, and firebreak maintenance; and establishing fire suppression procedures. These management measures are discussed in the following sections.

The West Point Fire and Emergency Services Division (FESD) is responsible for the suppression of wildland fires on the reservation. There are three fire stations on the reservation: the Main West Point fire station on Washington Road, the Stony Lonesome station, and the Reservation fire station on Route 293, next to Range Control. Additionally, West Point has a mutual aid agreement with Orange County, New York, for fire/rescue/hazardous materials response/weapons of mass destruction response (USACE 2008). The USAG WP Fire Chief is responsible for wildfire prevention and control procedures. USAG WP does not have a finalized IWFMP, and the last draft was created in 2015 (USMA 2015). Primarily, fire control strategies and actual fire suppression are conducted by FESD; however, a mutual aid agreement with Orange County provides for assistance between FESD and nearby local community fire departments when needed. In addition, local fire departments in Highland Falls and elsewhere provide standby capacity for fire-fighting, if necessary. NRB staff are responsible for updating the IWFMP, overseeing fuels management in ecological communities on the garrison, monitoring compliance, providing recommendations for determining fire danger to the Fire Chief, and assisting with prescribed burn plans including coordination with EMD personnel, FESD, Range Control, and external fire management parties.

Fire management is completed using a Fire Prevention Control Matrix to determine the conditions under which training exercises may be conducted or prohibited (USMA 2015). A newly revised matrix seeks to balance the need to meet training goals and schedules with the fire risk categories delineated by the Fire Department. In the event of a fire, unimproved range roads serve as firebreaks, and are currently maintained to preserve their effectiveness for this purpose.

Although not currently employed at USAG WP, there is the possibility of considering prescribed burns as part of natural resource management. Dead wood on the ground at USAG WP has a high ecological value and is generally not removed as part of forestry practices. However, in some areas, fallen trees are a ground level hazard to training activities. In some areas, prescribed burns or modified harvest practices could be used if appropriate to reduce ground hazards. Areas

could also be controlled to reduce ground level hazards through the use of the firewood collection permit process.

**Program Goals, Objectives, and Projects:** The goals, projects, and objectives for Wildland Fire Management are outlined in Table 6-1, *United States Army Garrison West Point Goals and Implementation Plan*, in Chapter 6.

**Program Management Units:** Wildland fires at USAG WP are managed according to the IWFMP, which has never been finalized; included within the IWFMP is the use of maximum manageable area as a tool to manage fires. The maximum management area is the maximum geographic limits within which a wildland fire is allowed to spread. Fire management is completed using a Fire Prevention Control Matrix to determine suitable conditions for training exercises.

#### **4.10.5 Grounds Maintenance**

The cantonment at USAG WP is highly developed, and requires maintenance of grounds through lawn care, landscaping maintenance, pest management, and snow removal. Environmentally sensitive landscape planning throughout the main cantonment area is critical for reducing grounds maintenance costs, maintaining aesthetics, reducing pesticide use, saving energy and water, and increasing biodiversity. In the reservation where lands are maintained as natural or undeveloped, maintenance activities are generally focused on maintaining roads and ranges. Overall land management at USAG WP is the responsibility of DPW, and includes the Natural Resources program, as well as programs in pest control and roads and grounds maintenance throughout the reservation. DPTMS, of which Range Control is an element, has responsibility for routine grounds maintenance in the camps and range.

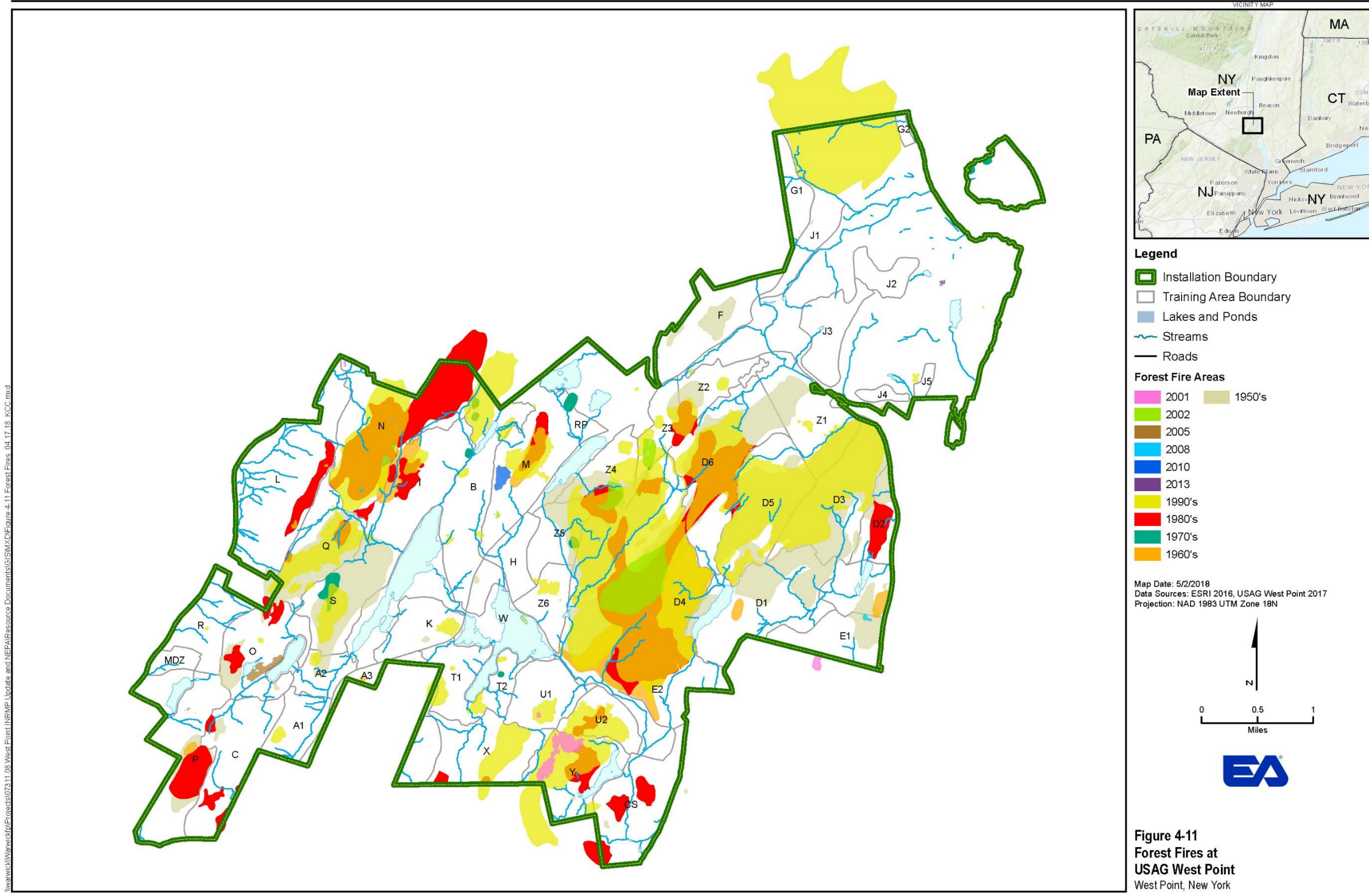
The control of pests, weeds, and invasive species is covered in Section 4.11 *Integrated Pest Management*, and Section 4.12, *Noxious Weeds and Invasive Species*.

**Program Data Management:** Grounds and roads uses GIS data and other facility management data to complete grounds maintenance activities. In addition, the use of plant species prohibited or regulated by NYS are prohibited for landscaping at USAG WP. Program data management resources applicable to Grounds Maintenance are outlined in Appendix C, Table C-1, *Program Data Management*.

**Supplemental References:** Grounds and roads maintenance is conducted by DPW, but maintenance activities associated with training areas are also conducted through the ITAM program. Supplemental resources applicable to Grounds Maintenance are outlined in Appendix C, Table C-2, *Supplemental References*.

**Program History:** Maintenance activities have been consistently undertaken at USAG WP to manage the aesthetics of the cantonment area, for upkeep of roads and facilities, enhancement of habitat and other natural resources, and improvements to training areas.

Figure 4-11. Forest Fires at USAG WP



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**Current Conditions:** Management of the natural elements of the cantonment area is conducted by DPW and consists of grounds maintenance, urban plant management, pest and nuisance animal management, turf management, and tree and shrub management. Annual management plans for urban plants, turf, and trees and shrubs are developed by the Post Agronomist and completed by outside contractors.

Standards for the design of the communities on the Main Post are described in the *West Point Installation Planning Standards* (Baker 2017). These standards have been established to provide clear guidelines developed to “promote visual order, enhance the natural and manmade environments through consistent architectural themes and standards, and improve the functional aspects of the installation” (Baker 2017). The guide includes restrictions and guidance on building standards (architecture and materials), street standards (traffic, sidewalks, and street plantings), and landscape standards (type and placement of plantings) (Baker 2017). Management of grounds in the cantonment area includes the replacement of non-native landscaping species with native species, where appropriate, controlling invasive species, and reducing erosion. Standards also seek to increase sustainability and efficiencies of facilities.

Maintenance of areas outside the cantonment area is completed by grounds maintenance, as well as under the ITAM program in training areas. Areas are managed in accordance with the ITAM program to best meet training needs. Management of the reservation is also completed to enhance wildlife habitat, protect waterbodies, reduce erosion, and support biodiversity. Grounds maintenance activities completed to enhance habitat include brush mowing to create edge habitat and mowing of fields to provide old field habitat, preservation of snags and other trees beneficial to wildlife, and planting of native trees and shrubs. The use of chemicals for turf management at USAG WP, including on the golf course, is conducted in accordance with applicable regulations and standards, and is completed to minimize chemical application.

A pollinator garden has been developed near the Round Pond Recreation Area to support pollinator species. In addition, the installation is considering options to further improve pollinator habitat. Measures include the use of wildflower mixes in old field habitat and construction sites as post-construction ground stabilization, development of rain gardens, and additional pollinator gardens.

**Program Goals, Objectives, and Projects:** The goals, projects, and objectives for Ground Maintenance are outlined in Table 6-1, *United States Army Garrison West Point Goals and Implementation Plan*, in Chapter 6. Goals for management of pests, noxious weeds, invasive species, and management for habitat may be covered in those respective sections of Table 6-1.

**Program Management Units:** Grounds maintenance activities are based in part on the portion of USAG WP where the maintenance is occurring. Maintenance on the cantonment is focused around landscaping and turf management, while road and vegetation maintenance is more common in the reservation.

#### **4.10.6 Agricultural Leases**

There are no areas on USAG WP suitable for agriculture or grazing; therefore, agricultural and grazing outleases have never been granted. However, goals for this INRMP include a

consideration of developing sugar bushes and character wood cutting for commercial products at USAG WP.

**Program Goals, Objectives, and Projects:** The goals, projects, and objectives for Agricultural Outleasings are outlined in Table 6-1, *United States Army Garrison West Point Goals and Implementation Plan*, in Chapter 6.

#### **4.11 INTEGRATED PEST MANAGEMENT**

DoDI 4150.7, Pest Management Program, is a DoD policy to establish and maintain safe, effective, and environmentally sound IPM programs to prevent or control pests and disease vectors that could adversely impact readiness or military operations by affecting the health of personnel or damaging structures, material, or property. The policy set Measures of Merit for pest management, which require each installation to develop an IPM Plan, reduce the amount of pesticides used on the installation, and certify all pesticide applicators. USAG WP will control invasive species using an ecosystem-based approach that conserves biodiversity while preserving the military mission from associated infringement (USAG WP 2015).

Invasive species are non-native organisms that aggressively propagate at the expense of native plants, animals, and ecosystems (Pray 2002). Invasive species may have unspecific habitat requirements, produce large numbers of offspring, or may aggressively compete with native organisms. In their native range, invasive organism populations are normally kept in check by predators and diseases that co-evolved to prey upon them. However, once transplanted outside this range, beyond the reach of these natural controls, populations of these organisms may explode. Then, the effects of the introduced species in its new habitat can be difficult to fully grasp, and can be far reaching beyond the immediate and obvious. Invasive plant species are discussed below in Section 4.12, *Noxious Weeds and Invasive Species*.

**Program Data Management:** Both GIS data and data from surveys of pest species are used to track management activities related to integrated pest management. Program data management resources applicable to Integrated Pest Management are outlined in Appendix C, Table C-1, *Program Data Management*.

**Supplemental References:** Pest and nuisance species at USAG WP are managed to prevent harm to natural resources and property, and to prevent the spread of disease. The Integrated Pest Management Plan (IPMP) provides detailed management guidelines for pest species (USAG WP 2015). In addition, guidelines for management of nuisance species are kept by USAG WP, and NRB produces educational handouts with contact information if these species are encountered. Supplemental resources applicable to Integrated Pest Management are outlined in Appendix C, Table C-2, *Supplemental References*.

**Program History:** Several pests have had management concerns at USAG WP for an extended period of time, while other species have relatively new issues on the installation.

An insect of ongoing concern to the health of natural resources at USAG WP is the gypsy moth (*Lymantria dispar*), the larvae of which can affect, and has affected to a significant degree in the past, large areas of forest on the reservation. Because the presence of large numbers of gypsy

moth and the resulting defoliation can degrade the realism of military training areas, USAG WP has in past years conducted gypsy moth suppression activities in support of the military mission. A Memorandum of Agreement between USDA and DoD, signed 11 December 1990, for the Conduct of Forest Insect and Disease Suppression on Lands Administered by DoD; this agreement is no longer in effect. USAG WP continues to have a longstanding partnership with the U.S. Forest Service for cooperative assistance for gypsy moth management. Following a 1987 suppression effort (aerial spray of 600 acres), gypsy moth population levels remained low, apparently due in large part to the presence of the entomopathogenic fungus, *Entomophaga maimaiga*. In 2002, however, the potential of defoliation by a large gypsy moth population required a control effort. Aerial spraying was employed in a successful effort to prevent defoliation. Because the forests of USAG WP are very susceptible to damage by gypsy moths, management, monitoring, and work with the U.S. Forest Service on control is ongoing.

Another insect of concern on the reservation is the hemlock woolly adelgid (*Adelges tsugae*), an aphid-like insect that can form severe infestations on hemlock trees if left unchecked. Appearance of the insect and population increases in the early 1990s, leading to heavy hemlock mortality on the Main Post and reservation. A U.S. Forest Service evaluation in 1998 concluded that the heavy presence of woolly adelgid in USAG WP eastern hemlock stands could not be significantly reduced by the introduction of a beetle that has shown promise for adelgid control in some situations. The adelgid has resulted in significant mortality at USAG WP, with few hemlocks remaining on the installation. Current management is focused on managing hazard trees and replanting former hemlock stands with native conifer species to replace ecological function.

The spread of Lyme disease at USAG WP due to the large deer population has been the subject of ongoing management. From 1985 until 2001, the NRB cooperated in a Lyme disease monitoring program with Fordham University's Vector Ecology Laboratory. According to a protocol provided by the Laboratory and conducted by the Public Health Command, ectoparasites and blood samples were collected from a sample of deer brought to the West Point Deer Check Station during the Regular "firearms" Season. The biological samples were tested for the Lyme disease spirochete and for human granular ehrlichiosis, another emerging tick-borne illness of concern. Results of the 1998 sampling showed that 34 percent of the black ticks analyzed were infective with the Lyme disease spirochete, and 24 percent of the ticks were infective with the ehrlichiosis pathogen. A follow-up survey was conducted in 2001 for this effort. Ticks are collected annually at the check station for Public Health Command and in partnership with USMA researchers studying disease discovery techniques and Lyme disease. Assistance is also provided to researchers at the Cary Institute of Ecosystem Studies who are completing a 5-year study of the impact of climate change and ground warming on tick success. NRB also assists the USAG WP preventative medicine with tick drags for population density and disease prevalence.

**Current Conditions:** Pest Management at USAG WP is completed under the IPMP, which implements integrated pest management. This method of pest management involves four primary control strategies—mechanical and physical control (physical removal or exclusion of pests), cultural control (altering the environment to make it less suitable or attractive to the pest), biological control (use of other organisms that control the pest), and chemical control (use of pesticides). This IPMP outlines the major pests managed at USAG WP and strategies for

managing these pests. Pest management objectives at USAG WP include the control of potential disease vectors or animals of other medical importance, protection of real estate, control of undesirable or nuisance plants and animals (including insects), and prevention of damage to natural resources.

*Control of Undesirable Animals:* Invasive animals, such as starlings, English sparrows, rock doves, rats, house mice, certain ants, earthworms, common carp, etc. are either managed when they present a problem, or are so well established that control is currently impractical. Several species that are nuisances do not pose real threat to humans but are controlled to make the buildings more enjoyable to inhabit. Spiders; ants; earwigs; crickets; and stray bees, wasps, or hornets that gain entry to buildings can be nuisances. Other undesirable species include moths, beetles, birds, stray dogs and cats, nonpoisonous snakes, woodchucks, skunks, and raccoons can become nuisances if they become accustomed to the presence of humans or to finding food near human dwellings, cause damage to grounds around dwellings, or gain entrance to dwellings.

Bears are generally managed as game species, but nuisance bears do occur at USAG WP. Management of nuisance bears is discussed in Section 4.9.3, *Game Management*.

*Damage to Natural Resources:* Natural resources damage can result from infestations of damaging insects or insect larvae, from overgrowths of vegetation where other natural resources management concerns demand their removal, and from invasions of exotic plant species that displace natural vegetation. Most pest species at USAG WP are managed as needed when they present a nuisance to humans, or are potential vectors for disease. Exceptions to this rule are gypsy moth and hemlock wooly adelgid, two pests that seriously damage some of the most important forest trees on the reservation. Nuisance animals and pests that currently present management concerns at USAG WP include resident Canada geese, beavers, skunks, racoons, opossums, bats, and bears. USAG WP maintains depredation permits for beaver, and goose management.

Control of deer browse in the cantonment area of USAG WP is also accomplished using habitat manipulation techniques. This includes planting species that are resistant to foraging, and the use of deer repellants. DPW uses a variety of browse-resistant ornamental plant species for landscaping the Main Post. It is important to consider, however, that the use of resistant plants will be effective only in the absence of intensive feeding pressures or high deer densities. Deer repellents have been used on West Point to control deer browsing, but some types have resulted in limited success. Similar to the use of resistant plantings, this method of control is effective only without intense feeding pressure; starving deer have been known to ignore all repellents (Swihart and Conover 1990).

*Health Risks and Disease Control:* Nuisance animals and pests can serve as vectors for undesirable diseases or can present a health risk to humans. Species that transmit diseases are a concern, including those that transmit rabies, West Nile virus, Zika, and Lyme disease. Other concerns include nuisance species that can harm humans, such as venomous species.

Rabies is endemic to the region, and wildlife species that present signs of rabies are captured on the installation at least once per year. Infected racoons, foxes, cats, skunks, and bats have all been verified on the Post. In four previous occasions USAG WP personnel have been referred for

prophylaxis shots to prevent rabies due to bites or out of discretion due to contact with wildlife. When sick wildlife is reported, NRB, Pest Management, and the PMO all respond in order to capture the animal if possible. Captured animals are submitted for testing according to Orange County Department of Health guidelines. These guidelines include rabies testing if wildlife show signs of disease or sickness; have had human contact or have bitten a human; have had contact with a person who may be unable to report or is unaware of contact; or when rabies is confirmed in a population and subsequent testing is needed to establish extent of infection in population. Testing is coordinated through USAG WP Veterinary Clinic. The USAG WP Department of Preventative Medicine and Wellness is responsible for coordinating educational outreach, and offers vaccination to USAG WP personnel with a high risk of rabies exposure due to occupation, including NRB employees.

Mosquitos are also a concern at USAG WP as they can be vectors for disease, including West Nile Virus. USAG WP coordinates with the Orange County Department of Health on West Nile Virus management. Natural Resources personnel look for dead birds, including crows; when found, specimens are sent to the NYSDEC Wildlife Health Unit's pathology lab in Delmar, New York, for testing. Zika is also transmitted by mosquitos, and has been found in New York. However, all known cases of zika were acquired elsewhere. The two species of mosquito known to transmit zika in the U.S. are *Aedes aegypti* and *A. polynesiensis*, which do not occur at USAG WP.

Lyme disease is a human health concern in many parts of the northeastern United States. Its primary vector is the black-legged tick (*Ixodes scapularis*). At USAG WP, where humans exist in relatively close contact with deer, the tick was closely monitored on an annual basis for changes in population size and infection rate. The black-legged tick is the primary vector of Lyme disease in the region. The Preventive Medicine Office of Medical Department Activity at USMA has had the primary responsibility for check station tick collections.

Other species with the potential to cause disease or health risks include cockroaches, flies, fleas, some ants, rodents, bats, ticks, bees, wasps, and venomous spiders and snakes. Venomous snake species at USAG WP include the timber rattlesnake and the copperhead (*Agkistrodon contortrix*). Rattlesnakes are typically found once a year on the Post, while copperheads are usually only found once every four years or so. Both these species are common in parts of the reservation and are encountered regularly by troops. In areas where snakes are an issue they are captured and relocated.

Protection of Real Estate: Many animals are attracted to human dwellings, but those that enter them and cause damage at USAG WP are not numerous. They include termites, carpenter ants, rodents, and powderpost beetles. Termites are the primary structural pest at USAG WP. Carpenter ants, powderpost beetles, and rodents have also caused damage to structures at USAG WP. Pest management at USAG WP includes control of these animals to prevent serious structural damage.

Most animals that are no more than nuisances only need to be controlled when their presence is substantial enough that they affect morale or the comfort of dwellings, or they present a potential danger to installation personnel. Their presence might be seasonal, and they can generally be controlled on a case-by-case basis. A plan for their control is generally not necessary.

**Program Goals, Objectives, and Projects:** The goals, projects, and objectives for Integrated Pest Management are outlined in Table 6-1, *United States Army Garrison West Point Goals and Implementation Plan*, in Chapter 6.

**Program Management Units:** Management units for IPM is generally species-specific. Pest management is completed using an integrated management strategy that emphasizes the four control strategies outlined above.

#### 4.12 NOXIOUS WEEDS AND INVASIVE SPECIES



Photo: NRB

Native plant and animal communities have been adversely impacted by development and the introduction of non-native species. Non-native species are those plants or animal species that were not present during European settlement. Due to aggressive growth habits of many non-native species, the species have become invasive and out-compete the native plants and animals. “An invasive species is defined as a species that is non-native (or alien) to the ecosystem under consideration and whose introduction causes or is likely to cause economic or environmental harm or harm to human health” (EO 13112) (National Archives and Records Administration 1999). Invasive species put native plants and

animals at risk. Invasive plants, which can be both native and non-native, result in the loss of diversity within a local plant community. The invasive plants that receive the most attention at USAG WP, Japanese barberry and multiflora rose, seriously impact training by forming impassable thickets (Pray 2002). Because the Corps of Cadets Control requires the open woodland of a mature forest for maneuvers, control of these species directly improves military training.

Nuisance plants include undesirable weedy plants on grounds that are unsightly, herbaceous or woody plants in locations where they could lead to mechanical problems (e.g., near power lines), and plants in areas that need to be relatively free of vegetation for fire control purposes. Plants that exude irritating substances (e.g., poison ivy) are also nuisances where they occur in areas frequented by humans. Animal invasive species and pests are discussed above in Section 4.11, *Integrated Pest Management*.

**Program Data Management:** Both GIS data and data from surveys of invasive species are used to track management activities related to integrated pest management. In addition, the use of plant species prohibited or regulated by New York (NYSDEC 2014) are prohibited for use at USAG WP, and are targets for management. Program data management resources applicable to Noxious Weeds and Invasive Species are outlined in Appendix C, Table C-1, *Program Data Management*.



**Supplemental References:** Management of invasive species is undertaken in accordance with applicable regulations and the Integrated Pest Management Plan. Management actions that utilize pesticides and herbicides require compliance with local, state, and federal guidelines regarding applicator training, and storage. Supplemental resources applicable to Noxious Weeds and Invasive Species are outlined in Appendix C, Table C-2, *Supplemental References*.

**Program History:** Management of invasive species as been ongoing at USAG WP for species as they have become known or an issue on the installation. Some species have been managed for several years and are still currently managed, including multiflora rose, Japanese barberry, and several aquatic invasive species. Some species, including purple loosestrife, were heavily managed in the past, but successful biocontrol has allowed for less ongoing maintenance and control.

**Current Conditions:** High priority invasive species are plants that are ecologically dangerous, spreading, negatively affecting training, and can be controlled with current methods. These tend to be species that the NRB staff been aware of for some time, and has been managing at least to some degree. Low priority plants may already be so incorporated into the ecosystem so as to appear native. Populations tend to be stable. These are generally small forbs that are not damaging to trees, and do not directly affect training. Priorities are sure to shift as new control methods become available and as populations begin to expand. A list of plant species found at USAG WP, including invasive species, is available on-file at the NRB office.

Invasive species that present management concerns at USAG WP include both terrestrial and aquatic species. Terrestrial invasive plant species that occur on the reservation and are most heavily managed include common reed (*Phragmites australis*), Japanese barberry (*Berberis thunbergii*) oriental bittersweet (*Celastrus orbiculatus*), multiflora rose (*Rosa multiflora*), garlic mustard (*Alliaria petiolata*), autumn olive (*Elaeagnus umbellata*), mile-a-minute (*Persicaria perfoliata*), mugwort (*Artemisia vulgaris*), spotted knapweed (*Centaurea stoebe*), and Japanese knotweed (*Polygonum cuspidatum*). These terrestrial invasive species seriously impact training by forming impassable thickets (Pray 2002). Because the Corps of Cadets Control requires the open woodland of a mature forest for maneuvers, control of these species directly improves military training.

Aquatic plants can become a problem in the lakes and ponds on the West Point property. The problem associated with aquatic plants is generally one of overgrowth such that use of the lakes or ponds is hindered, and control on a case-by-case basis is appropriate. An exotic aquatic plant native to Eurasia, water chestnut (*Trapa natans*), has established a large population in Upper Cragston Lake and populations in several other lakes on the reservation. Weeding is completed annually to control this species. Eurasian water milfoil (*Myriophyllum spicatum*) is also a concern at USAG WP, and control is currently completed using grass carp and other biocontrol methods. USAG WP also has a contract for diver-assisted suction harvesting as part of the control of water milfoil. All equipment used at USAG WP for control must be clean and free of invasive species propagules. In addition, NRB produces placards and brochures to educate anglers on methods to identify and eradicate aquatic invasive species.

**Program Goals, Objectives, and Projects:** The goals, projects, and objectives for Noxious Weeds and Invasive Species are outlined in Table 6-1, *United States Army Garrison West Point*

*Goals and Implementation Plan*, in Chapter 6. Control measures and partnerships implemented for the control of invasive plant species is provided in the Integrated Pest Management Plan, and in the program goals, objectives, and actions.

**Program Management Units:** Invasive plant species are managed according to the best tactic for each species; management includes spraying, pulling, mowing, and biocontrol. At USAG WP, patches of problematic invasive species are treated and NRB staff keep GIS to manage and track these patches.

#### **4.13 WILDLIFE AIRCRAFT STRIKE HAZARD**

A formal Wildlife Aircraft Strike Hazard plan is not applicable at USAG WP; however, installation personnel take several measures to minimize bird and other wildlife strikes to helicopter aircraft. Aircraft strike hazards apply to resident and seasonal bird species as well as other species of wildlife. Daily and seasonal bird movements create various hazardous conditions. Birds can be encountered up to altitudes of 30,000 ft and higher; however, most birds fly close to ground level, and more than 95 percent of all reported incidents in which an aircraft has struck a bird have been below 3,000 ft above ground level. Strike rates rise significantly as altitude decreases, which is partly due to the greater number of low-altitude missions, but mostly because birds are commonly active close to the ground.

To minimize the hazard to USAG WP and the deployed aircraft, USAG WP implements educational tools to inform pilots of local sensitive bird resources. To accomplish this, USAG WP provides an informational guidebook for visiting and new pilots about bird hazards at USAG WP and annually informs pilots of local bald eagle concentrations and sensitive areas. Additionally, USAG WP surveys populations of bird and wildlife species, including resident and seasonal migratory species, to better understand the potential hazards at USAG WP.

**Program Goals, Objectives, and Projects:** The goals, projects, and objectives for Wildlife Aircraft Strike Hazard are outlined in Table 6-1, *United States Army Garrison West Point Goals and Implementation Plan*, in Chapter 6.

#### **4.14 COMPATIBLE USE BUFFERING AND CONSERVATION EASEMENTS**

The Army Compatible Use Buffer (ACUB) Program authorizes a military installation to enter into an agreement with a state, local government, or private conservation organization to limit encroachment on lands neighboring the installation. An ACUB can be established under the authority of 10 U.S.C. § 2684a for the purpose of limiting development or use of the land for incompatible uses; preserving habitat on the property in a manner compatible with environmental requirements or to eliminate or relieve environmental restrictions that could restrict military training, testing, or operations; and protecting the Clear Zone areas from encroachment.

The ACUB program provides funding to work with willing land owners to help prevent encroachment of training areas and promote regional conservation efforts. The development of ACUBs allows the installation to maximize lands used to support the mission.

An ACUB at USAG WP has not been actively pursued since 2016 and there are no current plans for the development of an ACUB.

#### 4.15 OTHER PROGRAMS

The ITAM program is the element of the U.S. Army Sustainable Range Program that provides Army land managers with the capabilities to manage and maintain training and testing lands by integrating mission requirements with land management practices and environmental requirements. The ITAM program at USAG WP is administered by the DPTMS. DPTMS has established a strong partnering relationship with the NRB for ITAM implementation. The ITAM program consists of the following four components:

- Range and Training Land Assessment (RTLTA)
- Land Rehabilitation and Maintenance (LRAM)
- Training Requirements Integration (TRI)
- Sustainable Range Awareness (SRA).

**Program Data Management:** Data collected by the ITAM program includes data collected under the RTLTA program. This includes GIS data as well as physical and biological data. Program data management resources applicable to ITAM and other programs are outlined in Appendix C, Table C-1, *Program Data Management*.

**Supplemental References:** The specific activities for each of the components listed above are detailed in a comprehensive ITAM Annual Work Plan prepared by DPTMS and covering the current year and several out years. Supplemental resources applicable to the ITAM program and other programs are outlined in Appendix C, Table C-2, *Supplemental References*.

**Program History:** The ITAM program at USAG WP has been implemented in the past to manage training areas and natural resources. Several projects identified in the ITAM work plans have been ongoing and/or recurring over the years as general maintenance continues within the training areas. Other projects have been unique and only implemented on an as-needed basis. All projects have focused on avoiding a net loss of training land and to ensure that the lands remain viable to support future training and mission requirements. The LRAM program at USAG WP has been operational since 1995. The majority of the LRAM projects in recent years have been targeted at repairing and controlling soil erosion.

**Current Conditions:** As noted above, the ITAM program is currently divided into several groups that manage the responsibilities of the program.

RTLTA is the component of the ITAM program that is a process of military land management to maximize the capability and sustainability of land to meet the Army training and testing mission. It incorporates a relational database and uses GIS to support land use planning decisions. RTLTA collects physical and biological resources data from training land utilization to relate land conditions to training and testing activities (Tetra Tech 2011).

The LRAM Component is a key enabler for sustaining realistic training conditions and supporting the personnel, weapons, vehicles, and the mission requirements for the Soldiers.

LRAM is a preventive and corrective land rehabilitation and maintenance procedure that reduces the long-term impacts of training and testing on installation lands. Its primary function is to maintain training lands to ensure its capability to support the mission. It mitigates mission and training and testing effects by combining preventive and corrective land rehabilitation, repair, and/or maintenance practices to reduce the impacts of training and testing on an installation. It includes training area redesign and/or reconfiguration to meet training requirements (Tetra Tech 2011).

TRI facilitates training land management decisions that meet both mission requirements and natural resources conservation objectives. TRI integrates the installation's training and testing requirements for land use derived from the Range and Training Land Program, range operations and training land management processes, and the installation training readiness requirements with the natural resources conditions of installation lands. Standards for acceptable land conditions for all training activities are found in Appendix A of Training Circular (TC) 25-1, "Training Land."

SRA provides a means to educate land users on their environmental stewardship responsibilities in conjunction with their use of Army lands. It also provides for the development and distribution of educational materials to land users. These materials relate procedures for sound environmental stewardship of natural and cultural resources and reduce the potential for inflicting avoidable impacts on Army training lands. SRA also includes information provided to environmental professionals concerning operational requirements (Tetra Tech 2011). The ITAM Coordinator normally performs the management functions of the SRA component of the ITAM program. As discussed above, SRA improves land users' understanding of the impacts of their activities on the environment. The SRA program should focus on all land users, including soldiers, leaders, Department of the Army civilians, and the local community, who might use training lands for recreational purposes.

Current and future projects that may be undertaken by the ITAM program include projects with the potential to impact natural resources, including birds and other wildlife, as well as recreation. Future development of areas by the ITAM program would include coordination with NRB to ensure that natural resources were protected.

**Program Goals, Objectives, and Projects:** The goals, projects, and objectives for Other Programs, including the ITAM program, are outlined in Table 6-1, *United States Army Garrison West Point Goals and Implementation Plan*, in Chapter 6.

**Program Management Units:** Management units for projects carried out under the ITAM program are based on training needs. Landing zones, the forward arming and refueling point, bivouac areas, maneuver trails, specialty courses, and mortar firing point/observation point are examples of management units for the ITAM program.

## 5. IMPLEMENTATION

### 5.1 ENVIRONMENTAL AWARENESS

Environmental Awareness serves to educate the public and garner their support by effectively communicating the nature of the military mission at each installation and the level of natural resources management at the installation. When military users and the public are informed and educated about natural resources they tend to lend more support than opposition to the proactive practices. As noted above under Section 4.15, *Other Programs*, SRA provides a means for educating users of USAG WP lands on their stewardship responsibilities; this program is coordinated through the ITAM program. Materials provided by ITAM as part of the SRA program for environmental awareness are outlined below:

- *Soldier's Field Card*: ITAM provides a guide entitled *Training and the Environment: Soldier's Field Card*. This guide is a pocket-sized, laminated card that provides summarized examples of what should and should not be done to prevent destruction of the environment. Topics included on the card are Fire Prevention, Vehicle Movement, POL, Training Activities, and Protected Areas.
- *Snakes of the West Point Military Reservation Poster*: The Reservation is home to more species of snakes than most other areas in the state. Of the 13 species present, only 2 are venomous. ITAM offers a large and small snake poster; these posters offer photos and descriptions of 9 of the 13 species likely to be encountered to allow for easy identification in an effort to reduce fear and aid in educated decision-making regarding human welfare and conservation of these species. The four species not listed in the poster are small and non-venomous.
- *Instructive Signage*: *Area Off-Limits* signs are posted around rehabilitation projects in the training areas to minimize disturbance from training activities.
- ITAM also provides SRA Playing Cards and a Military Installation Map, as well as regular PowerPoint briefs before summer training, and twice-monthly safety briefings.

Community awareness efforts seek to foster awareness in the surrounding communities about the management actions being taken to conserve and protect natural resources at USAG WP. The installation is a popular tourist attraction in NYS and is open to visitors on guided tours with valid identification as described in Section 2.7, *Public and Affiliates Access*. Besides having the opportunity to enjoy the natural beauty and resources of West Point, community members are also encouraged to participate in the environmental education and public information programs that are offered by DPW's EMD. Some of the events and environmental programs sponsored by EMD and the NRB include:

- EMD is a major participant in annual Earth Day activities, which normally cover several weeks and include Arbor Day activities.
- Natural resources and other environmental topics are the subject of occasional articles in the *Pointer View*, the USMA weekly community newspaper.

- NRB assists in the outdoor education activities of the West Point Elementary and Middle School, advises and assists Eagle Scout candidates in their projects, assists in other scout projects on occasion, and annually participates in a country extension outdoor education program for area schools.
- NRB assists the Ecology Class with an annual field trip, data for projects, and they sit in on and comment on cadet project presentations.
- NRB has developed brochures and sign boards, and NRB personnel give talks at schools.

## **5.2 NATURAL RESOURCES STAFF AND TRAINING**

Professionally trained natural resources management staff and natural resources enforcement are required to implement this INRMP. The Sikes Act Improvement Act Section 670g, defines a “professional” as one who has an undergraduate degree or graduate degree in a natural resources-related science. AR 200-1 Chapter 4-Section 4-3- Land Resources requires implementing the INRMP by “ensuring that sufficient numbers of professionally trained natural resources management personnel are available to perform the tasks required by the INRMP.” The Sikes Act also states that if an installation cannot retain a professional natural resources staff, related federal or state agencies be given the opportunity to assume these tasks.

Natural Resources issues at the installation are handled by a variety of sources, including the NRB Manager, who manages the natural resources program and staff. The NRB at USAG WP currently has a core staff of professionally trained natural resources management personnel necessary to implement this INRMP. The personnel that currently constitute the NRB staff at USAG WP are listed in Table 5-1.

Additional sources of temporary labor include seasonal employees, Oak Ridge Institute for Science and Education participants, outside agency reimbursable assistance, and contractors. USAG WP derives professional assistance and guidance from academia through research projects conducted on the installation. Examples of academic research projects with benefits for resource management include a small-whorled pogonia study conducted under a grant given to researchers at the State University of New York College of Environmental Science and Forestry (SUNY ESF). Partnerships with neighboring entities also provide data, such as a deer impact study being planned in partnership with NYS Parks, Black Rock Forest, and SUNY ESF. Many past surveys referenced in this INRMP were completed by contractors, but ongoing monitoring of resources as part of these surveys is completed in-house by NRB personnel. Contract work in recent years have focused on endangered species. However, the core, permanent natural resources management professionals currently in-house provide the foundation and fulfill the supervisory roles necessary to continue the successful natural resources program at the USAG WP.

In addition to the Natural Resources Manager and installation personnel, government contractors, agency cooperation, coordination, and communication at the federal, state, and local levels is required for the success of this INRMP and future revisions. The NYSDEC and the USFWS will review the plan and are a signatory to this INRMP. Concurrence from NYSDEC



and the USFWS on this INRMP was provided via a signature page located at the front of this document. Copies of agency communication agencies are provided in Appendix H.

**Table 5-1. United States Army Garrison West Point Natural Resources Management Staff**

| Number | Position                            | Status               |
|--------|-------------------------------------|----------------------|
| 1      | Natural Resources Manager           | Full-time, permanent |
| 1      | Installation Forester               | Full-time, permanent |
| 1      | Forestry Technician                 | Full-time, permanent |
| 1      | Environmental Protection Specialist | Full-time, permanent |

### 5.3 KNOWLEDGE AND INFORMATION GAPS

Surveys and research are an integral component of the management of natural resources at USAG WP, and the INRMP serves to help identify potential studies or resources that would help to bridge gaps in the knowledge or data. Where data gaps exist, inventorying and monitoring programs have been proposed that are designed to collect the data necessary to fill those information gaps and to achieve the objectives of the natural resources program. Known data gaps and the proposed research and priority for these data gaps is provided on table 5-2. These data or knowledge gaps are prioritized based on the following prioritization level:

1. First Priority: No knowledge of extent of the identified resource has been conducted at USAG WP, but it is known to occur at USAG WP;
2. Second Priority: Previous study has provided data on a resource, and surveys are conducted regularly to ensure data on the resource are kept up to date;
3. Third Priority: Resource is not currently known at USAG WP, but be present in the future or may become a management issue in the future; and
4. Fourth Priority: Additional information on the resource or issue is needed for development of BMPs.

**Table 5-2. Knowledge and Information Gaps**

| Management Objective  | Target                   | Research Requirement  | Priority |
|---|--------------------------|---|----------|
| Management of At-Risk Species with Potential for Future Listing | Small-Whorled Pogonia    | Has not been identified at USAG WP, but potential habitat is present. Surveys of potential habitat to determine presence are needed to determine the potential for harm.  | 1        |
| Management of At-Risk Species with Potential for Future Listing | Wood and Spotted Turtles | Past studies have provided good location data, but further population studies and habitat use studies are needed to determine the potential for harm.   | 2        |
| Geospatial Information System Management                        | GIS database             | The GIS database is not currently held in a centralized, enterprise system, which results in data issues across offices. An investigation of centralized systems is needed to better manage spatial natural resources data. | 3        |
| Forest Management and Wildland Fire Management                  | Fuel Load                | A fuel load study was completed in at USAG WP in 2000, but the data are out of date and a new study is needed to better assess the fuel load and relative fire risk on the installation.                                    | 1        |

| Management Objective                         | Target          | Research Requirement   | Priority |
|--|-----------------|--|----------|
| Forest Management                            | Stand Inventory | A stand inventory was last collected in 2008; an updated forest stand inventory is needed to develop the forest management plan and appropriate BMPs for stand management as part of TSI practices.  | 4        |
| Soils, Erosion, and Sedimentation Management | Soils           | Management of soil resources is completed regularly and studies are done to ensure that training and natural resource management practices are being done in a manner to minimize erosion. Further study will allow for continued development of BMPs. | 4        |
| Wetland Management                           | Wetlands        | Wetlands on the installation were surveyed in 1993, and wetlands are managed using GIS data. Ongoing study of wetlands at USAG WP contributes to BMPs during training activities and management.   | 4        |

## 5.4 FUNDING

Implementation of a number of the projects discussed in this INRMP will require active outside assistance. This outside assistance will come from state and federal agencies, private consortiums and organizations, universities, contractors, and skilled volunteers. Using these resources is the most efficient and cost-effective method for acquiring expertise on a temporary basis. Some of the parties will be reimbursed for their assistance, as agreed based on intergovernmental support agreement, an Economy Act order, or contractual agreements, whereas others will supply their assistance in accordance with cooperative agreements.

The natural resources program at USAG WP receives financial support from appropriated funds (e.g., Operations and Maintenance), funded reimbursements (forestry), and user fees (hunting, fishing, trapping, and outdoor recreation). The use of funded reimbursements and user fees are restricted by federal law. Funded reimbursements can be used only for timber management-related expenses, and user fees may be used only to fund projects related to hunting, fishing, trapping, and outdoor recreation. Expenses not directly associated with timber management or with hunting, fishing, trapping, and outdoor recreational activities must be funded from appropriated funds. The following section presents the funding options and anticipated budgets (revenues) expected to be available to fund the natural resources program at USAG WP for the life of this INRMP (2018 through 2023).

All requirements set forth in this INRMP requiring the expenditure of funds are expressly subject to the availability of appropriations and the requirements of the Anti-Deficiency Act (31 U.S.C. Section 1341). No obligation undertaken by USAG WP under the terms of this INRMP will require or be interpreted to require a commitment to expend funds not obligated for a particular purpose.

*Forestry Funds:* Funding for forest management at installations is from the appropriated Operations and Maintenance funds and from the Army Forestry Account, which is part of the DoD Forest Reserve Account. Operations and Maintenance funds generally may be used for all forest management activities, including the improvement of land, management and inventory of forest resources, and to cover contingencies for the administration of forest lands (DoD Natural

Resources 2016). Proceeds from the sale of timber and other forest products are deposited into the Army Forestry Account, and may only be used for activities directly related to the management of the forest ecosystem. The funds in the Forestry account are distributed based on requirements, as submitted by installations through mechanisms outlined in an annual memorandum from IMCOM for the submission of Conservation Reimbursable and Fee Collection Programs (CRFCP) Annual Work Plan requirements

USAG WP generates forestry funds from the occasional sale of firewood and from commercial timber sales. Annual revenues typically range from \$30,000 to \$50,000, depending upon the volume of available timber and market values. These activities and the revenue they generate are expected to decrease in the current years as the NRB moves to a greater focus on TSI, rather than harvest.

Funds required to make up shortfalls between the funds that are generated by forestry activities and the funds that are required to operate the forestry program may, if available, come from the DoD Forestry Reserve Account. Other natural resources programs may also use these Reserve Account funds if available. Forestry operations are accomplished by the NRB staff, so project expenses are generally reflected as labor costs. The typical annual expenses are shown in Table 5-3.

**Table 5-3 Typical Forest Management Elements Funded by Forestry Funds**

| Program Element                                       | Typical Annual Expenses |
|---|-------------------------|
| Forestry Contracts (Inventory, Fuels Management, TSI) | \$20,000                |
| Equipment and Supply Purchases                        | \$10,000                |
| Harvest Management                                    | \$10,000                |
| Travel and Training                                   | \$5,000                 |
| <b>Total</b>  | <b>\$45,000</b>         |

*Wildlife Conservation Funds:* Pursuant to 16 U.S.C. § 670a-f, and as described in AR 200-1, Chapter 4-3, the installation must “deposit collected fees from the sale of Special State Licenses into Army Fish and Wildlife Conservation Fund 21X5095.” These fees are solely for defraying costs incurred for fisheries and wildlife management on the installation, and not for the construction of recreational structures, such as blinds, deer stands, and fishing piers. The 2018 fee schedule for hunting, fishing, and trapping are provided on table 4-6.

Total revenues from the sale of hunting, fishing, and trapping permits average about \$20,000 annually. The programs and projects that are expected to be funded with these revenues are listed in Table 5-4. In past years, if the revenue exceeded expenses, the balance was carried over to be applied to new fiscal year (FY) expenses. Requests for increasing revenue apportionment can be made through IMCOM if projected Sikes Act permit sales will exceed the current FY 21X5095 apportionment. USAG WP has had a carryover for several years, which is being reduced.

**Table 5-4 Projected Expenditures for 21X Account Revenues (2018–2022)**

| Program                  | FY 18           | FY 19           | FY 20           | FY 21           | FY 22           |
|--------------------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| iSportsman               | \$4,000         | \$4,120         | \$4,244         | \$4,371         | \$4,502         |
| Fish Stocking            | \$9,000         | \$9,270         | \$9,548         | \$9,835         | \$10,130        |
| Pheasant Stocking        | \$3,500         | \$3,605         | \$3,713         | \$3,825         | \$3,939         |
| Equipment                | \$5,000         | \$5,150         | \$5,305         | \$5,464         | \$5,628         |
| Surveys/Contract Support | \$6,000         | \$6,180         | \$6,365         | \$6,556         | \$6,753         |
| <b>Total</b>             | <b>\$27,500</b> | <b>\$28,325</b> | <b>\$29,175</b> | <b>\$30,050</b> | <b>\$30,951</b> |
| <b>5-Year Total</b>      |                 |                 |                 |                 |                 |

*General Project Budget:* Funding requirements for most of the Army’s environmental program are identified in general natural resource project budget. USAG WP natural resources projects for FY 2018 through FY 2022 that will be accomplished by NRB staff, contract, or agreement with other agencies that are not covered under Forestry Funds or 21X Account Revenues are identified and summarized in Table 5-5. Most of the management actions described in this INRMP are accomplished by government employees on the NRB staff. Funding for the staff positions is identified in Table 5-1 as part of overall USAG WP environmental management personnel requirements is not reflected in Table 5-5. The total General Project Budget expenses for this INRMP is estimated at \$1,414,885 for 2018 through 2022. These estimates will be adjusted each year on an as needed basis.

**Table 5-5. General Project Budget Expenses for United States Army Garrison West Point Natural Resources Management Program**

| Project   | FY 18            | FY 19            | FY 20            | FY 21            | FY 22              |
|---|------------------|------------------|------------------|------------------|--------------------|
| Fund Natural Resources ORISE  | \$80,000         | \$82,400         | \$84,872         | \$87,418         | \$90,041           |
| Support for Wildlife control  | \$20,000         | \$20,600         | \$21,218         | \$21,855         | \$22,510           |
| Invasive Species Control  | \$40,000         | \$41,200         | \$42,436         | \$43,709         | \$45,020           |
| Species at Risk Survey  | \$15,000         | \$15,450         | \$15,914         | \$16,391         | \$16,883           |
| Federally Threatened Species Management   | \$50,000         | \$51,500         | \$53,045         | \$54,636         | \$56,275           |
| Fire weather station Maintenance  | \$1,500          | \$1,545          | \$1,591          | \$1,639          | \$1,688            |
| Supplies/equipment  | \$20,000         | \$20,600         | \$21,218         | \$21,855         | \$22,510           |
| Ecological Survey (Wetlands, Soils, etc.)   | \$10,000         | \$10,300         | \$10,609         | \$10,927         | \$11,255           |
| Habitat Improvement General   | \$10,000         | \$10,300         | \$10,609         | \$10,927         | \$11,255           |
| Update INRMP  | \$10,000         | \$10,300         | \$10,609         | \$10,927         | \$11,255           |
| Environmental Education   | \$10,000         | \$10,300         | \$10,609         | \$10,927         | \$11,255           |
| <b>Total</b>  | <b>\$266,500</b> | <b>\$274,495</b> | <b>\$282,730</b> | <b>\$291,212</b> | <b>\$299,948</b>   |
| <b>5-Year Total</b>   |                  |                  |                  |                  | <b>\$1,414,885</b> |
| Notes: FY = Fiscal Year.<br>INRMP = Integrated Natural Resources Management Plan. |                  |                  |                  |                  |                    |

*Training Funds:* Funding for the ITAM program is through military training channels. The USAG WP ITAM LRAM funding requirements for FY 2018 through FY 2022 totals \$2,133,756 (Table 5-6). Of course, this is an estimated unconstrained value that is subject to adjustment based on changing needs and revised project cost estimates. The proposed annual budget for each fiscal year includes funds for a number of projects of major importance to maintaining,

preserving, and protecting the natural resources at USAG WP. Program budget detail is in separate ITAM Annual Work Plans prepared in accordance with the ITAM Program Strategy.

**Table 5-6. ITAM Program Funding**

| <b>Project</b>  | <b>FY 18</b> | <b>FY 19</b> | <b>FY 20</b> | <b>FY 21</b> | <b>FY 22</b>       |
|---|--------------|--------------|--------------|--------------|--------------------|
| ITAM LRAM Project Costs   | \$385,000    | \$418,000    | \$430,540    | \$443,456    | \$456,760          |
| <b>5-Year Total</b>   |              |              |              |              | <b>\$2,133,756</b> |
| Notes: FY = Fiscal Year.<br>LRAM = Land Rehabilitation and Maintenance. |              |              |              |              |                    |

The average annual costs of implementing this INRMP are presented below by funding category. These total annual costs represent an estimate of the cost of implementation; however, some variability from year to year can be expected. Variables that have the potential to affect the overall cost of implementation include changes in labor and contract costs, numbers of hunting and fishing permits issued, quantity of timber harvested, market value of timber, and the availability of funds.

- **Forestry:** \$ 45,000
- **Fish and Wildlife (21X Account):** \$29,200
- **Environmental (General Program Budget):** \$282,977
- **Training (ITAM LRAM):** \$426,751

The total average annual funding necessary to implement this INRMP, including INRMP activities associated with the ITAM LRAM, is \$783,928. The total cost over 5 years of implementing this INRMP is \$3,919,642.

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## 6. FIVE-YEAR IMPLEMENTATION PLAN

The INRMP Program has been organized to ensure the implementation of year-round, cost-effective management activities and projects that meet the requirements of the installation. The various organizations on USAG WP that are responsible for implementation of the INRMP are described below.

***Installation Stakeholders***—The INRMP Task Force will be responsible for the overall implementation of the INRMP. The INRMP Task Force will be comprised of key installation personnel from the USAG WP, in addition to the Natural Resources Program Manager who will provide technical assistance when necessary. This INRMP Task Force will assume an oversight role to ensure the effective implementation of this plan.

The Garrison Commander of USAG WP will be the official signatory for the INRMP and the annual reviews. The installation's Natural Resources Manager is responsible for ensuring the activities associated with the implementation of this plan adhere to applicable federal, state, local, and U.S. Army environmental regulations and guidelines. The Natural Resources Program Manager tracks DoD and U.S. Army policies, and approves funding for projects and studies identified as a priority in this plan. The Natural Resources Program Manager acts as a technical point of contact on all natural-resources-related activities. Projects proposed in this plan are reviewed by the installation's Natural Resources Manager. Deviation from the projects proposed in this plan should be independently reviewed by the Natural Resources Manager.

***External Stakeholders***—USFWS and NYSDEC can provide technical assistance to the installation. Specifically, these agencies will alert the Natural Resources Manager whenever new species that have the potential for inhabiting the installation are added to the federal and state endangered species lists. In addition, these agencies will be involved in the annual review of the INRMP and updates to the INRMP determined to be necessary as a result of changes in environmental conditions or the mission.

In the interest of best managing the natural resources found at the installation, the approach of the NRB at USAG WP has been to share natural resource data with USFWS, NYSDEC, NOAA, and NYNHP. USAG WP will continue to share data, including reports and species sightings, with these agencies. Other interested parties, including researchers and concerned citizens, may review natural resource data, depending on their research needs and the sensitivity of the data. All data collected for the USAG WP by contract is solely owned by the garrison and cannot be release without specific permission.

### 6.1 GOALS AND IMPLEMENTATION PLAN

The purpose of the implementation plan is to present a road map for the execution of specific actions to achieve management goals and objectives identified in this INRMP. Under the authority and direction of the Garrison Commander, the Environmental Manager provides staff for implementing the INRMP management actions.

Table 6-1 summarizes the management actions (goals, objectives, and projects) identified to address the management needs presented in Chapter 4, *Program Elements*. Table 6-1 also

provides the regulatory driver for these actions and proposes priorities and a timeline for their implementation from 2018 through 2022. The actions proposed for this INRMP are aggressive and might not be accomplished within the established timelines due to a number of factors (e.g., budget and manpower constraints, wartime tasks). However, their importance to the proper management of the installation's natural resources cannot be understated. Therefore, the management actions presented in these tables should be modified as part of the annual review of this INRMP by the INRMP Task Force to ensure that these goals are continually emphasized and accomplished when practicable.

This INRMP reflects the commitment set forth by USAG WP to conserve, protect, and enhance the natural resources present on the installation. This INRMP is the final plan that will direct the natural resources management at the installation from Fiscal Years 2018 through 2022. An ecosystem approach was used to develop the management measures for each resource area. Implementation of the management measures will maintain, conserve, and enhance the ecological integrity of USAG WP and the biological communities occurring on the installation. In addition, the natural resources management measures described in this plan will protect the installation's ecosystems and their components from unacceptable damage or degradation and identify and restore previously degraded habitats.

Natural resources and land use management issues are not the only factors contributing to the development and implementation of the INRMP. Installation management and other seemingly unrelated issues affect the implementation of this plan. It is of utmost importance to the implementation of this INRMP that installation personnel take "ownership" of the plan (i.e., individual or organizational primary responsibility to implement the INRMP), provide the necessary resources (i.e., personnel and equipment), and allocate the appropriate funding to enact the plan. It is extremely important that an INRMP Task Force be established to aid in the continued development of and commitment to the implementation of this INRMP. The INRMP Task Force should be comprised of key installation personnel and will assume an oversight role to ensure the effective implementation of this plan. Top- and middle-level management representation, as well as representation from several individuals with day-to-day on-installation field experience, will provide the INRMP Task Force with the leadership and structure necessary for the successful implementation of this INRMP.

Any requirement for the obligation of funds for projects in this INRMP shall be subject to the availability of funds appropriated by Congress, and none of the proposed projects shall be interpreted to require obligation or payment of funds in violation of any applicable federal law. Implementation of the actions and projects described in this INRMP are guided by how budget priorities are assessed for environmental work on DoD installations. This is described in DoDI 4715.03, *Natural Resources Conservation Program*, which implements policy, assigns responsibilities, and prescribes procedures for the integrated management of natural and cultural resources on property under DoD control.

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. As such, these programs and projects have been placed into four priority-based categories:

- Priority 0 – Day-to-day recurring projects
- Priority 1 – High priority projects
- Priority 2 – Medium importance projects
- Priority 3 – Low importance projects.

The prioritization of the projects is based on need, and need is based on a project’s importance in moving the natural resources management program closer toward successfully achieving its goal. DoDI 4715.03 defines recurring and non-recurring conservation requirements as follows:

### **RECURRING AND NON-RECURRING CONSERVATION REQUIREMENTS**

|  |
|--|
| <b>Priority 0: Recurring Natural Resources Conservation Management Requirements</b>  |
| a. Administrative, personnel, and other costs associated with managing the DoD Natural Resources Conservation Program that are necessary to meet applicable compliance requirements in federal and state laws, regulations, EOs, and DoD policies, or in direct support of the military mission.   |
| b. DoD components shall give priority to recurring natural resources conservation management requirements associated with the operation of facilities, installations, and deployed weapons systems. These activities include day-to-day costs of sustaining an effective natural resources management program, and annual requirements, including manpower, training, supplies, permits, fees, testing and monitoring, sampling and analysis, reporting and recordkeeping, maintenance of natural resources conservation equipment, and compliance self-assessments. |
| <b>Priority 1 (High): Non-Recurring Natural Resources Management Requirements. Current Compliance.</b>   |
| Includes installation projects and activities to support:  |
| a. Installations currently out of compliance (e.g., received an enforcement action from an authorized federal or state agency or local authority).   |
| b. Signed compliance agreement or consent order.   |
| c. Meeting requirements with applicable federal and state regulations, standards, EOs, or DoD policies.  |
| d. Immediate and essential maintenance of operational integrity or military mission sustainment.   |
| e. Projects or activities that will be out of compliance if not implemented in the current program year including the following:   |

## RECURRING AND NON-RECURRING CONSERVATION REQUIREMENTS

### **Priority 1 (High): Non-Recurring Natural Resources Management Requirements. Current Compliance (continued)**

- i. Environmental analyses for natural resources conservation projects, and monitoring and studies required to assess and mitigate potential impacts of the military mission on conservation resources.
- ii. Planning documentation, master plans, compatible development planning, and INRMPs.
- iii. Natural resources planning-level surveys.
- iv. Reasonable and prudent measures included in incidental take statements of Biological Opinions; biological assessments; surveys; monitoring; reporting of assessment results; or habitat protection for listed, at-risk, and candidate species so that proposed or continuing actions can be modified in consultation with the USFWS or National Marine Fisheries Service.
- v. Mitigation to meet existing regulatory permit conditions or written agreements.
- vi. Non-point source pollution or watershed management studies or actions needed to meet compliance dates cited in approved state coastal non-point source pollution control plans, as required to meet consistency determinations consistent with Coastal Zone Management.
- vii. Wetlands delineations critical for the prevention of adverse impacts on wetlands, so that continuing actions can be modified to ensure mission continuity.

Compliance with missed deadlines established in DoD-executed agreements.

### **Priority 2 (Medium): Non-Recurring Natural Resources Management Requirements. Maintenance Requirements.**

Includes those projects and activities needed to meet an established deadline beyond the current program year and maintain compliance. Examples include the following:

- a. Compliance with future deadlines.
- b. Conservation, GIS mapping, and data management to comply with federal, state, and local regulations; EOs; and DoD policy.
- c. Efforts undertaken in accordance with non-deadline specific compliance requirements of leadership initiatives.
- d. Wetlands enhancement to minimize wetlands loss and enhance existing degraded wetlands.
- e. Conservation recommendations in biological opinions issued pursuant to the ESA.

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## RECURRING AND NON-RECURRING CONSERVATION REQUIREMENTS

### **Priority 3 (Low): Non-Recurring Natural Resources Management Requirements. Enhancement Actions Beyond Compliance.**

Includes those projects and activities that enhance conservation resources or the integrity of the installation's mission, or are needed to address overall environmental goals and objectives, but are not specifically required by law, regulation, or EO, and are not of an immediate nature. Examples include:

- a. Community outreach activities, such as International Migratory Bird Day, Earth Day, National Public Lands Day, Pollinator Week, and Arbor Day activities.
- b. Educational and public awareness projects, such as interpretive displays, oral histories, Watchable Wildlife areas, nature trails, wildlife checklists, and conservation teaching materials.
- c. Restoration or enhancement of natural resources when no specific compliance requirement dictates a course, or timing of action.
- d. Management and execution of volunteer and partnership programs.

The goals, objectives, and projects for the INRMP, as well as the execution timeframe, priority, and monitoring are provided in Table 6-1.

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**Table 6-1. United States Army Garrison West Point Goals and Implementation Plan**

| Objective No.   | Task(s)   | Priority Level | Regulatory Driver | Monitoring and reporting          | Effectiveness Indicator | FY 18 | FY 19 | FY 20 | FY 21 | FY 22 | Labor Hours | Funding | Comments |  |
|---|---|----------------|-------------------|-----------------------------------|-------------------------|-------|-------|-------|-------|-------|-------------|---------|----------|--|
| <b>Natural Resources Program Management</b>   |   |                |                   |                                   |                         |       |       |       |       |       |             |         |          |  |
| <b>NRP Goal 1: Implement ecosystem principles in managing natural resources</b>   |   |                |                   |                                   |                         |       |       |       |       |       |             |         |          |  |
| NRP 1.1   | <b>Incorporate ecosystem principles into environmental management at USAG WP</b><br><ul style="list-style-type: none"> <li>NRP 1.1-1: Incorporate ecosystem principles into management documents and practices, and educate USAG WP personnel on the principles of ecosystem management</li> </ul>  | 3              | 11, 54            | Every 5 years                     |                         | X     | X     | X     | X     | X     |             |         |          |  |
| NRP 1.2   | <b>Support academic research at USAG WP</b><br><ul style="list-style-type: none"> <li>NRP 1.2-1: Support academic proposals by offering military lands as study sites when actions are compatible with training and do not impact the mission.</li> </ul>   | 3              | 11, 54            | On a per-project basis            |                         | X     | X     | X     | X     | X     |             |         |          |  |
| <b>Geospatial Information Systems (GIS)</b>   |   |                |                   |                                   |                         |       |       |       |       |       |             |         |          |  |
| <b>GIS Goal 1: Continue to apply modern technology and integrated techniques to enhance natural resources management at USAG WP</b>                             |   |                |                   |                                   |                         |       |       |       |       |       |             |         |          |  |
| GIS 1.1   | <b>Use GIS to map and inventory natural resources at USAG WP</b><br><ul style="list-style-type: none"> <li>GIS 1.1-1: Update GIS coverages for all natural resources as necessary.</li> <li>GIS 1.1-2: Develop schedule for GPS mapping and inventorying at USAG WP. The following occurrences of mapping should be included: <ul style="list-style-type: none"> <li>Wetlands: map every 10 years</li> <li>Fire: annual mapping</li> <li>Invasive species: annual mapping</li> <li>T&amp;E: annual mapping</li> </ul> </li> </ul>   | 2              | 11, 60            | Annually or as updates are needed |                         | X     | X     | X     | X     | X     |             |         |          |  |
|   |   | 2              | 11, 60            | Annually or as updates are needed |                         | X     | X     | X     | X     | X     |             |         |          |  |
| GIS 1.2   | <b>Develop a map of non-sensitive areas to be used for training activities</b><br><ul style="list-style-type: none"> <li>GIS 1.2-1: Develop non-sensitive areas map by compositing GIS coverages of vital habitat; sensitive species; ecological preserves; wetlands and vernal pools; riparian, wetland, vernal pool, and water resource buffer zones; steep slopes and highly erodible soils; rare plants; threatened and endangered species; and locations of cultural and archeological resources.</li> <li>GIS 1.2-2: Work with cultural resources to ensure map includes culturally-sensitive areas to be avoided</li> <li>GIS 1.2-3: Include a disclaimer on map noting that consultation with natural and cultural resources may still be necessary for areas deemed as non-sensitive.</li> <li>GIS 1.2-4: Implement the use of a centralized, enterprise system for GIS data management to ensure data are kept consistent and up-to-date across offices.</li> </ul> | 2              | 53                | Every 5 years                     |                         | X     |       |       |       |       |             |         |          |  |
|   |   | 2              | 53                | One-time                          |                         | X     |       |       |       |       |             |         |          |  |
|   |   | 2              | 53                | One-time                          |                         | X     |       |       |       |       |             |         |          |  |
|   |   | 2              | 11, 60            | As updates are needed             |                         | X     |       |       |       |       |             |         |          |  |
| <b>Conservation Law Enforcement (CLE)</b>   |   |                |                   |                                   |                         |       |       |       |       |       |             |         |          |  |
| <b>CLE Goal 1: Protect natural resources at USAG WP</b>   |   |                |                   |                                   |                         |       |       |       |       |       |             |         |          |  |
| CLE 1.1   | <b>Provide enforcement of natural resource regulations USAG WP</b><br><ul style="list-style-type: none"> <li>CLE 1.1-1: Maintain the Conservation Law Enforcement (CLE) program managed by the Provost Marshals Office.</li> <li>CLE 1.1-2: Continue to implement USMA Regulation 215-5.</li> <li>CLE 1.1-3: Review USMA 215-5 every 3 years.</li> <li>CLE 1.1-4: Assist PMO with conservation law enforcement, as needed.</li> </ul>   | 0              | 11, 60, 61        | Annually                          |                         | X     | X     | X     | X     | X     |             |         |          |  |
|   |   | 1              | 11, 60, 61        | Annually                          |                         | X     | X     | X     | X     | X     |             |         |          |  |
|   |   | 0              | 11, 60, 61        | Every 3 years                     |                         |       |       | X     |       |       |             |         |          |  |
|   |   | 0              | 11, 60, 61        | On a per-project basis            |                         | X     | X     | X     | X     | X     |             |         |          |  |
| <b>Soils, Erosions, and Sedimentation (SES)</b>   |   |                |                   |                                   |                         |       |       |       |       |       |             |         |          |  |
| <b>SES Goal 1: Identify eroded soils, protect soil resources, and prevent soil erosion and its potential impacts on water quality, habitat, and the mission</b> |   |                |                   |                                   |                         |       |       |       |       |       |             |         |          |  |
| SES 1.1   | <b>Ensure hot landing zones (HLZs) are maintained to ensure safety and to prevent erosion</b><br><ul style="list-style-type: none"> <li>SES 1.1-1: Maintain HLZs by completing seeding, shrub removal, and the fixing of ruts at HLZs where this is needed.</li> </ul>  | 0              | 53, 55            | Annually                          |                         | X     | X     | X     | X     | X     |             |         |          |  |



| Objective No.  | Task(s)  | Priority Level | Regulatory Driver     | Monitoring and reporting                                  | Effectiveness Indicator | FY 18 | FY 19 | FY 20 | FY 21 | FY 22 | Labor Hours | Funding | Comments |
|--|--|----------------|-----------------------|---|-------------------------|-------|-------|-------|-------|-------|-------------|---------|----------|
| SES 1.2  | <b>Minimize land disturbance and erosion resulting from mission activities</b>   |                |                       |   |                         |       |       |       |       |       |             |         |          |
|  | <ul style="list-style-type: none"> <li>SES 1.2-1: Use soil conservation measures (e.g., check dams, wind breaks, diversions) to control erosion, sedimentation, and dust when the exposure of soils is necessary to accomplish mission objectives for military training or other activities, such as timber harvest.</li> </ul>  | 0              | 53, 55                | On a regular basis  |                         | X     | X     | X     | X     | X     |             |         |          |
|  | <ul style="list-style-type: none"> <li>SES 1.2-2: When possible, site physically intensive land-disturbing activities on the least erodible lands (those requiring the least cover for erosion control) to minimize land maintenance expenditures and environmental impacts. Consider a site's potential erodibility (existing soil types, slopes, and vegetative cover), and the location of adjacent wetlands, vernal pools, and other surface waters to minimize impacts on these resources.</li> </ul> | 0              | 53, 55                | On a regular basis  |                         | X     | X     | X     | X     | X     |             |         |          |
|  | <ul style="list-style-type: none"> <li>SES 1.2-3: Implement erosion and sediment controls where appropriate. Maintain protective vegetative covers over all compatible areas, especially on steep slopes. Other materials, such as gravel, fabrics, mulch, riprap, or other materials that are environmentally safe and compatible with the location, may be used, as appropriate, for control of erosion in problem areas.</li> </ul>   | 0              | 53, 55                | On a regular basis  |                         | X     | X     | X     | X     | X     |             |         |          |
|  | <ul style="list-style-type: none"> <li>SES 1.2-4: Monitor soil erosion on a regular basis, especially following damaging events such as heavy rains, rapid snow melt, high winds, or excess traffic (training operations). Monitoring potential erosion will allow for early detection of problem areas.</li> </ul>  | 1              | 53, 55                | On a regular basis  |                         | X     | X     | X     | X     | X     |             |         |          |
|  | <ul style="list-style-type: none"> <li>SES 1.2-5: Continue to use the LRAM program to repair soil erosion sites as they occur, in a timely manner, to avoid potential development of excessive erosion sites.</li> </ul>   | 1              | 53, 55                | On a regular basis  |                         | X     | X     | X     | X     | X     |             |         |          |
| <b>Water Resources: General Water Conservation (GWC)</b>   |  |                |                       |   |                         |       |       |       |       |       |             |         |          |
| <b>GWC Goal 1: Identify and restore degraded aquatic habitats, protect aquatic and riparian habitats, and prevent degradation of water quality</b> |  |                |                       |   |                         |       |       |       |       |       |             |         |          |
| GWC 1.1  | <b>Inventory and monitor conditions of waterbodies as USAG WP</b>  |                |                       |   |                         |       |       |       |       |       |             |         |          |
|  | <ul style="list-style-type: none"> <li>GWC 1.1-1: Complete an inventory of all waterbodies on USAG WP and monitor the condition.</li> </ul>  | 1              | 7, 23, 52, 55         | Every 5 years, more frequently if problems are identified |                         | X     |       |       |       |       |             |         |          |
|  | <ul style="list-style-type: none"> <li>GWC 1.1-2: Develop lake contours for all USAG WP lakes.</li> </ul>  | 2              | 7, 23, 52, 55         | One-time  |                         |       |       | X     |       |       |             |         |          |
| GWC 1.2  | <b>Review projects for potential impacts to waters; seek to avoid impacts prior to design and mitigate unavoidable impacts</b>   |                |                       |   |                         |       |       |       |       |       |             |         |          |
|  | <ul style="list-style-type: none"> <li>GWC 1.2-1: When conducting work that may impact streams: <ul style="list-style-type: none"> <li>See appropriate permits from state and federal agencies;</li> <li>Develop BMPs for TESC; and,</li> <li>Implement in-stream design to maximize habitat diversity.</li> </ul> </li> </ul>   | 1              | 7, 23, 38, 52, 55     | On a per-project basis                                    |                         | X     | X     | X     | X     | X     |             |         |          |
| GWC 1.3  | <b>Control pollutant inputs to waterbodies at USAG WP and protect water quality</b>  |                |                       |   |                         |       |       |       |       |       |             |         |          |
|  | <ul style="list-style-type: none"> <li>GWC 1.3-1: Turf management chemicals for the USAG WP golf course will be applied minimally and in conformance with appropriate standards and will not be applied in riparian buffer areas. Currently, the most extensively used turf management chemical type is a nitrogen-based fertilizer.</li> </ul>  | 1              | 7, 11, 23, 38, 52, 55 | On a per-project basis                                    |                         | X     | X     | X     | X     | X     |             |         |          |
|  | <ul style="list-style-type: none"> <li>GWC 1.3-2: Minimize the potential for soil and water pollution by implementing an IPM approach in turf disease, insect, and weed control strategies.</li> </ul>   | 1              | 7, 11, 23, 38, 52, 55 | Every 5 years   |                         | X     | X     | X     | X     | X     |             |         |          |
|  | <ul style="list-style-type: none"> <li>GWC 1.3-3: Onsite wastewater treatment systems will be operated, inspected, and maintained to prevent the discharge of pollutants to surface and ground waters and, to the extent practicable, reduce the discharge of pollutants into ground waters that are closely hydrologically connected to surface waters.</li> </ul>  | 1              | 7, 11, 23, 38, 52, 55 | Annually  |                         | X     | X     | X     | X     | X     |             |         |          |
|  | <ul style="list-style-type: none"> <li>GWC 1.3-4: When stabilizing streams, incorporate stream improvements. For examples, check dams can be used to trap sediments and reduce the transport capacity of a stream. Suspended sediments often carry attached pollutants to downstream habitat areas.</li> </ul>   | 1              | 7, 11, 23, 38, 52, 55 | On a per-project basis                                    |                         | X     | X     | X     | X     | X     |             |         |          |
|  | <ul style="list-style-type: none"> <li>GWC 1.3-5: Follow stormwater BMPs for forestry, construction and operation of the Garrison. Incorporate stormwater management measures in all new construction.</li> </ul>  | 2              | 7, 11, 23, 38, 52, 55 | On a per-project basis                                    |                         | X     | X     | X     | X     | X     |             |         |          |

| Objective No.  | Task(s)  | Priority Level | Regulatory Driver     | Monitoring and reporting                       | Effectiveness Indicator | FY 18 | FY 19 | FY 20 | FY 21 | FY 22 | Labor Hours | Funding | Comments |
|--|--|----------------|-----------------------|--|-------------------------|-------|-------|-------|-------|-------|-------------|---------|----------|
|  | <ul style="list-style-type: none"> <li>GWC 1.3-6: Survey culverts for operation annually. Address and repair culverts to prevent erosion.</li> </ul>   | 2              | 7, 11, 23, 38, 52, 55 | Annually                                       |                         | X     | X     | X     | X     | X     |             |         |          |
| GWC 1.4  | <b>Consider dams for removal, and design basin to retain aquatic and wetland habitat</b> <ul style="list-style-type: none"> <li>GWC 1.4-1: Consider removal of dams that are no longer structurally sound, provide no water supply benefit, or would be costly to repair, such as Weyants, Georgina, and Cragston dams.</li> <li>GWC 1.4-2: Study dam basins prior removal and develop a management plan to maintain aquatic and wetland habitat as lake bottom transitions to upland.</li> </ul>  | 2              | 48, 53, 60            | On a per-project basis                         |                         | X     |       |       | X     |       |             |         |          |
|  | <ul style="list-style-type: none"> <li>GWC 1.4-2: Study dam basins prior removal and develop a management plan to maintain aquatic and wetland habitat as lake bottom transitions to upland.</li> </ul>  | 2              | 48, 53, 60            | On a per-project basis                         |                         | X     | X     | X     | X     | X     |             |         |          |
| GWC 1.5  | <b>Collaborate with adjacent properties for comprehensive natural resource management</b> <ul style="list-style-type: none"> <li>GWC 1.5-1: Meet as needed with adjacent landowners, including resource managers at Black Rock Forest, to share information and coordinate management efforts intended to improve water quality.</li> </ul>  | 3              | 53                    | On a per-project basis                         |                         | X     | X     | X     | X     | X     |             |         |          |
| <b>GWC Goal 2: Provide protection for riparian watersheds and buffers to maintain healthy aquatic ecosystems that provide high water quality and superior fisheries resources.</b> |  |                |                       |  |                         |       |       |       |       |       |             |         |          |
| GWC 2.1  | <b>Maintain forested watershed cover</b> <ul style="list-style-type: none"> <li>GWC 2.1-1: Maintain predominantly forested watershed cover and limited population density to the extent possible given recent and planned development. Maintain forested cover in order to reduce the quantity of nonpoint source pollution transported to the surface water bodies.</li> </ul>  | 2              | 11                    | Every 3 years                                  |                         |       |       | X     |       |       |             |         |          |
| GWC 2.2  | <b>Maintain adequate riparian areas for the protection of water quality and fisheries</b> <ul style="list-style-type: none"> <li>GWC 2.2-1: Maintain 100-foot vegetative buffers with a sufficient diversity of canopy, ground and shrub species around all water bodies to protect streambank and shoreline vegetation where practicable.</li> <li>GWC 2.2-2: Limit activities within the riparian buffer zones to those which would cause little or no impact on water quality and aquatic habitats; clearcutting and soil-disturbing activities will not occur within riparian buffer areas.</li> <li>GWC 2.2-3: Limit pesticide and fertilizer use in riparian buffers.</li> </ul>   | 2              | 7, 11, 53             | On a per-project basis                         |                         | X     | X     | X     | X     | X     |             |         |          |
|  | <ul style="list-style-type: none"> <li>GWC 2.2-2: Limit activities within the riparian buffer zones to those which would cause little or no impact on water quality and aquatic habitats; clearcutting and soil-disturbing activities will not occur within riparian buffer areas.</li> </ul>  | 2              | 7, 11, 53             | On a per-project basis                         |                         | X     | X     | X     | X     | X     |             |         |          |
|  | <ul style="list-style-type: none"> <li>GWC 2.2-3: Limit pesticide and fertilizer use in riparian buffers.</li> </ul>   | 2              | 7, 11, 53             | On a per-project basis                         |                         | X     | X     | X     | X     | X     |             |         |          |
| GWC 2.3  | <b>Protect Riparian habitat</b> <ul style="list-style-type: none"> <li>GWC 2.3-1: Focus riparian habitat assessments and potential stream restoration projects on priority areas such as Highland Brook, Trout Brook, Mineral Springs Brook, Crow's Nest, and Popolopen Brook.</li> <li>GWC 2.3-2: Encourage diverse species composition in riparian areas, particularly canopy species; woody canopy species will more successfully survive stochastic environmental events and will provide necessary stream bank stabilization.</li> </ul>  | 3              | 11, 53                | Every 3-5 years as part of habitat assessments |                         |       |       | X     |       |       |             |         |          |
|  | <ul style="list-style-type: none"> <li>GWC 2.3-2: Encourage diverse species composition in riparian areas, particularly canopy species; woody canopy species will more successfully survive stochastic environmental events and will provide necessary stream bank stabilization.</li> </ul>   | 3              | 11, 53                | Every 3-5 years as part of habitat assessments |                         | X     | X     | X     | X     | X     |             |         |          |
| GWC 2.4  | <b>Plan and implement projects and activities to minimize shoreline and streambank erosion and other impacts to waterbodies</b> <ul style="list-style-type: none"> <li>GWC 2.4-1: Plan recreational development and amphibious training exercises to minimize shoreline and stream bank erosion and to correct and/or minimize unavoidable impacts.</li> <li>GWC 2.4-2: Stream crossings will be located, designed, constructed, and maintained to provide maximum erosion protection; to have the least adverse effects on wildlife, aquatic life, and their habitats; and to maintain hydrologic processes and water quality. Any crossings will have the necessary state and federal permits prior to construction.</li> <li>GWC 2.4-3: Recommend crossing structures which have the least impact on riparian ecology. Such structures allow the easy passage of fish and other wildlife and do not substantially alter stream flow through the structure. Examples include bridges and open bottom culverts. Avoid structures likely to result in increased erosion and the creation of plunge pools.</li> <li>GWC 2.4-4: Allow LOD to remain in stream channels when practical.</li> <li>GWC 2.4-5: Use Natural Stream Design as much as practical for stream enhancement and stream bank protection measures.</li> </ul> | 1              | 7, 11, 40             | On a per-project basis                         |                         | X     | X     | X     | X     | X     |             |         |          |
|  | <ul style="list-style-type: none"> <li>GWC 2.4-1: Plan recreational development and amphibious training exercises to minimize shoreline and stream bank erosion and to correct and/or minimize unavoidable impacts.</li> </ul>   | 1              | 7, 11, 40             | On a per-project basis                         |                         | X     | X     | X     | X     | X     |             |         |          |
|  | <ul style="list-style-type: none"> <li>GWC 2.4-2: Stream crossings will be located, designed, constructed, and maintained to provide maximum erosion protection; to have the least adverse effects on wildlife, aquatic life, and their habitats; and to maintain hydrologic processes and water quality. Any crossings will have the necessary state and federal permits prior to construction.</li> </ul>  | 2              | 7, 11, 40             | On a per-project basis                         |                         | X     | X     | X     | X     | X     |             |         |          |
|  | <ul style="list-style-type: none"> <li>GWC 2.4-3: Recommend crossing structures which have the least impact on riparian ecology. Such structures allow the easy passage of fish and other wildlife and do not substantially alter stream flow through the structure. Examples include bridges and open bottom culverts. Avoid structures likely to result in increased erosion and the creation of plunge pools.</li> </ul>  | 2              | 7, 11, 40             | On a per-project basis                         |                         | X     | X     | X     | X     | X     |             |         |          |
|  | <ul style="list-style-type: none"> <li>GWC 2.4-4: Allow LOD to remain in stream channels when practical.</li> </ul>  | 2              | 7, 11, 40             | On a per-project basis                         |                         | X     | X     | X     | X     | X     |             |         |          |
|  | <ul style="list-style-type: none"> <li>GWC 2.4-5: Use Natural Stream Design as much as practical for stream enhancement and stream bank protection measures.</li> </ul>  | 2              | 7, 11, 40             | On a per-project basis                         |                         | X     | X     | X     | X     | X     |             |         |          |

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|  | <ul style="list-style-type: none"> <li>GWC 2.4-6: Maintain a blanket permit for stream and bridge maintenance and continue this program.</li> </ul>   | 1              | 7, 11, 40         | Annually                           |                         | X     | X     | X     | X     | X     |             |         |          |
| <b>Water Resources: Coastal and Marine Resources (CMR)</b>                                 |   |                |                   |                                    |                         |       |       |       |       |       |             |         |          |
| <b>CMR Goal 1: Protect shoreline resources at USAG WP</b>                                  |   |                |                   |                                    |                         |       |       |       |       |       |             |         |          |
| CMR 1.1  | <p><b>Continue to ensure that the identified coastal zone at USAG WP is maintained to protect the installation's natural resources</b></p> <ul style="list-style-type: none"> <li>CMR 1.1-1: Maintain the integrity of shoreline features and coordinate any activities that impact the shoreline with the Environmental Office to ensure compliance with the CZMA.</li> </ul>  | 1              | 8                 | On a per-project basis             |                         | X     | X     | X     | X     | X     |             |         |          |
| <b>Water Resources: Wetlands (WET)</b>   |   |                |                   |                                    |                         |       |       |       |       |       |             |         |          |
| <b>WET Goal 1: Implement management measures to protect wetlands and wetland resources</b> |   |                |                   |                                    |                         |       |       |       |       |       |             |         |          |
| WET 1.1  | <p><b>Maintain buffers around wetlands for resource protection</b></p> <ul style="list-style-type: none"> <li>WET 1.1-1: Maintain 100-foot buffers around wetlands as practical.</li> <li>WET 1.1-2: West Point will comply with NYS mandated wetland buffer requirements. Only development within federal jurisdictional wetlands and vernal pools will be receive a higher-level review to assess for the need of additional mitigations to include project relocation.</li> </ul>  | 1              | 48                | Annually or on a per-project basis |                         | X     | X     | X     | X     | X     |             |         |          |
|  |   | 1              | 48                | On a per-project basis             |                         | X     | X     | X     | X     | X     |             |         |          |
| WET 1.2  | <p><b>Continue to develop wetland inventory and GIS</b></p> <ul style="list-style-type: none"> <li>WET 1.2-1: Continue to develop the wetland inventory database by compiling information on wetland characteristics.</li> <li>WET 1.2-2: Continue to maintain and update GIS database and coverages for wetlands.</li> <li>WET 1.2-3: Identify and map sites according to project need based on standard wetland delineation procedures.</li> </ul>  | 2              | 53, 60            | Every 10 years                     |                         |       |       |       |       | X     |             |         |          |
|  |   | 2              | 53, 60            | Every 10 years                     |                         | X     |       |       |       |       |             |         |          |
|  |   | 2              | 53, 60            | Every 10 years                     |                         | X     |       |       |       |       |             |         |          |
| WET 1.3  | <p><b>Complete restoration and mitigation measures to avoid or mitigate impacts to wetlands</b></p> <ul style="list-style-type: none"> <li>WET 1.3-1: Continue to restore degraded wetlands or to mitigate impacts on the habitats when requirements are identified and resources are available.</li> <li>WET 1.3-2: Pursue water quality management procedures that protect wetlands from excessive nonpoint source runoff.</li> <li>WET 1.3-3: Continue to encourage project managers to coordinate early with the Environmental Division to determine adverse impacts on wetlands. Continue to plan development and training to avoid wetland impacts to the maximum extent possible and mitigate unavoidable impacts on wetland functions.</li> <li>WET 1.3-4: Review operations and maintenance programs that potentially affect wetlands, and develop procedures and guidelines to avoid the loss of wetland functions.</li> <li>WET 1.3-5: Following dam removal, develop plans to convert lake basins to moist soil habitat with a matrix of upland and wetland habitats.</li> <li>WET 1.3-6: Replace culverts at Range Road 15 with beaver-resistant design</li> </ul> | 3              | 48, 53, 60        | On a per-project basis             |                         | X     | X     | X     | X     | X     |             |         |          |
|  |   | 2              | 48, 53, 60        | On a per-project basis             |                         |       |       |       | X     | X     |             |         |          |
|  |   | 1              | 48, 53, 60        | On a per-project basis             |                         | X     | X     | X     | X     | X     |             |         |          |
|  |   | 2              | 48, 53, 60        | Every 5 years                      |                         |       |       |       |       | X     |             |         |          |
|  |   | 3              | 48, 53, 60        | On a per-project basis             |                         | X     | X     | X     | X     | X     |             |         |          |
|  |   | 3              | 48, 53, 60        | On a per-project basis             |                         | X     |       |       |       |       |             |         |          |
| WET 1.4  | <p><b>Explore mitigation banking at USAG WP</b></p> <ul style="list-style-type: none"> <li>WET 1.4-1: Create an SOW to develop plans for wetland mitigation banking purchase. Investigate the construction of mitigation wetlands; the potential for wetland mitigation bank (either use or development); and in-lieu fee programs for Phragmites removal and restoration at the marsh at Bear Mountain and at Audubon marsh.</li> </ul>  | 3              | 7                 | One-time                           |                         |       |       | X     |       |       |             |         |          |
| WET 1.5  | <p><b>Complete field surveys and monitoring of wetland resources</b></p> <ul style="list-style-type: none"> <li>WET 1.5-1: Identify and monitor high quality wetlands that may provide habitat for rare species, such as spotted turtles and marbled salamanders and consider additional preservation measures or increased buffers.</li> <li>WET 1.5-2: Complete a wetland delineation at Camp Buckner/Natural Bridge.</li> </ul>  | 2              | 11, 53, 60        | Annually                           |                         | X     | X     | X     | X     | X     |             |         |          |
|  |   | 1              | 48                | Every 5 years                      |                         | X     |       |       |       |       |             |         |          |

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|--|--|----------------|-------------------|--------------------------|-------------------------|-------|-------|-------|-------|-------|-------------|---------|----------|
| <b>WET Goal 2: Protect vernal pool habitat</b>   |  |                |                   |                          |                         |       |       |       |       |       |             |         |          |
| WET 2.1  | <b>Implement measures that protect vernal pool habitat from impacts</b>  |                |                   |                          |                         |       |       |       |       |       |             |         |          |
|  | <ul style="list-style-type: none"> <li>WET 2.1-1: Limit activities within 100-feet of vernal pools to those which would cause little or no impact on or disturbance to the vernal pool, especially during wet periods.</li> </ul>  | 2              | 7, 17, 48         | On a per-project basis   |                         | X     | X     | X     | X     | X     |             |         |          |
|  | <ul style="list-style-type: none"> <li>WET 2.1-2: Monitor high quality vernal pools. 'High quality' is defined as large pools or those that have identified populations of special status fauna (i.e., marble salamanders, Jefferson salamanders, spotted turtles) and rare plants.</li> </ul> | 2              | 7, 17, 48         | Every 5 years            |                         | X     |       |       |       |       |             |         |          |
|  | <ul style="list-style-type: none"> <li>WET 2.1-3: Monitor vernal pools vulnerable to degradation due to proximity to West Point activities.</li> </ul>   | 2              | 7, 17, 48         | Every 5 years            |                         | X     |       |       |       |       |             |         |          |
|  | <ul style="list-style-type: none"> <li>WET 2.1-4: Identify and mitigate problems to vernal pool function such as inflow/outflow, canopy cover, and invasive species.</li> </ul>  | 2              | 7, 17, 48         | Every 5 years            |                         | X     |       |       |       |       |             |         |          |
| <b>Water Resources: Floodplains (FLD)</b>  |  |                |                   |                          |                         |       |       |       |       |       |             |         |          |
| <b>FLD Goal 1: Ensure that development in the floodplain is reviewed for compatibility and considers future changes in water level</b> |  |                |                   |                          |                         |       |       |       |       |       |             |         |          |
| FLD 1.1  | <b>Implement measures to understand future floodplain changes and design for these changes</b>   |                |                   |                          |                         |       |       |       |       |       |             |         |          |
|  | <ul style="list-style-type: none"> <li>FLD 1.1-1: Review proposed construction projects for compatibility and design project accordingly based on location in the floodplain.</li> </ul>   | 2              | 25                | On a per-project basis   |                         | X     | X     | X     | X     | X     |             |         |          |
|  | <ul style="list-style-type: none"> <li>FLD 1.1-2: Map potential new floodplains related to climate change based on elevation and revisit maps every 5-10 years.</li> </ul>   | 2              | 25                | Every 5 years            |                         |       |       |       |       | X     |             |         |          |
| <b>Sensitive Species: Threatened and Endangered Species (TE)</b>   |  |                |                   |                          |                         |       |       |       |       |       |             |         |          |
| <b>TE Goal 1: Protect federally-listed species</b>   |  |                |                   |                          |                         |       |       |       |       |       |             |         |          |
| TE 1.1   | <b>Comply with all applicable laws and regulations regarding federally-listed species</b>  |                |                   |                          |                         |       |       |       |       |       |             |         |          |
|  | <ul style="list-style-type: none"> <li>TE 1.1-1: Identify and preserve endangered, threatened, and rare species in accordance with applicable laws, regulations, and policies.</li> </ul>  | 1              | 17                | Annually                 |                         | X     | X     | X     | X     | X     |             |         |          |
|  | <ul style="list-style-type: none"> <li>TE 1.1-2: Monitor and prevent the take of federally-listed and rare species.</li> </ul>   | 1              | 17                | Annually                 |                         | X     | X     | X     | X     | X     |             |         |          |
| TE 1.2   | <b>Update GIS layers for threatened and endangered species</b>   |                |                   |                          |                         |       |       |       |       |       |             |         |          |
|  | <ul style="list-style-type: none"> <li>TE 1.2-1: Update GIS to show areas with sensitive species that may be encountered at USAG WP and where additional input from natural resources staff may be needed prior to training activities. Keep GIS database updated.</li> </ul>                  | 2              | 53, 54            | Annually                 |                         | X     | X     | X     | X     | X     |             |         |          |
| <b>TE Goal 2: Implement measures for the protection of federally-listed bat species</b>  |  |                |                   |                          |                         |       |       |       |       |       |             |         |          |
| TE 2.1   | <b>Implement protections for the federally-endangered the Indiana Bat during forestry practices</b>  |                |                   |                          |                         |       |       |       |       |       |             |         |          |
|  | <ul style="list-style-type: none"> <li>TE 2.1-1: As much as practical, restrict felling potential roost trees from April 1 to October 1.</li> </ul>  | 1              | 17                | Annually                 |                         | X     | X     | X     | X     | X     |             |         |          |
|  | <ul style="list-style-type: none"> <li>TE 2.1-2: Maintain at least 3 live trees &gt;20" dbh and 6 live trees &gt; 11" dbh per acre in timber sales.</li> </ul>   | 1              | 17                | Annually                 |                         | X     | X     | X     | X     | X     |             |         |          |
|  | <ul style="list-style-type: none"> <li>TE 2.1-3: Favor snags, wolf trees, and hickories for retention in timber sale areas.</li> </ul>   | 2              | 17                | Annually                 |                         | X     | X     | X     | X     | X     |             |         |          |
|  | <ul style="list-style-type: none"> <li>TE 2.1-4: Maintain 60% canopy closure in all timber sales.</li> </ul>   | 2              | 17                | Annually                 |                         | X     | X     | X     | X     | X     |             |         |          |
|  | <ul style="list-style-type: none"> <li>TE 2.1-5: Minimize forestry activities near vernal pools and forested streams.</li> </ul>   | 2              | 17                | Annually                 |                         | X     | X     | X     | X     | X     |             |         |          |
| TE 2.2   | <b>Minimize activities in proximity to waterbodies</b>   |                |                   |                          |                         |       |       |       |       |       |             |         |          |
|  | <ul style="list-style-type: none"> <li>TE 2.2-1: Minimize other disturbance within a 100-foot buffer to all wetlands, water bodies, and streams.</li> </ul>  | 2              | 48                | On a per-project basis   |                         | X     | X     | X     | X     | X     |             |         |          |
|  | <ul style="list-style-type: none"> <li>TE 2.2-2: Continue to apply pesticides minimally. Do not apply copper sulfate to storm water retention ponds.</li> </ul>  | 2              | 48                | On a per-project basis   |                         | X     | X     | X     | X     | X     |             |         |          |
| TE 2.3   | <b>Follow design guidelines for lighting and other building practices to minimize impacts to Indiana bat</b>   |                |                   |                          |                         |       |       |       |       |       |             |         |          |
|  | <ul style="list-style-type: none"> <li>TE 2.3-1: Follow Installation design guide for new exterior lighting, selecting fixtures with cutoff optics or hoods to limit light pollution.</li> </ul>   | 3              | 17                | Every 10 years           |                         |       |       | X     |       |       |             |         |          |

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|   | <ul style="list-style-type: none"> <li>TE 2.3-2: Convert outdoor lighting to light-emitting diode (LED), which has a minimal impact to bat species.</li> </ul>   | 3                     | 17                         | On a per-project basis   |                         |                       |                       | X                     | X                     |        |             |         |          |
| TE 2.4  | <b>Complete coordination and comply with all regulatory requirements for the federally-endangered Indiana bat and federally-threatened Northern long-eared bat</b> <ul style="list-style-type: none"> <li>TE 2.4-1: Coordinate with the USFWS and NYSDEC early in planning for any proposed wind power facilities.</li> </ul>  | 1                     | 17                         | On a per-project basis   |                         | X                     | X                     | X                     | X                     | X      |             |         |          |
| TE 2.5  | <b>Complete sampling for bat species and review development plans</b> <ul style="list-style-type: none"> <li>TE 2.5-1: Acoustically sample via transect 1 week per year.</li> <li>TE 2.5-2: Complete mist net and acoustic surveys for Indiana and Northern long-eared bats every 3-5 years, focusing on known populations and areas with a higher potential for development or other impacts.</li> <li>TE 2.5-3: Acoustically sample the Round Pond mines, and use a harp tarp if needed.</li> <li>TE 2.5-4: Complete broader, reservation-wide surveys every 10 years.</li> <li>TE 2.5-5: Review all projects and operations for effect on bat species, not just those listed as threatened or endangered, and develop mitigations if necessary.</li> </ul>  | 2<br>2<br>2<br>2<br>3 | 17<br>17<br>17<br>17<br>17 | Annually<br>Every 3-5 years<br>Every 3-5 years<br>Every 10 years<br>On per-project basis |                         | X<br>X<br>X<br>X<br>X | X<br>X<br>X<br>X<br>X | X<br>X<br>X<br>X<br>X | X<br>X<br>X<br>X<br>X |        |             |         |          |
| TE 2.6  | <b>Implement protections for the federally-threatened Northern long-eared bat</b> <ul style="list-style-type: none"> <li>TE 2.6-1: Develop an ESMP and update the document once every five years.</li> </ul>   | 1                     | 17                         | Every 5 years  |                         | X                     |                       |                       |                       |        |             |         |          |
| TE 2.7  | <b>Protect mines that may harbor bat species and provide bat habitat at USAG WP</b> <ul style="list-style-type: none"> <li>TE 2.7-1: Facilitate a NYSDEC or federal inspection of mines at USAG WP.</li> <li>TE 2.7-2: Implement measures to prevent unauthorized access to mines.</li> <li>TE 2.7-3: Install bat houses at USAG WP and review current bat houses for use.</li> </ul>  | 1<br>1<br>1           | 17<br>17<br>17             | Every 5 years<br>Every 5 years<br>Every 5 years  |                         |                       | X<br>X<br>X           |                       |                       |        |             |         |          |
| <b>TE Goal 3: Implement measures for federally-protected sturgeon species</b> |  |                       |                            |  |                         |                       |                       |                       |                       |        |             |         |          |
| TE 3.1  | <b>Complete consultation with the appropriate state and federal regulatory agencies for actions that may affect Atlantic and shortnose sturgeon</b> <ul style="list-style-type: none"> <li>TE 3.1-1: Consult as necessary, informally and formally, with the NMFS, pursuant to Section 7 of the ESA, and NYSDEC regarding any USMA activities in the Hudson River. Incorporate any modifications into activities that arise from consultations and permits issued.</li> <li>TE 3.1-2: Comply with all provisions stipulated in the permit issued by NYSDEC for the operation of USMA's Target Field Wastewater Treatment Plant to reduce pollutants that may be discharged into the Hudson River. Comply with storm water management regulations. The Wastewater Treatment Plant will have tertiary treatment and state-of -the-art treatment technology.</li> </ul> | 1<br>1                | 17<br>7                    | On a per-project basis<br>As required in permits   |                         | X<br>X                | X<br>X                | X<br>X                | X<br>X                | X<br>X |             |         |          |
| TE 3.2  | <b>Provide access and assistance for surveys and research of Atlantic sturgeon at or in the vicinity of USAG WP</b> <ul style="list-style-type: none"> <li>TE 3.2-1: Permit access to the Hudson River from USMA properties by Federal, state, and other researchers studying the sturgeon, provided it does not greatly interfere with USMA operations.</li> <li>TE 3.2-2: Coordinate with activities and surveys in the Hudson River; USAG WP will not conduct specific surveys for sturgeon.</li> </ul>   | 3<br>3                | 17<br>17                   | On a per-project basis<br>On a per-project basis   |                         | X<br>X                | X<br>X                | X<br>X                | X<br>X                | X<br>X |             |         |          |
| TE 3.3  | <b>Develop and implement a management plan for Atlantic sturgeon</b> <ul style="list-style-type: none"> <li>TE 3.3-1: Develop an Endangered Species Management Plan (ESMP) for the Atlantic Sturgeon and coordinate with NOAA protected species division and will complete consultation.</li> <li>TE 3.3-2: Update the ESMP once every five years.</li> </ul>  | 1<br>1                | 17<br>17                   | Every 5 years<br>Every 5 years   |                         | X<br>X                |                       |                       |                       |        |             |         |          |
| TE 3.4  | <b>Implement an ESMP for the shortnose sturgeon</b> <ul style="list-style-type: none"> <li>TE 3.4-1: Update the ESMP once every five years.</li> </ul>   | 1                     | 17                         | Every 5 years  |                         | X                     |                       |                       |                       |        |             |         |          |

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|---|---|----------------|-------------------|--|-------------------------|-------|-------|-------|-------|-------|-------------|---------|----------|
| <b>TE Goal 4: Implement measures for the protection of the federally-threatened small whorled pogonia</b> |   |                |                   |  |                         |       |       |       |       |       |             |         |          |
| TE 4.1  | <b>Complete surveys at USAG WP for the small whorled pogonia</b>  |                |                   |  |                         |       |       |       |       |       |             |         |          |
|   | <ul style="list-style-type: none"> <li>TE 4.1-1: Survey for small whorled pogonia, and complete surveys approximately every 3 years, unless found. If found, develop search procedures for further sampling.</li> <li>TE 4.1-2: If small whorled pogonia is found at USAG WP, develop an installation-specific ESMP and identify management measures to identify, and mitigation population pressures. Consult with the USFWS.</li> </ul>   | 1              | 17                | Every 3 years, unless species is found |                         | X     |       |       | X     |       |             |         |          |
|   |   | 1              | 17                | Every 5 years, if found                |                         |       |       |       |       | X     |             |         |          |
| <b>TE Goal 5: Implement measures for the protection of the federally-threatened bog turtle</b>            |   |                |                   |  |                         |       |       |       |       |       |             |         |          |
| TE 5.1  | <b>Protect and monitor bog turtle habitat</b>   |                |                   |  |                         |       |       |       |       |       |             |         |          |
|   | <ul style="list-style-type: none"> <li>TE 5.1-1: Identify and protect wetlands with potential bog turtle habitat.</li> <li>TE 5.1-2: Protect first order streams.</li> <li>TE 5.1-3: Prevent illicit discharge to installation waters</li> <li>TE 5.1-4: Use pesticides minimally.</li> <li>TE 5.1-5: Continue efforts to control invasive purple loosestrife (<i>Lythrum salicaria</i>), multiflora rose (<i>Rosa multiflora</i>), and common reed (<i>Phragmites australis</i>) in wetlands.</li> </ul>   | 1              | 17                | Every 5 years, unless species is found |                         |       |       | X     |       |       |             |         |          |
|   |   | 2              | 17                | Annually                               |                         | X     | X     | X     | X     | X     |             |         |          |
|   |   | 1              | 17                | Annually                               |                         | X     | X     | X     | X     | X     |             |         |          |
|   |   | 2              | 17                | On a per-project basis                 |                         | X     | X     | X     | X     | X     |             |         |          |
|   |   | 1              | 17                | Every 5 years                          |                         |       |       | X     |       |       |             |         |          |
| TE 5.2  | <b>Survey for bog turtle at USAG WP</b>   |                |                   |  |                         |       |       |       |       |       |             |         |          |
|   | <ul style="list-style-type: none"> <li>TE 6.2-1: Conduct formal bog turtle studies approximately once every five years.</li> <li>TE 6.2-2: If bog turtle is verified to be on the installation, develop an ESMP.</li> </ul>   | 1              | 17                | Every 5 years, unless species is found |                         | X     |       |       |       |       |             |         |          |
|   |   | 1              | 17                | Every 5 years                          |                         |       |       |       |       | X     |             |         |          |
| <b>Sensitive Species: BGEPA Species (BGE)</b>   |   |                |                   |  |                         |       |       |       |       |       |             |         |          |
| <b>BGE Goal 1: Protect populations of bald eagles at USAG WP</b>  |   |                |                   |  |                         |       |       |       |       |       |             |         |          |
| BGE 1.1   | <b>Complete surveys and monitoring of eagles</b>  |                |                   |  |                         |       |       |       |       |       |             |         |          |
|   | <ul style="list-style-type: none"> <li>BGE 1.1-1: Continue to survey the reservation for eagles once every two weeks during the winter. Survey foraging and loafing areas.</li> <li>BGE 1.1-2: Continue to survey roosts 3 times annually during regional counts. Survey roosts in the lower Hudson River.</li> <li>BGE 1.1-3: Participate in state-wide eagle counts, including the 1-day helicopter annual winter survey of the lower Hudson River.</li> <li>BGE 1.1-4: Follow 2007 Eagle Management Guidelines or current federal guidelines for eagle management.</li> <li>BGE 1.1-5: Consider a program to stake out carcasses in the winter with game cameras.</li> </ul>   | 2              | 4                 | Every 2 weeks during winter            |                         | X     | X     | X     | X     | X     |             |         |          |
|   |   | 2              | 4                 | 3 times a year                         |                         | X     | X     | X     | X     | X     |             |         |          |
|   |   | 2              | 4                 | Annually                               |                         | X     | X     | X     | X     | X     |             |         |          |
|   |   | 1              | 4                 | Annually                               |                         | X     | X     | X     | X     | X     |             |         |          |
|   |   | 3              | 4                 | One-time                               |                         |       | X     |       |       |       |             |         |          |
| BGE 1.2   | <b>Implement measures to protect bald eagles at USAG WP</b>   |                |                   |  |                         |       |       |       |       |       |             |         |          |
|   | <ul style="list-style-type: none"> <li>BGE 1.2-1: Should bald eagles commence nesting on USAG WP, the Army will coordinate with the USFWS with regards to the BGEPA and the MBTA.</li> <li>BGE 1.2-2: Continue restrictions on helicopter flights under 1,000 feet over parts of the reservation, including the Long Mountain night roost, and Constitution Island, and Constitution Marsh between 1 December and 31 March.</li> <li>BGE 1.2-3: Restrict helicopter flights under 1,000 ft. near bald eagle nests.</li> <li>BGE 1.2-4: Review all construction projects and other proposed Federal activities for potential impacts to bald eagles and continue to coordinate with the USFWS with regards to the BGEPA and the MBTA.</li> </ul> | 1              | 4                 | Annually                               |                         | X     | X     | X     | X     | X     |             |         |          |
|   |   | 1              | 4                 | Annually                               |                         | X     | X     | X     | X     | X     |             |         |          |
|   |   | 1              | 4                 | Annually                               |                         | X     | X     | X     | X     | X     |             |         |          |
|   |   | 1              | 4                 | Annually                               |                         | X     | X     | X     | X     | X     |             |         |          |
| BGE 1.3   | <b>Educate members of the USAG WP community about bald eagles.</b>  |                |                   |  |                         |       |       |       |       |       |             |         |          |
|   | <ul style="list-style-type: none"> <li>BGE 1.3-1: Consider a scope to view eagle nest and other resources at Fort Clifton.</li> </ul>   | 3              | 4                 | One-time                               |                         |       |       | X     |       |       |             |         |          |
| <b>BGE Goal 2: Protect populations of golden eagles at USAG WP</b>  |   |                |                   |  |                         |       |       |       |       |       |             |         |          |
| BGE 2.1   | <b>Continue to protect and monitor golden eagle activity, including nesting, at USAG WP</b>   |                |                   |  |                         |       |       |       |       |       |             |         |          |

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|   | <ul style="list-style-type: none"> <li>BGE 2.1-1: Nest building has been observed on several occasions at USAG WP. Continue to monitor golden eagle activity.</li> </ul>  | 2              | 4                 | Annually                                |                         | X     | X     | X     | X     | X     |             |         |          |
|   | <ul style="list-style-type: none"> <li>BGE 2.1-2: Prevent disturbance to golden eagles at USAG WP.</li> </ul>   | 2              | 4                 | Annually                                |                         | X     | X     | X     | X     | X     |             |         |          |
| <b>Sensitive Species: MBTA Covered Species (MBTA)</b>   |   |                |                   |   |                         |       |       |       |       |       |             |         |          |
| <b>MBTA Goal 1: Protect Migratory birds covered under the Migratory Bird Treaty Act</b>       |   |                |                   |   |                         |       |       |       |       |       |             |         |          |
| MBTA 1.1  | <b>Comply with measures in the MBTA</b>   |                |                   |   |                         |       |       |       |       |       |             |         |          |
|   | <ul style="list-style-type: none"> <li>MBTA 1.1-1: Remain in compliance with MBTA by integrating measures to protect migratory birds into environmental management, operations, and training at USAG WP.</li> </ul>   | 1              | 35                | Annually                                |                         | X     | X     | X     | X     | X     |             |         |          |
| MBTA 1.2  | <b>Complete surveys for migratory bird species</b>  |                |                   |   |                         |       |       |       |       |       |             |         |          |
|   | <ul style="list-style-type: none"> <li>MBTA 1.2-1: Complete two rounds of bird point counts annually.</li> </ul>  | 2              | 35                | 2 times each year                       |                         | X     | X     | X     | X     | X     |             |         |          |
| MBTA 1.3  | <b>Protect habitats that support migratory bird species and implement measures to prevent conflicts with mission activities and training</b>  |                |                   |   |                         |       |       |       |       |       |             |         |          |
|   | <ul style="list-style-type: none"> <li>MBTA 1.3-1: Protect wetland habitats that may support least bittern and pied-billed grebes.</li> </ul>   | 2              | 35                | Every 5 years                           |                         |       |       |       |       | X     |             |         |          |
|   | <ul style="list-style-type: none"> <li>MBTA 1.3-2: Prevent nesting of Canada geese through the continued use of egg addling, reducing food supply, and depredation.</li> </ul>  | 2              | 2, 35             | Annually                                |                         | X     | X     | X     | X     | X     |             |         |          |
|   | <ul style="list-style-type: none"> <li>MBTA 1.3-3: Discourage nesting of cliff and barn swallows in incompatible locations through the use of netting and erect nesting structures in compatible areas.</li> </ul>    | 2              | 35                | Every 5 years                           |                         |       | X     |       |       |       |             |         |          |
|   | <ul style="list-style-type: none"> <li>MBTA 1.3-4: Provide nesting boxes for bluebirds, tree swallows, and screech owls.</li> </ul>   | 2              | 35                | Every 5 years                           |                         |       |       |       | X     |       |             |         |          |
|   | <ul style="list-style-type: none"> <li>MBTA 1.3-5: Review designs for the incorporation of bird-friendly features, such as landscaping and lighting, and the elimination of nesting and roosting surfaces.</li> </ul> | 3              | 35                | On a per-project basis                  |                         | X     | X     | X     | X     | X     |             |         |          |
| <b>Sensitive Species: Species of Concern (SC)</b>   |   |                |                   |   |                         |       |       |       |       |       |             |         |          |
| <b>SC Goal 1: Protect species of concern, including state-listed species and rare species</b> |   |                |                   |   |                         |       |       |       |       |       |             |         |          |
| SC 1.1  | <b>Monitor and survey for species of concern at USAG WP</b>   |                |                   |   |                         |       |       |       |       |       |             |         |          |
|   | <ul style="list-style-type: none"> <li>SC 1.1-1: Monitor, as necessary, prior to conducting construction and development activities.</li> </ul>   | 2              | 11, 53, 60        | On a per-project basis                  |                         | X     | X     | X     | X     | X     |             |         |          |
|   | <ul style="list-style-type: none"> <li>SC 1.1-2: Map locations and enter data for individuals and populations into a GIS database.</li> </ul>   | 2              | 11, 53, 60        | Every 5 years, unless species are found |                         | X     |       |       |       |       |             |         |          |
| <b>SC Goal 2: Protect populations of the state-threatened timber rattlesnake</b>              |   |                |                   |   |                         |       |       |       |       |       |             |         |          |
| SC 2.1  | <b>Monitor and protect existing populations and important habitat features</b>  |                |                   |   |                         |       |       |       |       |       |             |         |          |
|   | <ul style="list-style-type: none"> <li>SC 2.1-1: Actively search for undiscovered timber rattlesnake den and gestation areas annually. Share information with NYSDEC when found.</li> </ul>                           | 2              | 11, 53, 60        | Annually                                |                         | X     | X     | X     | X     | X     |             |         |          |
|   | <ul style="list-style-type: none"> <li>SC 2.1-2: Visit Rattlesnake hibernacula and gestation areas two times annually (Spring and fall).</li> </ul>   | 2              | 11, 53, 60        | 2 times annually                        |                         | X     | X     | X     | X     | X     |             |         |          |
|   | <ul style="list-style-type: none"> <li>SC 2.1-3: Remove competing vegetation at brooks hollow rattler hibernacula.</li> </ul>   | 2              | 11, 53, 60        | Annually                                |                         | X     | X     | X     | X     | X     |             |         |          |
|   | <ul style="list-style-type: none"> <li>SC 2.1-4: Remove incidental snakes found on-post to appropriate habitat.</li> </ul>  | 2              | 11, 53, 60        | When reported                           |                         | X     | X     | X     | X     | X     |             |         |          |
| SC 2.2  | <b>Protect rattlesnake populations and habitat features during project work and training</b>  |                |                   |   |                         |       |       |       |       |       |             |         |          |
|   | <ul style="list-style-type: none"> <li>SC 2.2-1: Maintain the rattlesnake training exclusion area (TEA).</li> </ul>   | 0              | 11, 53, 60        | Annually                                |                         | X     | X     | X     | X     | X     |             |         |          |
|   | <ul style="list-style-type: none"> <li>SC 2.2-2: Evaluate all plans for impact on rattlesnakes. Suggest mitigation measures, such as physical barriers, work site monitoring, and worker training.</li> </ul>         | 2              | 11, 53, 60        | On a per-project basis                  |                         | X     | X     | X     | X     | X     |             |         |          |
|   | <ul style="list-style-type: none"> <li>SC 2.2-3: Mandate that a search for timber rattlesnakes is required prior to land clearing if documented use in season.</li> </ul>   | 2              | 11, 53, 60        | On a per-project basis                  |                         | X     | X     | X     | X     | X     |             |         |          |
|   | <ul style="list-style-type: none"> <li>SC 2.2-4: Mandate snake monitor if in documented use area.</li> </ul>  | 2              | 11, 53, 60        | On a per-project basis                  |                         | X     | X     | X     | X     | X     |             |         |          |



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|  | <ul style="list-style-type: none"> <li>SC 2.2-5: West Point will consider mitigations at construction sites associated with timber rattlesnakes to include work-force education, site search and clearing, the use of a monitor and the use of physical barriers. However, West Point cannot accept such requirements as contingent upon the issuance of a permit for which the Federal Government has ceded jurisdiction to the states, i.e. Clean Water Act jurisdiction. Such requirements are seen as akin to the acceptance of state fees, and a violation of the Anti-Deficiency Act.</li> </ul>   | 2              | 11, 53, 60        | On a per-project basis                  |                         | X     | X     | X     | X     | X     |             |         |          |
| SC 2.3   | <b>Improve awareness of timber rattlesnake populations at USAG WP</b> <ul style="list-style-type: none"> <li>SC 2.3-1: Educate the West Point community on snake safety and special legal protected status in NYS.</li> </ul>  | 3              | 11, 53, 60        | Annually                                |                         | X     | X     | X     | X     | X     |             |         |          |
| <b>SC Goal 3: Protect populations of New York special concern turtle species</b> |  |                |                   |   |                         |       |       |       |       |       |             |         |          |
| SC 3.1   | <b>Monitor and protect populations of wood turtle at USAG WP</b> <ul style="list-style-type: none"> <li>SC 3.1-1: Contract for wood turtle surveys 1 time every 5-8 years, unless listing status from USFWS changes.</li> <li>SC 3.1-2: Continue to survey and mark turtles in-house and through contract surveys.</li> <li>SC 3.1-3: Create small clearings with sand for nesting.</li> </ul>   | 2              | 11, 53, 60        | Every 5-8 years unless listing changes  |                         |       |       |       |       | X     |             |         |          |
|  |  | 2              | 11, 53, 60        | Every 5-8 years unless listing changes  |                         |       |       |       |       | X     |             |         |          |
|  |  | 2              | 11, 53, 60        | Every 5-8 years unless listing changes  |                         |       |       |       |       | X     |             |         |          |
| SC 3.2   | <b>Monitor and protect populations of spotted turtle at USAG WP</b> <ul style="list-style-type: none"> <li>SC 3.2-1: Contract for spotted turtle surveys 1 time every 5-8 years, unless listing status from USFWS changes.</li> <li>SC 3.2-2: Develop a monitoring protocol and implement trapping in pens. Survey vernal pools for current population numbers.</li> </ul>   | 2              | 11, 53, 60        | Every 5-8 years unless listing changes  |                         |       |       |       |       | X     |             |         |          |
|  |  | 2              | 11, 53, 60        | Every 5-8 years unless listing changes  |                         |       |       |       |       | X     |             |         |          |
| SC 3.3   | <b>Limit impacts to turtle species by studying populations</b> <ul style="list-style-type: none"> <li>SC 3.3-1: Limit impacts to spotted and wood turtles by identifying populations and understanding the potential impacts to populations stemming from training, construction, external pressures, or other installation activities.</li> </ul>   | 2              | 11, 53, 60        | On a per-project basis or when feasible |                         | X     | X     | X     | X     | X     |             |         |          |
| SC 3.4   | <b>Mitigate potential impacts to turtle species resulting from training and other activities</b> <ul style="list-style-type: none"> <li>SC 3.4-1: USAG WP will seek to mitigate potential impacts by avoiding temporally or spatially turtle presence or activity as practical and will seek to preserve known habitats for continued turtle presence, and offer mitigations, i.e. protected nesting sites and vegetation management, as resources allow. In the event these species become listed, we will consult with the USFWS to jointly develop appropriate management plans for these species.</li> </ul>                               | 2              | 11, 53, 60        | On a per-project basis or when feasible |                         | X     | X     | X     | X     | X     |             |         |          |
| <b>SC Goal 4: Protect New York listed plant species and rare plant species</b>   |  |                |                   |   |                         |       |       |       |       |       |             |         |          |
| SC 4.1   | <b>Protect populations of rare or state-listed plants from change or damage</b> <ul style="list-style-type: none"> <li>SC 4.1-1: Prevent human-related damage. USAG - West Point has jurisdiction over state-listed plants and, therefore, will review plans and actions, and suggest mitigation measures to protect specific populations. However, take will be allowed if the action is necessary to support the mission.</li> <li>SC 4.1-2: Prevent natural changes such as succession, which may affect plants, only if the species is vulnerable to extinction.</li> </ul>  | 2              | 11, 53, 60        | On a per-project basis or when feasible |                         |       |       |       | X     |       |             |         |          |
|  |  | 2              | 11, 53, 60        | On a per-project basis or when feasible |                         | X     | X     | X     | X     | X     |             |         |          |
|  |  | 3              | 11, 53, 60        | On a per-project basis or when feasible |                         | X     | X     | X     | X     | X     |             |         |          |
| SC 4.2   | <b>Complete surveys for state-listed plant species and keep management information up to date</b> <ul style="list-style-type: none"> <li>SC 4.2-1: Conduct surveys of known populations rare plants approximately every 5 years.</li> <li>SC 4.2-2: Every 10 years complete a review of potential listed or rare species, and complete an installation-wide survey for known and unknown populations.</li> <li>SC 4.2-3: Identify species, populations at risk, and populations that occur close to regular human activity (i.e., Natural Heritage ranked S-1 and S-2 species) and monitor frequently (annually and semi-annually).</li> </ul> | 2              | 11, 53, 60        | Every 5 years                           |                         | X     |       |       |       |       |             |         |          |
|  |  | 2              | 11, 53, 60        | Every 10 years                          |                         |       |       |       |       | X     |             |         |          |
|  |  | 2              | 11, 53, 60        | Annually or semi-annually               |                         | X     | X     | X     | X     | X     |             |         |          |

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|  | <ul style="list-style-type: none"> <li>SC 4.2-4: For less rare species (Natural Heritage ranked S-3 species), monitor a single robust population for changes.</li> </ul>  | 2              | 11, 53, 60         | Every 3 years                    |                         |       |       | X     |       |       |             |         |          |
|  | <ul style="list-style-type: none"> <li>SC 4.2-5: Revise the 2010 Rare Plant Management Plan with updated species information and projects.</li> </ul>   | 2              | 11, 53, 60         | Every 5 years                    |                         | X     |       |       |       |       |             |         |          |
| <b>SC Goal 5: Protect rare invertebrate species found at USAG WP</b>   |   |                |                    |                                  |                         |       |       |       |       |       |             |         |          |
| SC 5.1   | <b>Maintain up to date population and location data on rare invertebrates</b>   |                |                    |                                  |                         |       |       |       |       |       |             |         |          |
|  | <ul style="list-style-type: none"> <li>SC 5.1-1: Monitor and survey for rare invertebrates every 10 years.</li> </ul>   | 2              | 17, 53, 54, 60     | Every 10 years                   |                         |       |       |       | X     |       |             |         |          |
|  | <ul style="list-style-type: none"> <li>SC 5.1-2: Continue to map the results of surveys as the data becomes available.</li> </ul>   | 2              | 17, 53, 54, 60     | Every 10 years                   |                         |       |       |       | X     |       |             |         |          |
|  | <ul style="list-style-type: none"> <li>SC 5.1-3: Keep current annually with new listings of invertebrate species with the potential to occur at USAG WP.</li> </ul>   | 2              | 17, 53, 54, 60     | Annually                         |                         | X     | X     | X     | X     | X     |             |         |          |
|  | <ul style="list-style-type: none"> <li>SC 5.1-4: In the event a protected invertebrate species becomes identified, implement steps to protect the species and its habitats.</li> </ul>  | 2              | 17, 53, 54, 60     | When species is found            |                         | X     | X     | X     | X     | X     |             |         |          |
|  | <ul style="list-style-type: none"> <li>SC 5.1-5: Monitor populations of monarch butterfly at USAG WP. The monarch is under consideration for listing and a decision is expected in June 2019.</li> </ul>  | 2              | 17, 53, 54, 60     | After USFWS decision for listing |                         |       |       | X     |       |       |             |         |          |
|  | <ul style="list-style-type: none"> <li>SC 5.1-6: Identify invertebrate species of concern to develop a survey list, and complete surveys for these species.</li> </ul>  | 2              | 17, 53, 54, 60     | Every 5 years                    |                         |       |       |       | X     |       |             |         |          |
| SC 5.2   | <b>Implement measures to protect pollinators</b>  |                |                    |                                  |                         |       |       |       |       |       |             |         |          |
|  | <ul style="list-style-type: none"> <li>SC 5.2-1: Develop a wildflower seed mix for regional use that is attractive to pollinators and chosen for a good germination rate. Investigate procedures to increase germination success.</li> </ul>  | 3              | 14, 53             | Every 5 years                    |                         | X     |       |       |       |       |             |         |          |
|  | <ul style="list-style-type: none"> <li>SC 5.2-2: Maintain and create pollinator gardens and reconfigure plantings in stormwater management basins to promote pollinators. Use stormwater controls for pollinators.</li> </ul>   | 3              | 14, 53             | On a per-project basis           |                         | X     | X     | X     | X     | X     |             |         |          |
|  | <ul style="list-style-type: none"> <li>SC 5.2-3: Seed construction sites with flower seed. Maintain old fields</li> </ul>   | 3              | 14, 53             | Annually                         |                         | X     | X     | X     | X     | X     |             |         |          |
|  | <ul style="list-style-type: none"> <li>SC 5.2-4: Work with roads and grounds to develop a list of landscape plants best suited to seasonal pollination production.</li> </ul>   | 3              | 14, 53             | One-time                         |                         | X     |       |       |       |       |             |         |          |
| <b>Fish and Wildlife: Recreation (REC)</b>   |   |                |                    |                                  |                         |       |       |       |       |       |             |         |          |
| <b>REC Goal 1: Provide diverse recreational activities to all users at USAG WP</b>   |   |                |                    |                                  |                         |       |       |       |       |       |             |         |          |
| REC 1.1  | <b>Improve opportunities for bird and wildlife viewing at USAG WP</b>   |                |                    |                                  |                         |       |       |       |       |       |             |         |          |
|  | <ul style="list-style-type: none"> <li>REC 1.1-2: Add two ADA-compliant bird blinds for viewing with interpretive signage.</li> </ul>   | 3              | 11, 53, 54, 60     | Post-construction                |                         |       |       |       | X     |       |             |         |          |
|  | <ul style="list-style-type: none"> <li>REC 1.1-3: Investigate the development of an online bird and wildlife sighting program or application.</li> </ul>  | 3              | 11, 53, 54, 60     | Every 5 years                    |                         | X     |       |       |       |       |             |         |          |
| REC 1.2  | <b>Improve or expand boat launches for recreational use at USAG WP</b>  |                |                    |                                  |                         |       |       |       |       |       |             |         |          |
|  | <ul style="list-style-type: none"> <li>REC 1.2-1: Improve the carry-in boat launch area for Bull Pond.</li> </ul>   | 3              | 11, 53, 54, 60     | Post-construction                |                         |       | X     |       |       |       |             |         |          |
|  | <ul style="list-style-type: none"> <li>REC 1.2-2: Upgrade carry-in launches at Mine and Frederick Lakes to be light boat trailer launches compliant with ADA and safety standards.</li> </ul>   | 3              | 11, 53, 54, 60     | Post-construction                |                         |       |       | X     |       |       |             |         |          |
|  | <ul style="list-style-type: none"> <li>REC 1.2-3: Repair and improve trailered boat launches at Popolopen and Stilwell Lakes.</li> </ul>  | 3              | 11, 53, 54, 60     | Post-construction                |                         |       | X     |       |       |       |             |         |          |
|  | <ul style="list-style-type: none"> <li>REC 1.2-4: Implement a boat steward program.</li> </ul>  | 3              | 11, 53, 54, 60     | Every 5 years                    |                         |       |       |       | X     |       |             |         |          |
|  | <ul style="list-style-type: none"> <li>REC 1.2-5: Install ADA-compliant decking for access at Wilkins Pond.</li> </ul>  | 3              | 11, 29, 53, 54, 60 | Post-construction                |                         |       |       | X     |       |       |             |         |          |
| <b>Fish and Wildlife: Fisheries Management (FM)</b>  |   |                |                    |                                  |                         |       |       |       |       |       |             |         |          |
| <b>FM Goal 1: Provide quality recreational fishing opportunities, while maintaining a balanced and diverse aquatic ecosystem</b> |   |                |                    |                                  |                         |       |       |       |       |       |             |         |          |
| FM 1.1   | <b>Continue general fisheries management measures currently conducted on USAG WP waters</b>   |                |                    |                                  |                         |       |       |       |       |       |             |         |          |
|  | <ul style="list-style-type: none"> <li>FM 1.1-1: Continue to stock the following species: <ul style="list-style-type: none"> <li>o trout species (brook, brown, and rainbow)</li> <li>o channel catfish</li> <li>o fatheads</li> <li>o grass carp</li> <li>o tiger muskies</li> </ul> </li> </ul> | 3              | 49, 53, 54, 60     | Every 4-5 years                  |                         | X     | X     | X     | X     | X     |             |         |          |

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|   | <ul style="list-style-type: none"> <li>FM 1.1-2: If fish populations are found to be lower than would support high quality fisheries, institute catch and release policy and improve stocking.</li> </ul>   | 3              | 49, 53, 54, 60    | Every 4-5 years          |                         | X     | X     | X     | X     | X     |             |         |          |
|   | <ul style="list-style-type: none"> <li>FM 1.1-3: Maintain the 12-inch minimum size, 5/day bag limit for channel catfish on all West Point waters.</li> </ul>  | 3              | 49, 53, 54, 60    | Every 4-5 years          |                         | X     | X     | X     | X     | X     |             |         |          |
|   | <ul style="list-style-type: none"> <li>FM 1.1-4: Work with MWR to improve disabled fishermen access.</li> </ul>   | 3              | 49, 53, 54, 60    | Every 5 years            |                         |       |       | X     |       |       |             |         |          |
|   | <ul style="list-style-type: none"> <li>FM 1.1-5: Continue to limit public access to the fishery.</li> </ul>   | 1              | 49, 53, 54, 60    | Every 5 years            |                         | X     | X     | X     | X     | X     |             |         |          |
| FM 1.2  | <b>Continue fisheries monitoring currently conducted on waters at USAG WP</b>   |                |                   |                          |                         |       |       |       |       |       |             |         |          |
|   | <ul style="list-style-type: none"> <li>FM 1.2-1: Complete 6 hours of electrofishing survey per site every year. During surveys, note the overall condition of fish, and tag game fish and maintain the tag list.</li> </ul>   | 2              | 53, 54, 60        | Annually                 |                         | X     | X     | X     | X     | X     |             |         |          |
|   | <ul style="list-style-type: none"> <li>FM 1.2-2: Conduct habitat assessments on all perennial streams every 3 years.</li> </ul>   | 2              | 11, 53, 54        | Every 3 years            |                         |       |       | X     |       |       |             |         |          |
|   | <ul style="list-style-type: none"> <li>FM 1.2-3: Continue limnological measurements (temp, DO, pH, conductivity, plankton samples) on all waters.</li> </ul>  | 2              | 53, 54, 60        | Every 3-5 years          |                         |       |       | X     |       |       |             |         |          |
|   | <ul style="list-style-type: none"> <li>FM 1.2-4: Conduct creel surveys.</li> </ul>  | 2              | 53, 54, 60        | Every 5 years            |                         |       | X     |       |       |       |             |         |          |
|   | <ul style="list-style-type: none"> <li>FM 1.2-5: Complete an eDNA study at USAG WP.</li> </ul>  | 2              | 53, 54, 60        | Every 10 years           |                         |       |       |       | X     |       |             |         |          |
| <b>FM Goal 2: Maintain viable populations compatible with the range they occupy, land management objectives, and provide quality recreational opportunities</b> |   |                |                   |                          |                         |       |       |       |       |       |             |         |          |
| FM 2.1  | <b>Manage fisheries resources at Bull Pond</b>  |                |                   |                          |                         |       |       |       |       |       |             |         |          |
|   | <ul style="list-style-type: none"> <li>FM 2.1-1: Investigate incidence of the presence of alewives in reservoirs and Bull Pond.</li> </ul>  | 2              | 49, 53, 54, 60    | Every 5 years            |                         |       |       |       |       | X     |             |         |          |
|   | <ul style="list-style-type: none"> <li>FM 2.1-2: Continue stocking brown trout in the smaller sizes and brook and rainbow trout in the larger sizes to provide recreational fishing opportunities. Emphasize brown trout to maximize holdover potential.</li> </ul> | 3              | 49, 53, 54, 60    | Annually                 |                         | X     | X     | X     | X     | X     |             |         |          |
|   | <ul style="list-style-type: none"> <li>FM 2.1-3: Conduct population surveys every 4-5 years with gill nets, trap nets and electrofishing equipment to monitor fish population sizes and structure.</li> </ul>   | 2              | 49, 53, 54, 60    | Every 4-5 years          |                         | X     |       |       |       | X     |             |         |          |
|   | <ul style="list-style-type: none"> <li>FM 2.2-1: Electrofish once every 4-5 years to assess the warmwater species population sizes and structures.</li> </ul>   | 2              | 49, 53, 54, 60    | Every 4-5 years          |                         | X     |       |       |       | X     |             |         |          |
| FM 2.2  | <b>Manage fisheries resources at Cragston Lakes</b>   |                |                   |                          |                         |       |       |       |       |       |             |         |          |
|   | <ul style="list-style-type: none"> <li>FM 2.2-2: Monitor the lakes for water chestnut and hand remove any plants found in lower Cragston. Continue efforts to remove water chestnut from the other three ponds.</li> </ul>  | 2              | 3                 | Annually                 |                         | X     | X     | X     | X     | X     |             |         |          |
|   | <ul style="list-style-type: none"> <li>FM 2.2-3: Evaluate fish and sediments at Cragston Lakes for contamination as the site is being considered for dam removal.</li> </ul>  | 2              | 7                 | One-time                 |                         |       | X     |       |       |       |             |         |          |
|   | <ul style="list-style-type: none"> <li>FM 2.2-4: In the event Cragston Dam is chosen for removal, design and implement a plan to retain some aquatic habitat in the basin.</li> </ul>   | 2              | 7                 | On-time                  |                         |       |       | X     |       |       |             |         |          |
| FM 2.3  | <b>Manage fisheries resources at Crow's Nest Brook</b>  |                |                   |                          |                         |       |       |       |       |       |             |         |          |
|   | <ul style="list-style-type: none"> <li>FM 2.3-1: Monitor for changes in water quality.</li> </ul>   | 2              | 7, 53, 54, 60     | Annually                 |                         | X     | X     | X     | X     | X     |             |         |          |
|   | <ul style="list-style-type: none"> <li>FM 2.3-2: Electrofish once every five years to assess fish populations.</li> </ul>   | 2              | 53, 54, 60        | Every 5 years            |                         |       |       |       | X     |       |             |         |          |
|   | <ul style="list-style-type: none"> <li>FM 2.3-3: Prevent streambank erosion and improve fish habitat.</li> </ul>  | 2              | 53, 54, 60        | On a per-project basis   |                         | X     | X     | X     | X     | X     |             |         |          |
| FM 2.4  | <b>Manage fisheries resources at Highland Brook</b>   |                |                   |                          |                         |       |       |       |       |       |             |         |          |
|   | <ul style="list-style-type: none"> <li>FM 2.4-1: Continue to stock 100-200 brown trout between the golf course and Range Road 1 each spring to provide stream trout fishing opportunities.</li> </ul>   | 3              | 53, 54, 60        | Annually                 |                         | X     | X     | X     | X     | X     |             |         |          |
|   | <ul style="list-style-type: none"> <li>FM 2.4-2: Electrofish once every five years to assess fish populations.</li> </ul>   | 2              | 53, 54, 60        | Every 5 years            |                         | X     |       |       |       |       |             |         |          |
|   | <ul style="list-style-type: none"> <li>FM 2.4-3: Survey the stream to locate potential spawning sites. Take appropriate actions to protect those areas from degradation by sedimentation.</li> </ul>  | 2              | 53, 54, 60        | Every 5 years            |                         | X     |       |       |       |       |             |         |          |
|   | <ul style="list-style-type: none"> <li>FM 2.4-4: Monitor for changes in water quality.</li> </ul>   | 2              | 7, 53, 54, 60     | Annually                 |                         | X     | X     | X     | X     | X     |             |         |          |
| FM 2.5  | <b>Manage fisheries resources at Lake Frederick</b>   |                |                   |                          |                         |       |       |       |       |       |             |         |          |
|   | <ul style="list-style-type: none"> <li>FM 2.5-1: Electrofish once every 4-5 years to assess fish populations. Manage bag limits based on survey numbers and implement catch and release restrictions if surveys indicate population issues.</li> </ul>              | 2              | 53, 54, 60        | Every 5 years            |                         | X     |       |       |       |       |             |         |          |
|   | <ul style="list-style-type: none"> <li>FM 2.5-2: Maintain 5 fish bag limit and 12-inch minimum size on channel catfish.</li> </ul>  | 3              | 53, 54, 60        | Annually                 |                         | X     | X     | X     | X     | X     |             |         |          |

| Objective No. | Task(s)   | Priority Level        | Regulatory Driver   | Monitoring and reporting   | Effectiveness Indicator | FY 18                 | FY 19                 | FY 20                 | FY 21                 | FY 22                 | Labor Hours | Funding | Comments |
|---------------|---|-----------------------|---|--|-------------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-------------|---------|----------|
|               | <ul style="list-style-type: none"> <li>FM 2.5-3: Maintain brush piles nearshore.</li> <li>FM 2.5-4: Aerate to improve zooplankton populations and prevent blue-green algae blooms.</li> </ul>   | 3<br>3                | 53, 54, 60<br>3, 53, 54, 60   | Annually<br>Annually   |                         | X<br>X                | X<br>X                | X<br>X                | X<br>X                | X<br>X                |             |         |          |
| FM 2.6        | <b>Manage fisheries resources at Lusk Reservoir</b> <ul style="list-style-type: none"> <li>FM 2.6-1: Complete post-gastric and gill net surveys (3 net nights) of trout at Lusk and Round Pond to determine need for forage fish and management measures.</li> <li>FM 2.6-1: Continue stocking with 700 - 800 brook, brown, and rainbow trout each spring to provide angling opportunities.</li> <li>FM 2.6-2: Continue to remove water chestnut plants as they are found.</li> <li>FM 2.6-3: Work to limit milfoil in the lake.</li> <li>FM 2.6-4: Clear weeds from Lusk Reservoir.</li> </ul>   | 2<br>3<br>2<br>2<br>2 | 53, 54, 60<br>53, 54, 60<br>3, 53, 54, 60<br>3, 53, 54, 60<br>3, 53, 54, 60 | Annually<br>Annually<br>Annually<br>Annually<br>Annually             |                         | X<br>X<br>X<br>X<br>X | X<br>X<br>X<br>X<br>X | X<br>X<br>X<br>X<br>X | X<br>X<br>X<br>X<br>X | X<br>X<br>X<br>X<br>X |             |         |          |
| FM 2.7        | <b>Manage fisheries resources at Mine Lake</b> <ul style="list-style-type: none"> <li>FM 2.7-1: Electrofish to assess fish populations once every four to five years.</li> <li>FM 2.7-2: Investigate establishing an ADA-compliant fishing access point on the east shore.</li> </ul>   | 2<br>3                | 53, 54, 60<br>53, 54, 60  | Every 4-5 years<br>One-time  |                         | X                     |                       |                       |                       | X                     |             |         |          |
| FM 2.8        | <b>Manage fisheries resources at Popolopen Brook</b> <ul style="list-style-type: none"> <li>FM 2.8-1: Continue to stock 700- 800 brown trout and rainbow trout to provide a stream trout fishing experience. Stock the majority of the fish in the section downstream of the Weyants Pond Road bridge.</li> <li>FM 2.8-1: Electrofish once every five years to assess fish populations</li> <li>FM 2.8-2: Investigate stream improvement projects and plant willows.</li> <li>FM 2.8-3: Monitor for changes in water quality.</li> <li>FM 2.8-4: Clear fishing access points on Popolopen Brook.</li> </ul>   | 3<br>2<br>3<br>2<br>2 | 53, 54, 60<br>53, 54, 60<br>53, 54, 60<br>7, 53, 54, 60<br>53, 54, 60       | Annually<br>Every 5 years<br>One-time<br>Annually<br>Annually        |                         | X<br>X<br>X<br>X<br>X | X<br>X<br>X<br>X<br>X | X<br>X<br>X<br>X<br>X | X<br>X<br>X<br>X<br>X | X<br>X<br>X<br>X<br>X |             |         |          |
| FM 2.9        | <b>Manage fisheries resources at Popolopen Lake</b> <ul style="list-style-type: none"> <li>FM 2.9-1: Continue stocking hybrid muskellunge to limit perch and rough fish reproduction, and to provide a new sporting opportunity.</li> <li>FM 2.9-2: Electrofish every four to five years to assess fish population structures and growth rates.</li> <li>FM 2.9-3: Electrofish to verify tiger muskellunge populations. Once angler reporting and surveys indicate good numbers, consider stocking with catch and release at Stilwell and implementing bag limits at Popolopen, with a 5-year population-drive management cycle.</li> <li>FM 2.9-4: Continue stocking channel catfish at Popolopen Lake.</li> <li>FM 2.9-5: Clear weeds from the Popolopen intake.</li> </ul> | 3<br>2<br>3<br>3<br>2 | 53, 54, 60<br>53, 54, 60<br>53, 54, 60<br>53, 54, 60<br>3, 53, 54, 60       | Annually<br>Every 4-5 years<br>Every 5 years<br>Annually<br>Annually |                         | X<br>X<br>X<br>X<br>X | X<br>X<br>X<br>X<br>X | X<br>X<br>X<br>X<br>X | X<br>X<br>X<br>X<br>X | X<br>X<br>X<br>X<br>X |             |         |          |
| FM 2.10       | <b>Manage fisheries resources at Mineral Springs Brook</b> <ul style="list-style-type: none"> <li>FM 2.10-1: Electrofish once every five years to assess fish populations.</li> <li>FM 2.10-2: Identify the key spawning locations for the trout so that appropriate actions can be taken to protect those areas.</li> <li>FM 2.10-3: Monitor for changes in water quality.</li> <li>FM 2.10-4: Trout fishing will be catch-and-release only.</li> </ul>  | 2<br>2<br>2<br>1      | 53, 54, 60<br>53, 54, 60<br>7, 53, 54, 60<br>53, 54, 60                     | Every 5 years<br>One-time<br>Annually<br>Annually                    |                         | X<br>X<br>X<br>X      | X<br>X<br>X<br>X      | X<br>X<br>X<br>X      | X<br>X<br>X<br>X      | X<br>X<br>X<br>X      |             |         |          |
| FM 2.11       | <b>Manage fisheries resources at Queensboro Brook</b> <ul style="list-style-type: none"> <li>FM 2.11-1: Stock 100 - 150 brown trout each spring.</li> <li>FM 2.11-2: Electrofish once every seven years determine holdover success and assess fish populations.</li> <li>FM 2.11-3: Monitor for changes in water quality.</li> </ul>  | 3<br>2<br>2           | 53, 54, 60<br>53, 54, 60<br>3, 53, 54, 60                                   | Annually<br>Every 7 years<br>Annually                                |                         | X<br>X<br>X           | X<br>X<br>X           | X<br>X<br>X           | X<br>X<br>X           | X<br>X<br>X           |             |         |          |
| FM 2.12       | <b>Manage fisheries resources at Round Pond</b> <ul style="list-style-type: none"> <li>FM 2.12-1: Continue stocking brook, brown, and rainbow trout to provide angling</li> </ul>   | 3                     | 53, 54, 60  | Annually   |                         | X                     | X                     | X                     | X                     | X                     |             |         |          |

| Objective No.   | Task(s)   | Priority Level | Regulatory Driver | Monitoring and reporting | Effectiveness Indicator | FY 18 | FY 19 | FY 20 | FY 21 | FY 22 | Labor Hours | Funding | Comments |
|---|---|----------------|-------------------|--------------------------|-------------------------|-------|-------|-------|-------|-------|-------------|---------|----------|
|   | opportunities. Emphasize rainbow trout in the large sizes to increase fishing success.  |                |                   |                          |                         |       |       |       |       |       |             |         |          |
|   | • FM 2.12-2: Electrofish every fourth or fifth year to assess fish populations and growth rates.  | 2              | 53, 54, 60        | Every 4-5 years          |                         | X     |       |       |       |       |             |         |          |
|   | • FM 2.12-3: Control shoreline vegetation and aquatic vegetation to improve angler access.  | 2              | 3, 53, 54, 60     | Annually                 |                         | X     | X     | X     | X     | X     |             |         |          |
|   | • FM 2.12-4: Evaluate forage and adjust for fish health at Round Pond.  | 2              | 53, 54, 60        | Every 5 years            |                         |       |       | X     |       |       |             |         |          |
|   | • FM 2.12-5: Monitor and continue stocking grass carp as needed for weed control in Round Pond.   | 2              | 3, 53, 54, 60     | Annually                 |                         | X     | X     | X     | X     | X     |             |         |          |
|   | • FM 2.12-6: Clear weeds from Round Pond.   | 2              | 3, 53, 54, 60     | Annually                 |                         | X     | X     | X     | X     | X     |             |         |          |
| FM 2.13   | <b>Manage fisheries resources at Stilwell Lake</b>  |                |                   |                          |                         |       |       |       |       |       |             |         |          |
|   | • FM 2.13-1: Consider stocking hybrid muskellunge to limit perch and rough fish reproduction, and to provide a new sporting opportunity.  | 3              | 53, 54, 60        | One-time                 |                         |       | X     |       |       |       |             |         |          |
|   | • FM 2.13-2: Electrofish annually to assess fish population structure and supplement angler diary information.  | 2              | 53, 54, 60        | Annually                 |                         | X     | X     | X     | X     | X     |             |         |          |
|   | • FM 2.13-3: Continue annual efforts to manually remove water chestnut.   | 2              | 3, 53, 54, 60     | Annually                 |                         | X     | X     | X     | X     | X     |             |         |          |
| FM 2.14   | <b>Manage fisheries resources at Trout Brook</b>  |                |                   |                          |                         |       |       |       |       |       |             |         |          |
|   | • FM 2.14-1: Monitor for changes in water quality.  | 2              | 3, 53, 54, 60     | Annually                 |                         | X     | X     | X     | X     | X     |             |         |          |
|   | • FM 2.14-2: Electrofish once every five years to assess fish populations.  | 2              | 53, 54, 60        | Every 5 years            |                         | X     |       |       |       |       |             |         |          |
|   | • FM 2.14-3: Trout fishing will be catch-and-release only.  | 1              | 53, 54, 60        | Annually                 |                         | X     | X     | X     | X     | X     |             |         |          |
| FM 2.15   | <b>Manage fisheries resources at Weyants Pond</b>   |                |                   |                          |                         |       |       |       |       |       |             |         |          |
|   | • FM 2.15-1: If required, treat aquatic vegetation chemically.  | 2              | 3                 | On a per-project basis   |                         | X     | X     | X     | X     | X     |             |         |          |
| <b>Fish and Wildlife: Game Management (GM)</b>  |   |                |                   |                          |                         |       |       |       |       |       |             |         |          |
| <b>GM Goal 1: Maintain viable populations compatible with the range they occupy, land management objectives, and provide quality recreational opportunities</b> |   |                |                   |                          |                         |       |       |       |       |       |             |         |          |
| GM 1.1  | <b>Provide black bear hunting opportunities for West Point hunters, as well as the general public</b>   |                |                   |                          |                         |       |       |       |       |       |             |         |          |
|   | • GM 1.1-1: Encourage hunting of black bears  | 3              | 20, 53, 54        | Annually                 |                         | X     | X     | X     | X     | X     |             |         |          |
|   | • GM 1.1-2: Discourage human habituation of bears, control garbage, particularly on ranges and recreation areas.  | 3              | 2, 53, 54         | Annually                 |                         | X     | X     | X     | X     | X     |             |         |          |
|   | • GM 1.1-3: Haze bears, as needed using pyrotechnics, pepper spray, and rubber buckshot.  | 3              | 2, 53, 54         | Annually                 |                         | X     | X     | X     | X     | X     |             |         |          |
|   | • GM 1.1-4: Work with NYSDEC for the capture and relocation of problem bears.   | 3              | 2, 53, 54         | Annually                 |                         | X     | X     | X     | X     | X     |             |         |          |
|   | • GM 1.1-5: Replace existing waste containers with bear-proof receptacles.  | 3              | 2, 53, 54         | One-time                 |                         |       | X     |       |       |       |             |         |          |
|   | • GM 1.1-6: Encourage the use of compactors (especially at natural bridge), or construct fenced and covered central trash areas that must be opened and closed.                               | 3              | 2, 53, 54         | One-time                 |                         |       | X     |       |       |       |             |         |          |
|   | • GM 1.1-7: Institute an improved and robust educational campaign to help the community manage attractants.   | 3              | 2, 53, 54         | One-time                 |                         |       | X     |       |       |       |             |         |          |
| GM 1.2  | <b>Provide white-tailed deer hunting opportunities for West Point hunters, as well as the general public</b>  |                |                   |                          |                         |       |       |       |       |       |             |         |          |
|   | • GM 1.2-1: Deer should be managed according to state regulations unless specific regulations are designated to protect species or address problems.  | 3              | 20, 53, 54        | Annually                 |                         | X     | X     | X     | X     | X     |             |         |          |
|   | • GM 1.2-2: Meet 1-2 times annually with Black Rock Forest, New York State Parks, NYSDEC, and other agencies to coordinate, share information on trends in 3P, and to set appropriate limits. | 3              | 20, 53, 54        | 1-2 times annually       |                         | X     | X     | X     | X     | X     |             |         |          |
|   | • GM 1.2-3: Maintain a population that does not damage native and ornamental vegetation or cause conflict with humans.  | 3              | 2, 53, 54         | Annually                 |                         | X     | X     | X     | X     | X     |             |         |          |
|   | • GM 1.2-4: Proactively educate the public about discouraging deer foraging on the Main Post.   | 3              | 20, 53, 54        | Every other year         |                         | X     |       | X     |       | X     |             |         |          |
|   | • GM 1.2-5: The deer population level should be between 25 and 30 per square mile.  | 3              | 20, 53, 54        | Annually                 |                         | X     | X     | X     | X     | X     |             |         |          |

| Objective No. | Task(s)  | Priority Level | Regulatory Driver | Monitoring and reporting       | Effectiveness Indicator | FY 18 | FY 19 | FY 20 | FY 21 | FY 22 | Labor Hours | Funding | Comments |
|---------------|--|----------------|-------------------|--------------------------------|-------------------------|-------|-------|-------|-------|-------|-------------|---------|----------|
|               | <ul style="list-style-type: none"> <li>GM 1.2-6: Adjust the annual harvest rate to reflect the average of the last 5 years of data and changes in hunting availability</li> </ul>  | 3              | 20, 53, 54        | Annually                       |                         | X     | X     | X     | X     | X     |             |         |          |
|               | <ul style="list-style-type: none"> <li>GM 1.2-7: Census deer on the reservation every 3 years.</li> </ul>  | 2              | 20, 53, 54        | Every 3 years                  |                         | X     |       |       | X     |       |             |         |          |
|               | <ul style="list-style-type: none"> <li>GM 1.2-8: Evaluate deer populations for blood lead levels.</li> </ul>   | 3              | 20, 53, 54        | One-time                       |                         |       |       | X     |       |       |             |         |          |
|               | <ul style="list-style-type: none"> <li>GM 1.2-9: Investigate a way to improve access for disabled hunters to white-tailed deer hunting on the reservation</li> </ul>   | 3              | 20, 53, 54        | One-time                       |                         |       |       |       | X     |       |             |         |          |
|               | <ul style="list-style-type: none"> <li>GM 1.2-10: Monitor the effects of deer on ecological communities at Constitution Island</li> </ul>  | 2              | 20, 53, 54        | Every 3 years                  |                         | X     |       |       | X     |       |             |         |          |
|               | <ul style="list-style-type: none"> <li>GM 1.2-11: Establish a procedure with the MPs/PMOs to maintain formal records of the frequency and outcome of deer-vehicle collisions.</li> </ul>   | 3              | 20, 53, 54        | One-time                       |                         |       | X     |       |       |       |             |         |          |
|               | <ul style="list-style-type: none"> <li>GM 1.2-12: As of 2014, continue cadet-only bow hunting areas on Constitution Island as managed by the Cadet Hunting Club. The club will report their take to Natural Resources.</li> </ul>  | 1              | 20, 53, 54        | Annually                       |                         | X     | X     | X     | X     | X     |             |         |          |
|               | <ul style="list-style-type: none"> <li>GM 1.2-13: Encourage bow hunting in on-Post areas. Bow hunters on-Post must be certified by PMO for proficiency.</li> </ul>   | 3              | 20, 53, 54        | Annually                       |                         | X     | X     | X     | X     | X     |             |         |          |
|               | <ul style="list-style-type: none"> <li>GM 1.2-14: Work with NYSDEC to establish appropriate deer take permits issued to WMU 3P and for appropriate take at USAG WP.</li> </ul>   | 3              | 20, 53, 54        | Annually                       |                         | X     | X     | X     | X     | X     |             |         |          |
|               | <ul style="list-style-type: none"> <li>GM 1.2-15: Manipulate hunting pressure by managing the number of general permits issued. Currently, 30-50 general permits are issued per year. There will not be a limit to military, retired military, dependents, and civilian employees to manage hunting pressure.</li> </ul> | 3              | 20, 53, 54        | Annually                       |                         | X     | X     | X     | X     | X     |             |         |          |
|               | <ul style="list-style-type: none"> <li>GM 1.2-16: Complete an infrared study once every two years.</li> </ul>  | 2              | 20, 53, 54        | Every two years                |                         |       | X     |       | X     |       |             |         |          |
|               | <ul style="list-style-type: none"> <li>GM 1.2-17: Develop a human dimensions survey</li> </ul>   | 3              | 53, 54            | One-time                       |                         |       |       |       |       | X     |             |         |          |
| GM 1.3        | <b>Maintain viable populations of small game and provide recreational opportunities</b>  |                |                   |                                |                         |       |       |       |       |       |             |         |          |
|               | <ul style="list-style-type: none"> <li>GM 1.3-1: Continue to stock ring-necked pheasants in suitable areas and maintain habitat.</li> </ul>  | 3              | 20, 53, 54        | Annually                       |                         | X     | X     | X     | X     | X     |             |         |          |
|               | <ul style="list-style-type: none"> <li>GM 1.3-2: Continue to promote hunting of Canada geese and their capture when eclipse plumage renders them flightless as a means of reducing nuisance problems populations.</li> </ul>   | 2              | 2, 53, 54         | Annually                       |                         | X     | X     | X     | X     | X     |             |         |          |
|               | <ul style="list-style-type: none"> <li>GM 1.3-3: Maintain wood duck nest boxes and place more boxes where the habitat can support more wood ducks.</li> </ul>  | 3              | 20, 53, 54        | Annually                       |                         | X     | X     | X     | X     | X     |             |         |          |
|               | <ul style="list-style-type: none"> <li>GM 1.3-4: Continue creating small (1- to 2-acre) openings in the forest during timber harvests to provide habitat and improve the diversity of wildlife and habitats.</li> </ul>  | 3              | 20, 53, 54        | Annually                       |                         | X     | X     | X     | X     | X     |             |         |          |
|               | <ul style="list-style-type: none"> <li>GM 1.3-5: Maintain healthy aspen stands and encourage root sucker growth, sprouting in cut- and burned-over areas, and downed logs to promote grouse habitat.</li> </ul>  | 3              | 20, 53, 54        | Annually                       |                         | X     | X     | X     | X     | X     |             |         |          |
|               | <ul style="list-style-type: none"> <li>GM 1.3-6: Continue efforts to reduce deer population, thereby improving growth of ground cover. Ground cover is used by many species for brood and breeding cover.</li> </ul>   | 2              | 2, 53, 54         | Annually                       |                         | X     | X     | X     | X     | X     |             |         |          |
|               | <ul style="list-style-type: none"> <li>GM 1.3-7: Continue to mow and clear brush on range areas to maintain some open, grassland habitat.</li> </ul>   | 3              | 20, 53, 54        | Annually                       |                         | X     | X     | X     | X     | X     |             |         |          |
|               | <ul style="list-style-type: none"> <li>GM 1.3-8: Expand young and early successional areas through mowing every 1-2 years.</li> </ul>  | 3              | 20, 53, 54        | Every 1-2 years                |                         | X     |       | X     |       | X     |             |         |          |
|               | <ul style="list-style-type: none"> <li>GM 1.3-9: Manage uplands for turkey, grouse, woodcock, rabbit.</li> </ul>   | 3              | 20, 53, 54        | Annually                       |                         | X     | X     | X     | X     | X     |             |         |          |
| GM 1.4        | <b>Reduce or eliminate nuisance furbearer populations while providing recreational opportunities</b>   |                |                   |                                |                         |       |       |       |       |       |             |         |          |
|               | <ul style="list-style-type: none"> <li>GM 1.4-1: Prevent the taking of fisher.</li> </ul>  | 2              | 2, 53, 54         | Annually                       |                         | X     | X     | X     | X     | X     |             |         |          |
|               | <ul style="list-style-type: none"> <li>GM 1.4-2: Encourage beaver trapping in areas where they are a nuisance.</li> </ul>  | 2              | 2, 53, 54         | Annually                       |                         | X     | X     | X     | X     | X     |             |         |          |
|               | <ul style="list-style-type: none"> <li>GM 1.4-3: Use trapping to reduce populations of nuisance species, with a secondary benefit for recreation.</li> </ul>   | 2              | 2, 53, 54         | Annually                       |                         | X     | X     | X     | X     | X     |             |         |          |
|               | <ul style="list-style-type: none"> <li>GM 1.4-4: If sport trapping effort is insufficient to reduce wildlife conflict, USAG WP will seek additional population reduction through in-house, contract, or APHIS support efforts.</li> </ul>  | 2              | 2, 53, 54         | On a per-project or need basis |                         | X     | X     | X     | X     | X     |             |         |          |

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| <b>Fish and Wildlife: Non-Game Management (NGM)</b>   |  |                |                   |                                    |                         |       |       |       |       |       |             |         |          |
| <b>NGM Goal 1: Maintain nongame species populations at levels compatible with land use objectives, while promoting the existence, importance, and benefits of nongame species</b> |  |                |                   |                                    |                         |       |       |       |       |       |             |         |          |
| NGM 1.1   | <b>Implement management actions to support and enhance forest and upland habitat for non-game species</b>  |                |                   |                                    |                         |       |       |       |       |       |             |         |          |
|   | • NGM 1.1-1: Maintain individual trees with a high wildlife value (e.g., wolf trees, snags, den and cavity trees, trees with a high mast production).  | 3              | 11, 53, 54, 60    | Annually                           |                         | X     | X     | X     | X     | X     |             |         |          |
|   | • NGM 1.1-2: Plan training activities to avoid impacts and mitigate unavoidable impacts to forested habitat.   | 2              | 11, 53, 54, 60    | As feasible                        |                         | X     | X     | X     | X     | X     |             |         |          |
|   | • NGM 1.1-3: Maintain and create edge and open areas.  | 3              | 11, 53, 54, 60    | Annually                           |                         | X     | X     | X     | X     | X     |             |         |          |
|   | • NGM 1.1-4: Erect and maintain nest boxes.  | 3              | 11, 53, 54, 60    | One-time                           |                         |       | X     |       |       |       |             |         |          |
|   | • NGM 1.1-5: Maintain dead woody materials on the forest floor.  | 3              | 11, 53, 54, 60    | Annually                           |                         | X     | X     | X     | X     | X     |             |         |          |
|   | • NGM 1.1-6: Plant native trees and shrubs that could be used as habitat.  | 3              | 11, 53, 54, 60    | Annually                           |                         | X     | X     | X     | X     | X     |             |         |          |
|   | • NGM 1.1-7: Continue to investigate planting options.   | 2              | 11, 53, 54, 60    | Annually                           |                         | X     | X     | X     | X     | X     |             |         |          |
|   | • NGM 1.1-8: Maintain and improve unique trees and forest stands.  | 3              | 11, 53, 54, 60    | Annually                           |                         | X     | X     | X     | X     | X     |             |         |          |
|   | • NGM 1.1-9: Control and, to the extent practicable, eliminate exotic and invasive species in forested and upland habitats.  | 2              | 2, 53, 54         | Annually                           |                         | X     | X     | X     | X     | X     |             |         |          |
| NGM 1.2   | <b>Implement management actions to support and enhance wetland and aquatic habitat for non-game species</b>  |                |                   |                                    |                         |       |       |       |       |       |             |         |          |
|   | • NGM 1.2-1: Maintain and protect important wildlife habitats such as wetlands, riparian areas and wintering sites.  | 3              | 11, 53, 54, 60    | Annually                           |                         | X     | X     | X     | X     | X     |             |         |          |
|   | • NGM 1.2-2: Maintain buffers around aquatic habitats (streams, lakes, ponds, wetlands, vernal pools) to maintain healthy communities of riparian and shoreline vegetation and stabilize eroding shorelines.   | 1              | 48                | Annually or on a per-project basis |                         | X     | X     | X     | X     | X     |             |         |          |
|   | • NGM 1.2-3: Plan training activities to avoid impacts and mitigate unavoidable impacts to aquatic habitat.  | 2              | 11, 53, 54, 60    | Annually                           |                         | X     | X     | X     | X     | X     |             |         |          |
|   | • NGM 1.2-4: Continue development of the wetlands inventory database, and the identification and classification of vernal pools.   | 2              | 53, 60            | Every 10 years                     |                         |       |       |       |       | X     |             |         |          |
|   | • NGM 1.2-5: Control and, to the extent practicable, eliminate exotic and invasive species in aquatic and wetland habitats.  | 2              | 3, 53, 54         | Annually                           |                         | X     | X     | X     | X     | X     |             |         |          |
| NGM 1.3   | <b>Continue to monitor populations of non-game species and maintain population data</b>  |                |                   |                                    |                         |       |       |       |       |       |             |         |          |
|   | • NGM 1.3-1: Continue to do two rounds of point counts during the breeding bird season and maintain a bird count database.   | 2              | 35, 53, 54, 60    | 3 times each year                  |                         | X     | X     | X     | X     | X     |             |         |          |
| <b>NGM Goal 2: Protect non-game species populations during hunting and trapping seasons.</b>  |  |                |                   |                                    |                         |       |       |       |       |       |             |         |          |
| NGM 2.1   | <b>Prevent the take of non-game species at USAG WP and remain compliant with state take regulations for non-game species</b>   |                |                   |                                    |                         |       |       |       |       |       |             |         |          |
|   | • NGM 2.1-1: Maintain compliance with recently implemented NYSDEC regulations prohibiting the harvest, take, or possession of any native snakes, lizards, or salamanders, as well as most turtles and two anurans. Only snapping turtles, diamond backed terrapins and certain frog species may be caught during open season and only appropriate license. | 1              | 28, 53, 54        | Annually                           |                         | X     | X     | X     | X     | X     |             |         |          |
| <b>NGM Goal 3: Maintain and support pollinator species populations</b>  |  |                |                   |                                    |                         |       |       |       |       |       |             |         |          |
| NGM 3.1   | <b>Implement management measures to enhance pollinator habitat and promote pollinator species</b>  |                |                   |                                    |                         |       |       |       |       |       |             |         |          |
|   | • NGM 3.1-1: Encourage the use of wildflowers to promote pollinators.  | 3              | 14, 53            | Annually                           |                         | X     | X     | X     | X     | X     |             |         |          |
|   | • NGM 3.1-2: Develop pollinator gardens.   | 3              | 14, 53            | On a per-project basis             |                         | X     | X     | X     | X     | X     |             |         |          |
|   | • NGM 3.1-3: Evaluate and reconstruct stormwater management raingardens for pollinator attractiveness.   | 3              | 14, 53            | On a per-project basis             |                         | X     | X     | X     | X     | X     |             |         |          |
|   | • NGM 3.1-4: Develop a pollinator-friendly seed mix for use in construction and soil stabilization projects.   | 3              | 14, 53            | One-time                           |                         | X     |       |       |       |       |             |         |          |



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|--|---|----------------|--------------------|--------------------------|-------------------------|-------|-------|-------|-------|-------|-------------|---------|----------|
| <b>Vegetation: Flora and Habitat (VEG)</b>   |   |                |                    |                          |                         |       |       |       |       |       |             |         |          |
| <b>VEG Goal 1: Provide benefits to wildlife species and maintain or improve overall biodiversity</b> |   |                |                    |                          |                         |       |       |       |       |       |             |         |          |
| VEG 1.1  | <b>Maintain edge and open areas at USAG WP and increase old field habitat.</b>  |                |                    |                          |                         |       |       |       |       |       |             |         |          |
|  | • VEG 1.1-1: Continue to clear brush and woody growth to maintain open areas for wildlife; pile cleared brush in old fields to provide resting and escape cover for wildlife.   | 3              | 11, 53, 54, 60     | Annually                 |                         | X     | X     | X     | X     | X     |             |         |          |
|  | • VEG 1.1-2: Continue to use brush mowing to leave a mosaic of cleared areas and brush islands for wildlife cover and tactical concealment.   | 3              | 11, 53, 54, 60     | Annually                 |                         | X     | X     | X     | X     | X     |             |         |          |
| VEG 1.2  | <b>Preserve snags, mast trees, and trees with natural cavities</b>  |                |                    |                          |                         |       |       |       |       |       |             |         |          |
|  | • VEG 1.2-1: Retain all snags within 100 yards of lakes and ponds consistent with personal safety and the protection of facilities.   | 3              | 11, 53, 54, 60     | Annually                 |                         | X     | X     | X     | X     | X     |             |         |          |
|  | • VEG 1.2-2: Preserve and retain all snags, active den trees, active raptor nest trees, and most wolf trees during timber harvest operations.   | 3              | 11, 53, 54, 60     | Annually                 |                         | X     | X     | X     | X     | X     |             |         |          |
|  | • VEG 1.2-3: Remove snags and dead trees on the Main Post if they interfere with landscape objectives or if their presence endangers personnel, roadways, power lines, buildings, or training structures. Removal of snags and dead trees requires approval by the Post Agronomist.   | 2              | 11, 53, 54, 60     | Annually                 |                         | X     | X     | X     | X     | X     |             |         |          |
|  | • VEG 1.2-4: Discontinue the use of girdling as a TSI method; residual snags are a training hazard.   | 3              | 11, 53, 54, 60     | Annually                 |                         | X     | X     | X     | X     | X     |             |         |          |
|  | • VEG 1.2-5: Retain mast trees, especially hickory, in all harvest plans.   | 3              | 11, 53, 54, 60     | Annually                 |                         | X     | X     | X     | X     | X     |             |         |          |
|  | • VEG 1.2-6: Snags, if necessary to be cut, will be cut during inactive period for bats (winter) unless immediate safety concerns require it.   | 1              | 17                 | On a per-project basis   |                         | X     | X     | X     | X     | X     |             |         |          |
| VEG 1.3  | <b>Construct and maintain nest boxes</b>  |                |                    |                          |                         |       |       |       |       |       |             |         |          |
|  | • VEG 1.3-1: Encourage the use of bluebird, tree swallow, and bat nesting boxes for educational value   | 3              | 11, 53, 54, 60     | On a per-project basis   |                         |       | X     |       |       |       |             |         |          |
| VEG 1.4  | <b>Preserve downed woody material</b>   |                |                    |                          |                         |       |       |       |       |       |             |         |          |
|  | • VEG 1.4-1: Maintain fallen logs on forest floor in all areas to provide foraging opportunities and cover for pileated woodpeckers and other wildlife species.   | 3              | 11, 53, 54, 60     | Annually                 |                         | X     | X     | X     | X     | X     |             |         |          |
|  | • VEG 1.4-2: Continue to cut slash and lay within 3-4 feet of the ground surface to protect developing seedlings from deer browsing.  | 3              | 11, 53, 54, 60     | On a per-project basis   |                         | X     | X     | X     | X     | X     |             |         |          |
| VEG 1.5  | <b>Plant native trees and shrubs that provide habitat</b>   |                |                    |                          |                         |       |       |       |       |       |             |         |          |
|  | • VEG 1.5-1: Continue planting native trees and shrubs on West Point.   | 3              | 11, 53, 54, 60     | Annually                 |                         | X     | X     | X     | X     | X     |             |         |          |
|  | • VEG 1.5-2: Restrict all plantings of potentially invasive plants on the reservation and Constitution Island.  | 3              | 11, 29, 53, 54, 60 | Annually                 |                         | X     | X     | X     | X     | X     |             |         |          |
|  | • VEG 1.5-3: Plant fruit trees and shrubs, where appropriate  | 3              | 11, 53, 54, 60     | Annually                 |                         | X     | X     | X     | X     | X     |             |         |          |
|  | • VEG 1.5-4: Replace conifers lost to adelgid attack using native conifers such as white pine and non-native species, such as Norway spruce, Douglas fir, and larch. Consider a program to identify and protect specimen trees, if any remain. Consideration of the use of systemic pesticides to protect specimen trees and an evaluation of the persistence of these pesticides would be completed. | 3              | 11, 53, 54, 60     | On a per-project basis   |                         | X     | X     | X     | X     | X     |             |         |          |
| VEG 1.6  | <b>Maintain and improve unique tree and forest stands</b>   |                |                    |                          |                         |       |       |       |       |       |             |         |          |
|  | • VEG 1.6-1: Provide high-quality grouse habitat by promoting aspen root sucker growth and sprouting in cut- and burned-over areas.   | 3              | 20, 53, 54         | Annually                 |                         | X     | X     | X     | X     | X     |             |         |          |
|  | • VEG 1.6-2: Prune and fence wild fruit trees to prevent excessive deer browsing. Monitor activities to determine level of success.   | 3              | 2, 53, 54          | Annually                 |                         | X     | X     | X     | X     | X     |             |         |          |
|  | • VEG 1.6-3: Create new clearings and plant appropriately.  | 3              | 11, 53, 54, 60     | Annually                 |                         | X     | X     | X     | X     | X     |             |         |          |

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| <b>Vegetation: Forest Management (FRM)</b>  |   |                |                    |                          |                         |       |       |       |       |       |             |         |          |  |
| <b>FRM Goal 1: Manage forests in accordance with the goals of the Forest Management Plan</b>              |   |                |                    |                          |                         |       |       |       |       |       |             |         |          |  |
| FRM 1.1   | <b>Perform a detailed, up-to-date, inventory on all timber stands that hold potentially commercially viable wood products</b>   |                |                    |                          |                         |       |       |       |       |       |             |         |          |  |
|   | • FRM 1.1-1: Secure funding for installation timber inventory every 10 years.   | 2              | 11, 53, 54, 60     | Every 10 years           |                         | X     |       |       |       |       |             |         |          |  |
|   | • FRM 1.1-2: Utilize FRA funds to contract CSE for remaining acreage that was not previously inventoried in 2008. Identify areas of installation to inventory in interest of commercial timber management for each fiscal year.                                       | 2              | 11, 53, 54, 60     | Annually                 |                         | X     | X     | X     | X     | X     |             |         |          |  |
|   | • FRM 1.1-3: Determine size and scope of inventory project based on data required for making informed management and harvest recommendations for each fiscal year.  | 2              | 11, 53, 54, 60     | Annually                 |                         | X     | X     | X     | X     | X     |             |         |          |  |
|   | • FRM 1.1-4: Rank timber stands based on timber quality and availability.   | 2              | 11, 53, 54, 60     | Every 5 years            |                         |       |       |       | X     |       |             |         |          |  |
| FRM 1.2   | <b>Implement Smaller Timber Sales and other types of sales on Installation. Perhaps 40-70 thousand board feet per sale</b>  |                |                    |                          |                         |       |       |       |       |       |             |         |          |  |
|   | • FRM 1.2-1: Cursory inspection of timber stands and past logging operations reveals harvests are occurring at unsustainable rates for the long rotations necessary for Oak/Maple dominated forest types. Alter rotations based on data collected during inspections. | 2              | 11, 53, 54, 60     | Every 5 years            |                         |       | X     |       |       |       |             |         |          |  |
|   | • FRM 1.2-2: If it is feasible, find a market for smaller sales that would help target remaining mature timber tracts and mimic smaller natural disturbances.   | 2              | 11, 53, 54, 60     | One-time                 |                         | X     | X     | X     |       |       |             |         |          |  |
|   | • FRM 1.2-3: Following updated timber inventory, identify areas that would meet these specifications for smaller sales.   | 2              | 11, 53, 54, 60     | One-time                 |                         |       |       | X     |       |       |             |         |          |  |
|   | • FRM 1.2-4: Rank areas based on age, quality, size, species composition.   | 2              | 11, 53, 54, 60     | Every 5 years            |                         | X     |       |       |       |       |             |         |          |  |
|   | • FRM 1.2-5: Develop markets for sap, character wood, and firewood.   | 3              | 11, 53, 54, 60     | One-time                 |                         |       |       |       | X     |       |             |         |          |  |
|   | • FRM 1.2-6: Seek the timber value for all wood cut to support construction. This value may not be used to defray the cost of the project.  | 2              | 1                  | On a per-project basis   |                         | X     | X     | X     | X     | X     |             |         |          |  |
| FRM 1.3   | <b>Identify and Perform Timber Stand Improvement (TSI) on Select Areas of installation forest</b>   |                |                    |                          |                         |       |       |       |       |       |             |         |          |  |
|   | • FRM 1.3-1: Cursory examinations of timber areas revealed easy access to perform understory removal of undesirable, invasive and exotic species. Complete removal in these areas.  | 2              | 11, 29, 53, 54, 60 | Annually                 |                         | X     | X     | X     | X     | X     |             |         |          |  |
|   | • FRM 1.3-2: Continue winter removal of understory hardwoods, focusing on reducing competition, promoting regeneration of desired species and expedite succession.  | 3              | 11, 53, 54, 60     | Annually                 |                         | X     | X     | X     | X     | X     |             |         |          |  |
|   | • FRM 1.3-3: Develop a more comprehensive map that will identify target areas and ranking them in accordance with value and importance.   | 2              | 11, 53, 54, 60     | Every 5 years            |                         |       |       |       | X     |       |             |         |          |  |
|   | • FRM 1.3-4: Identify management actions that reveal the best options for control for the period of this INRMP.   | 2              | 11, 53, 54, 60     | One-time                 |                         |       |       | X     |       |       |             |         |          |  |
| FRM 1.4   | <b>Identify and Perform Shelterwood Prep Cuts on Select Areas of Installation Forest</b>  |                |                    |                          |                         |       |       |       |       |       |             |         |          |  |
|   | • FRM 1.4-1: Identify the need for this method of management based on desired outcomes for current and future wildlife habitat, timber quality and future sales.  | 2              | 11, 53, 54, 60     | One-time                 |                         | X     | X     | X     |       |       |             |         |          |  |
|   | • FRM 1.4-2: Utilize timber cruising and updated inventory to identify target areas for shelterwood prep cuts.  | 2              | 11, 53, 54, 60     | One-time                 |                         | X     | X     | X     |       |       |             |         |          |  |
|   | • FRM 1.4-3: Determine if this type of harvesting and management can be provided by in house labor or necessitate contracted professionals.   | 2              | 11, 53, 54, 60     | One-time                 |                         | X     | X     | X     |       |       |             |         |          |  |
| FRM 1.5   | <b>Attempt to Implement Prescribed Burn Program for Ecological Enhancement of Forest Ecosystem</b>  |                |                    |                          |                         |       |       |       |       |       |             |         |          |  |
|   | • FRM 1.5-1: Determine measures needed to implement Prescribed Burn Plan.   | 2              | 11, 15, 60         | One-time                 |                         | X     |       |       |       |       |             |         |          |  |
| <b>Vegetation: Special Natural Areas (SNA)</b>  |   |                |                    |                          |                         |       |       |       |       |       |             |         |          |  |
| <b>SNA Goal 1: Protect and preserve unique natural areas having ecological or geological significance</b> |   |                |                    |                          |                         |       |       |       |       |       |             |         |          |  |
| SNA 1.1   | <b>Protect special natural areas through management and modification of training activities</b>   |                |                    |                          |                         |       |       |       |       |       |             |         |          |  |

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|   | <ul style="list-style-type: none"> <li>SNA 1.1-1: Modify training activities when possible and restrict timber harvest within areas.</li> </ul>  | 3              | 11, 53, 54, 60     | Annually                 |                         | X     | X     | X     | X     | X     |             |         |          |
|   | <ul style="list-style-type: none"> <li>SNA 1.1-2: Implement additional restrictions in areas known to contain special status species, including Constitution Island, Popolopen Brook wetland, and the timber rattlesnake den area.</li> </ul>                              | 1              | 11, 53, 54, 60     | Annually                 |                         | X     | X     | X     | X     | X     |             |         |          |
|   | <ul style="list-style-type: none"> <li>SNA 1.1-3: Control invasive plant species at special natural areas.</li> </ul>  | 2              | 11, 29, 53, 54, 60 | Annually                 |                         | X     | X     | X     | X     | X     |             |         |          |
|   | <ul style="list-style-type: none"> <li>SNA 1.1-4: Consider siting training activities away from special natural areas when possible.</li> </ul>  | 3              | 11, 53, 54, 60     | Annually                 |                         | X     | X     | X     | X     | X     |             |         |          |
| SNA 1.2   | <b>Monitor special natural areas to ensure resource protection</b>   |                |                    |                          |                         |       |       |       |       |       |             |         |          |
|   | <ul style="list-style-type: none"> <li>SNA 1.2-1: Maintain natural area locations and unique ecological or geological features on a GIS database.</li> </ul>   | 2              | 11, 53, 54, 60     | Every 5 years            |                         | X     |       |       |       |       |             |         |          |
|   | <ul style="list-style-type: none"> <li>SNA 1.2-2: Provide updated maps to military trainers to coordinate and plan training activities so that adverse impacts to sensitive resources are minimized</li> </ul>   | 2              | 11, 53, 54, 60     | Every 5 years            |                         | X     |       |       |       |       |             |         |          |
|   | <ul style="list-style-type: none"> <li>SNA 1.2-3: Conduct periodic monitoring of each site.</li> </ul>   | 2              | 11, 53, 54, 60     | Every 3-5 years          |                         | X     |       |       | X     |       |             |         |          |
| <b>Vegetation: Wildland Fire Management (WFM)</b>   |  |                |                    |                          |                         |       |       |       |       |       |             |         |          |
| <b>WFM Goal 1: Prevent unacceptable damage to natural resources and prevent interference with training and minimize complaints of smoke</b> |  |                |                    |                          |                         |       |       |       |       |       |             |         |          |
| WFM 1.1   | <b>Prevent damage and interference to resources and the training mission</b>   |                |                    |                          |                         |       |       |       |       |       |             |         |          |
|   | <ul style="list-style-type: none"> <li>WFM 1.1-1: Report all fires as soon as they are observed.</li> </ul>  | 1              | 11, 15, 60         | Per occurrence           |                         | X     | X     | X     | X     | X     |             |         |          |
|   | <ul style="list-style-type: none"> <li>WFM 1.1-2: Finalize the IWFMP and strictly follow all fire reporting, organization, personnel, equipment, and communication procedures contained in USMA IWFMP.</li> </ul>  | 1              | 11, 15, 60         | Per occurrence           |                         | X     | X     | X     | X     | X     |             |         |          |
|   | <ul style="list-style-type: none"> <li>WFM 1.1-3: Restrict the use of pyrotechnics according to the fire index matrix.</li> </ul>  | 1              | 11, 15, 60         | Annually                 |                         | X     | X     | X     | X     | X     |             |         |          |
|   | <ul style="list-style-type: none"> <li>WFM 1.1-4: Continuously monitor weather conditions at the permanent fire weather monitoring site during the fire season.</li> </ul>   | 1              | 11, 15, 60         | Annually                 |                         | X     | X     | X     | X     | X     |             |         |          |
| WFM 1.2   | <b>Manage road resources and firebreaks</b>  |                |                    |                          |                         |       |       |       |       |       |             |         |          |
|   | <ul style="list-style-type: none"> <li>WFM 1.2-1: Maintain unimproved roads and range roads in large areas that are void of firebreaks and in areas particularly prone to wildfires.</li> </ul>  | 1              | 11, 15, 60         | Annually                 |                         | X     | X     | X     | X     | X     |             |         |          |
|   | <ul style="list-style-type: none"> <li>WFM 1.2-2: Consider closure of range roads that are unnecessary and that contribute to environmental problems, such as erosion.</li> </ul>  | 2              | 11, 15, 60         | Annually                 |                         | X     | X     | X     | X     | X     |             |         |          |
| WFM 1.3   | <b>Survey the fire risk at USAG WP and develop a plan for prescribed burns</b>   |                |                    |                          |                         |       |       |       |       |       |             |         |          |
|   | <ul style="list-style-type: none"> <li>WFM 1.3-1: Contract with a fire ecologist to survey and map the installation and to identify areas of high fire risk and potential management for with prescribed burns.</li> </ul>   | 2              | 11, 15, 60         | Every 10 years           |                         | X     |       |       |       |       |             |         |          |
|   | <ul style="list-style-type: none"> <li>WFM 1.3-2: Develop a prescribed fire plan working with a fire ecologist.</li> </ul>   | 2              | 11, 15, 60         | Every 5 years            |                         | X     |       |       |       |       |             |         |          |
|   | <ul style="list-style-type: none"> <li>WFM 1.3-3: Carefully control prescribed burns set for natural resources management purposes.</li> </ul>   | 1              | 11, 15, 60         | Per occurrence           |                         | X     | X     | X     | X     | X     |             |         |          |
| <b>Vegetation: Grounds Maintenance (GRM)</b>  |  |                |                    |                          |                         |       |       |       |       |       |             |         |          |
| <b>GRM Goal 1: Maintain USAG WP grounds to minimize soil erosion, protect natural resources, and protect road resources</b>                 |  |                |                    |                          |                         |       |       |       |       |       |             |         |          |
| GRM 1.1   | <b>Implement Road and Grounds management measures to protect road resources at USAG WP</b>   |                |                    |                          |                         |       |       |       |       |       |             |         |          |
|   | <ul style="list-style-type: none"> <li>GRM 1.1-1: Maintain range road margins cleared of brush and small trees to 5 feet on each side. Clearing of trees and shrubs greater than 3 inches dbh must be discussed with the NRB due to concerns for bat habitat.</li> </ul>   | 1              | 60                 | On a per-project basis   |                         | X     | X     | X     | X     | X     |             |         |          |
|   | <ul style="list-style-type: none"> <li>GRM 1.1-2: Clear culverts annually to prevent road flooding and damage. Ensure clearing of culverts and ditches is done in accordance with New York State cut and fill regulations and permitting for Waters of the U.S.</li> </ul> | 0              | 60                 | Annually                 |                         | X     | X     | X     | X     | X     |             |         |          |
|   | <ul style="list-style-type: none"> <li>GRM 1.1-3: Most range roads will be surfaced with gravel/Item 4 or asphalt millings. Where roads have a history of erosion, West Point will install hardened surfaces such as asphalt.</li> </ul>                                   | 1              | 60                 | On a per-project basis   |                         | X     | X     | X     | X     | X     |             |         |          |
|   | <ul style="list-style-type: none"> <li>GRM 1.1-4: Resurface and repair range roads culverts and ditches as needed to prevent erosion and vehicle damage.</li> </ul>  | 0              | 60                 | On a per-project basis   |                         | X     | X     | X     | X     | X     |             |         |          |

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|---|--|----------------|--------------------|--------------------------|-------------------------|-------|-------|-------|-------|-------|-------------|---------|----------|
| GRM 1.2   | <b>Prevent the spread of non-native species during grounds maintenance</b>   |                |                    |                          |                         |       |       |       |       |       |             |         |          |
|   | • GRM 1.2-1: Undertake measures to keep equipment and soil free of invasive species.   | 2              | 11, 29, 54, 60     | On a per-project basis   |                         | X     | X     | X     | X     | X     |             |         |          |
|   | • GRM 1.2-2: Develop contract language that specifies that contractors must supply clean planting and fill material and that contractors supplying contaminated materials shall be responsible for the costs incurred by NRB for clearing new invasive species infestations.   | 2              | 11, 29, 54, 60     | On a per-project basis   |                         | X     | X     | X     | X     | X     |             |         |          |
|   | • GRM 1.2-3: Prohibit the use of all species on the most current version of the NYSDEC Prohibited and Regulated Invasive plants at USAG WP.  | 2              | 11, 29, 53, 54, 60 | On a per-project basis   |                         | X     | X     | X     | X     | X     |             |         |          |
| GRM 1.3   | <b>Identify eroded soils, protect soil resources, and prevent soil erosion and its potential impacts on water quality, habitat, and the mission</b>  |                |                    |                          |                         |       |       |       |       |       |             |         |          |
|   | • GRM 1.3-1: Implement erosion and sediment controls where appropriate and maintain vegetative covers over all compatible areas, especially steep slopes.  | 0              | 11, 53, 54, 60     | On a per-project basis   |                         | X     | X     | X     | X     | X     |             |         |          |
|   | • GRM 1.3-2: Develop a list of beneficial and commercially available wildflowers for use as construction mitigation to support pollinators.  | 3              | 14, 53             | Every 5 years            |                         | X     |       |       |       |       |             |         |          |
| GRM 1.4   | <b>Use landscaping measures that protect natural resource and minimize resource use and maintenance</b>  |                |                    |                          |                         |       |       |       |       |       |             |         |          |
|   | • GRM 1.4-1: Encourage native and xeriscape landscaping at USAG WP.  | 3              | 31                 | On a per-project basis   |                         | X     | X     | X     | X     | X     |             |         |          |
|   | • GRM 1.4-2: Encourage and develop a green roof initiative at USAG WP.   | 3              | 31                 | On a per-project basis   |                         | X     | X     | X     | X     | X     |             |         |          |
| <b>Vegetation: Agricultural Outleases (AG)</b>  |  |                |                    |                          |                         |       |       |       |       |       |             |         |          |
| <b>AG Goal 1: Investigate alternative sources of revenue that have benefit to the Installation and the public</b>   |  |                |                    |                          |                         |       |       |       |       |       |             |         |          |
| AG 1.1  | <b>Identify market and related agricultural products which can be further developed within USAG WP</b>   |                |                    |                          |                         |       |       |       |       |       |             |         |          |
|   | • AG 1.1-1: Investigate potential leases for sugar bushes.   | 3              | 11, 53, 54, 60     | One-time                 |                         |       |       |       | X     |       |             |         |          |
| <b>Integrated Pest Management (IPM)</b>   |  |                |                    |                          |                         |       |       |       |       |       |             |         |          |
| <b>IPM Goal 1: Control undesirable pests to prevent damage to natural resources, protect real estate from depreciation, and control potential disease vectors</b> |  |                |                    |                          |                         |       |       |       |       |       |             |         |          |
| IPM 1.1   | <b>Manage beaver populations and activities to minimize environmental impact</b>   |                |                    |                          |                         |       |       |       |       |       |             |         |          |
|   | • IPM 1.1-1: Remove nuisance beaver that endanger dams and structures by encouraging sport trapping of beaver  | 2              | 2, 53, 54          | Annually                 |                         | X     | X     | X     | X     | X     |             |         |          |
|   | • IMP 1.1-2: Clear beaver dams, install fencing, electric controls, deceivers, and depredate.  | 2              | 2, 53, 54          | Annually                 |                         | X     | X     | X     | X     | X     |             |         |          |
| IPM 1.2   | <b>Manage for nuisance bird species to minimize harm to natural areas</b>  |                |                    |                          |                         |       |       |       |       |       |             |         |          |
|   | • IPM 1.2-1: Adddle goose eggs annually.   | 2              | 2, 35              | Annually                 |                         | X     | X     | X     | X     | X     |             |         |          |
|   | • IPM 1.2-2: Actively discourage Canada geese from Round Pond, Lake Frederick, the West Point Golf Course and areas of the Main Post. Remove resident geese from recreational and TAs where the accumulation of feces is unacceptable. Action will occur under U.S. Fish and Wildlife Service issued depredation permit. | 2              | 2, 35              | Annually                 |                         | X     | X     | X     | X     | X     |             |         |          |
|   | • IPM 1.2-3: Investigate control measures for pigeons, sparrows, and European starlings in the cantonment. These species cause damage and are a nuisance at USAG WP.   | 2              | 2, 35              | Annually                 |                         | X     | X     | X     | X     | X     |             |         |          |
|   | • IPM 1.2-4: Remove nests of birds that are located on buildings in accordance with the Migratory Bird Treaty Act.   | 2              | 2, 35              | Annually                 |                         | X     | X     | X     | X     | X     |             |         |          |
|   | • IPM 1.2-5: Review designs for nesting surfaces and eliminate surfaces that may encourage nesting.  | 3              | 35                 | On a per-project basis   |                         | X     | X     | X     | X     | X     |             |         |          |
| IPM 1.3   | <b>Capture and relocate nuisance small animals; if rabies or other disease is suspected wildlife should be tested</b>  |                |                    |                          |                         |       |       |       |       |       |             |         |          |
|   | • IPM 1.3-1: Capture individual large animals (e.g., woodchucks, skunks) for relocation. If disease such as rabies is suspected, animals will be processed and submitted for testing.  | 1              | 2, 53, 54          | Annually                 |                         | X     | X     | X     | X     | X     |             |         |          |
|   | • IPM 1.3-2: Capture and test all animals with suspected human contact or obvious signs of disease (except mange). In the presence of a confirmed case, capture and test in area for at least one week to verify/eliminate threat.   | 1              | 2, 53, 54          | Annually                 |                         | X     | X     | X     | X     | X     |             |         |          |

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|               | <ul style="list-style-type: none"> <li>IPM 1.3-3: In presence of a confirmed case of rabies, consider the following measures: <ul style="list-style-type: none"> <li>Eliminate food resources;</li> <li>Trap as needed;</li> <li>Investigate storm sewers as transport, and consider welding in grates if needed;</li> <li>Educate the USAG WP population; and,</li> <li>Pending approval, airdrop vaccine pellets.</li> </ul> </li> </ul> | 0              | 2, 53, 54         | Annually                 |                         | X     | X     | X     | X     | X     |             |         |          |
|               | <ul style="list-style-type: none"> <li>IPM 1.3-4: Use snap traps and glue boards to trap rodents. Use rodenticides as a control method only as a last resort. Use is often inappropriate in spaces of high human use.</li> </ul>   | 1              | 2, 53, 54         | Annually                 |                         | X     | X     | X     | X     | X     |             |         |          |
|               | <ul style="list-style-type: none"> <li>IPM 1.3-5: Immediately respond to reports of sick or injured animals to prevent human contact.</li> </ul>   | 1              | 2, 53, 54         | Annually                 |                         | X     | X     | X     | X     | X     |             |         |          |
| IPM 1.4       | <b>Control insects and other pests that may present hazards to humans and enact measures to protect human health</b>   |                |                   | Annually                 |                         |       |       |       |       |       |             |         |          |
|               | <ul style="list-style-type: none"> <li>IPM 1.4-1: Place pesticide baits along the paths of ants and cockroaches.</li> </ul>  | 1              | 2, 53, 54         | Annually                 |                         | X     | X     | X     | X     | X     |             |         |          |
|               | <ul style="list-style-type: none"> <li>IPM 1.4-2: Destroy the nests of bees and wasps whose locations present a hazard to people.</li> </ul>   | 1              | 2, 53, 54         | Annually                 |                         | X     | X     | X     | X     | X     |             |         |          |
|               | <ul style="list-style-type: none"> <li>IPM 1.4-3: Control potential disease vectors or animals of other medical importance.</li> </ul>   | 1              | 2, 53, 54         | Annually                 |                         | X     | X     | X     | X     | X     |             |         |          |
|               | <ul style="list-style-type: none"> <li>IPM 1.4-4: Remove the excrement of bats and birds from underneath their roosts to prevent the growth of harmful bacteria.</li> </ul>  | 1              | 2, 53, 54         | Annually                 |                         | X     | X     | X     | X     | X     |             |         |          |
|               | <ul style="list-style-type: none"> <li>IPM 1.4-5: Continue full and complete cooperation with PMO and preventable medicine when incidents occur.</li> </ul>  | 1              | 2, 53, 54         | Annually                 |                         | X     | X     | X     | X     | X     |             |         |          |
| IPM 1.5       | <b>Control large nuisance species that may present hazards to humans or natural resources</b>  |                |                   |                          |                         |       |       |       |       |       |             |         |          |
|               | <ul style="list-style-type: none"> <li>IPM 1.5-1: Discourage bear activity by limiting food availability by implementing strict control of trash at training and recreation sites.</li> </ul>  | 3              | 2, 53, 54         | Annually                 |                         | X     | X     | X     | X     | X     |             |         |          |
|               | <ul style="list-style-type: none"> <li>IPM 1.5-2: Leverage garbage contract "no attractants" to convert all garbage cans to bear-resistant containers. Work with Residential Communities Initiative (RCI) to eliminate street-side pickup in favor of central compactor.</li> </ul>  | 3              | 2, 53, 54         | One-time                 |                         |       | X     |       |       |       |             |         |          |
|               | <ul style="list-style-type: none"> <li>IPM 1.5-3: Use proper sanitation of outdoor garbage facilities to prevent attracting pests.</li> </ul>  | 3              | 2, 53, 54         | Annually                 |                         | X     | X     | X     | X     | X     |             |         |          |
| IPM 1.6       | <b>Enact measures to reduce the presence and harm of pests inside and outside of buildings</b>   |                |                   |                          |                         |       |       |       |       |       |             |         |          |
|               | <ul style="list-style-type: none"> <li>IPM 1.6-1: Conduct regular (weekly, monthly, annual) inspections to assess the need for pest control measures. Inspect vegetation for signs of infestation, buildings for points of entry, and buildings and grounds for conditions that promote pest occurrence.</li> </ul>  | 0              | 2, 53, 54         | Annually                 |                         | X     | X     | X     | X     | X     |             |         |          |
|               | <ul style="list-style-type: none"> <li>IPM 1.6-2: Ensure proper sanitation and housekeeping to remove the food sources of interior pests that are attracted to foodstuffs (e.g., cockroaches, ants, flies).</li> </ul>   | 0              | 2, 53, 54         | Annually                 |                         | X     | X     | X     | X     | X     |             |         |          |
|               | <ul style="list-style-type: none"> <li>IPM 1.6-3: Exclude pests from buildings and repair openings used by birds and animals to enter structures.</li> </ul>   | 3              | 2, 53, 54         | Annually                 |                         | X     | X     | X     | X     | X     |             |         |          |
|               | <ul style="list-style-type: none"> <li>IPM 1.6-4: Design new buildings with a minimum of flat surfaces for bird nesting and roosting.</li> </ul>   | 3              | 2, 53, 54         | On a per-project basis   |                         | X     | X     | X     | X     | X     |             |         |          |
|               | <ul style="list-style-type: none"> <li>IPM 1.6-5: Prevent the entry of pests into buildings by closing holes, cracks, and crevices; replacing torn or missing window screens; and adjusting doors that do not close tightly.</li> </ul>  | 1              | 2, 53, 54         | Annually                 |                         | X     | X     | X     | X     | X     |             |         |          |
|               | <ul style="list-style-type: none"> <li>IPM 1.6-6: Keep the perimeters of buildings free of tall or dense vegetation.</li> </ul>  | 1              | 2, 53, 54         | On a per-project basis   |                         | X     | X     | X     | X     | X     |             |         |          |
| IPM 1.7       | <b>Implement personal and home pest management measures to protect human health from insect pests, notably ticks, mosquitoes, and bedbugs</b>  |                |                   |                          |                         |       |       |       |       |       |             |         |          |
|               | <ul style="list-style-type: none"> <li>IPM 1.7-1: Practice proper personal hygiene, wear proper clothing, and wear repellants to reduce or eliminate problems associated with sucking insects (ticks, mosquitoes).</li> </ul>  | 2              | 2, 53, 54         | None                     |                         | X     | X     | X     | X     | X     |             |         |          |
|               | <ul style="list-style-type: none"> <li>IPM 1.7-2: Apply insecticides for the control of ticks, mosquitoes, and ants for large infestations.</li> </ul>   | 2              | 2, 53, 54         | None                     |                         | X     | X     | X     | X     | X     |             |         |          |
|               | <ul style="list-style-type: none"> <li>IPM 1.7-3: Immediately address any bedbug infestations in conjunction with preventative medicine.</li> </ul>  | 0              | 2, 53, 54         | On a case-by-case basis  |                         | X     | X     | X     | X     | X     |             |         |          |

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|   | <ul style="list-style-type: none"> <li>IPM 1.7-4: Use tick control products on pets regularly to reduce their occurrence indoors and prior to applying tick control chemicals to carpets or upholstery.</li> </ul>                           | 1              | 2, 53, 54         | None                     |                         | X     | X     | X     | X     | X     |             |         |          |
|   | <ul style="list-style-type: none"> <li>IPM 1.7-5: Eliminate artificial breeding and larval habitat for flies and mosquitoes.</li> </ul>  | 0              | 2, 53, 54         | Annually                 |                         | X     | X     | X     | X     | X     |             |         |          |
| <b>IPM Goal 2: Conduct pest management operations and practices to minimize or eliminate adverse environmental effects</b>                                      |  |                |                   |                          |                         |       |       |       |       |       |             |         |          |
| IPM 2.1   | <b>Conduct all application of pesticides and herbicides in a manner consistent with local, state, and federal regulations</b>  |                |                   |                          |                         |       |       |       |       |       |             |         |          |
|   | <ul style="list-style-type: none"> <li>IPM 2.1-1: Enact measures and act in accordance with regulations outlined in AR 200-1 Chapter 5, Pest Management.</li> </ul>  | 1              | 21, 22, 60        | Annually                 |                         | X     | X     | X     | X     | X     |             |         |          |
|   | <ul style="list-style-type: none"> <li>IPM 2.1-2: Ensure all pesticide and herbicide application is completed by appropriately trained and certified individuals.</li> </ul>   | 1              | 21, 22, 60        | On a per-project basis   |                         | X     | X     | X     | X     | X     |             |         |          |
|   | <ul style="list-style-type: none"> <li>IPM 2.1-3: Meet requirements related to aerial spraying, including development of an Aerial Spray Statement of Need and needed NEPA documentation.</li> </ul>   | 1              | 18, 21, 22, 60    | On a per-project basis   |                         | X     | X     | X     | X     | X     |             |         |          |
|   | <ul style="list-style-type: none"> <li>IPM 2.1-4: Maintain an in-house pesticide application capability within NRB. Employees shall be certified for the application of forestry chemicals.</li> </ul>                                       | 1              | 21, 22, 60        | Annually                 |                         | X     | X     | X     | X     | X     |             |         |          |
| <b>Noxious Weeds and Invasive Species (INV)</b>   |  |                |                   |                          |                         |       |       |       |       |       |             |         |          |
| <b>INV Goal 1: Identify and target specific problem populations of terrestrial invasive species to protect ecological, training, and recreational resources</b> |  |                |                   |                          |                         |       |       |       |       |       |             |         |          |
| INV 1.1   | <b>Control Japanese barberry (<i>Berberis thunbergii</i>)</b>  |                |                   |                          |                         |       |       |       |       |       |             |         |          |
|   | <ul style="list-style-type: none"> <li>INV 1.1-1: Identify and spray 15 acres of barberry annually by contract - providing adequate funding is available.</li> </ul>   | 2              | 21, 22, 29, 60    | Every 3-5 years          |                         | X     |       |       | X     |       |             |         |          |
|   | <ul style="list-style-type: none"> <li>INV 1.1-2: Continue to monitor the effectiveness of past treatments and new encroachments into these areas.</li> </ul>  | 2              | 22, 29, 60        | Every 3 years            |                         | X     |       |       | X     |       |             |         |          |
|   | <ul style="list-style-type: none"> <li>INV 1.1-3: Intensify efforts to re-treat past spray areas with NRB staff or by contract if necessary.</li> </ul>  | 2              | 21, 22, 29, 60    | Every 3 years            |                         | X     |       |       | X     |       |             |         |          |
|   | <ul style="list-style-type: none"> <li>INV 1.1-4: Complete an inventory and mapping project to develop a map of barberry intensity and extent on the Post.</li> </ul>  | 2              | 21, 22, 29, 60    | Every 5 years            |                         | X     |       |       |       |       |             |         |          |
|   | <ul style="list-style-type: none"> <li>INV 1.1-5: Survey for and treat barberry and other invasive species prior to forestry treatments designed to increase forest floor insolation. Follow up all treatments for three seasons.</li> </ul> | 2              | 21, 22, 29, 60    | Annually for 4 years     |                         |       | X     | X     | X     | X     |             |         |          |
| INV 1.2   | <b>Control multiflora rose (<i>Rosa multiflora</i>)</b>  |                |                   |                          |                         |       |       |       |       |       |             |         |          |
|   | <ul style="list-style-type: none"> <li>INV 1.2-1: Continue to target and treat rose infestations with both contractor and in-house spraying.</li> </ul>  | 2              | 21, 22, 29, 60    | Every 5 years            |                         | X     |       |       |       |       |             |         |          |
|   | <ul style="list-style-type: none"> <li>INV 1.2-2: Monitor for rose rosette disease.</li> </ul>   | 2              | 22, 29, 60        | Annually                 |                         | X     | X     | X     | X     | X     |             |         |          |
| INV 1.3   | <b>Control garlic mustard (<i>Alliaria petiolata</i>)</b>  |                |                   |                          |                         |       |       |       |       |       |             |         |          |
|   | <ul style="list-style-type: none"> <li>INV 1.3-1: Continue involvement with academic programs working on garlic mustard control.</li> </ul>  | 3              | 22, 29, 60        | On a per-project basis   |                         | X     | X     | X     | X     | X     |             |         |          |
|   | <ul style="list-style-type: none"> <li>INV 1.3-2: Evaluate a control program for garlic mustard.</li> </ul>  | 2              | 22, 29, 60        | One-time                 |                         | X     |       |       |       |       |             |         |          |
| INV 1.4   | <b>Control oriental bittersweet (<i>Celastrus orbiculatus</i>)</b>   |                |                   |                          |                         |       |       |       |       |       |             |         |          |
|   | <ul style="list-style-type: none"> <li>INV 1.4-1: Seek out effective chemical control.</li> </ul>  | 2              | 21, 22, 29, 60    | Every 5 years            |                         |       |       | X     |       |       |             |         |          |
|   | <ul style="list-style-type: none"> <li>INV 1.4-2: Mechanically control bittersweet in sensitive areas.</li> </ul>  | 2              | 22, 29, 60        | Every 5 years            |                         |       |       | X     |       |       |             |         |          |
| INV 1.5   | <b>Control autumn olive (<i>Elaeagnus umbellata</i>)</b>   |                |                   |                          |                         |       |       |       |       |       |             |         |          |
|   | <ul style="list-style-type: none"> <li>INV 1.5-1: Continue to cut/mow and/or spray with 2,4-D and triclopyr /glyphosate olive plantings in the woodlands of West Point.</li> </ul>   | 2              | 21, 22, 29, 60    | Every 5 years            |                         | X     |       |       |       |       |             |         |          |
|   | <ul style="list-style-type: none"> <li>INV 1.5-2: Apply pesticide to emerging seedlings and older escapees.</li> </ul>   | 2              | 21, 22, 29, 60    | Every 2 years            |                         |       | X     |       | X     |       |             |         |          |
|   | <ul style="list-style-type: none"> <li>INV 1.5-3: Investigate improved chemical control using alternate chemicals.</li> </ul>  | 2              | 21, 22, 29, 60    | One-time                 |                         | X     |       |       |       |       |             |         |          |
|   | <ul style="list-style-type: none"> <li>INV 1.5-4: Continue periodic mechanical control of autumn olive.</li> </ul>   | 2              | 22, 29, 60        | Every 5 years            |                         |       |       | X     |       |       |             |         |          |

| Objective No.   | Task(s)  | Priority Level | Regulatory Driver  | Monitoring and reporting   | Effectiveness Indicator | FY 18 | FY 19 | FY 20 | FY 21 | FY 22 | Labor Hours | Funding | Comments |
|---|--|----------------|--------------------|----------------------------|-------------------------|-------|-------|-------|-------|-------|-------------|---------|----------|
| INV 1.6   | <b>Control mile-a-minute (<i>Persicaria perfoliata</i>)</b>  |                |                    |                            |                         |       |       |       |       |       |             |         |          |
|   | <ul style="list-style-type: none"> <li>INV 1.6-1: Continue to target populations and treat chemically with glyphosate.</li> <li>INV 1.6-2: Continue bio-control with <i>Rhinoncomimus latipes</i>.</li> </ul>  | 2              | 21, 22, 29, 60     | Every 3 years              |                         | X     |       |       | X     |       |             |         |          |
| INV 1.7   | <b>Control mugwort (<i>Artemisia vulgaris</i>)</b>   |                |                    |                            |                         |       |       |       |       |       |             |         |          |
|   | <ul style="list-style-type: none"> <li>INV 1.7-1: Develop a mapping and larger control program for mugwort.</li> </ul>   | 2              | 22, 29, 60         | One-time                   |                         |       |       |       | X     |       |             |         |          |
| INV 1.8   | <b>Control knapweed (<i>Centaurea stoebe</i>)</b>  |                |                    |                            |                         |       |       |       |       |       |             |         |          |
|   | <ul style="list-style-type: none"> <li>INV 1.8-1: Control knapweed at turtle nesting area at Buckner Wetland.</li> </ul>   | 2              | 21, 22, 29, 60     | Every 3 years              |                         |       | X     |       |       | X     |             |         |          |
| INV 1.9   | <b>Control Japanese knotweed (<i>Polygonum cuspidatum</i>)</b>   |                |                    |                            |                         |       |       |       |       |       |             |         |          |
|   | <ul style="list-style-type: none"> <li>INV 1.9-1: Continue to monitor and map knotweed populations.</li> <li>INV 1.9-2: Research potential sites for a knotweed monitoring program, and complete control as possible.</li> </ul>   | 2              | 22, 29, 60         | Every 3 years              |                         | X     |       |       | X     |       |             |         |          |
| INV 1.10  | <b>Control Phragmites (<i>Phragmites australis</i>)</b>  |                |                    |                            |                         |       |       |       |       |       |             |         |          |
|   | <ul style="list-style-type: none"> <li>INV 1.10-1: Seek out and treat Phragmites populations which cause ecological or economic harm.</li> </ul>   | 2              | 21, 22, 29, 60     | Every other year           |                         | X     |       | X     |       | X     |             |         |          |
|   | <ul style="list-style-type: none"> <li>INV 1.10-2: Continue to monitor and map existing populations of Phragmites.</li> </ul>  | 2              | 21, 22, 29, 60     | Every 5 years              |                         | X     |       |       |       |       |             |         |          |
|   | <ul style="list-style-type: none"> <li>INV 1.10-3: Continue herbicide spray treatments on an as-needed basis at the following sites <ul style="list-style-type: none"> <li>Cranberry Pond Bog Mat.</li> <li>Camp Buckner</li> <li>Adjacent to Round Pond Road</li> </ul> </li> <li>INV 1.10-4: Control Phragmites at Range 11 using herbicide annually.</li> </ul>       | 2              | 21, 22, 29, 60     | Annually                   |                         | X     | X     | X     | X     | X     |             |         |          |
| INV 1.11  | <b>Consider general methods and programs to control invasive species.</b>  |                |                    |                            |                         |       |       |       |       |       |             |         |          |
|   | <ul style="list-style-type: none"> <li>INV 1.11-1: Seek out biocontrol methods if possible, and mechanical and herbicide if needed to control invasive species.</li> </ul>   | 3              | 21, 22, 29, 60     | Annually                   |                         | X     | X     | X     | X     | X     |             |         |          |
| <b>INV Goal 2: Identify and target specific problem populations of aquatic invasive species to protect ecological, training, and recreational resources</b> |  |                |                    |                            |                         |       |       |       |       |       |             |         |          |
| INV 2.1   | <b>Control water chestnut (<i>Trapa natans</i>)</b>  |                |                    |                            |                         |       |       |       |       |       |             |         |          |
|   | <ul style="list-style-type: none"> <li>INV 2.1-1: Monitor and weed Mine Lake, Upper Cragston, Stilwell Lake, Long Pond and Lusk Reservoir annually until no new plants are found in two consecutive years.</li> <li>INV 2.1-2: USAG WP lakes and ponds will be monitored for water chestnut.</li> </ul>  | 2              | 3, 22, 29, 60      | Annually                   |                         | X     | X     | X     | X     | X     |             |         |          |
| INV 2.2   | <b>Control Eurasian water milfoil (<i>Myriophyllum spicatum</i>)</b>   |                |                    |                            |                         |       |       |       |       |       |             |         |          |
|   | <ul style="list-style-type: none"> <li>INV 2.2-1: Maintain current grass carp levels at Round Pond by restocking to replace mortality, as indicated by monitoring.</li> </ul>  | 2              | 3, 22, 29, 60      | As indicated by monitoring |                         | X     | X     | X     | X     | X     |             |         |          |
|   | <ul style="list-style-type: none"> <li>INV 2.2-2: Continue to monitor the status of <i>Acentria ephemerella</i> or <i>Euhrychiopsis lecontei</i> in West Point waters. These species can be used for biocontrol.</li> </ul>  | 2              | 3, 21, 22, 29, 60  | Every 3 years              |                         |       | X     |       |       | X     |             |         |          |
|   | <ul style="list-style-type: none"> <li>INV 2.2-3: Identify unacceptable densities of aquatic plants and treat chemically, if appropriate. Continue the current contract for diver-assisted selection harvest of Eurasian water milfoil and other invasive aquatic plants.</li> <li>INV 2.2-4: Consider the use of grass carp in other waterbodies at USAG WP.</li> </ul> | 2              | 3, 22, 29, 60      | Every 3 years              |                         | X     |       |       | X     |       |             |         |          |
| INV 2.3   | <b>Implement controls to prevent the introduction of invasive species into waterbodies</b>   |                |                    |                            |                         |       |       |       |       |       |             |         |          |
|   | <ul style="list-style-type: none"> <li>INV 2.3-1: Implement a boat steward program that includes the purchase and operation of a mobile boat cleaning station.</li> <li>INV 2.3-2: Continue to use signage and other measures to increase awareness of invasive species.</li> </ul>  | 3              | 11, 29, 53, 54, 60 | Every 5 years              |                         |       |       |       | X     |       |             |         |          |
| <b>INV Goal 3: Control the introduction and spread of nuisance and invasive wildlife species</b>  |  |                |                    |                            |                         |       |       |       |       |       |             |         |          |
| INV 3.1   | <b>Implement searches for invasive wildlife known in the vicinity of USAG WP</b>   |                |                    |                            |                         |       |       |       |       |       |             |         |          |
|   | <ul style="list-style-type: none"> <li>INV 3.1-1: Monitor for Chinese mitten crabs, weather fish, and other aquatic invasive species.</li> </ul>   | 2              | 3, 11, 53, 54, 60  | Annually                   |                         | X     | X     | X     | X     | X     |             |         |          |



| Objective No.  | Task(s)   | Priority Level | Regulatory Driver      | Monitoring and reporting   | Effectiveness Indicator | FY 18 | FY 19 | FY 20 | FY 21 | FY 22 | Labor Hours | Funding | Comments |  |
|--|---|----------------|------------------------|----------------------------|-------------------------|-------|-------|-------|-------|-------|-------------|---------|----------|--|
| INV 3.2  | <b>Prohibit the release of wildlife into USAG WP, including pet releases</b>  |                |                        |                            |                         |       |       |       |       |       |             |         |          |  |
|  | <ul style="list-style-type: none"> <li>INV 3.2-1: Prohibit the introduction of non-native species through the release of exotic pet species, such as red-eared slider turtles, cats, and fish species.</li> <li>INV 3.2-2: Develop educational material on the ecological harm caused by released pets and contacts for rehoming, and distribute at USAG WP as part of introductory welcome materials.</li> </ul> | 3              | 11, 29, 53, 54, 60     | Annually                   |                         | X     | X     | X     | X     | X     |             |         |          |  |
|  |   | 3              | 11, 29, 53, 54, 60     | Every 5 years              |                         | X     |       |       |       |       |             |         |          |  |
| <b>INV Goal 4: Control potential pathogens that could harm native wildlife species at USAG WP</b>                |   |                |                        |                            |                         |       |       |       |       |       |             |         |          |  |
| INV 4.1  | <b>Use methods to protect native species from non-native pathogens</b>  |                |                        |                            |                         |       |       |       |       |       |             |         |          |  |
|  | <ul style="list-style-type: none"> <li>INV 4.1-1: Implement measures for cleanliness and decontamination to prevent potential ranavirus introduction that could harm amphibian populations at USAG WP.</li> </ul>   | 2              | 11, 29, 53, 54, 60     | Annually                   |                         | X     | X     | X     | X     | X     |             |         |          |  |
|  | <ul style="list-style-type: none"> <li>INV 4.1-2: Implement measures for cleanliness and decontamination to prevent white-nose syndrome spread that could harm bat populations.</li> </ul>  | 2              | 11, 29, 53, 54, 60     | Annually                   |                         | X     | X     | X     | X     | X     |             |         |          |  |
|  | <ul style="list-style-type: none"> <li>INV 4.1-3: Practice equipment decontamination and cleaning measures to prevent the spread of invasive species and harmful pathogens.</li> <li>INV 4.1-4: Investigate incidence of snake fungus disease and maintain biosecurity measures on snake-handling equipment.</li> </ul>   | 2              | 11, 29, 53, 54, 60     | Annually                   |                         | X     | X     | X     | X     | X     |             |         |          |  |
| <b>Wildlife Aircraft Strike Hazard (WASH)</b>  |   |                |                        |                            |                         |       |       |       |       |       |             |         |          |  |
| <b>WASH Goal 1: Develop and implement an educational tool to inform pilots of local sensitive bird resources</b> |   |                |                        |                            |                         |       |       |       |       |       |             |         |          |  |
| WASH 1.1   | <b>Ensure pilots are informed of the unique conditions relative to USAG WP avian impacts</b>  |                |                        |                            |                         |       |       |       |       |       |             |         |          |  |
|  | <ul style="list-style-type: none"> <li>WASH 1.1-1: Develop an informational guidebook for visiting and new pilots about bird hazards at USAG WP.</li> </ul>   | 3              | 36                     | Every 5 years              |                         | X     |       |       |       |       |             |         |          |  |
|  | <ul style="list-style-type: none"> <li>WASH 1.1-2: Determine populations of hazard bird and wildlife species, including resident populations and seasonal influxes of migratory species</li> <li>WASH 1.1-3: Once a year inform pilots of local bald eagle concentrations and sensitive areas</li> </ul>  | 2              | 36                     | Every 5 years              |                         | X     |       |       |       |       |             |         |          |  |
|  |   | 2              | 36                     | Annually                   |                         | X     | X     | X     | X     | X     |             |         |          |  |
| <b>Compatible Use Buffering and Conservation Easements (CUB)</b>   |   |                |                        |                            |                         |       |       |       |       |       |             |         |          |  |
| <b>CUB Goal 1: Collaborate with adjacent properties for comprehensive natural resource management</b>            |   |                |                        |                            |                         |       |       |       |       |       |             |         |          |  |
| CUB 1.1  | <b>Where possible, work with resource managers at Black Rock Forest on natural resource data collection and management</b>  |                |                        |                            |                         |       |       |       |       |       |             |         |          |  |
|  | <ul style="list-style-type: none"> <li>CUB 1.1-1: Collaborate on future project assessing carnivore and deer populations, including population size, density, the impact of carnivores on deer density, and migration corridors.</li> </ul>   | 2              | 53, 61                 | On a per-project basis     |                         | X     | X     | X     | X     | X     |             |         |          |  |
|  | <ul style="list-style-type: none"> <li>CUB 1.1-2: Collaborate on a future fisher population and behavior study.</li> </ul>  | 2              | 53, 61                 | One-time                   |                         |       |       | X     |       |       |             |         |          |  |
|  | <ul style="list-style-type: none"> <li>CUB 1.1-3: Provide access for sampling and available USAG WP water chemistry data to Black Rock Forest as part of a future assessment of water chemistry of ponds in the Highlands compared to historic data sets.</li> <li>CUB 1.1-4: When feasible, share natural resource GIS data layers with Black Rock Forest.</li> </ul>  | 2              | 53, 61                 | One-time                   |                         |       |       | X     |       |       |             |         |          |  |
|  |   | 2              | 53, 61                 | Every 3 years, if feasible |                         | X     |       |       | X     |       |             |         |          |  |
| <b>ITAM and Other Programs (OP)</b>  |   |                |                        |                            |                         |       |       |       |       |       |             |         |          |  |
| <b>ITAM Goal 1: Continue to Implement the objectives of the ITAM Program</b>                                     |   |                |                        |                            |                         |       |       |       |       |       |             |         |          |  |
| OP 1.1   | <b>Continue to Implement and Support the ITAM Program and environmental awareness program</b>   |                |                        |                            |                         |       |       |       |       |       |             |         |          |  |
|  | <ul style="list-style-type: none"> <li>OP 1.1-1: Review and revise ITAM training aids.</li> <li>OP 1.1-2: Ensure that management of natural resources is conducted in a manner that does not conflict the goals and objectives of the ITAM program</li> </ul>   | 2              | 53, 60                 | Every 5 years              |                         |       |       |       |       | X     |             |         |          |  |
|  |   | 1              | 53, 60                 | Annually                   |                         | X     | X     | X     | X     | X     |             |         |          |  |
| OP 1.2   | <b>Support the U.S. Corps of cadets (USCC) aerial capability within the West Point Range and Training Complex</b>   |                |                        |                            |                         |       |       |       |       |       |             |         |          |  |
|  | <ul style="list-style-type: none"> <li>OP 1.2-1: Enhance/Maintain Helicopter LZs: Annually, enhance/maintain designated LZs that will support the current FY cadet summer training and academic year military training</li> </ul>   | 2              | 21, 22, 39, 53, 54, 60 | Annually                   |                         | X     | X     | X     | X     | X     |             |         |          |  |

| Objective No.   | Task(s)   | Priority Level | Regulatory Driver      | Monitoring and reporting | Effectiveness Indicator | FY 18 | FY 19 | FY 20 | FY 21 | FY 22 | Labor Hours | Funding | Comments |
|---|---|----------------|------------------------|--------------------------|-------------------------|-------|-------|-------|-------|-------|-------------|---------|----------|
|   | operations. Each year, from FY17 to FY21, significantly enhance at least one of the 13 active landing zones. Perform maintenance, including: filling/grading ruts, applying topsoil and seeding, mowing/grubbing encroaching vegetation, and erosion control work on a total of up to 5 acres of the other LZs that are required by USCC for summer training.   |                |                        |                          |                         |       |       |       |       |       |             |         |          |
| OP 1.3  | <b>Support USCC Live Fire Capability</b>  |                |                        |                          |                         |       |       |       |       |       |             |         |          |
|   | <ul style="list-style-type: none"> <li>OP 1.3-1: Maneuver Damage Repair at Live Fire Ranges/LFX Sites/MFP: At least one Live-Fire Range, LFX site, or MFP will be repaired or maintained annually from FY 18 to FY 22, for a total of up to 2 acres. Work to include MFP hardening, grading, spreading topsoil, and hydroseeding.</li> </ul>  | 2              | 53, 54, 60             | Annually                 |                         | X     | X     | X     | X     | X     |             |         |          |
|   | <ul style="list-style-type: none"> <li>OP 1.3-2: Vegetation Clearing at MFPs and OPs: To maintain line of sight at MFPs and indirect fire (artillery, mortar) OPs, up to 70 acres of vegetation will be maintained via herbicide or mechanical means annually from FY 18 to FY 22.</li> </ul>   | 2              | 21, 22, 39, 53, 54, 60 | Annually                 |                         | X     | X     | X     | X     | X     |             |         |          |
| OP 1.4  | <b>Support USCC Mounted/Dismounted Training</b>   |                |                        |                          |                         |       |       |       |       |       |             |         |          |
|   | <ul style="list-style-type: none"> <li>OP 1.4-1: Maintain/Repair/Reconfigure Specialty Use Areas to Support Additional Cadets and Long-Term Usage: Maintain, repair, or reconfigure up to 40 acres per year of the land associated with the 10 specialty course areas and three land navigation sites, from FY18 to FY22, to accommodate the increase in size of the U.S. Corps of Cadets and the additional U.S. Military Academy Preparatory School cadets. Remove deadfall from training sites, reduce woody/invasive vegetation encroachment, improve drainage, and repair any erosion issues within the specialty course areas and land navigation sites.</li> </ul> | 2              | 53, 54, 60             | Annually                 |                         | X     | X     | X     | X     | X     |             |         |          |
|   | <ul style="list-style-type: none"> <li>OP 1.4-2: Maintain/Repair/Reconfigure Maneuver/Movement Trails: Maintain and/or enhance the complex network of approximately 75km of maneuver/movement trails throughout the 14,000+ acres of training reservation from FY18 to FY22. Conduct maintenance on, repair, or reconfigure approximately 5 kilometers of both heavily used trails, and those trails that are more susceptible to woodland encroachment each FY. Clear encroaching vegetation, remove deadfall, repair erosion damage, improve drainage, &amp; reconfigure trails to accommodate tactical vehicle use.</li> </ul>   | 2              | 21, 22, 39, 53, 54, 60 | Annually                 |                         | X     | X     | X     | X     | X     |             |         |          |
|   | <ul style="list-style-type: none"> <li>OP 1.4-3: Repair/Maintain Existing Bivouac Sites: Annually repair/maintain at least one company size (240 cadets) bivouac site between FY18 and FY22 that can be used by USCC to execute 24-hour field operations during cadet summer training and academic year. Annually from FY18 to FY22, maintain previously created bivouac sites by reducing vegetation encroachment and/or installing erosion control measures.</li> </ul>   | 2              | 21, 22, 39, 53, 54, 60 | Annually                 |                         | X     | X     | X     | X     | X     |             |         |          |
|   | <ul style="list-style-type: none"> <li>OP 1.4-4: Reduce Vegetation Encroachment to Support Force on Force Events: Ensure that maneuver training lands required by USCC can support platoon, squad, and team maneuvering. This acreage should be configured and maintained to provide good command and control of cadets during cadet summer training and academic year force on force events. Reduce woody vegetation on 10 to 20 acres and maintain previously cleared acreage annually from FY18 to FY22.</li> </ul>  | 2              | 21, 22, 39, 53, 54, 60 | Annually                 |                         | X     | X     | X     | X     | X     |             |         |          |
| <b>OP Goal 2: Obtain resources for effective natural resource management.</b> |   |                |                        |                          |                         |       |       |       |       |       |             |         |          |
| OP 2.1  | <b>Provide needed facilities for natural resources management staff.</b>  |                |                        |                          |                         |       |       |       |       |       |             |         |          |
|   | <ul style="list-style-type: none"> <li>OP 2.1-1: Create office space for natural resources staff at 1960.</li> </ul>  | 3              |                        | One-time                 |                         |       |       |       | X     |       |             |         |          |
|   | <ul style="list-style-type: none"> <li>OP 2.1-2: Develop budgets and projects annually.</li> </ul>  | 2              |                        | Annually                 |                         | X     | X     | X     | X     | X     |             |         |          |

## 7. NEPA ENVIRONMENTAL ASSESSMENT

### 7.1 NATIONAL ENVIRONMENTAL POLICY ACT COMPLIANCE AND INTEGRATION

#### 7.1.1 National Environmental Policy Act of 1969

The National Environmental Policy Act (NEPA) is a federal statute requiring the identification and analysis of potential environmental impacts of proposed federal actions before those actions are taken. NEPA established the Council on Environmental Quality (CEQ), which is charged with the development of implementing regulations and ensuring federal agency compliance with NEPA. CEQ regulations mandate that all federal agencies use a systematic interdisciplinary approach to environmental planning and the evaluation of actions that could affect the environment. This process evaluates potential environmental consequences associated with a proposed action and considers alternative courses of action. The intent of NEPA is to protect, restore, or enhance the environment through well-informed federal decisions.

The process for implementing NEPA is codified in 40 Code of Federal Regulations (CFR) Parts 1500–1508, *Regulations for Implementing the Procedural Provisions of the National Environmental Policy Act*. The CEQ was established under NEPA to implement and oversee Federal policy in this process. To this end, the CEQ regulations specify that an Environmental Assessment (EA) be prepared to do the following:

- Briefly provide evidence and analysis for determining whether to prepare an Environmental Impact Statement (EIS) or a Finding of No Significant Impact;
- Aid in an agency’s compliance with NEPA when an EIS is unnecessary; and,
- Facilitate preparation of an EIS when one is necessary.

AR 200-1, *Environmental Protection and Enhancement*, states that the Army will comply with applicable federal, state, and local environmental laws and regulations, including NEPA. The Army implementing regulation for NEPA is 32 CFR Part 651, *Environmental Analysis of Army Actions*. The policy and responsibilities for integrating NEPA into the INRMP Revision process are outlined in 32 CFR 651. Specifically, 32 CFR 651 states that the “Army goal to integrate environmental reviews concurrently with other Army planning and decisionmaking actions avoids delays in mission accomplishments. To achieve this goal, proponents should provide complete environmental documents for early inclusion with any recommendation or report to decisionmakers. These documents include the Natural Resource Management Plans.” The implementation of NEPA in this document is thus done as part of the INRMP, rather than as a separate analysis. The Sikes Act also requires ample opportunity for public comment. This is provided through the NEPA process, which requires a public comment period of at least 30 days. This public comment period allows for meaningful discussion with the public, including neighbors and other stakeholders, and allows for input for the proposed INRMP. Public notification requirements also present in the Sikes Act can be met through the NEPA public comment process.

### 7.1.2 INRMP and NEPA Integration

To comply with NEPA, the planning and decision-making process for actions proposed by federal agencies involves a study of other relevant environmental statutes and regulations. The NEPA process, however, does not replace procedural or substantive requirements of other environmental statutes and regulations. It addresses them collectively in the form of an Environmental Assessment (EA) or EIS, which enables the decision-maker to have a comprehensive view of major environmental issues and requirements associated with the Proposed Action. According to the CEQ regulations, the requirements of NEPA must be integrated “with other planning and environmental review procedures required by law or by agency so that all such procedures run concurrently rather than consecutively.”

The adoption of an INRMP can be considered a major federal action as defined by Section 1508.18 of the CEQ regulations. Section 1508.9 of the CEQ regulations states that an agency may prepare an EA to determine whether preparation of an EIS is necessary, or to aid in compliance with NEPA when no EIS is necessary. For the purposes of implementing the USAG WP INRMP, an EA was chosen as the appropriate level of NEPA analysis, and was integrated as part of the INRMP in 2011.

If new management measures are developed during annual reviews or during the 5-year INRMP revision, additional environmental analyses may be required. An EA is being incorporated into this INRMP revision to further evaluate the environmental consequences associated with INRMP implementation.

CEQ regulations encourage NEPA documents to be combined with other agency documents to reduce duplication and paperwork (40 CFR §1506.4) so that agencies can focus a stronger NEPA analysis. In addition, Army guidelines (*Updated Guidance for Implementation of the Sikes Act Improvement Act*, 10 October 2002 and 1 November 2004) recommend that the INRMP and its associated NEPA analysis and documentation be prepared concurrently. To alleviate the drawbacks of preparing sequential documents and to streamline the overall process, USAG WP has fully integrated the INRMP and its associated NEPA analysis and documentation into a single report.

The INRMP portion of the document provides management measures that have been developed by considering various alternatives for meeting resource-specific goals and objectives at USAG WP. The INRMP also provides the rationale for why certain management measures have been selected for implementation and others have not, based on analysis of resource-specific screening criteria. The EA portion of the document “carries forward” the INRMP’s selected management measures as the proposed action. Since other management alternatives are considered and dismissed from further consideration in developing the INRMP, the EA addresses only the proposed action and a No Action Alternative.

Table 7-1 presents a “roadmap” of the NEPA analysis incorporated as part of this INRMP by providing the INRMP sections that correspond to the sections typically found in an EA.

**Table 7-1. Roadmap Indicating NEPA Analysis and Corresponding INRMP Sections**

| Required NEPA Analysis  | Corresponding INRMP Section           |
|---|---------------------------------------|
| <b>Executive Summary</b> – briefly describes the Proposed Action, environmental consequences, and mitigation measures.  | Chapter 7<br>Environmental Assessment |
| <b>Purpose and Need of the Proposed Action</b> – summarizes the Proposed Action’s purpose and need and describes the scope of the environmental impact analysis process.  | Section 7.1.3                         |
| <b>Description of Proposed Action and Alternatives</b> – describes the Proposed Action of implementing the INRMP and alternatives to the implementation of the Proposed Action.   | Section 7.1.4                         |
| <b>Scope of Analysis</b> – describes the scope of the environmental impact analysis process.  | Section 7.1.5                         |
| <b>Affected Environment</b> – describes the biotic environment and the general physical environment potentially affected by the Proposed Action within the scope.   | Chapters 4 Program Elements           |
| <b>Environmental Consequences</b> – identifies the potential environmental impacts of implementing the INRMP.   | Section 7.2                           |
| <b>Cumulative Effects</b> – identifies potential effect on the environment that result 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. | Section 7.3                           |
| <b>References</b> – provides a list of references used in the preparation of the EA and INRMP.  | Appendix A                            |
| <b>Persons Consulted</b> – provides a list of persons and agencies consulted during the preparation and approval of the EA.   | Appendix H                            |
| <b>Distribution List</b> – indicates recipients of the EA   | Appendix H                            |
| <b>Agency Consultation Letters</b> – copies of these letters and supplemental information used in the preparation of the EA.  | Appendix H                            |

### 7.1.3 Purpose of and Need for the Proposed Action

USAG WP is proposing to implement an INRMP, which supports the management of natural resources as prescribed by the plan itself. The purpose of the proposed action is to carry out the set of resource-specific management measures developed in the INRMP, which would enable USAG WP to effectively manage the use and condition of natural resources located on the installation to protect the natural setting primarily for training purposes. Army and USAG WP practice is to manage natural resources above and beyond those measures for simple compliance. Natural resource management at USAG WP includes many practices to promote stewardship and conservation of resources, which have a positive benefit to natural resources on the installation. Implementation of the proposed action would support the USA WP’s continuing need to train cadets and soldiers in a realistic natural setting while meeting other mission and community support requirements and complying with environmental regulations and policies.

### 7.1.4 Description of the Proposed Action and Alternatives

**Proposed Action:** The proposed action is to implement the INRMP for USAG WP. This proposal would meet the USAG WP underlying need to train cadets in a realistic setting while maintaining compliance with environmental regulations and policies. The Proposed Action includes natural resource management measures in areas associated with the installation. In addition, because the INRMP is a “living” document, it will be modified (adaptively managed) over time. The INRMP document provides a plan and schedule for the implementation of the plan and projects proposed in the plan revision. The schedule and projects are reviewed annually by NRB and agencies to ensure that the INRMP is being implemented and natural resource

management is being addressed. The Proposed Action focuses on providing a solid foundation for natural resources management beyond 2018 on a 5-year planning period, which is consistent with the time frame for the management measures described in the INRMP. Implementation of the INRMP (the Proposed Action) involves putting in place the management measures presented in Table 6-1 in Section 6.1, *Goals and Implementation Plan*. Additional environmental analyses may be required as new management measures are developed over the long term (i.e., beyond 5 years). Implementation of some INRMP-related projects also may require evaluation to determine the need for and appropriate level of NEPA documentation.

The management measures (goals, objectives, and projects) included in the INRMP and proposed for implementation under the Proposed Action were developed using available literature, current criteria and guidelines, best professional judgement, and input from NRB staff, agencies, and other stakeholders. The implementation of this INRMP under the Proposed Action would allow for management and newly proposed projects based on current ecological trends, species statuses, occurrences, and knowledge. Consistent with the intent of NEPA, the development of management measures focused on considering a reasonable range of resource-specific management measures to develop the Proposed Action. Management alternatives deemed to be infeasible were dropped from detailed analysis. The EA formally addresses two alternatives, the Proposed Action (i.e., implementation of the INRMP) and the No Action Alternative, both described below.

**No Action:** Implementation of the No Action Alternative means that the management measures set forth in the Revised INRMP would not be implemented. Current management measures for natural resources would remain in effect, and existing conditions would continue as the status quo. This document refers to the continuation of existing (i.e., baseline) conditions of the affected environment, without implementation of the Proposed Action, as the No Action Alternative. Continuation of management under the current INRMP would mean that data used to make management decisions would become out of date. The current INRMP does not include management measures to address threatened and endangered species that have been listed since 2011, or include Endangered Species Management Plans for two listed species at USAG WP. In addition, it does not reflect projects occurring at USAG WP, as many projects proposed in the current INRMP have already been completed. Lastly, the current INRMP does not reflect the recent and foreseeable changes to training and development at USAG WP that have occurred since 2011. Inclusion of a No Action Alternative is prescribed by CEQ regulations and serves as a benchmark against which proposed federal actions can be evaluated.

### **7.1.5 Scope of Analysis**

The potential environmental effects associated with the proposed action are required to be assessed in compliance with NEPA regulations of the CEQ. This EA identifies, documents, and evaluates the effects of implementing the INRMP for USAG WP. The INRMP addresses the geographical area associated with the contiguous properties of the USAG WP with particular emphasis on the USAG WP reservation. As discussed, this EA examines the USAG WP Preferred Alternative (i.e., the Proposed Action and the No Action Alternative as described in Section 7.1.4). The document analyzes potential environmental effects in Section 7.2, *NEPA Environmental Consequences*.

The objective of this analysis is to provide an objective evaluation of the environmental consequences of an implementable INRMP for USAG WP that can guide the installation in the following activities:

- Meeting training needs and military mission requirements
- Achieving natural resource management goals
- Meeting legal and policy requirements, including those associated with NEPA, that are consistent with current national natural resources management philosophies.

To meet this objective, an interdisciplinary team of environmental scientists, biologists, planners, economists, engineers, archaeologists, historians, and military technicians developed the EA. The team identified the affected environment, and analyzed the potential impacts of the Proposed Action and No Action Alternative on existing conditions.

#### **7.1.6 Interagency Coordination and Review**

Interagency participation is invited throughout the process for developing the INRMP. Once the INRMP has been drafted, the EA may be used as a tool to inform decision-makers and the public of the likely environmental and socioeconomic consequences of implementing the proposed action and alternatives. In addition, USAG WP provides for public participation in the NEPA process to promote open communication and facilitate decision-making. Public participation is invited throughout the NEPA process for developing the EA portion of the document. The following discussion describes agency and public involvement for this project. A list of stakeholders notified of the release of the Draft Final INRMP as part of the NEPA process is provided in Appendix H, *Agency Coordination*.

**Interagency Coordination:** On 1 November 2017, USAG WP delivered an email informing agencies and stakeholders of the intent to complete a Revision of the 2011 USAG WP INRMP and providing an invitation to a charrette to initiate the review process. A charrette was held on 5 December 2017 to initiate the INRMP revision process. As part of the NEPA process, formal agency coordination letters were mailed on July 9, 2018 to applicable state and federal agencies, including the USFWS and the NYSDEC. Agency correspondence is provided in Appendix H. Coordination with federally-recognized tribes was completed through the Cultural Resources Manager.

**Public Participation:** Both the Sikes Act and NEPA require public comment be included as part of the INRMP revision and EA development process. A Notice of Availability was placed in the Times Herald-Record on July 11, 2018 to invite the public to provide comments on the Draft Final INRMP/EA during a 30-day review period. A copy of the Draft Final INRMP/EA was made available at the Highland Falls Public Library in Highland Falls, New York, and Julia L. Butterfield Memorial Library in Coldspring, New York, during the review period. Comments from the public will be incorporated into the Final INRMP.

**Project Review and Comment:** The Signatory Agencies will be provided an opportunity to review and comment on the draft final version of the INRMP and EA for a 30-day review period.



Comments from agencies will be incorporated into the document and distributed to these agencies for additional review and comment. These additional comments will be incorporated into the final version of the document, and a Finding of No Significant Impact will be prepared for inclusion in the Final INRMP/EA.

## **7.2 NEPA ENVIRONMENTAL CONSEQUENCES**

This section of the document assesses known, potential, and reasonably foreseeable environmental consequences related to implementing the INRMP and managing natural resources at USAG WP. Section 7.2.1 addresses implementation of the No Action Alternative, which reflects the continuation of existing baseline conditions as described in Chapter 4, *Program Elements*. Section 7.2.2 presents potential effects in the context of the scope of the Proposed Action and in consideration of the affected environment. This assessment is organized by resource area. This assessment presents resource areas adapted from the resources described in Chapter 4, as well as resource areas requiring assessment pursuant to 32 CFR 651, *Environmental Analysis of Army Actions* (e.g., socioeconomics and environmental justice). This section of the document considers implementation of the selected management measures in their entirety (as presented in Section 6.1, *Goals and Implementation Plan*). Cumulative effects are discussed in Section 7.3. Implementing the Proposed Action is the USAG WP's Preferred Alternative. A summary of the potential environmental consequences associated with the No Action Alternative and the Proposed Action is presented in Table 7-2.

As discussed in Section 7.1.4, *Description of the Proposed Action and Alternatives*, the EA addresses two alternatives—the Proposed Action and the No Action Alternative. Section 7.1.4 provides a description of the methods used to develop management measures for each resource area. This approach supports Army guidance for concurrent preparation and integration of the INRMP and NEPA documentation, as outlined in Section 7.1.2, *INRMP and NEPA Integration*.

As discussed in Section 7.1.4, the USAG WP 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 may be required as new management measures are developed over the long term (i.e., beyond 5 years).

### **7.2.1 No Action Alternative**

Adoption of the No Action Alternative would mean that this USAG WP 5-year INRMP revision would not be implemented and current natural resource management practices proposed in the 2011 INRMP would continue “as is” at USAG WP. Existing conditions and management practices presented in Section 4.0, *Program Elements*, and the 2011 INRMP would continue and no new initiatives would be established.

Potential consequences associated with the No Action Alternative are discussed in this section for each resource area described in Chapter 4, *Program Elements*. Table 7-2 summarizes the analysis of potential consequences for the No Action Alternative and compares them to the Proposed Action. As shown, no significant or adverse effects would be expected. Under the

No Action Alternative, the environmental conditions at USAG WP would not benefit from the management measures associated with implementing the proposed INRMP.

Expected consequences of the No Action Alternative for each resource area are presented in the following paragraphs.

**Air Quality:** The primary concern regarding the potential environmental effects on air quality are exceedances of National Ambient Air Quality Standards (NAAQS) and other federal, state, and local limits. Current natural resources management actions do not involve activities that would contribute significantly to the changes in existing air quality. Therefore, there would be no effects regarding air quality as a result of implementation of the No Action Alternative.

**Noise:** The primary concern regarding noise and potential environmental effects at USAG WP pertains to increases in sound levels, exceedances of acceptable land use compatibility guidelines, and changes in public acceptance (i.e., noise complaints). Potential effects are precluded by the fact that current natural resource management actions do not involve activities that would affect noise conditions. Existing noise levels associated with natural resource management would not change. Therefore, there would be no effects regarding noise levels or sound quality as a result of implementation of the No Action Alternative.

**Soils and Geology:** Soils at USAG WP are highly susceptible to erosion, and soil erosion is a concern on the installation. Erosion issues are managed through the LRAM program, but localized erosion would continue under the No Action Alternative. Natural resource management activities at USAG WP do not currently involve the management of geologic resources, and other management activities are unlikely to impact geologic resources. Therefore, there would be no effects to geology and long-term, minor, adverse impacts to soils as a result of implementation of the No Action Alternative.

**Water Resources:** Currently, water resources at USAG WP are considered protected and are managed in accordance with state and federal regulations. USAG WP has permits for activities in waterbodies, and water quality at USAG WP is considered good. Actions conducted under the No Action Alternative would continue to be conducted in accordance with all applicable regulations, and would have no effects on water resources and general water conservation.

**Coastal Zone:** Currently, USAG WP manages natural resources within the coastal zone to provide protection of shoreline resources. Therefore, there would be no effects regarding coastal and marine resources as a result of implementation of the No Action Alternative.

**Wetlands and Floodplains:** USAG WP currently protects wetland resources, including vernal pools, in accordance with federal regulatory requirements and state requirements to prevent loss of wetlands. Actions impacting wetlands require federal permits, and current management is completed in accordance with permits. Under current natural resource management, actions that result in impacts to wetlands are avoided. When actions in wetlands are unavoidable, USAG WP mitigates for impacts. Floodplains and riparian areas at USAG WP are in good condition, and activities and management actions in floodplains are generally low. Portions of the cantonment area within the floodplain, and activities in this area are managed to protect resources. Overall, the No Action Alternative would have negligible impacts on wetlands and floodplains.

**Threatened and Endangered Species:** Several federally-listed species occur or have the potential to occur at USAG WP. Current management objectives include measures to protect and conserve these species and their habitat. USAG WP consults with agencies on any actions that have the potential to impact federally-listed species. State-listed species and rare species, or species of concern, are also present at USAG WP. Current management actions at USAG WP are conducted to minimize impacts to and conserve habitat of state-listed species. Management objectives in the current INRMP do not provide measures to improve conditions for species that have been listed since the document was released in 2011. Overall, the No Action Alternative would result in negligible impacts to threatened and endangered species as a result of current natural resource management.

**Vegetation:** Management activities under the current management are implemented to promote native plant species and manage the growth of invasive species. Under the No Action Alternative, current vegetation management measures to continue, and impacts would not be anticipated under the No Action Alternative.

**Wildlife:** Wildlife and wildlife habitat at USAG WP is managed to promote and enhance species. Game species are managed to provide recreational hunting, trapping, and fishing opportunities while maintaining healthy populations. Under the No Action Alternative, current management measures to maintain wildlife and habitat would continue. Impacts to wildlife would not be anticipated under the No Action Alternative.

**Land Use:** Changes to land use at USAG WP would not be anticipated under the No Action Alternative, and land use patterns in the surrounding area would not be affected. Overall, no impacts would be expected.

**Forestry:** The No Action Alternative would have negligible impacts on forest resources at USAG WP. Current forest management is geared towards harvest, but there is a need to shift the management focus to TSI to maintain forest health. Many of the projects in the current INRMP are not geared towards TSI, and many have already been completed.

**Fire Management:** Under the No Action Alternative, USAG WP does not have a finalized IWFMP. This would result in continued negligible impacts, as management of fire is not managed according to a plan but is managed and conducted by FESD.

**Hazardous and Toxic Materials:** Hazardous and toxic materials would continue to be handled in accordance with federal laws and Army regulations, including RCRA; the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA); and the Toxic Substances Control Act (TSCA). Pesticides, herbicides, and insecticides would be managed in accordance with the IPMP. Therefore, no adverse impacts regarding the hazardous and toxic materials would be expected under the No Action Alternative.

**Socioeconomic Resources:** Changes to land use at USAG WP would not be anticipated under the No Action Alternative. Typical changes in population, housing, and economic conditions would continue. Current management of natural resources does not involve activities that change existing socioeconomic resources; therefore, no impacts are expected under the No Action Alternative.

**Environmental Justice:** The primary concern regarding environmental justice and potential environmental effects pertains to disproportionately high and adverse consequences to minority or low-income communities. The No Action Alternative and current management of natural resources at USAG WP does not create an advantage or disadvantage for any group or individual, and is not expected to create disproportionately high or adverse human health or environmental effects on minority or low-income populations or communities at, or surrounding the installation.

**Cultural Resources:** The No Action Alternative would not lead to any actions that have the potential to significantly affect cultural resources, tribal resources, tribal rights, or Indian lands. Overall, no impacts to cultural resources would occur.

In summary, analysis of the existing (i.e., baseline) conditions identifies no serious environmental concerns, but is not desirable for the many reasons stated above. The current INRMP does not provide the mechanisms to address the outcome of a variety of management actions that have taken place since its implementation in 2011. In addition, several of the management goals, objectives, and projects proposed in the 2011 INRMP have been successfully completed, and no longer present a management action. The Sikes Act requires installations to review and revise an INRMP no less frequently than every 5 years. The 5-year time period for the current INRMP expired at the end of FY 2015. Therefore, the implementation of the No Action Alternative is not favored.

### **7.2.2 Proposed Action (Preferred Alternative)**

Potential consequences associated with the Proposed Action are discussed in this section for each resource area. Table 7-2 summarizes the analysis of potential consequences for the Proposed Action and compares them to the No Action Alternative. Potential environmental consequences associated with implementation of the INRMP would result in either no effects, minor adverse effects, or beneficial effects for each resource area. The Proposed Action would enable USAG WP to achieve its goal of maintaining ecosystem viability while ensuring sustainability of desired military training conditions. Compared to the No Action Alternative, environmental conditions at USAG WP would improve as a result of implementing the proposed INRMP and associated plans. Therefore, implementing the INRMP (Proposed Action) is the Preferred Alternative.

Expected consequences of the preferred alternative for each resource area are presented in the following paragraphs.

**Air Quality:** The primary concern regarding the potential environmental effects on air quality are exceedances of NAAQS and other federal, state, and local limits. Examples of activities that would result in potential adverse changes in air quality conditions include changes in military equipment, increase in the number and location of personnel, construction of new facilities or modification of existing facilities, or an increase or change in military operations. Implementation of the INRMP does not include activities that would contribute significantly to changes in the existing air quality conditions. However, potential effects on existing pollutant emissions are precluded by the fact that the Proposed Action does not involve any activities that

would contribute to changes in existing air quality conditions. Therefore, there would be no effects regarding air quality as a result of implementing the Proposed Action.

**Noise:** The primary concern regarding noise and potential environmental effects at USAG WP pertains to increases in sound levels, exceedances of acceptable land use compatibility guidelines, and changes in public acceptance (i.e., noise complaints). Noise associated with management activities would occur on a short-term basis, but this would not be above current levels, and would be negligible. Potential effects are precluded by the fact that current natural resource management actions do not involve activities that would affect noise conditions, such as changes in military equipment (aircraft), increase in the number or location of personnel, construction of new facilities or modification of existing facilities, or change in military operations. Therefore, impacts to noise levels are not expected under the Preferred Alternative.

**Soils and Geology:** Implementation of the INRMP would create beneficial impacts to soils and no impacts on geology. By continuing to adapt the comprehensive soil resource management program to current conditions, impacts on soils associated with erosion and sedimentation on USAG WP would be minimized. As part of the Proposed Action, existing sites where erosion has been determined to be a problem would continue to be addressed through the LRAM component of the ITAM program. Measures presented in the ITAM program would provide beneficial impacts to soils through the reduction of erosion related to training activities. In addition, monitoring soil conditions, implementing additional conservation measures, and avoiding activities likely to result in erosion would minimize potential impacts to soil resources and result in a reduction in erosion at USAG WP.

**Water Resources:** Beneficial effects would be expected from the implementation of the Proposed Action. The maintenance of previously established riparian buffers would be continued, resulting in beneficial effects on water quality at USAG WP. Continued efforts to limit impacts on waterbodies and riparian areas in the impact zone would reduce the potential for water quality degradation both in and downstream of the training areas. Implementation of new management measures for the application of turf management chemicals, fungicides, and insecticides would help to minimize the potential impacts on waterbodies associated with the use of these chemicals at USAG WP. Additional benefits would occur through the implementation of measures to improve wastewater treatment at USAG WP.

**Coastal Zone:** Implementation of the INRMP would have no impacts on the coastal zone. USAG WP would continue to manage activities in the coastal zone as currently managed to protect shoreline resources.

**Wetlands and Floodplains:** The Proposed Action is anticipated to result in beneficial impacts on wetlands and no impacts on floodplains. Implementation of the Proposed Action would protect wetlands by providing a basis to evaluate and monitor habitat conditions, and through the continual updating and improvement of the wetland and riparian habitat database for USAG WP. The maintenance of established buffers would minimize potential impacts to wetlands associated with adjacent activities. Aggressive control of invasive species would protect wetland integrity and biodiversity. Additional efforts would be made to reduce impacts to wetlands by planning mission activities in a manner consistent with wetland protection objectives. Goals within the Proposed Action would also include restoration of wetland areas and removal of dams to

promote wetland habitat, where feasible, providing beneficial impacts. Exploration of wetland mitigation banking would also potentially provide beneficial impacts, but may require additional analysis. Where current activities may be impacting wetland functions, efforts would be made to identify the type and source of impacts and, where applicable, restoration of affected habitats would be implemented.

**Threatened and Endangered Species:** Implementation of the INRMP would create beneficial impacts to threatened and endangered species. The updated INRMP would allow for the implementation of management measures that are more directed to current issues and needs for listed species. Implementation of the Proposed Action would continue to provide protection and management for species not protected under the ESA. Listed species and their habitats found or with the potential to occur within USAG WP would be monitored and protected during activities on the installation. Species-specific measures would provide beneficial impacts to threatened and endangered species. The management of invasive species would result in beneficial impacts to habitat for some threatened and endangered species at USAG WP. In addition, an ESMP would be prepared or updated every 5 years for federally listed species found at USAG WP.

**Vegetation:** Implementation of the INRMP would create beneficial impacts to vegetation. The INRMP includes measures for continuing the removal and/or treatment of invasive species, and for the protection of native habitats. Beneficial effects would be expected. Implementation of the Proposed Action would result in the aggressive control and monitoring of invasive species, which would provide direct positive benefits to the military mission, while protecting the ecological integrity and biodiversity of these habitats. The Proposed Action would also result in the continued improvement of vegetation by maintaining a high level of habitat diversity. Forest management practices comprising part of the Proposed Action would similarly result in improved ecosystem conditions by focusing on the long-term balance between maintaining forest ecosystem integrity and producing commercially valuable forest products. Promotion of pollinators species would also have beneficial impacts on vegetation at USAG WP.

**Wildlife:** Beneficial effects on both game and nongame species would be expected through careful management of game species to promote healthy populations. Surveys conducted under the current INRMP have resulted in the observation of additional species previously unknown or infrequently observed at USAG WP. As a result, monitoring and management efforts would be expanded to develop a database of information from which additional management measures can be developed. These data management measures will assist in protecting species and maintaining a high degree of biodiversity and improve habitat conditions for game and nongame species. Habitat for wildlife at USAG WP would be improved through management actions in the Proposed Actions, including leaving downed woody vegetation in some areas, mowing to promote open habitats, and invasive species control. MBTA measures would also provide protection for migratory bird species found at USAG WP. The Proposed Action includes implementation of a Prescribed Burning Plan at USAG WP; while this project has the potential to have beneficial impacts on wildlife and other natural resources, it also would have short-term adverse impacts and would likely require additional NEPA analysis.

**Land Use:** Beneficial effects would be expected to land use under the Proposed Action. No changes to onsite land uses or land use patterns would occur under the Proposed Action and land uses would not be expected to change onsite or in the surrounding area. However, management

of lands at USAG WP is anticipated to become increasingly important as natural areas face encroachment concerns from development on the installation. The implementation of the INRMP would help to ensure that development does not adversely impact natural resources.

**Forestry:** Beneficial effects would be expected to forestry under the Proposed Action. Projects for forest management, including a focus on TSI, would promote a healthy forest and improve forest stands at USAG WP.

**Fire Management:** The Proposed Action would have beneficial impacts on Fire Management at USAG WP. The INRMP includes a proposed project to study the fuel load at USAG WP. This would improve knowledge of conditions on the installation, which would allow management actions to be adapted to best manage fire. In addition, the finalization of the IWFMP would provide better management of fire control and suppression.

**Hazardous and Toxic Materials:** The Proposed Action would have no effects on hazardous materials. All hazardous and toxic materials would continue to be handled in accordance with federal laws and Army regulations, including RCRA, FIFRA, and TSCA. Thus, no adverse effects regarding the generation of hazardous and toxic materials would be expected under the Proposed Action.

**Socioeconomic Resources:** No effects would be expected. The Proposed Action would not involve any activities that would contribute to changes in population, housing, industry earnings and employment, or personal income.

**Environmental Justice:** No effects would be expected to environmental justice as a result of the Proposed Action. Implementation of the Proposed Action would not create an advantage or disadvantage for any group or individual, and is not expected to create disproportionately high or adverse human health or environmental effects on children or minority or low-income populations at or surrounding USAG WP.

**Cultural Resources:** The Proposed Action would not lead to any actions that have the potential to significantly affect cultural resources, tribal resources, tribal rights, or Indian lands. Overall, no impacts to cultural resources would occur.

The EA findings are consistent with the goals of the natural resources management program to maintain ecosystem viability and ensure the sustainability of desired military training area conditions; to maintain, protect and improve ecological integrity; to protect and enhance biological communities, particularly sensitive, rare, threatened and endangered species; to protect the ecosystems and their components from unacceptable damage or degradation; and to identify and restore degraded habitats. The nature of the management measures recommended by the INRMP, if implemented, would directly and positively affect the health and condition of natural resources at USAG WP.

### 7.2.3 Summary of Impacts

Implementation of the INRMP would result in a comprehensive environmental strategy for USAG WP that represents compliance, restoration, prevention, and conservation; improves the



existing management approach for natural resources on the installation; and meets legal and policy requirements consistent with national natural resources management philosophies. Implementation would be expected to improve existing environmental conditions at USAG WP, as shown by the potential for beneficial effects in Table 7-3. Over time, adoption of the Proposed Action would enable USAG WP to achieve its goal of maintaining ecosystem viability and ensuring sustainability of desired military training area conditions.

Although growth and development can be expected to continue outside of USAG WP and the surrounding natural areas, its environmental effects, although possibly somewhat adversely affecting natural resources within the ecoregion, would not be expected to result in cumulatively adverse effects to these resources when added to the effects of activities associated with the proposed management measures contained in the INRMP.

**Table 7-2 Summary of Potential Environmental Consequences**

| Resource Area/Environmental Condition | Environmental Consequences  |  |
|---------------------------------------|---|--|
|                                       | No Action   | Proposed Action  |
| Air Quality                           | No impacts  | No impacts   |
| Noise                                 | No impacts  | No impacts   |
| Soils and Geology                     | No impacts on geology; long-term, minor, adverse impacts on soils | No impacts on geology; beneficial impacts on soils           |
| Water Resources                       | No impacts  | Beneficial impacts   |
| Coastal Zone                          | No impacts  | No impacts   |
| Wetlands and Floodplains              | Negligible impacts  | Beneficial impacts on wetlands and no impacts on floodplains |
| Threatened and Endangered Species     | Negligible impacts  | Beneficial impacts   |
| Vegetation                            | No impacts  | Beneficial impacts   |
| Wildlife                              | No impacts  | Beneficial impacts   |
| Land Use                              | No impacts  | Beneficial impacts   |
| Forestry                              | Negligible impacts  | Beneficial impacts   |
| Fire Management                       | Negligible impacts  | Beneficial impacts   |
| Hazardous and Toxic Materials         | No impacts  | No impacts   |
| Socioeconomic Resources               | No impacts  | No impacts   |
| Environmental Justice                 | No impacts  | No impacts   |
| Cultural Resources                    | No impacts  | No impacts   |

### 7.3 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.

Past, present, and future projects at USAG WP and in the vicinity of USAG WP can be considered to evaluate the potential cumulative impacts. Broader installation-wide projects

include installation development plans that guide development on the installation. Area management plans have recently been developed for several areas within the installation. These plans and other cumulative projects that may impact resources analyzed in this INRMP are provided on Table 7-3 below. The table does not provide an exhaustive list of projects, as many actions could have a cumulative impact at USAG WP when combined with the proposed implementation of the INRMP.

**Table 7-3 Potential Cumulative Projects**

| <b>Project</b>   | <b>Date</b>   | <b>Description</b>   |
|--|---------------|--|
| <i>West Point Stony Raw Water Bypass</i>                         | 2021-2022     | Proposed construction of 4,600 linear feet of a pipe raw waterline bypass to connect to the existing Stony raw waterline                             |
| <i>West Installation Planning Standards</i>                      | March 2017    | Planning and development standards for USAG WP, including standards for aesthetics and building design, as well as landscaping.                      |
| <i>West Point Real Property Vision Plan</i>                      | March 2017    | A vision plan for the future development of USAG WP.   |
| <i>West Point Proctoria Area Development Plan</i>                | December 2017 | Planning and development plan for the Proctoria area.  |
| <i>South Posts Upgrades Project</i>                              | December 2015 | Environmental Assessment for the proposed construction of a new Visitor Center, and proposed demolition and renovation of other building at USAG WP. |
| <i>Target Hill Wastewater Treatment Plant Modernization</i>      | 2014          | Modernization of wastewater treatment facility at USAG WP  |
| <i>Lusk Reservoir Dam Maintenance</i>                            | 2012          | Proposed project to replace and repair pipes, valves, and masonry joints.  |
| <i>Implementation of US Army Integrated Pest Management Plan</i> | August 2010   | Environmental Assessment for the proposed implementation of the IPM plan at Army Installations.  |
| <i>Camp Buckner and Camp Natural Bridge Upgrades</i>             | March 2004    | Environmental Assessment for proposed upgrades and expansion to Cam Buckner and Camp Natural Bridge.   |

## **Appendix A1**

### **List of Acronyms and Abbreviations**

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## LIST OF ACRONYMS AND ABBREVIATIONS

|       |  |
|-------|--|
| °F    | Degrees Fahrenheit   |
| ACHP  | American Council on Historic Preservation                  |
| ACUB  | Army Compatible Use Buffer                                 |
| APHIS | Animal and Plant Health Inspection Service                 |
| APR   | Annual program review                                      |
| AR    | Army Regulation  |
| BGEPA | Bald and Golden Eagle Protection Act                       |
| BMP   | Best Management Practice                                   |
| CBT   | Cadet Basic Training                                       |
| CEMML | Center for Ecological Management of Military Lands         |
| CEQ   | Council on Environmental Quality                           |
| CFR   | Code of Federal Regulations                                |
| CFT   | Cadet Field Training                                       |
| CHPPM | Army Center for Health Promotion and Preventive Medicine   |
| CLE   | Conservation Law Enforcement                               |
| CLEO  | Conservation Law Enforcement Officer                       |
| CLEP  | Conservation Law Enforcement Program                       |
| CRFCP | Conservation Reimbursable Fee Collection Programs          |
| CZMA  | Coastal Zone Management Act                                |
| DMAP  | Deer Management Assistance Permit                          |
| DoD   | Department of Defense                                      |
| DoDD  | Department of Defense Directive                            |
| DoDI  | Department of Defense Instruction                          |
| DoDM  | Department of Defense Manual                               |
| DPTMS | Directorate of Plans, Training, Mobilization, and Security |
| DPW   | Directorate of Public Works                                |
| EA    | Environmental Assessment                                   |
| EIS   | Environmental Impact Statement                             |
| EMD   | Environmental Management Division                          |
| EO    | Executive Order  |
| EPR   | Environmental Program Requirements                         |
| EPT   | Ephemeroptera, Plecoptera and Trichoptera                  |
| ESA   | Endangered Species Act                                     |
| ESMC  | Endangered Species Management Component                    |
| ESMP  | Endangered Species Management Plan                         |
| FESD  | Fire and Emergency Services Division                       |
| FIFRA | Federal Insecticide, Fungicide, and Rodenticide Act        |
| FMP   | Forest Management Plan                                     |

|        |   |
|--------|---|
| ft     | Foot (feet)   |
| FY     | Fiscal year   |
| GIS    | Geospatial information system                           |
| gpm    | Gallon(s) per minute                                    |
| HQDA   | Headquarters, U.S. Department of the Army               |
| IMCOM  | Installation Management Command                         |
| in.    | Inch(es)  |
| INRMP  | Integrated Natural Resources Management Plan            |
| IPM    | Integrated Pest Management                              |
| IPMP   | Integrated Pest Management Plan                         |
| ITAM   | Integrated Training Area Management                     |
| IWFMP  | Integrated Wildland Fire Management Plan                |
| LRAM   | Land Rehabilitation and Maintenance                     |
| MBTA   | Migratory Bird Treaty Act                               |
| mm     | Millimeter(s)   |
| MOA    | Memorandums of Agreement                                |
| MOU    | Memorandum of Understanding                             |
| MWR    | Morale, Welfare and Recreation                          |
| NA     | Not applicable  |
| NAAQS  | National Ambient Air Quality Standards                  |
| NEPA   | National Environmental Policy Act                       |
| NOAA   | National Oceanic and Atmospheric Administration         |
| NRB    | Natural Resources Branch                                |
| NRCS   | Natural Resources Conservation Service                  |
| NYCRR  | New York Codes Rules and Regulations                    |
| NYNHP  | New York Natural Heritage Program                       |
| NYS    | New York State  |
| NYSCMP | New York State Coastal Management Program               |
| NYSDEC | New York State Department of Environmental Conservation |
| NYSDOS | New York State Department of State                      |
| PEM    | Palustrine emergent                                     |
| PFO    | Palustrine forested                                     |
| P.L.   | Public Law  |
| PMO    | Provost Marshal's Office                                |
| POL    | Petroleum, oil, and lubricants                          |
| PSS    | Palustrine scrub shrub                                  |
| ROTC   | Reserve Officer Training Corps                          |
| RTLTA  | Range and Training Land Analysis                        |

|          |  |
|----------|--|
| SDSFIE   | Spatial Data Standards for Facilities, Infrastructure, and Environment     |
| SHPO     | State Historic Preservation Officer  |
| SRA      | Sustainable Range Awareness  |
| SUNY ESF | State University of New York College of Environmental Science and Forestry |
| SWAP     | State Wildlife Action Plan   |
| SWPPP    | Stormwater Pollution Prevention Plan                                       |
|          |  |
| TRI      | Training Requirements Integration  |
| TSCA     | Toxic Substances Control Act   |
| TSI      | Timber Stand Improvement   |
|          |  |
| USACE    | United States Army Corps of Engineers                                      |
| USAG WP  | United States Army Garrison West Point                                     |
| U.S.C.   | United States Code   |
| USDA     | United States Department of Agriculture                                    |
| USEPA    | United States Environmental Protection Agency                              |
| USFWS    | United States Fish and Wildlife Service                                    |
| USMA     | United States Military Academy   |
|          |  |
| WMU      | Wildlife Management Unit   |
| WWTP     | Wastewater Treatment Plant   |



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**Appendix A2**  
**Literature Cited**

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## **Appendix B1**

### **USMA Regulation 215-5, Recreational Activities**

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Department of the Army  
United States Military Academy  
West Point, New York 10996

**USAG West Point  
Recreational Activities**

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IMML-MWR

FOR THE SUPERINTENDENT:

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**Summary:** This regulation covers the policies, responsibilities and procedures governing endorsed recreational activities and the protection of fish and wildlife resources at West Point.

**Applicability:** This regulation applies to the United States Military Academy (USMA), United States Army Garrison West Point and tenant agencies and authorized users of USMA lands for recreational activities (hunting/fishing/trapping/boating/etc.).

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**\*This regulation supersedes USMA Regulation 215-5, dated 21 September 2011.**



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**-West Point Fishing/Waterfowl Hunting Maps**

**CHAPTER I****SECTION I  
GENERAL**

**1-1. Purpose:** To prescribe policies, responsibilities and procedures governing recreational activities and the protection of fish and wildlife resources at West Point.

**1-2. References:** Reference publications are listed in **Appendix A**.

**Section II  
RESPONSIBILITIES****1-3. Recreation Officer (Chief, Recreation Division (RD) will:**

- a. Sell the special West Point Recreational Passes, and collect the recreational activity fees ICW Natural Resources.
- b. Distribute maps, promotional and regulatory materials to ensure West Point personnel, guests, and visiting troops are aware of recreational regulations. UXO Awareness training Map.
- c. Implement administrative aspects of the hunting, fishing, and trapping programs.
- d. Operate the Field Archery Range.
- e. Publish fees and charges annually.
- f. Conduct a lottery for the opening day hunting slots of the Regular Firearms Big Game Season.
- g. Position boats and docks as available at MWR authorized fishing areas.
- h. Provide personnel to sell/issue West Point permits during the Regular Big Game Hunting season.
- i. Arrange for NYS required hunter education classes for new hunters
- j. Organize and operate Personal Owned Firearms (POF) ranges ICW DPTMS.

**1-4. Directorate of Public Works (DPW), Engineering & Environmental Division (DPW/EMD) will:**

- a. Prepare, update, and implement Integrated Natural Resources Management Plan (INRMP)
- b. Perform surveys and studies to determine fish and game harvest quotas, size limits, bag limits and season lengths using the best available science.
- c. Serve as the primary liaison in fish and wildlife matters with the New York State Department of Environmental Conservation (NYSDEC), U.S. Fish and Wildlife Service (USFWS), and neighboring landowners.
- d. Operate the West Point Big Game Check Station.
- e. Implement administrative and operational aspects of the trapping program.
- f. Implement the administrative aspects of the general public hunting program.
- g. Post cantonment Hunting Areas prior to the archery big-game season.
- h. Provide to RD and Range Control specific season dates for hunting, fishing, and trapping seasons.
- i. Determine hunting area participation quotas and coordinate quota criteria with Range Control and the Safety Officer.
- j. Solicit and direct trappers that may meet the eligible requirements set forth in **Appendix B (Eligibility Priorities)** to trap problem or nuisance animals.

- k. Approve appropriate West Point, Federal, and State organizations to use internal combustion engines on all lakes and ponds for recreational fishing, and water quality, weed control, habitat management, and fisheries investigations.

**1-5. Directorate of Emergency Services/Police Chief (Chief CLEO) will:**

- a. As the proponent for law enforcement, serve as the Chief Conservation Law Enforcement Officer.
- b. Establish and resource a Conservation Law Enforcement section to enforce this regulation, Archeological laws, USMA REG 210-30 (Animal Control), USMA REG 420-03 (Fire Prevention & Protection), NYS and federal laws.
- c. Issue citations on DD Form 1408 and/or a District Court Violation Notice (DCVN) and will coordinate with the NYS Department of Environmental Conservation (DEC) for major violations of NYS environmental conservation laws.
- d. CLEO's will suspend recreational privileges of recreationist(s) issued a DCVN until the DCVN is properly paid for or settled in court. Proof of payment is required before the suspension can be lifted. CLEO's will report all suspensions to all recreational departments. If a suspended recreationist(s) are caught conducting recreational activities covered in this regulation while suspended, the recreationist(s) will be apprehended for trespassing.
- e. CLEO's will record violations in the Army Law Enforcement Reporting and Tracking System (ALERTS).
- f. CLEO's will conduct surveillance in the training areas by placing game cameras in random locations to ensure that all recreationalists will be following all NYS, Federal, and West Point regulations.
- g. Every CLEO will conduct 40 Hours of On the Job Training (OJT), the first 8 hours will be conducted in the right seat and remaining 32 hours will be in the left seat. This will include driving through all training areas, main cantonment, and Constitution Island. They will complete a familiarization on all CLEO special weapons (Shotgun, Pepperball Pistol, and Bear Mace). All CLEO's will complete a watercraft and ATV certification before operation of these special vehicles. CLEO's will be proficient with all NYS laws, Federal laws, USMA REG 210-30, USMA REG 420-03, and Archeological laws to properly enforce this regulation and recover wild and domestic animals.

**1-6. Directorate of Plans, Training, Mobilization and Security (DPTMS) will:**

- a. Ensure that the range and training area schedule as well as the associated road closings impacting availability is updated in the Online Application, so hunting, fishing, and trapping will not interfere with the military mission.
- b. Exercise absolute control of access to all training areas, ranges, and danger areas no matter what the hunting, fishing or trapping activity.
- c. Ensure hunting, fishing, trapping do not interfere with scheduled training activities.
- d. Ensure safe operation of the ranges and training areas in conjunction with hunting, fishing, and trapping.
- e. Assist in the administration of the Big Game Hunt Control Center. Assist in the administration of the Big Game Hunt Control Center.
- f. Contact the DES/Military Police Desk to report violations of Range Control restrictions.
- g. Support Personal Owned Firearms (POF) ranges ICW MWR.

**1-7. G1 will:** Publish range and training schedules and associated road closings in the USMA Post Bulletin.

**1-8. Garrison Safety Office:**

- a. The Safety Officer will review all safety-related aspects of the hunting, fishing, and trapping programs.
- b. Review all Risk Management Worksheets related to the regulation.
- c. Review all plans, requests, and regulations regarding events that involve firearms and archery implements for hunting.
- d. Review yearly hunting area personnel quotas.
- e. The Installation safety Office shall receive immediate notification in the event of an accident, injury or report of UXO.
- f. Provide Safety Awareness resources for the program.
- g. The Installation Safety Office shall investigate all hunting related incidents and accidents; to include tree stand accidents.

**1-9. The Office of The Garrison Commander (GC) will:**

- a. Designate approved and disapproved areas for recreational use.
- b. Will be the final approving authority to suspend individual recreational privileges.

### **SECTION III - POLICIES**

**1-10. General Policies**

- **This section contains information on general policies that shall apply to all recreational activities at West Point. See activity specific restrictions in each section.**

**Programmatic:**

- a. Recreational activities on West Point lands are secondary to the requirements of the military mission of the United States Military Academy and U.S. Army Garrison at West Point. Recreational activities at West Point are a privilege for all eligible persons. The actions and behavior of individuals will be considered when authorizing access. Those choosing to hunt, fish, or trap, as ambassadors to the sport, are strongly encouraged to be mindful of public sensitivities in regards to the use of firearms and the harvest of animals.
- b. Hunting, fishing and trapping on West Point lands will be in accordance with (IAW) and promoted under all applicable federal and state conservation laws, rules, and regulations the Integrated Natural Resources Management Plan (INRMP), this regulation (USMA 215-5), AR 200-1, AR 215-1, and any existing West Point regulations, and orders issued by the Garrison Commander. It is the responsibility of all individuals participating in hunting, fishing, and trapping to know these regulations.
- c. Under Title 10 U.S. Code, Section 2671, West Point must abide by New York regulations for fish and game dates, bag limits, and other regulations. There is no

- option available to expand season dates or bag limits to make restrictions less stringent or accommodate other activities. No part of this regulation should be interpreted to convey rights or privileges to recreationalists in conflict with state law.
- d. Failure to comply with lawful orders, posted signs, and written notices is illegal. Violation of this regulation may result in apprehension, prosecution, fines and/or loss of hunting, fishing, and trapping privileges. State and Federal regulations may also apply to violations of environmental law. Violators may be subject to additional penalties from external regulatory agencies.
  - e. Persons found responsible for damage to government property, whether through gross negligence or malicious action may be held financially responsible for damages and any associated costs.
  - f. Any training area may be closed for any reason including, but not limited to, mission-related activities and weather by Range Control in coordination with DES, DPW, and RD. Portions of the Garrison, i.e. impact areas and firing ranges, are permanently closed to recreation. Recreationalists are not permitted any access to closed areas, i.e. for parking or as a crossing to adjacent recreational areas.

**Safety:**

- g. All individuals must understand the hazards of unexploded ordinance (UXO). Suspected UXO will not be touched and its location will be immediately reported to Range Control, Military Police, or Safety Office.
- h. Accidents and lost persons must be immediately reported to Range Control and/or the Military Police, or West Point Fire Department.
- i. Persons observing wildland fires on West Point lands must notify West Point Fire Department, the Military Police, or Range Control
- j. It is unlawful to consume alcoholic beverages or other drugs, or be under the influence thereof while hunting or trapping, or while operating a motor vehicle or motor boat.
- k. All big game hunters, small game hunters, and trappers will wear at least 100 square inches (Visible from all sides) of blaze orange at all times. Waterfowl hunters, spring turkey hunters and bow hunters are exempted from this regulation while hunting in place, but must comply with regulation during walk-in/walk-out.
- l. Hunting shall only occur inside established hunting areas, the boundary of which cannot be assumed to comply with safe discharge distances. Safe discharge zones near a school, playground, or occupied structure shall be: Firearm: 500 feet, Bow: 150 feet.
- m. At no time shall a projectile pass over any part of a public highway. Hunters must be 5 feet off ALL range roads before discharging any weapon.
- n. Hunters may discharge at waterfowl over water within 500 feet of a dwelling or public structure as long as neither are within 500 feet in the direction of shot.
- o. Hunters shall not target shoot or sight-in weapons in the hunting areas, unless at a MWR sponsored event.



- p. All weapons entering the Cantonment Area (east of Route 9W and south of Route 218) must be registered with the DES (IAW USMA Reg 190-3, 1-10).
- q. Adjacency to housing, area size, or other factors may limit what implement is allowed for use inside selected hunting areas. Limitations shall be posted on the published hunting map and/or the hunting application, and **Appendix H**. The categories shall be 'All Implements,' 'Bow Only,' 'Shotgun Only,' 'Shotgun/Muzzleloader/Bow,' 'Bow/Primitive Muzzleloader.'
- r. Hunters wishing to access designated disabled hunting areas or reserve garrison owned hunting blinds must either possess a handicapped parking pass, be 40% service disabled, or be over 65. Disabled hunters may be accompanied by an un-armed assistant who may retrieve game, etc., and who will not count against the area capacity. Assistants driving game will count against capacity and must be permitted to hunt.
- s. Crossbows, are managed similarly to muzzleloaders with the same hunting area restrictions apply. Crossbows shall be restricted from 'Bow Only' areas with the exception of disabled hunters possessing a NYS issued Modified Crossbow Permit. All crossbow hunters must complete the same qualification designated for bow hunting on main cantonment (See Chapter 3-3 para. h Archery Hunting).
- t. Hunters are reminded that ethics, courtesy, and safe hunting practice requires that hunters avoid crowding and have full awareness of the positions of nearby hunters. Hunters arriving late to the field must yield to those already occupying the site, even if the hunting area capacity is not exceeded. Those behaving in an unsafe manner may be subject to penalty.
- u. A safety harness must be worn at all times while on a tree stand.

**Recreationalist Responsibilities:**

- v. No person shall discard, bury, or dispose of any trash, waste or litter on West Point lands. All hunters, anglers, and trappers must carry out of West Point lands everything that is carried in. Animal carcasses and wastes from butchering animals, including those taken at West Point shall not be discarded, buried, or disposed of on West Point lands. Field dressing animals is permitted immediately following harvest, but must be done out of sight of buildings, roads, and range complexes; at least 50 feet from a permanent water body. No non-biodegradable materials (gloves, bags, ground-cloth, etc.) may be left on site.
- w. Trail Cameras must be marked with the owners name and contact number. Trail cameras may not be installed with nails or screws. Trail cameras may not be placed in restricted areas or anywhere that would be considered an invasion of privacy. Unauthorized cameras will be seized by DES Conservation Officers.
- x. Open fires while hunting, fishing, and trapping on West Point lands are prohibited, except MWR established fire rings at MWR Recreation Areas as conditions allowed.
- y. Firewood collection is allowed but only as authorized by conditional permit, available from Natural Resources Branch.



- z. No person shall enter, injure, deface, or otherwise disturb culturally sensitive areas on West Point lands. The collection of any artifacts (such as old bottles, coins, etc), collection of paleontological specimens, or disturbance of any feature is prohibited.
- aa. No person shall enter, injure, deface, or disturb any part of a building, range structure, vehicle, equipment, sign, or government property encountered in hunting and training areas on West Point lands. Likewise, the taking of any equipment or materials, regardless of its condition, from West Point lands, is prohibited.
- bb. Unauthorized excavation or digging on West Point lands is prohibited, including the removal of natural material (e.g. rocks, sand, etc). Likewise, unauthorized cutting, digging up, removal, or defacing of trees and any live vegetation is prohibited. Minor disturbance for trapping is permitted. All use of metal detectors are unauthorized on West Point lands without written authorization from Culture resources.
- cc. Feeding, harassing, disturbing, or unauthorized taking of any wildlife on West Point lands is prohibited.
- dd. Unauthorized stocking is prohibited. No individual shall stock, move, or release fish (including bait), fish eggs, wildlife, or any other animal species without permission from Natural Resources Branch. Those wishing to purchase pheasants and arrange a private stocking event may contact Natural Resources for assistance.
- ee. No individual shall plant vegetation of any kind without permission from Natural Resources Branch.
- ff. The disturbance, or removal of legally set traps or trapped animals on West Point lands is prohibited.
- gg. Gates shall be left in the condition encountered. Recreationalists may only drive on established range roads (NOT TRAILS). Off –road use of vehicles strictly is prohibited.
- hh. All vehicles must be parked in designated areas or adjacent to area to be accessed, with parking passes displayed. Vehicles must be parked so as to allow other vehicles safe passage and access, including not blocking access to roads, trails, gates, boat ramps, docks, dams, etc. Unauthorized personal use of recreational vehicles (i.e. all-terrain vehicles (ATVs), snowmobiles) is not permitted at West Point.
- ii. Range road speed limits are as follows: 20MPH and 10MPH while passing troops.

**Access Procedures:**

- jj. All hunters, trappers and anglers will sign-out/in to an area via the online hunting application. Daily passes to access hunting, trapping and fishing areas are obtained via the on-line area sign-out application. Subject to change due to special events (i.e. Hunting lotteries).
- kk. In the event of global technical failure of the on-line system outside of Regular Season, hunters will coordinate access in person at the military police desk located at bldg.616.
- ll. All hunters, anglers, and trappers must have on their person (1) a New York State hunting, fishing, or trapping license if required by New York State regulations; (2) a West Point hunting, fishing, or trapping permit (or in Big Game season, Hunting Area ID pass) unless exempted due to age.

- mm. The boundaries of authorized hunting, trapping, fishing and recreational areas are depicted on the current official West Point hunting map and current official West Point trapping map, respectively. No other map shall be valid.
- nn. All hunters and trappers must remain within specific hunting or trapping areas designated at sign-out. Hunters and trappers wishing to move to a new area must sign in/sign out into the new area.
- oo. Hunters/trappers must be in the area they have signed out. One hour of transit is allotted between time to sign out to an area and occupation of the area. Similarly, hunters/trappers have one hour to sign in from an area once they leave the site.
- pp. Hunters are responsible for knowing Sunrise and Sunset times, and complying with legal shooting hours as defined in the current NYS Hunting and Trapping Guide.
- qq. All hunters and trappers will report their daily harvest through the online hunting application. In addition to reporting harvest online, bear and regular season deer hunters will report to the WP Check Station for processing by Natural Resources Branch staff. All hunters, trappers, and fisherman should report the harvest, or catch and release, of tagged or otherwise marked fish and wildlife to the Natural Resources Branch. Those encountering such animals should record and report any identifying serial numbers, and if possible supply a photograph of the catch. Any incidental catch of endangered or invasive species should be reported to USAG West Point Natural Resources.
- rr. Individuals who are not armed, but assisting in hunting – i.e. driving game, scouting, placing a tree stand, etc. will possess required permits, be signed out, and are counted as hunters against an area capacity. Individuals accompanying hunters but not actively assisting in hunting – i.e. an unarmed walker remaining no less than 5 meters from their sponsor, will not count as a hunter against an area capacity. For spring turkey hunting, an unarmed individual that calls for another hunter will be considered a walker and does not count against a hunting area's participation level capacity, but must be permitted for hunting IAW state law.
- ss. In the interest of cadet development, and in view of limited opportunities for cadets to hunt, the Cadet Hunt Club may reserve hunting area(s) for approved USMA trip sections. Areas reserved for hunting will be proportionate to the number of cadets projected to attend the event. Reserved areas may be closed to other hunters if the total number of users, cadets and advisors, is one half or more than the published capacity of the area. There are no reservations within two days of a game stocking. Cadet activities utilizing hunting areas shall complete a Risk Management Worksheet and submit it to the USCC/USMA Safety Office for review.
- tt. Range keys may be obtained at Range Control ONLY during business hours IAW Range Control SOP. Failure to comply with the Range Control SOP may result in penalties.
- uu. Anyone wishing to have access to the training areas for any other reason not stated in this regulation must have a valid range pass issued by range control.

**1-11. Guests and Non-Hunting Walkers – All Seasons:**

- a. Authorized personnel may sponsor a maximum of two guests to accompany him/her afield at one time. Guests will have the same privileges and access as their sponsor, must sign out with their sponsor, and will count against hunting area capacity. Guests must remain in the same hunting area as their sponsor.
- b. Guests are not authorized to hunt on opening day of Regular Big Game Season.
- c. Guests may not hunt the On-Post hunting areas.
- d. General Public Hunters may sign in as a guest if sponsored by a WP permitted hunter but may not sponsor guests or walkers of their own. Antlerless deer taken by General Public hunters hunting as guests may count toward the "Earn-a-Buck" requirement.
- e. West Point permitted hunters and anglers may purchase one season-long guest pass. The pass shall be valid for the period of one year, and allows the sponsor unlimited guest access to hunting and fishing without needing to purchase additional passes during the year. Sponsors are held to the standard of one guest using the season pass at a time, but the guest pass may be used to sponsor multiple persons individually. Guests must follow all standard regulations, i.e. be permitted by NYS to hunt or fish, must be accompanied at all times by their sponsor, must sign out/sign in, etc. Season passes held by a sponsor whose West Point permit is expired shall not be considered valid until the sponsors permit is renewed.
- f. Hunters may be accompanied by one non-hunting, unarmed, walker who may be no less than five meters away from the sponsor at all times while afield. Walkers will not count against hunting area hunter capacity. West Point hunters who are already hunting with a junior hunter are not eligible to be accompanied by a walker. For spring turkey hunting, an unarmed individual that calls for another hunter does not count against a hunting area's participation level capacity. A hunter may sponsor one walker and one guest.

**1-12. West Point Permits and Fees:**

- a. As authorized by the Sikes Act (16 USC 670 et seq.) and IAW AR 200-1, special West Point hunting, fishing and trapping permits will be sold to individuals authorized under Eligibility Priorities IAW AR 215-1. A fee schedule is posted in **Appendix G**.
- b. Permit fees collected will be deposited into Wildlife Conservation Fund Account. Funds will be used by the DPW/NRB exclusively for the protection, conservation, and management of game fish and wildlife (IAW AR 200-1). Permit fees are determined by DPW/NRB ICW Chief, RD.
- c. A recreational (hunting/fishing/trapping) activity fee may also be collected for the Installation, Family and Morale, Welfare, and Recreation (FMWR) Fund for activities such as lotteries. Activity fees will be used IAW AR 215-1 to support the Hunting and Fishing program. Activity fees are determined by Chief, RD ICW DPW/NRB.
- d. The acceptance of a hunting, fishing, trapping permit, or guest pass shall constitute an acknowledgment by the permittee of his/her duty to comply with this regulation, and all permits are conditioned upon such acceptance.
- e. Forest products, to include firewood, are considered Army real property and may only be collected for personal use with a Natural Resources Issued permit. Permit fees apply.

- f. Recreationalists enrolled in the online hunt program must have ALL contact and vehicle information up to date at all times.
- g. Recreationalists must have valid West Point permits or passes in their vehicles and on their persons when conducting activities that require them.

**1-13. Federal and State Licensing and Permits:**

The privileges accorded by the special hunting/fishing/trapping permit will not relieve the permittees of the licensing requirements in the Migratory Bird Hunting Stamp Act (16 USC 718 et seq.) or the Environmental Conservation Law of NYS. All State or Federal reporting requirements remain the responsibility of the hunter.

**1-14. Season and Bag Limits:**

Harvest regulations will be as those prescribed in New York State Environmental Conservation Law and/or the Federal Government except where more stringent measures may be promulgated by DPW/NRB in response to fluctuations of fish and game populations. These seasons, bag limits and size limits will be published in the West Point Hunting/Fishing and Trapping Bag Limit Guide, available online on the West Point Sportsman website, Hunt Control and the Round Pond office. The pamphlet will be used by Conservation Law Enforcement Officers to help determine violations. Violators are also subject to disciplinary action under the Uniform Code of Military Justice and/or Federal Law and may be permanently barred from West Point.

**CHAPTER 2****SMALL GAME HUNTING**

**2-1. Eligibility:** Eligibility Priorities are listed in **Appendix B**.

**2-2. General Small Game Procedures:**

- a. All general policies and procedures (Chapter I) apply.
- b. Licensed Junior hunters (12 to 15 years of age) are permitted to hunt small game on the reservation, but must be accompanied by a sponsoring West Point hunter (over 18 years of age) and remain within ten meters of that sponsoring hunter. West Point will participate in NYS Special Youth Hunting Seasons.

**2-3. Waterfowl:**

- a. Waterfowl hunters may establish their own blinds, making sure to maintain safe distance from other blinds. Live vegetation may not be cut for the creation of a blind. All blinds must be removed at the end of the waterfowl season. Blinds left up after April 1<sup>st</sup> may be subject to removal by NRB, DES Conservation Officers.
- b. Waterfowl hunters using boats must have U.S. Coast Guard approved personal flotation devices (PFDs) for each person in the boat. There is no hunting from a vessel under power. All vessels must be IAW NYS DEC and West Point boating regulations. Hunters using watercraft must follow NYS and West Point Aquatic Invasive Species regulations.
- c. Waterfowl hunters must only possess non-toxic (non-lead) shot while afield.

- d. Only waterfowl hunting may occur within specially designated waterfowl areas. No small game or big game hunting is authorized when signing out these areas.
- e. Waterfowl hunting is allowable in the Hudson River and is considered off-post hunting. Hunters must observe all NYS shooting regulations.

**2-4. Spring Turkey:**

- a. Turkey hunters will sign in and out daily, observing all specific capacity, weapon, and specific hunter regulations for the areas they sign out.
- b. Spring turkey hunters will stop hunting by 1200hrs unless hunting in Areas J2 and J3 see below.
- c. Spring turkey hunting is permitted in post/cantonment Areas J2 and J3. Spring turkey hunting in Area J2 is restricted to bow use only. Spring turkey hunting in Area J3 permits bow and shotgun use. Hunters utilizing on-post turkey hunting areas will stop hunting by 0900hrs and must be checked out of the area by 1000hrs.
- d. Hunters should avoid wearing what are considered turkey colors: red, white and blue. At rest, hunters may be completely camouflaged. Hunters shall wear at least 100 sq. inches of blaze orange (Visible from all sides) when entering or exiting the woods and it is highly recommended that a tree near your position be marked with blaze orange to signal your presence to other hunters.
- e. All spring turkey hunter(s) will be signed in no later than 1300hrs

**2-5. Furbearer Hunting:**

- a. Furbearer hunting on West Point lands will be IAW Environmental Conservation Laws of New York, applicable federal laws, and West Point regulations.
- b. Furbearer hunters will sign in and out daily, observing all specific capacity, weapon, and specific hunter regulations for the areas they sign out.
- c. Night hunters for furbearer species as defined by NYSDEC will follow the same sign-out and sign-in procedures as other small game hunters. Hunters must coordinate with Range Control during duty hours to schedule and coordinate access to an area for night hunting.
- d. Spotlights, night vision, thermal and laser devices are permitted for furbearer hunting. They may be attached to the firearm. All state laws pertaining to the use of a spotlight apply.
- e. For regulations on allowable night time weapons and bait, refer to NYSDEC Furbearer Hunting Regulations

**CHAPTER 3****BIG GAME HUNTING**

**3-1. Eligibility:** Eligibility is listed in **Appendix B**.

**3-2. General Big Game Procedures:**

- a. All general policies and procedures (Chapter I) apply.

- b. Regulated deer hunting is an important land management tool that allows West Point to maintain high quality training areas. This hunting is conducted as a recreational activity but the land management aspects will take precedence. DPW/NRB will use the best available information on the quality and size of the herd, ecological indicators such as forest regeneration rates, browse density, and impact to sensitive habitats, as well as human dimensions to set management goals.
- c. Big Game hunting on West Point lands will be IAW Environmental Conservation Laws of New York, applicable federal laws, and West Point regulations. When referring to NYSDEC Big Game Hunting Regulations, West Point is in Wildlife Management Unit (WMU) 3P in NYSDEC Hunting Regulations.
- d. Hunters must comply with all NYS and West Point reporting requirements. During Regular Big Game Season harvested deer and bears will be aged and weighed by Natural Resource Branch (DPW/NRB) at the West Point Check Station. USAG West Point Harvest Check is mandatory for bear in all seasons and deer in regular season, voluntary for deer in Early Archery and Late season.
- e. All big game will be legally tagged and reported. Regardless of hunt check regulations, hunters must report their harvests for all deer and bear harvested at West Point IAW NYS regulations.
- f. In order to fully implement the big game hunting program, Range Control may restrict non-hunter access on the reservation during the hunting season.
- g. Temporary, pre-made, portable tree stands are permitted provided that stand and accessories do not damage supporting tree(s) when installed. Permanent tree stands are prohibited. Screw-in or nail-in spikes, footholds, and other structures are prohibited. Stands must be marked with owner's name and contact number. Tree stands are prohibited in ALL hunting areas from March 30th to September 1st. Any tree stand found in violation of this regulation may be confiscated by the Conservation Law Enforcement Officer(s) and destroyed or otherwise legally disposed of. Lawfully deployed tree stands are considered personal property and shall not be used without the expressed consent of the owner. Hunters are reminded that the placement of a stand does not confer priority use of the site. Late arriving hunters should yield to hunters already afield regardless of proximity to an owned stand.

### 3-3. Archery Hunting:

- a. During the early and late seasons, it is the responsibility of the hunter to sign-out, sign back in, and report their harvest once they have vacated the hunting area using the hunting application. Harvest Check is voluntary during Early Archery and late season.
- b. During the Regular Firearms Big Game Season, archers will follow the sign out and harvest registration procedures applicable to firearms big game hunters.
- c. No hunting will be permitted in hunting areas G2, J1, J2, J3, J4 and J5 on days coinciding with home football games.
- d. Junior hunters (12 to 15 years old) may hunt big game with bow during the special archery season. Young hunters must be accompanied by and remain within 20 meters



- of sponsoring West Point hunter. Participation in NYS Special Youth Hunting Seasons is encouraged provided the hunter is accompanied by a licensed, unarmed sponsor.
- e. Hunters may not carry a firearm while hunting deer during the early or late archery season.
  - f. Archers wishing to hunt J2, J3, J4, J5 and G2 must pass an Archer Proficiency Test.
  - g. Big game hunting using archery equipment will be permitted for cadets on Constitution Island (CI). Cadets wishing to access CI must coordinate with the caretaker for access at least a day in advance and follow sign-out and sign-in procedures using the hunt management application. Cadets hunting CI may sponsor one non-cadet to hunt CI with them. A non-cadet will count against CI area hunter capacity, and must meet all applicable permitting and licensing requirements and hunter category restrictions.

h. Archery Qualification will be conducted at a location determined by the CLEO's. The requirements to qualify with your bow are as follows: Must use the same bow, arrows, and arrow heads that you will use to hunt. Standards for qualification are as follows; Hunters will shoot 3 arrows from distances of 20 yards and 25 yards (10 and 15 yards for youth). Shots made from 20 yards must hit 3 out of 3 within a 6 inch plate. Shots made from 25 yards must hit 2 out of 3. For youth, Shots made from 10 yards must hit 3 out of 3 within a 6 inch plate. Shots made from 15 yards must hit 2 out of 3. These standards must be met from the ground and from a simulated tree stand elevated position. CLEO's will hold qualifications as designated on the hunt management application. All other qualifications can be scheduled by contacting the CLEO's.

#### **3-4. Regular Firearms Big Game Season:**

- a. During the Regular Firearms Big Game Season, all hunters, including big game, small game, waterfowl, and archery hunters will sign out according to the access procedures.
- b. After selecting a hunting area, hunters will be issued distinctive Hunting Area Identification pass, and in exchange they will surrender their West Point Hunting Permit, which will be retained in the Hunt Control Center. When signing in from an area, hunters will turn in the Hunting Area Identification and in exchange receive back their permits.
- c. The parking pass issued by the Hunt Control Center will be prominently displayed in the windshield whenever the vehicle is parked in or adjacent to a hunting area. Hunters must park in or immediately adjacent to their hunting area and display their parking pass issued by the Hunt Control Center.
- d. Junior big game hunters (as defined by the NYSDEC) may hunt big game on the reservation during the Regular Firearms Season. Junior hunters will comply with all NYS regulations. Participation in the NYSDEC Special Youth Hunt is allowed and encouraged. Young hunters must be accompanied by a qualified sponsoring hunter. Junior hunters will remain within 20 meters of their sponsor.
- e. During the season, hunters will choose hunting areas on a first-come, first-served basis (except lottery assignments for opening morning).

**3-5. General Public Deer Management Permit (DMP) Program:**

- a. General Public Hunters may pursue deer, coyotes (during legal deer hunting hours), and bears, within limits posted annually by DPW/NRB to the West Point Hunting web site.
- b. The DPW/NRB Wildlife biologist may place special restrictions on Public Access hunters. Special restrictions and procedures will be posted on the MWR hunting website annually. General Public Hunters who have reached their deer management bag limits, and can no longer take a deer, may not sign out to hunt for other species or otherwise access the hunting areas, except to assist a disabled hunter. In such cases, the assisting hunter must be unarmed, and remain within 5 meters of the disabled hunter.
- c. General Public hunters may not hunt the first day of the Regular Season, and may not sign out the first seven days of the season until 0700.
- d. General public hunters will comply with all other regulations and policies applicable to hunting in New York and at West Point.
- e. Administrative aspects of General Public hunting will be coordinated by DPW/NRB. The DPW/NRB Wildlife Biologist may choose to limit the number of General Public passes

**3-6. Lottery:**

- a. The Recreation Officer will hold a hunting area selection lottery for the opening morning of Regular Season. Eligibility priority in the lottery will be: *Priority I* - Active duty military personnel and their Family members. *Priority II* - Retired military personnel, Drilling Reserve and Guard personnel, and West Point Civilian Personnel and their Family members.
- b. In the event an individual will be away from West Point on the date of the lottery, a letter of explanation may be submitted to the Recreation Officer requesting that an area be selected by proxy.
- c. If slots are still available following the lottery, West Point hunters may choose a slot prior to opening day on a first-come, first-served basis at Hunt Control during business hours.
- d. Hunting slots reserved for opening morning will be held in reserve until 0900 on opening morning. After 0900, the spaces will be signed out on a first-come, first- served basis.
- e. Group Chip. A group of hunters may elect to enter the lottery as a group. A group will receive a single chip, and may sign out an area as a unit, provided the area has open capacity. A chip drawn during the Priority One round of selections must have all Priority One hunters. A chip drawn during the Priority Two round may be a mixed priority party.

**3-7. Muzzleloader Season:**

- a. Muzzleloader use is restricted to those hunting areas open to rifle or shotgun hunting.
- b. Muzzleloaders will sign out and in using the online hunting application.
- c. Hunters will wear a minimum 100 square inches of blaze orange clothing (e.g., hat) while hunting (Must be visible from all sides).
- d. Muzzleloaders will register their harvest at sign in.



- e. Use of Primitive muzzleloader is authorized in J1. Modern muzzleloaders, i.e. in-lines, are prohibited in Hunting Area J1.

## CHAPTER 4 FISHING

**4-1. Eligibility:** Eligibility Priorities are listed in **Appendix C**.

**4-2. Authorized Fishing Areas:**

- a. All general policies and procedures (Chapter I) apply.
- b. Fishing is permitted in all West Point waters. Differing access rules apply.
- c. Recreation Waters: Waters occurring inside designated recreation areas or within the cantonment, i.e. Round Pond, Wilkins Pond, Bull Pond, Lake Frederick, and Lusk Reservoir, Crow's Nest Brook, may be accessed freely by permitted personnel meeting installation eligibility requirements, and pursuing fish IAW State and Local regulations.
- d. Training Area Waters: All other installation waters, to include Popolopen Brook, Popolopen Lake, and Stilwell Lake, among others, may be subject to closure due to military training needs. All anglers must check the on-line application to determine which waters are available. Anglers may obtain a key to access fishing areas during normal business hours from MWR or Range Control. Range Control will ensure that gate access is appropriate to training and recreational needs.
- e. Shore fishing is not permitted from Stilwell Lake. Access to the lake is through the MWR maintained boat access only.
- f. Hudson River: Shore fishing in the Hudson River from West Point is allowed, and requires a West Point fishing permit if fishing from West Point facilities. Fishing the Hudson from watercraft is considered fishing off West Point and is free from this requirement.
- g. Veterans may purchase a Veteran's Fishing Pass allowing access to Round Pond and Lake Frederick for catch and release fishing only. Veterans must display a DD form 214 showing honorable discharge, and a NYS issued fishing license. Veterans may not sponsor guests to fish older than 15 years old. The sponsored guests are not required to obtain West Point or NYS permits.
- h. Long Pond is leased to the Town of Highlands for use by its residents; use by West Point personnel is not authorized unless registered residents of the Town.

**4-3. Fishing Policies:**

- a. West Point will follow the New York State published bag limits, seasons, and size restrictions except where additional restrictions are necessary for the improvement of the local fishery. Such restrictions will be published annually to the MWR Fishing website, and/or by appropriate signage.
- b. Catch and Release of sport fish species (bass and trout) will be promoted to reduce over-exploitation of this resource.

- c. Children under 12 years of age must be accompanied responsible person at least 16 years of age while fishing in West Point waters, except at Round Pond, Lusk Reservoir, and Lake Frederick.
- d. Anglers will not actively fish for species out of season, unless allowable under NYS law. All out of season fish will be released immediately, unharmed, at the point of capture.
- e. Anglers will not release live bait fish in any West Point waters.
- f. Anglers will follow the AIS regulation and policies as outlined in **Appendix E**.
- g. Ice fishing is only authorized on non-trout waters. Anglers must use their own discretion in judging the safety of the ice thickness.
- h. Permanent ice fishing shanties are not authorized at any time and will taking down and removed from all West Point waters. All ice fishing shanties left on West Point waters will be confiscated by CLEO's.
- i. Anglers age 16 and older must have a current NYS fishing license as well as a West Point permit in order to fish at any of the installation ponds, lakes, or streams.
- j. Anglers fishing must dispose of their trash, fishing line and bait containers.

#### **4-4. Stocking and Habitat Management:**

DPW/NRB will coordinate and implement all fish stockings and habitat management projects, as prescribed in the INRMP. West Point activities that wish to conduct habitat management projects or to stock additional fish (at their expense) must seek prior approval from the DPW/NRB.

#### **4-5. Reporting:**

There are no mandatory requirements for reporting catch. Anglers are encouraged to voluntarily report to the Natural Resources Office their catch in trout and any catch in hybrid muskellunge, grass carp, or walleye, as well as unusual conditions or indications of disease in the fishery or habitats. NRB will monitor take via creel surveys and angler interviews.

#### **4-6. Bass Tournaments:**

- a. Aerated live wells will be used by all competitors to keep all bass alive for the duration of bass tournaments.
- b. Bass will be returned to the same lake as caught immediately after weigh-in, if possible at the location of capture. All out of season fish will be released immediately, unharmed, at the point of capture.
- c. Records will be kept of tournament participants and the catch to include lengths by fish species.
- d. During the tournament, the West Point minimum length and possession limit will be waived and the NYS minimum legal bass length and possession limit may be used for fish that will be released immediately after the competition. Anglers may keep one trophy bass (minimum length 20 inches) per tournament. All other bass must be released.

- e. All anglers in tournaments will possess NYS fishing licenses and West Point fishing permits or guest passes. All NYS bag limits and season regulations must be adhered to.
- f. Not more than three one-day tournaments will be held on any individual body of water in any one year.
- g. Anglers will follow the AIS regulation and policies as outlined in **Appendix E**

## CHAPTER 5 TRAPPING

### **5-1. Eligibility:** Eligibility priorities are listed in **Appendix B.**

**5-2. Trapping Policy:** Trapping is an important tool in wildlife management and it is permitted on the reservation primarily for the removal or control of problem and nuisance animals and secondarily for recreation.

### **5-3. General Trapping Procedures:**

- a. All general policies and procedures (Chapter I) apply.
- b. Trapping on West Point lands will be IAW Environmental Conservation Laws of New York, applicable federal laws, and West Point regulations. To determine seasons, bag limits and other information, refer to West Point Hunting/Fishing and Trapping Bag Limit Guide and NYSDEC Trapping Regulations.
- c. When referring to NYSDEC Trapping Regulations, West Point is in Wildlife Management Unit (WMU) 3P in NYSDEC Trapping Regulations
- d. Individuals who wish to trap on the West Point Military Reservation must apply to DPW/NRB for West Point Trapping Permit for that license year's trapping season.
- e. West Point trappers must have a West Point trapping permit and a NYS Trapping License. Both should be carried when afield trapping.
- f. DPW/NRB will determine if sufficient densities of furbearers exist to permit limited trapping. If sufficient densities of furbearers exist, DPW/NRB will determine the number of trappers each season (not to exceed 15 individual trappers).
- g. DPW/NRB will assign trappers areas to trap. Authorized trapping areas will be listed on the trapper's permit along with the authorized harvest for each area, sign-out procedures, season restrictions and reporting requirements.
- h. Trappers will use good judgment and sensitivity in setting traps such that domestic animals, non-target species and humans are unlikely to encounter traps. Trappers using questionable sets, even if legal, may be removed from the trapping program.
- i. All traps will be marked with the owner's name and address. Traps will be checked IAW NYS Conservation Laws. Unmarked traps, unattended traps, and dangerous/questionable traps (IAW 5-3f) may be confiscated by Military Police Conservation Law Enforcement Officers, or NYS Environmental Conservation Officers.

- j. River otter, bobcat and fisher harvest must be authorized in advance by DPW/NRB. All incidental take shall be immediately reported to DPW/NRB.
- k. Legally trapped furbearers must be dispatched immediately after capture. Only .22 rim-fire caliber firearms may be carried by the trapper to dispatch animals.
- l. Non-target animals, such as stray domestic animals or protected wildlife species, must be immediately released at the capture site, if survival of the animal is probable. Severely injured by-catch, excluding domestic animals, shall be dispatched on site.
- m. Domestic animals injured or killed by trapping shall be immediately delivered to Natural Resources for identification or veterinary treatment.
- n. Trapping may be authorized during the Regular Firearms Big Game Season to address nuisance animal situations. Trappers must coordinate with NRB for access.
- o. Authority to trap live woodchucks, raccoons, skunks, and opossum on the Main Post may also be granted by DPW/NRB. Animals captured on the Main Post in this program will be dispatched at an off-post location. Live release is not authorized.
- p. All harvested animals will be reported to the Natural Resources Branch, as stipulated on the trapping permit.
- q. All traps and trapping methods (implements, sets, seasons, limits, etc.) will be IAW the current NYS trapping regulations.
- r. Should less than five (5) individuals eligible under paragraph 5-1 (see Appendix C) of this regulation apply to RD for a West Point trapping permit, DPW/NRB is authorized to solicit up to five other trappers that do not meet the eligibility requirements set forth in 5-1 to trap problem or nuisance animals. Selection will be made on a first-come first-served basis at the Natural Resources Office starting at 0830 on November 1. Selected individuals will be sold a West Point trapping permit. All other restrictions and/or guidance provided in this chapter will apply to the selected individuals. Access to the reservation shall be coordinated at all times with Range Control.

## CHAPTER 6

### Other Recreational Activities

#### Section I

#### Boating

##### 6-1. Eligibility:

- a. Active duty military personnel and their family members assigned to or stationed at West Point have priority and may call to reserve permits up to 72 hours prior, other categories of personnel which include eligible retirees and eligible Department of Defense (DOD) civilians will be issued permits on a first come first serve basis.

##### 6-2. General Boating Procedures and Policies:

- a. Non-DOD civilians and guests are not authorized to utilize the powerboat program and are not permitted to sign for passes under any circumstances.
- b. Registered powerboat owners are the sole authorized users, guests are not permitted.
- c. Sharing passes is not authorized. Only pass holders are authorized to utilize passes.

- d. The power boating program will be conducted 1 May through 30 October from 0800-2000hrs. Powered watercraft are allowed on West Point waters after the above dates unless the operator has written permission and a range pass from range control. This excludes DES and DPW.
- e. Permits are required for powerboats (10 horsepower or more) and all jet skis. Permits will be issued at the Round Pond Registration Office. Only two power boat permits will be issued at a time for Popolopen Lake and five for Stilwell Lake. Individuals will be issued only one permit at a time. Powerboats equipped with both a 10+ HP motor and a low-power electric motor shall be regulated as an electric powered boat if the gas motor is disabled (i.e. the gas tank is removed from the boat) while afloat.
- f. Power boat permits must be turned in at the end of the day. After-hours a drop box is provided in the front door of Round Pond Camp Office.
- g. Any Keys signed out for boat ramp access must be turned in by the end of the day. You are responsible for keeping the gate locked at all times.
- h. Parking your vehicle blocking any boat ramp or entrance gate is strictly prohibited.
- i. All personnel who wish to use a powered watercraft on Popolopen Lake and Stillwell Lake must have a registration card on file at the Round Pond Camp Office. The registration will have the following information: Owner's name, address, work and home phone number, boat make, color, serial number, motor make/HP, motor serial number and copy of the current registration.
- j. All boats must be properly registered.
- k. All boats will have the necessary safety equipment aboard IAW current USCG rules. Operators are responsible for complying with Federal and State boating laws
- l. All boats on West Point waters must have U.S. Coast Guard approved personal flotation devices (PFDs) for each person in the boat.
- m. The term "boat" is intended to mean any vessel capable of being used or operated as a means of transportation or recreation in or on the water including but not limited to gas powerboats, electric powerboats, and non-powerboats such as canoes and kayaks.
- n. Trailered boats shall only be launched at designated boat launch sites. Carry in boats may be launched at the owner's discretion, but access precautions to prevent training conflict apply.
- o. Boaters will follow the AIS regulation and policies as outlined in **Appendix E**.
- p. Boaters will control and immediately report any fuels spills to West Point Emergency Services (845-938-3333)

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**6-3. Authorized boating Areas, Types of Propulsion Authorized and Capacity Limits:**

| <b>Types of Propulsion Authorized</b> |  |  |                                       |                             |
|---------------------------------------|--|--|---------------------------------------|-----------------------------|
| <b>Area</b>                           | <b>Powerboats /w<br/>Less than 10 hp</b> | <b>Powerboats<br/>/w 10, more<br/>hp</b> | <b>Electric<br/>Powered<br/>Boats</b> | <b>Non-Power<br/>Boats*</b> |
| Beaver Pond                           |  |  | X                                     | X                           |
| Brooks Hollow                         |  |  | X                                     | X                           |
| Bull Pond                             |  |  | X                                     | X                           |
| Cragston Lakes                        |  |  | X                                     | X                           |
| Cranberry Pond                        |  |  | X                                     | X                           |
| Lake Frederick                        |  |  | X                                     | X                           |
| Lake Georgina                         |  |  | X                                     | X                           |
| Lusk Reservoir                        |  |  |                                       | X                           |
| Mine Lake                             |  |  | X                                     | X                           |
| Popolopen Lake                        | X  | X  | X                                     | X                           |
| Round Pond                            |  |  | X                                     | X                           |
| Stilwell Lake                         | X  | X  | X                                     | X                           |
| Weyants Pond                          |  |  | X                                     | X                           |
| Wilkins Pond                          |  |  | X                                     | X                           |

**\*Non-power boats include any watercraft not powered by gasoline or electric motors.**

| <b>Capacity Limits</b> |  |                                      |
|------------------------|--|--------------------------------------|
| <b>Area</b>            | <b>Powerboats /w<br/>Less than 10 hp</b> | <b>Powerboats /w<br/>10, more hp</b> |
| Beaver Pond            | 0  | 0                                    |
| Brooks Hollow          | 0  | 0                                    |
| Bull Pond              | 0  | 0                                    |
| Cragston Lakes         | 0  | 0                                    |
| Cranberry Pond         | 0  | 0                                    |
| Lake Frederick         | 0  | 0                                    |
| Lake Georgina          | 0  | 0                                    |
| Lusk Reservoir         | 0  | 0                                    |
| Mine Lake              | 0  | 0                                    |
| Popolopen Lake         | 7  | 2                                    |
| Round Pond             | 0  | 0                                    |
| Stilwell Lake          | 7  | 5                                    |
| Weyants Pond           | 0  | 0                                    |
| Wilkins Pond           | 0  | 0                                    |

**(THIS AREA IS INTENTIONALLY LEFT BLANK)**

- a. Powerboats will not be permitted on Popolopen Lake during the period of Cadet Field Training. Powerboats needed to support cadet training will be permitted at the Camp Commander's discretion. Only electric powerboats are authorized on Popolopen Lake during the period of Cadet Field Training.
- b. DPW/NRB may authorize appropriate West Point, Federal and State organizations to use internal combustion engines on all lakes and ponds during water quality, weed control, habitat management, and fisheries investigations.
- c. Lusk Reservoir is limited to two non-power boats on the water at any one time.

## **Section II**

### **Camping & Primitive Camping**

#### **6-4. Camping Procedures and Policies:**

- a. Camping is only authorized in established MWR recreation areas.

#### **6-5. Primitive Camping Procedures and Policies:**

- a. Primitive camping outside of established MWR recreation areas is prohibited on West Point.

## **Section III**

### **Hiking**

#### **6-6. General Hiking Procedures and Policies:**

- b. Hiking, bird watching and dog walking is prohibited in any of the West Point Training Areas without specific written approval by USAG West Point Range Control.
- c. The only authorized hiking areas are in the designated MWR recreational areas.

## **Section IV**

### **Off Road and Recreational Vehicle Use**

#### **6-7. All-terrain vehicle (ATV):**

- a. Recreational use of All-Terrain Vehicles are prohibited on West Point.

#### **6-8. Recreational off-highway vehicle (ROV):**

- a. Recreational off-highway vehicles are prohibited in West Point training areas.

#### **6-9. Off-highway motorcycle (OHM):**

- a. Off-highway motorcycles are prohibited in West Point training areas. This includes off-highway motorcycles that are modified for public highway use.

#### **6-10. Snowmobiles:**

- a. Recreational use of Snowmobiles are prohibited on West Point.



**Section V  
Biking**

**6-11. Biking Procedures and Policies:**

- a. Biking is prohibited in West Point training areas, unless written permission by USAG West Point Range Control. .

**Section VI  
Drone Usage**

**6-12. Drone Procedures and Policies:**

All drone users must follow the rules and regulations in Appendix H. Failure to follow the rules and regulations in Appendix H may result in fines.

**Section VII  
Swimming**

**6-13. Swimming Procedures and Policies:**

- a. The only authorized swimming area is Round Pond, Bull Pond and Lake Frederick Beaches. Authorized cadets and military personnel may swim at the Lake Popolopen beaches.
- b. Pets are not authorized to swim at Popolopen Lake or Stillwell Lake. Pets are unauthorized to swim in all beach areas. Pets must be on a leash at all times, unless authorized for approved hunting reasons.

**Section VIII  
Horseback Riding**

**6-14. Horseback Riding Procedures and Policies**

- a. Only authorized horseback riding authorized is on Range Road (RR) 8 starting at Morgan Farm starting at gate 13 and stops at gate 14.
- b. You must remain on RR 8 at all times. The only time horseback riding is authorized on RR 8 is when the sign at gate 13 permits it. All other horseback riding on RR 8 is unauthorized.
- c. Only authorized cadets and military personnel can horseback ride on West Point. Authorized cadets and military personnel must check in, check out and obtain permission from Range Control before riding in training areas. All others must coordinate with MWR and Range Control to obtain written permission.

**CHAPTER 7  
ENFORCEMENT**

**SECTION I  
PROCEDURES**

**7-1. Warnings/Citations:**

a. CLEO's will respond to violations of this regulation, archeological laws and regulations, USMA REG 210-30 (Animal Control), USMA REG 420-03 (Fire Prevention & Protection), NYS and federal laws. Violators may be issued warnings and citations using the DA Form 1408 and DCVN (United States District Court Violations Notice), when required.

b. CLEO's, in coordination with NYS DEC, will investigate major violations of Federal Fish and Wildlife Laws and NYS Environmental Conservation Law.

**SECTION II  
SUSPENSIONS AND REVOCATIONS**

When a Monetary DCVN is issued for a violation the violator will be suspended on the spot until proof of payment is turned into the Military Police CLEO's. When a mandatory court DCVN is issued the violator will be suspended on the spot until after the court adjudication and a suspension or revocation of privileges decision has been made by the Provost Marshal Office and Garrison Commander.

**7-2. West Point Military and Civilian Personnel:** If the violator is a cadet, active duty military person, or civilian employee stationed at West Point, the notification of violation, suspension, and revocation, when not issued directly to the violator, may be forwarded to the violator's organization or activity.

**SECTION III  
APPEALS**

Any individual cited for a violation of this regulation, which results in the loss of privileges, may appeal the decision providing the appeal is submitted in writing to the GC within ten working days of the notice. Any individual cited for a NYS or Federal violation, which results in the loss of privileges, may NOT appeal the decision with the

## Glossary

**All-terrain vehicle:** Any motor vehicle designed for travel over unimproved terrain that is 50 inches or less in width, weighs 1,000 pounds or less, has three or more low-pressure tires, has a seat designed to be straddled by the operator, and has handlebar-type steering control

**Aquatic invasive species (AIS):** a species that is nonnative to the ecosystem under consideration and whose introduction causes, or is likely to cause, economic or environmental harm or harm to human health. The harm must significantly outweigh the benefits.

**Artifact:** any human-made, portable object older than 50 years.

**Artificial lures/bait:** artificial imitations of natural bait, man-made flies, spinners, spoons, plugs, jigs and other lures, including those that may contain some natural substances such as deer hair and feathers.

**Authorized fishing area:** all waters within the West Point boundary, excluding Long Pond which is under the jurisdiction of the Town of Highlands and the Hudson River.

**Bag limit:** the maximum number of single species or combination (aggregate) of species permitted to be taken by one person in any one day during the open season in any one specified geographic area for which a daily bag limit is prescribed.

**Big game:** White-tailed deer and black bear.

**Black bass:** largemouth and smallmouth bass.

**Blind:** anything that provides shelter, cover, or place of concealment for a person(s) for the use in hunting.

**Boat** is intended to mean any vessel capable of being used or operated as a means of transportation or recreation in or on the water including but not limited to gas powerboats, electric powerboats, and non-powerboats such as canoes and kayaks.

**Bow:** includes long (stick), compound, or recurve bow.

**Catch-and-release:** catching and immediately releasing the caught fish without harm. Measuring, weighing and photographing of the fish are permitted as long as the fish is not removed from the water for an extended period or handled in a manner that could cause it harm. Fish may not be placed in a bucket, tub, livewell, on a string or any other holding device. Catch and release angling is only permitted during the open season for a particular fish species. Catch and release angling during the closed season, unless allowed by NYS or local regulation, or for endangered or threatened fish species is prohibited.

**Crossbow:** consists of a bow, a string, and either compound or recurve limbs with minimum width of 17 inches (tip of limbs, un-cocked), mounted on a stock. The stock shall have a trigger with a working safety that holds the string and limbs under tension until released. It shall have a minimum overall length from the butt of the stock to the front of the limbs of 24 inches and be able to launch a minimum 14-inch arrow/ bolt, not including the legal arrowhead. It shall have a

draw weight of 100 to 200 pounds. Optical sights are allowed on crossbows. Crossbows have similar regulation as muzzleloaders and will be considered as such on the USMA reservation.

**Culturally sensitive areas:** area which contains or may contain archaeological sites.

**Disabled hunter:** In regards to access to reserved hunting blinds or dedicated hunting disabled hunting areas: a person who possesses a valid handicapped parking pass issued by an authorized authority.

**Dispatch:** to kill with quick efficiency.

**Dud Zones/UXO:** areas designated for impact and/or detonation of ordnance, or the area within an operational range used to contain fired, dropped, or launched military munitions.

**Earn-a-buck:** program which allows valid general public hunters to take a legal antlered deer after the take of an antlerless deer (w/appropriate tags) as authorized by NRB staff.

**Firearm:** all guns, including handguns, rifles, shotguns, muzzleloaders and BB and pellet guns.

**Fires:** any outdoor fire or outdoor smoke producing process from which air contaminants are emitted directly into the outdoor atmosphere. *Open fires* include burning in barrels or modified barrels.

**Firewood:** all dead and on the ground wood of any species, cut or not cut, split or not split, regardless of length which is in a form and size appropriate for use as a fuel.

**Fishing:** the taking, killing, netting, capturing or withdrawal of fish by any means. This includes every attempt to take fish, plus assisting another person in taking or attempting to take fish.

**Furbearer:** Coyote, red and gray fox, bobcat, raccoon, skunk, mink, weasel and opossum

**Conservation Law Enforcement Officer:** environmental law enforcement personnel for USAG West Point.

**Hunting:** to pursue, shoot, kill or capture (other than trap) wildlife and includes all lesser acts that disturb or worry wildlife, whether or not they result in take. Hunting also includes all acts to assist another person in taking wildlife. Accompanying individuals not assisting in the take of wildlife (i.e. observers) will be considered walkers, not hunters.

**Internal combustion engine:** a heat engine in which the combustion that generates the heat takes place inside the engine proper instead of in a furnace.

**Launch:** to place a watercraft into a waterbody for any purpose and any activity that takes place within fifty feet of the high water mark of the waterbody for the purpose of placing a watercraft into a waterbody, including moving by trailer or other device or carrying by hand a watercraft toward the waterbody, or entering a queue prior to launching.

**Muzzleloader:** a firearm loaded through the muzzle, shooting a single projectile and having a minimum bore of .44 inch. (Also see primitive muzzleloader)

**Natural bait:** all baits which entice or might be ingested or swallowed by fish including, but not limited to, fish (dead or alive), fish eggs, worms, shellfish, crustacea, amphibians (frogs and toads), insects (including all stages of development such as larvae, pupae, etc.), pork rinds, liver, meat, corn or other vegetable matter, tapioca, candy, cheese, bread and putty or dough-like scented baits.

**Non-toxic shot:** any shot type that does not cause sickness and death when ingested by migratory birds as outlined by the US Fish and Wildlife Service.

**Off-highway motorcycle (OHM):** Any motor vehicle designed for travel over unimproved terrain on no more than two tires that has a seat designed to be straddled by the operator, and handlebar-type steering control.

**Off-post/Reservation hunting areas:** areas west of 9W and 218.

**On-post/cantonment hunting areas:** areas east of 9W and 218 to include areas G2, J2, J3, J4, J5.

**Primitive muzzleloader:** flintlock-ignition, single-barrel long guns manufactured prior to 1800, or a similar reproduction of an original muzzle loading single-barrel long gun .44 caliber or larger, or .50 caliber or larger handgun, using a single projectile.

**Range:** a designated land or water area that is set aside, managed, and used for range activities of the DOD. The term includes firing lines and positions, maneuver areas, firing lanes, test pads, detonation pads, impact areas, electronic scoring sites, buffer zones with restricted access, and exclusionary areas. The term also includes airspace areas designated for military use in accordance with regulations and procedures prescribed by the Administrator of the Federal Aviation Administration.

**Reasonable precautions:** intentional actions that prevent or minimize the introduction or spread of aquatic invasive species.

**Recreation area:** areas under MWR jurisdiction where military training is excluded.

**Recreational off-highway vehicle (ROV):** Any motor vehicle designed for travel on four or more non-highway tires and that is less than 80 inches in width, weighs 1,750 pounds or less, has an operating speed greater than 35 mph, has non-straddle seating, and has a steering wheel for steering control

**Restricted areas:** areas that are off limits for all recreational activities or actions associated with recreational activities (parking, walking, driving, etc.).

**Scouting:** to explore an area to obtain information. Includes activities such as blind or tree stand set up or removal. Counts against area use limit.

**Shotgun:** a firearm with a barrel length of 18 inches or more that uses shells that are nonmetallic except for the base.

**Sign-in:** procedure to account for personnel exiting hunting areas.

**Sign-out:** procedure to account for personnel entering hunting areas.

**Size limit:** minimum length of fish required for take; measured from nose to end of pinched tail.

**Small game:** Upland and migratory game birds, small game mammals, excluding those designated furbearers (i.e. gray squirrel, rabbit) and certain frogs and turtles.

**Snowmobile:** Any motor vehicle designed for travel on snow or ice and steered and supported in whole or in part by skis, belts, cleats, runners, or low-pressure tires

**Stock:** the liberation of fish or fish eggs, wildlife, or plants into a free-living state.

**Take/harvest:** to pursue, shoot, hunt, kill, capture, trap, snare or net wildlife and game and all lesser acts that disturb, harass or worry wildlife or to place or use any net or other device commonly used to take wildlife.

**Trapping:** to take, kill or capture wildlife with traps, deadfalls and other devices commonly used to take wildlife, including the shooting or killing of lawfully trapped animals. It also includes all related activities such as placing, setting, staking or checking traps or assisting another person with these activities.

**Tree stand:** open or enclosed platforms used by hunters. The platforms are secured to trees in order to elevate the hunter and give him or her a better vantage point. Use of permanent stands, screw-in/nail-in spikes, foothold, or any other accessory that causes damage to a tree are not permitted.

**Unexploded ordinance:** military munitions that (A) have been primed, fuzed, armed, or otherwise prepared for action; (B) have been fired, dropped, launched, projected, or placed in such a manner as to constitute a hazard to operations, installations, personnel, or material; and (C) remain unexploded whether by malfunction, design, or any other cause.

**Watercraft/boat:** any vessel capable of being used or operated as a means of transportation or recreation in or on the water including but not limited to gas powerboats, electric powerboats, and non-powerboats such as canoes and kayaks.

**Waterfowl:** migratory game birds to include brant, wild ducks, geese, and swans.

**APPENDIX A  
REFERENCES**

1. Title 16, United States Code, Section 670 et seq., Conservation Programs on Military Installations and Title 18, United States Code, Section 1382, Trespassing.
2. Title 16, United States Code Section 718 et seq., Migratory Bird Hunting Stamp Act.
3. Title 18, United States Code Section 1382, Trespassing.
4. DOD Directive 4700.4, Natural Resource Management Program.
5. AR 37-100, Account/Code Structure.
6. AR 37-108, General Finance and Accounting for Finance and Accounting Office.
7. AR 190-45, Law Enforcement Reporting.
8. AR 215-1, Military Morale, Welfare, and Recreation Programs and Non-appropriated Fund Instrumentalities.
9. AR 200-1, Environmental Quality Environmental Protection and Enhancement.
10. Environmental Conservation Law of NYS and Title 6 New York Code of Rules and Regulations.
11. Integrated Natural Resources Management Plan: 2011-2015, at the United States Military Academy.
12. USMA Reg 350-11, Range and Training Complex.
13. Uniform Code of Military Justice (UCMJ).
14. Title 10, United States Code, Section 2671- Military Reservations: Hunting, Fishing, and Trapping.
15. USMA Reg 190-6, Firearms and Dangerous Weapons.



**APPENDIX B  
ELIGIBILITY PRIORITIES**

1. Eligibility and patronage shall be IAW with AR 215-1 Military Morale, Welfare, and Recreation Programs and Non-appropriated Fund Instrumentalities, Chapter 7.
2. Guests of West Point DOD civilians. Guests may not fish or hunt without their sponsor.
3. Members of the general public other than those covered above that apply and obtain a West Point Hunting Permit thru the USAG established procedures.

**APPENDIX C  
OFFENSES AND ADMINISTRATIVE ACTION**

1. Violations of this regulation or violations of US Federal Fish and Wildlife Laws and NYS Environmental Conservation Laws (ECL) need only be proven by preponderance of the evidence standard in order to impose West Point administrative actions. Consequently, the West Point administrative actions listed may be taken against personnel whose civil or criminal prosecutions for violations of NYS and Federal Fish and Wildlife Laws resulted in acquittals, if substantial evidence nevertheless exists that the violations occurred.
2. Suspensions include all recreational privileges and are enforced in aspects of a pass year (1 October to 30 September). If a suspension of privileges occurs at or near the end of the license year and the suspension period exceeds the license year, then the remaining suspension period will be carried over to the next license year.
3. Any suspension imposed for a violation will not be shortened except through filing an appeal with the GC.

**APPENDIX D – HUNTING AREAS & REGULATIONS**

| <b>Hunting Area</b> | <b>Implements Permitted</b> | <b>Hunter class restriction</b> | <b>Hunter Quota</b> |
|---------------------|-----------------------------|---------------------------------|---------------------|
| A1                  | All implements              | All                             | 3                   |
| A2                  | All implements              | All                             | 2                   |
| A3                  | Archery Only                | All                             | 5                   |
| Accessible Hunting  | All implements              | Disabled Only                   | 2                   |
| B                   | All implements              | All                             | 7                   |
| Buckner Bow         | Archery Only                | No Public Hunters               | 2                   |
| C                   | All implements              | All                             | 6                   |
| Constitution Island | Archery Only                | Cadet Only                      | 4                   |
| CS                  | All implements              | All                             | 3                   |
| CS 2 Bow            | Archery Only                | No Public Hunters               | 3                   |
| D1                  | All implements              | All                             | 7                   |
| D2                  | All implements              | All                             | 3                   |
| D3                  | All implements              | All                             | 7                   |
| D4                  | All implements              | All                             | 2                   |
| E1                  | All implements              | All                             | 4                   |
| E2                  | All implements              | All                             | 5                   |
| F                   | All implements              | All                             | 6                   |
| G1                  | All implements              | All                             | 2                   |
| G2 Bow              | Archery Only                | No Public Hunters               | 2                   |
| H                   | All implements              | No Public Hunters               | 3                   |
| I                   | All implements              | All                             | 7                   |
| J1                  | Bow/Primitive muzzleloader  | No Public Hunters               | 5                   |
| J2 Bow              | Archery Only                | No Public Hunters               | 7                   |
| J3                  | Bow/Spring shotgun          | No Public Hunters               | 7                   |
| J4 Bow              | Archery Only                | No Public Hunters               | 3                   |
| J5 Bow              | Archery Only                | No Public Hunters               | 3                   |
| K                   | Shotgun/Muzzleloader/Bow    | No Public Hunters               | 5                   |
| L                   | All implements              | All                             | 11                  |
| M                   | All implements              | All                             | 8                   |
| N                   | All implements              | All                             | 10                  |
| O                   | All implements              | All                             | 6                   |
| P                   | All implements              | All                             | 6                   |
| Q                   | All implements              | All                             | 6                   |
| R                   | All implements              | All                             | 4                   |
| RP Bow              | Archery Only                | All                             | 2                   |
| S                   | All implements              | All                             | 7                   |
| T1                  | All implements              | All                             | 3                   |
| T2                  | All implements              | All                             | 2                   |

| <b>Hunting Area</b>   | <b>Implements Permitted</b> | <b>Hunter class restriction</b> | <b>Hunter Quota</b> |
|-----------------------|-----------------------------|---------------------------------|---------------------|
| U1                    | All implements              | All                             | 4                   |
| U2                    | All implements              | All                             | 5                   |
| V/W Bow               | Archery Only                | No Public Hunters               | 2                   |
| X                     | All implements              | All                             | 7                   |
| Y                     | All implements              | All                             | 6                   |
| Z1                    | All implements              | No Public Hunters               | 6                   |
| Z2                    | All implements              | No Public Hunters               | 2                   |
| Z4                    | All implements              | No Public Hunters               | 2                   |
| Z5                    | All implements              | No Public Hunters               | 3                   |
| Z6                    | All implements              | No Public Hunters               | 2                   |
|                       |                             |                                 |                     |
| <b>Waterfowl Area</b> | <b>Implements Permitted</b> | <b>Hunter class restriction</b> | <b>Hunter Quota</b> |
| Beaver Pond WF        | Shotgun                     | No Public Hunters               | 3                   |
| Brooks Hollow WF      | Shotgun                     | No Public Hunters               | 2                   |
| Bull Pond WF          | Shotgun                     | No Public Hunters               | 4                   |
| Cranberry Pond WF     | Shotgun                     | No Public Hunters               | 4                   |
| Lake Georgina WF      | Shotgun                     | No Public Hunters               | 2                   |
| Popolopen Lake WF     | Shotgun                     | No Public Hunters               | 8                   |
| Stilwell Lake WF      | Shotgun                     | No Public Hunters               | 8                   |
| Weyants Pond WF       | Shotgun                     | No Public Hunters               | 4                   |
| Wilkins Pond WF       | Shotgun                     | No Public Hunters               | 4                   |

## Appendix E

### Aquatic Invasive Species Prevention (AIS)

#### A. Definitions

- 1) **Aquatic invasive species (AIS)** are organisms that are not native to our aquatic ecosystems and can threaten New York State's aquatic ecology, economy, and even human health. New York State's legal definition of invasive species is consistent with the federal definition and is "*a species that is nonnative to the ecosystem under consideration and whose introduction causes, or is likely to cause, economic or environmental harm or harm to human health. ...the harm must significantly outweigh any benefits*" (ECL § 9-1703).
- 2) **Watercraft** includes every motorized or non-motorized boat or vehicle capable of being used or operated as a means of transportation or recreation in or on water.
- 3) **Launch** means to place a watercraft into a waterbody for any purpose and any activity that takes place within fifty feet of the high water mark of the waterbody for the purpose of placing a watercraft into a waterbody, including moving by trailer or other device or carrying by hand a watercraft toward the waterbody, or entering a queue prior to launching.
- 4) **Reasonable precautions** mean intentional actions that prevent or minimize the introduction or spread of aquatic invasive species.

#### B. Waterbodies

- 1) Applies to all waterbodies specified in 4.3-x Authorized Waterbodies

#### C. Policies

- 1) ECL § 9-1710 requires that operators launching watercraft or floating docks must take "reasonable precautions" to prevent the spread of AIS, and requires NYSDEC to promulgate regulations describing demonstrable "reasonable precautions" to be taken prior to launch.
- 2) 6 NYCRR §§ 59.4 & 190.24 requires watercraft launched at or retrieved from access sites to be drained, and the watercraft, trailer, and associated equipment to be free of visible plant or animal matter.
- 3) Watercraft operators will practice a Clean, Drain, Dry protocol
  - i) Check
    - (1) Check boat propellers, trailers, hulls, sailboat keels, centerboard and dagger-board trunks, and rudders, and fishing and anchor lines, as well as within motors, live wells, and bilge water for plant matter or mud
    - (2) Run your hand along the hull of the boat. If it feels like sandpaper then it likely has invasive mussels attached
  - ii) Clean
    - (1) Remove plant material/mud and dispose of away from waterbody/drainages
  - iii) Drain
    - (1) Drain boat, ballast tanks, and livewell before leaving site
  - iv) Dry
    - (1) Dry boats, trailers, and all equipment at a minimum of 5-7 days, in warm condition before transporting to a new body of water
  - v) Disinfect

- (1) Use steam or exposing surface/equipment to 140F hot water for 30 seconds or;
- (2) Use of disinfecting agents such as 2% bleach, 200 ppm Potassium Chloride (KCl) solution, 100% vinegar, or 1% salt water solution for minimum of 10 minutes (Note: some solutions may damage/discolor equipment)

**D. Tournaments**

- 1) Will comply with 4-x policies in addition to the following:
  - a) Tournament officials/administrators will appoint on Environmental Officer (EO)
  - b) The EO will be responsible for visually inspecting watercraft and equipment, as outlined in 4.3-x, prior to watercraft entering waterbody and after exit from waterbody
  - c) EO will report any invasive species found to Natural Resources Branch personnel

**E. References**

- 1) Federal
  - a) Executive Order 13112
  - b) Lacey Act
  - c) Plant Protection Act; Title VII, Chapter 104
- 2) New York State
  - a) ECL § 9-1710
  - b) ECL § 9-1709
  - c) 6 NYCRR § 575
  - d) 6 NYCRR § 59.4 & 190.24
  - e) 6 NYCRR § 180.9

**Appendix F: Contact Numbers**

**Phone Numbers**

|   |              |
|---|--------------|
| Natural Resources Office.....               | 845-938-7122 |
| .....                                       | 845-938-1973 |
| .....                                       | 845-938-3857 |
| .....                                       | 845-938-2314 |
| Safety Office.....                          | 845-938-6129 |
| Range Control.....                          | 845-938-3930 |
| Provost Marshal Office/Military Police..... | 845-938-3333 |
| Conservation Law Enforcement Office.....    | 845-590-1345 |
| Conservation Law Enforcement Duty Cell..... | 845-938-0147 |
| Fire Department.....                        | 845-938-3001 |
| Hunt Control Office.....                    | 845-938-8810 |
| Recreation Office (Round Pond).....         | 845-938-2503 |
| Emergency Services.....                     | 911          |



**Appendix G: Permit Fees**

|   |         |
|---|---------|
| Hunting Permit <sup>α</sup> .....               | \$20.00 |
| Discount Hunting Permit <sup>β</sup> .....      | \$12.00 |
| Fishing Permit <sup>α</sup> .....               | \$20.00 |
| Discount Fishing Permit <sup>β</sup> .....      | \$12.00 |
| Daily Veteran Fishing Pass <sup>γ</sup> .....   | \$5.00  |
| Trapping Permit <sup>α</sup> .....              | \$20.00 |
| Discount Trapping Permit <sup>β</sup> .....     | \$12.00 |
| Sportsman Permit <sup>α</sup> .....             | \$35.00 |
| Discount Sportsman Permit <sup>β</sup> .....    | \$21.00 |
| Daily Hunt/Fish Permit <sup>δ</sup> .....       | \$5.00  |
| Weekly Hunt/Fish Permit <sup>δ</sup> .....      | \$10.00 |
| Monthly Hunt/Fish Permit <sup>δ</sup> .....     | \$15.00 |
| General Public Access Permit <sup>ε</sup> ..... | \$40.00 |
| Daily Guest Pass <sup>δ</sup> .....             | \$5.00  |
| Season Guest Pass <sup>δ</sup> .....            | \$30.00 |

<sup>α</sup> General Pass – available to Active Duty Military Members, Civilians working at West Point, Dependents of Active Duty Military Members or Civilians Working at West Point, and Retired Individuals.

<sup>β</sup> Discount Pass – available to Special Discount may be applied to Cadets, Recreationalists under 16, Recreationalists over 65, and Veterans with 100% Service Related Disability.

<sup>γ</sup> Pass is available only to Veterans honorably discharged and only available for purchase in person directly from Round Pond or Lake Frederick

<sup>δ</sup> Pass is available only to all individuals except members of the General Public.

<sup>ε</sup> Pass is available only to members of the General Public.

## Appendix H: USMA Drone Policy

REPLY TO  
ATTENTION OFDEPARTMENT OF THE ARMY  
UNITED STATES MILITARY ACADEMY  
West Point, New York 10996

MAAS

23 April 2017

## MEMORANDUM FOR SEE DISTRIBUTION

SUBJECT: Use of Small Unmanned Aircraft Systems (sUAS) on West Point Military Installation Policy Memorandum

## 1. References:

- a. AR 95-2, Air Traffic Control, Airfield/Heliport, & Airspace Operations, 31 Mar 16.
- b. AR 95-23, Unmanned Aircraft System Flight Regulations (RAR001), 2 Jul 10.
- c. Chairman of the Joint Chiefs of Staff Instruction (CJCSI) 3121.01B, Standing Rules of Engagement/Standing Rules for the Use of Force for U.S. Forces, 13 Jun 05.
- d. Army Regulation 190-13, The Army Physical Security Program, 25 Feb 11.
- e. Federal Aviation Administration (FAA) Modernization and Reform Act of 2012 (PL 112-95) Section 336, 14 Feb 12.
- f. AR 600-20, Army Command Policy, para 2-5b(1). 6 Nov 14.

2. Purpose: To define the types and regulation of sUAS on the West Point Military Installation and its airspace. sUAS are defined as any UAS under the weight of 55 lbs.

3. Scope: Provisions of this memorandum apply to personnel assigned, attached, residing, visiting or under Operational Control (OPCON) of the United States Military Academy (USMA) and the confines of the West Point Military Installation including its airspace.

## 4. Guidance:

- a. Residents and organizations on the West Point Military Installation are prohibited from receiving commercial services and deliveries originating from outside the installation by means of sUAS.
- b. Installation policy on sUAS will be reviewed on an annual basis. The Senior Commander can prohibit the use of all sUAS at any time.
- c. All sUAS launched within the installation will abide by Federal Aviation Administration (FAA) requirements found at <http://www.faa.gov/uas> and be registered at the Provost Marshall's Office, Building 616.

MAAS

SUBJECT: Use of Small Unmanned Aircraft Systems (sUAS) on West Point Military Installation Policy Memorandum

d. All Small Unmanned Aircraft Systems (sUAS) create the potential for invasions of privacy. To the extent that sUAS activity might threaten good order and discipline, commanders are encouraged to anticipate said activities and adopt appropriate remedial measures.

e. If the West Point Force Protection Condition (FPCON) elevates to FPCON CHARLIE or DELTA, use of all sUAS will terminate immediately and will not resume until reduction in FPCON or approval by the Senior Commander.

f. All sUAS operators will:

(1) Register the aircraft online with the FAA and also with the Provost Marshall's Office, Building 616.

(2) Fly sUAS within line-of-sight of the operator.

(3) Fly only within daylight hours. Daylight hours are defined as the period of time between morning and evening civil twilight, in which one would not need the use of artificial light.

(4) Only operate sUAS below a maximum altitude of 400 feet Above Ground Level (AGL).

(5) Follow all community based safety guidelines.

(6) Provide notification to any airport or air traffic tower within 5 miles.

(7) Conduct full pre-flight inspections on sUAS before operating.

(8) Follow all FAA sUAS regulations.

5. Regulations by Category of Use.

a. Recreational. Small UAS flown for recreational purposes are typically known as model aircraft. This category includes most drones purchased commercially or given as gifts.

(1) Will only operate at Lake Frederick.

(2) Must submit Request for Use five (5) working days in advance.

## MAAS

SUBJECT: Use of Small Unmanned Aircraft Systems (sUAS) on West Point Military Installation Policy Memorandum

(3) Request must be approved by 2<sup>nd</sup> AVN and FMWR Outdoor Recreation. Approved requests will be published in the Helo-Ops and Flight Schedule and distributed in the weekly TASKORD. See Enclosure 1.

b. Educational. Only small UAS flown in support of cadet classes and CAPSTONE projects fit in this category.

(1) Educational use is defined as utilizing the aircraft for research and engineering purposes and MUST be requested by a USMA Academic Department.

(2) There are two categories of educational sUAS missions.

(a) CATEGORY 1: Short Notice – Limited Scope Mission.

i. Will only operate at River Courts and no higher than Cullum Hall.

ii. Will only operate during daylight, 7 days a week.

iii. Must submit Request for Use one (1) working day in advance, approved by 2<sup>nd</sup> AVN, and follow FAA regulations.

(b) CATEGORY 2: All Other Educational sUAS Missions.

i. Can operate anywhere on West Point Military Installation as requested by the Academic Department.

ii. Will only operate during daylight, 7 days a week.

iii. Must submit Request for Use 5 working days. Request must be approved by 2<sup>nd</sup> AVN and will be published in the Helo-Ops and Flight Schedule and distributed in the weekly TASKORD.

c. Commercial: Commercial use of sUAS (such as providing aerial surveying or photography services) or fly incidental to a business (such as performing roof inspections or real estate photography) must follow these regulations.

(1) Can operate anywhere on West Point Military Installation.

(2) Operator must hold a [remote pilot airman certificate](#) with a small UAS rating or be under the direct supervision of someone holding a remote pilot airman certificate.

MAAS

SUBJECT: Use of Small Unmanned Aircraft Systems (sUAS) on West Point Military Installation Policy Memorandum

(3) Must submit Request for Use 5 working days in advance. Request must be approved by 2nd AVN and will be published in the Helo-Ops and Flight Schedule and distributed in the weekly TASKORD. See Enclosure 1.

(4) The USMA Public Affairs Office ICW USMA Anti-Terrorism Officer will review all pictures and video.

(5) All pictures and video posted to social media must adhere to and be IAW USMA Social Media Policy.

6. Point of Contact for this policy is USMA Deputy G3, Mr. Steve Merkel and can be reached at [steven.merkel@usma.edu](mailto:steven.merkel@usma.edu) or 845-938-7398.

ROBERT L. CASLEN, JR.  
Lieutenant General, US Army  
Superintendent

Encl

1. Request for sUAS Use on West Point Military Installation

**Attachments Enclosed:**

- West Point Recreation Map
- West Point Trapping Map
- West Point Cantonment Hunting Map
- West Point Fishing/Waterfowl Hunting Maps

**(THIS AREA IS INTENTIONALLY LEFT BLANK)**

Department of the Army  
United States Military Academy  
West Point, New York 10996

12 October 2011

**Morale, Welfare and Recreation**  
**Hunting, Fishing, Trapping and Boating**

---

IMNE-MIL-MWR

FOR THE SUPERINTENDENT:

OFFICIAL:  
CHARLES A. STAFFORD  
COL, IN  
Chief of Staff

LYNNÁ M. SPEIER  
MAJ, AG  
G1/Adjutant General

DISTRIBUTION:  
SharePoint (G1)

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**Summary:** This regulation covers the policies, responsibilities and procedures governing hunting, fishing, trapping, and boating and the protection of fish and wildlife resources at West Point.

**Applicability:** This regulation applies to the United States Military Academy (USMA), United States Army Garrison West Point and tenant agencies and authorized users of USMA lands as a recreational activity (hunting/fishing/trapping/boating).

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**\*This regulation supersedes USMA Regulation 215-5, dated 1 October 2010.**

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## CHAPTER 1

### SECTION 1 GENERAL

**1-1. Purpose.** To prescribe policies, responsibilities and procedures governing hunting, fishing, trapping, boating, and the protection of fish and wildlife resources at West Point.

**1-2. References.** Reference publications are listed in Appendix A.

### SECTION II RESPONSIBILITIES

**1-3. Recreation Officer (Chief, Recreation Division (RD) will:**

- a. Control selling of the special West Point hunting, fishing, trapping permits, and collect the recreational activity fees.
- b. Distribute maps, promotional and regulatory materials to ensure West Point personnel, guests, and visiting troops are aware of West Point hunting, fishing, and trapping regulations.
- c. Implement administrative aspects of the hunting, fishing, and trapping programs.
- d. Operate the Field Archery Range.
- e. Publish fees and charges annually.
- f. Conduct a lottery for the opening day hunting slots of the Regular Firearms Big Game Season.
- g. Position boats and docks at authorized fishing areas.
- h. Maintain listing of suspended hunting, fishing, and trapping privileges
- i. Receive and forward Appeals for Suspension through Directorate of Emergency Services (DES) to the Deputy to the Garrison Commander (DGC).
- j. Provide personnel to sell/issue New York State (NYS), West Point, Deer Management Unit (DMU) permits during the Regular Big Game Hunting season.

**1-4. Directorate of Public Works (DPW), Environmental Management Division (DPW/EMD) will:**

- a. Prepare, update and implement the Integrated Natural Resources Management Plan.
- b. Determine fish and game harvest quotas, size limits, bag limits, and season lengths. Determine participation quotas and coordinate quota criteria with the Safety Officer.
- c. Serve as the primary liaison in fish and wildlife matters with the New York State Department of Environmental Conservation, U.S. Fish and Wildlife Service, and neighboring landowners.
- d. Operate the West Point Big Game Check Station.
- e. Implement administrative and operational aspects of the trapping program.
- f. Implement the administrative aspects of the general public hunting program.
- g. Post cantonment Hunting Areas prior to the special archery big-game season.
- h. Provide to RD and Range Control specific season dates for hunting, fishing, and trapping seasons.
- i. Approve appropriate West Point, Federal, and State organizations to use internal combustion engines on all lakes and ponds during water quality, weed control, habitat management, and fisheries investigations.

j. Solicit up to five trappers that may meet the eligible requirements set forth in Appendix C (Eligibility Priorities) to trap problem or nuisance animals.

**1-5. Directorate of Emergency Services/Police Chief (Chief Game Warden) will:**

- a. As the proponent for law enforcement, serve as the Chief Game Warden.
- b. Establish and resource a Game Warden section to enforce this regulation, NYS and federal laws.
- c. Issue citations on DD Forms 1408 and 1805 and will coordinate with the NYS Department of Environmental Conservation (DEC) for enforcement of NYS environmental conservation laws.
- d. Report citations to the RD along with recommended suspension based on the circumstances of the violation.
- e. Game Wardens will record hunting, fishing and trapping violations in the Centralized Operations Police Suite (COPS).
- f. Game Wardens will respond to all nuisance wildlife complaints and will coordinate with the NYS DEC and the DPW/EMD for removal of the animal, if required. In the case that a nuisance animal can only be removed by shooting the animal, only a qualified law enforcement officer (Game Warden) may discharge his weapon for the purpose of eliminating the nuisance animal.

**1-6. Directorate of Plans, Training, Mobilization and Security (DPTMS) will:**

- a. Establish and resource a Range Control section to manage and control access to all training areas, ranges and danger areas.
- b. Ensure that the range and training area schedule and associated road closings are provided to the G1 for inclusion in the USMA Post Bulletin, to Range Control operation and the Chief, RD, so hunting, fishing, and trapping will not interfere with the military mission.
- c. Exercise absolute control of access to all training areas, ranges, and danger areas no matter what the hunting, fishing or trapping activity, and when necessary, provide personnel to assist in the enforcement of the regulation.
- d. Ensure any hunting, fishing, trapping do not interfere with scheduled training activities.
- e. Ensure safe operation of the ranges and training areas in conjunction with hunting, fishing, and trapping.
- f. Provide the administration and operation of all sign outs for small game/big game hunting, archery, and trapping.
- g. Operate the Big Game Hunt Control Center.
- h. Contact the DES/Military Police Desk to report violations of Range Control restrictions.
- i. Assist RD with opening day lottery for Firearm and Big Game.

**1-7. G1 will:** Publish range and training schedules and associated road closings in the USMA Post Bulletin.

**1-8. Safety Office.** The Safety Officer will review all safety-related aspects of the hunting, fishing, and trapping programs.

**1-9. Deputy to the Garrison Commander (DGC) will:**

- a. Act as the final appeal authority for suspensions of hunting, fishing, and trapping privileges. DGC will respond to written appeals within ten working days.

- b. Designate approved and disapproved hunt and fish areas.

**1-10. USMA Hunters, Trappers and Anglers.** See Appendix B (Rules for West Point Hunters, Trappers, and Anglers).

### **SECTION III POLICIES**

#### **1-11. Policies.**

a. Hunting, fishing and trapping on West Point lands will be in accordance with (IAW) this regulation, the Integrated Natural Resources Management Plan, AR 200-1, applicable Federal laws, and the NYS Environmental Conservation Law and Title 6 New York Code of Rules and Regulations (Appendix E).

b. Hunting, fishing and trapping on the reservation are promoted for personnel eligible under provisions of this regulation and AR 200-1.

c. Any range structures and/or equipment (towers, bleachers/grandstands, bunkers, targets, berms, buildings, etc.) located in hunting areas are off limits.

d. The boundaries of authorized hunting areas are depicted on the most current official West Point hunting map. No other map depicting area boundaries shall be valid.

#### **1-12. West Point Permits and Fees.**

a. As authorized by the Sikes Act (16 USC 670 et seq.) and IAW AR 200-1, special West Point hunting, fishing and trapping permits will be sold to individuals authorized under Eligibility Priorities in Appendix C of this regulation. The permit fees collected will be deposited on a monthly basis in the Wildlife Conservation Fund Account. Funds will be used by the DPW/EMD for the protection, conservation, and management of fish and wildlife (IAW AR 200-1).

b. A recreational (hunting/fishing/trapping) activity fee will also be collected for the Installation, Family and Morale, Welfare, and Recreation (FMWR) Fund. Activity fees will be used IAW AR 215-1 to support the Hunting and Fishing program. This activity fee is included in the total cost of a West Point hunting, fishing, trapping permit.

c. The acceptance of a hunting, fishing, trapping permit, or guest pass shall constitute an acknowledgment by the permittee of his/her duty to comply with this regulation, and all permits are conditioned upon such acceptance.

**1-13. Federal and State Licensing and Permits.** The privileges accorded by the special hunting/fishing/trapping permit will not relieve the permittees of the licensing requirements in the Migratory Bird Hunting Stamp Act (16 USC 718 et seq.) or the Environmental Conservation Law of NYS.

**1-14. Season and Bag Limits.** Harvest regulations will be as those prescribed in the Environmental Conservation Law of NYS, and/or the Federal Government except where more stringent measures may be promulgated by DPW/EMD in response to fluctuations of fish and game populations. These seasons, bag limits and size limits will be published in the West Point Hunting/Fishing and Trapping Bag Limit Guide. The pamphlet will be used by Game Wardens to help determine violations. Violators are also subject to disciplinary action under the Uniform Code of Military Justice and/or Federal Law and may be permanently barred from West Point.

## CHAPTER 2 SMALL GAME HUNTING

**2-1. Eligibility.** Eligibility Priorities are listed in Appendix C.

### **2-2. General Procedures.**

a. Small game, waterfowl, and spring turkey hunting areas and their hunter capacities will be listed annually by Range Control on the respective sign-out sheets posted at Range Control. It is the hunter's responsibility to sign-out on the correct sheet.

b. Small game/waterfowl, and pheasant hunters, during the Regular Firearms Big Game Season, will be required to sign out and in daily, in person for hunting areas at Hunt Control Center. Only one area may be signed out by an individual at one time. Small game hunters, except waterfowl hunters, must wear at least 400 square inches of blaze orange clothing when small game hunting during dates that the Regular Firearms Big Game Season occurs.

c. Off-limits areas reserved for training will be indicated on the sign-out sheets at Range Control located on Route 293. Upon completion of a hunting trip, hunters will sign back in at Range Control in person and report their kill.

d. Licensed young hunters (12 to 15 years of age) are permitted to small game hunt on the reservation, but they must be accompanied by a sponsoring West Point hunter (over 18 years of age) and remain within ten meters of that sponsoring hunter.

e. No individual or West Point activity is authorized to stock wildlife without the permission of the DPW/EMD.

f. Any game taken that has leg bands, ear tags, radio transmitters, or other markers will be reported by the hunter to the Natural Resource Branch, DPW/EMD.

g. Parking is limited at Range Control. Hunters should not park on the shoulder of Route 293. They should park on the access roads across from Range Control when visitor parking is full at Building 1403. No vehicles are to be left in the Range Control parking lot.

h. Hunters are responsible for checking the Sunrise to Sunset Time Chart posted at Range Control for the day's hunting hours.

i. In the interest of cadet development, and in view of limited opportunities for cadets to hunt, the Cadet Hunt Club may reserve hunting area(s) for approved USMA trip sections. Areas reserved for hunting small game and spring turkey will be proportionate to the number of cadets projected, not to exceed half of the number of slots available on a given day to hunt. There are no reservations the day after a stocking.

### **2-3. Small Game/Fall Turkey/Waterfowl.**

a. Small game hunting, including fall turkey, shall be permitted in the hunting areas east of U.S. Route 9W with bow and arrow only, and only during the dates when deer hunting seasons are open.

b. Waterfowl hunters may establish their own blinds, making sure to maintain safe distance from other blinds. Blinds must be constructed entirely of natural material common to the hunting site. All blinds must be removed at the end of the waterfowl season.

c. Waterfowl hunters using boats while hunting must have U.S. Coast Guard approved flotation devices for each person in the boat.

d. Waterfowl hunters must only possess non-toxic (non-lead) shot while afield.

e. Only waterfowl hunting may occur within specially designated area. Waterfowl hunting areas. No small game or big game hunting is authorized when signing out these areas.

**2-4. Spring Turkey.**

- a. Spring turkey hunters will sign out and in daily for hunting areas at Range Control. All spring turkey hunters must be signed in no later than 1330 daily.
- b. Spring turkey hunters may be completely camouflaged. Spring turkey hunting is not permitted in cantonment areas. However, the following exception applies: spring turkey bow hunting is permitted in Areas J2 and J3. All hunters in the areas must be signed in by 1200.

**2-5. Raccoon and Predator (Night).**

- a. Night hunters for predator species (raccoons, foxes, coyotes, opossums and bobcats) will follow the same Range Control sign-out and in procedures as small game hunters. Hunters must coordinate with Range Control during duty hours to schedule an area for night hunting. Additionally, hunters must check back in with Range Control the next morning.
- b. Nighttime hunting is prohibited during the Regular Firearms Big Game Season.
- c. Nighttime hunters may possess only .22 rim fire rifles or shotguns loaded with size BB or smaller. Center fire rifles or pistols may not be carried by the hunter or in the vehicle.

## **CHAPTER 3**

### **BIG GAME HUNTING**

**3-1. Eligibility.** Eligibility is listed in Appendix C.

**3-2. General Procedures.**

- a. All big game harvested during the season will be registered at the West Point Big Game Check Station.
- b. Upon legally harvesting a deer or bear, after it is properly tagged according to the Environmental Conservation Law of NYS, the hunter will proceed via the most direct route to the West Point Check Station. Bear taken by any big-game hunter will be immediately reported to the DPW/EMD Natural Resources Branch's Wildlife Biologist.
- c. Harvested big game will be presented by the hunter for registration with all internal organs removed. Registration procedures will be posted at the Hunt Control Center.
- d. Any area not being used for training and open for hunting may be closed at the discretion of the DGC or the Range Control in coordination with DPW/EMD and RD. In order to fully implement the big game hunting program, Range Control may restrict non-hunter access on the reservation during the hunting season.
- e. Big game hunters will be permitted to use temporary, pre-fabricated, portable stands provided that the tree(s) supporting the stand is (are) not significantly damaged when the stand is erected. Screw-in footholds, spikes, or any structures nailed into a tree will not be permitted. All stands must be removed at the end of the big game seasons. Permanent tree stands are prohibited.
- f. Regulated deer hunting is an important land management tool that allows West Point to maintain high quality training areas. This hunting is conducted as a recreational activity but the land management aspects are primary.
- g. Under Title 10 U.S. Code, Section 2671, West Point must abide by New York regulations for deer hunting season dates, bag limits and other regulations that control how deer hunting is conducted at West Point. There is no option available to change season dates or bag limits to make restrictions less stringent or accommodate other activities. Therefore, any projects or activities proposed to occur in the training areas during deer hunting season dates must be given careful consideration and needs to be carefully evaluated by all affected parties.

**3-3. Hunting Areas and Hunter Density.**

- a. The authorized Big Game Hunting areas and their maximum hunter capacities will be posted at Hunt Control.
- b. Hunting in the areas east of US Route 9W is only authorized for military personnel assigned to West Point, West Point civilian employees, USMA cadets, Family members of military personnel, retirees, parents of USMA cadets, and authorized guests of any one of these categories (guests must be accompanied by their sponsors at all times). All weapons used in these areas must be registered with the DES (IAW USMA Reg 190-3, 1-10).

**3-4. Archery Season.**

- a. Archery hunting areas and hunter capacities will be listed by Range Control on the hunting sign-out sheet at Range Control and cantonment areas.
- b. Big Game taken during the archery seasons will be registered and weighed at a location to be announced by DPW/EMD. Bear taken by archers will be immediately reported to the Natural Resources Branch, DPW/EMD.
- c. Archery deer hunters are allowed tree stands, IAW paragraph 3-2e.
- d. During the Regular Firearms Big Game Season, archers will follow the sign out and harvest registration procedures applicable to firearms big game hunters.
- e. No archery hunting will be permitted in the J areas on the Saturdays of home football games.
- f. Young hunters (14 to 15 years of age) with junior archery licenses may hunt big game with bow and arrow during the special archery season. Young hunters must be accompanied by a sponsoring West Point hunter and must remain within 20 meters of that sponsoring hunter.
- g. Deer aging during early and late bow season is voluntary.

**3-5. Regular Firearms Big Game Season and Deer Management Permit (DMP) Program.**

- a. During the Regular Firearms Big Game/DMP Season, all hunters will sign out and in at the Hunt Control Center.
- b. After selecting a hunting area, hunters will be issued distinctive Hunting Area Identification, and they will surrender their West Point Hunting Permit, which will be retained in the Hunt Control Center. When signing in from an area, a hunter will turn in the Hunting Area Identification and receive back his/her permit.
- c. At all times hunters will wear the distinctive identification issued by the Hunt Control Center and at least 400 square inches of fluorescent orange clothing visible from all sides.
- d. The parking pass issued by the Hunt Control Center will be prominently displayed in the windshield whenever the vehicle is parked in or adjacent to a hunting area. Hunters must park in or immediately adjacent to their hunting area and display their parking pass issued by the Hunt Control Center.
- e. Beginner big game hunters (14 to 17 years of age) may hunt big game on the reservation during the Regular Firearms Season, but they must be accompanied by a sponsoring hunter.
- f. During the season, hunters will choose hunting areas on a first-come, first-served basis (except lottery assignments for opening morning).
- g. During the Regular Firearms Big Game season, the antlerless deer take may be time-limited to maintain the deer herd. The Early Bow and first week of the Regular Firearms Big Game Seasons would proceed as normal, but close for the remainder of the Regular Firearms Season. The antlerless take would then re-open for the Special Muzzleloader/Late Archery Season. The open period for antlerless take may be shifted to account for population changes as

appropriate. This restriction will be lifted as the deer population approaches acceptable levels. This restriction allows for the growth in the deer population for West Point and may not be appropriate for all areas of the reservation. This restriction may be removed for the on-post hunting should there be an increase in deer/human conflict.

h. A '3 points on a side' antler rule is instituted for Hunting Areas D1, D2, D3, D4, E1, and E2 for the Regular Firearms Season only. Any antlered deer harvested in these areas must display one antler with at least three, one-inch points.

### **3-6. Administrative Procedures of DMP Hunting.**

a. Administrative aspects of General Public DMP hunting will be coordinated by DPW/EMD. The DPW/EMD Wildlife Biologist may choose to limit or increase the number of General Public passes available for purchase in order to align hunting pressure with game species populations. Access to the Special Muzzleloader season may also be restricted.

b. General Public hunters hunting at West Point with a valid DMP must fill their DMP at West Point with an antlerless deer and register the deer before they are authorized to hunt for an antlered deer. This requirement may be suspended during the later part of the Regular Big Game Season, if the DPW/EMD Wildlife Biologist determines that a sufficient antlerless deer harvest has been achieved.

c. Special Buck Hunting Passes will be issued by DPW/EMD to general public hunters who fill their DMP tag at West Point with an antlerless deer.

d. General public hunters will not be issued Special Buck Hunting Passes until their antlerless deer is first registered at the West Point Deer Check Station.

e. General Public hunters may not sign out the first week of the season until 0700. After the first week, General Public hunters may sign out at 0500.

f. General Public hunters may use their DMP permits at West Point during the Regular Big Game, the Special Muzzleloader Season that follows the Regular Season, and late Special Archery Seasons.

g. General Public DMP Hunters may only take deer, bear or coyotes (provided the hunter has a small-game or sportsman license and furbearer tags) during the Regular Big Game Season and seasons thereafter (the Late Special Archery Big Game Season and the Special Muzzleloader Big Game Season). Access to West Point hunting lands will not be granted to General Public hunters during the closed season for antlerless take unless the hunter possesses a valid Special Buck Hunting Pass.

h. General public hunters will comply with all other regulations and policies applicable to hunting at West Point.

i. General public may hunt as a guest east of US Route 9W, if accompanied by an authorized hunter.

j. General public may not hunt on opening day of Regular Firearms Big Game Season.

k. No public hunter access to post, build up, or ranges, areas J2, J3, J4, J5, Buckner Bow, K, V/W2, CS2, H/Z6, Z5, Z4, Z2, and Z1.

l. In order to maintain deer population level, DMP limit will be 100 people, and there will be no DMP hunting late season. As the deer herd recovers, more passes may be issued. Passes will be issued on a first come-first-served basis until sold out.

### **3-7. Lottery.**

a. The Recreation Officer will hold a lottery for the opening morning hunting slots of the Regular Firearms Big Game Season. Eligibility priority in the lottery will be:



**Priority I** - Active duty military personnel and their Family members.

**Priority II** - Retired military personnel, Drilling Reserve and Guard personnel, and West Point Civilian Personnel and their Family members.

b. In the event an individual will be away from West Point on the date of the lottery, a letter of explanation may be submitted to the Recreation Officer requesting that an area be selected by proxy.

c. If slots are still available following the lottery, West Point hunters may choose a slot prior to opening day on a first-come, first-served basis at Range Control during business hours.

d. Hunting slots reserved for opening morning will be held in reserve until 0900 on opening morning. After 0900, the spaces will be signed out on a first-come, first- served basis.

e. Group Chip – One Chipper group, no matter the size for one area, if space available.

**3-8. Guests.**

a. Authorized personnel may sponsor only two guests to accompany him/her afield at one time.

b. Guests are not authorized to hunt on opening day of Regular Big Game Season.

c. Guests possessing a valid DMP Permit will pay lower applicable fee daily, if hunting one or two days or DMP fee for three or more days.

d. Guests may not hunt without their sponsors.

**3-9. Muzzleloader Season.**

a. Muzzleloaders will sign out and in at Range Control, Building 1403 on Route 293 and Military Police Station for J3.

b. Muzzleloaders will wear at least 100 square inches of fluorescent orange clothing (e.g., hat) while hunting.

c. Muzzleloaders will register and weigh their kill at Range Control, Building 1403 on Route 293.

**CHAPTER 4  
FISHING**

**SECTION I  
FISHING**

**4-1. Eligibility.** Eligibility Priorities are listed in Appendix C.

**4-2. Authorized Fishing Areas.**

Note: Fires are not authorized on the ice while ice fishing.

a. Water Bodies. Beaver Pond (northeast of Cat Hollow), Brooks Hollow, Bull Pond, Popolopen Lake, Cragston Lake, Cranberry Pond, Lake Frederick, Lake Georgina, Lusk Reservoir, Mine Lake, Round Pond, Stilwell Lake, Weyants Pond, Wilkins Pond, and any unnamed ponds outside of the West Point dud danger zones. Bull Pond and Round Pond will only be open to fishing during the NYS trout season and Lusk Reservoir will be open from 1 April through 30 November.

b. Streams. Cranberry Brook, Highland Brook, Long Pond Creek, Deep Hollow Brook, Johnson Meadow Brook, Popolopen Brook, Queensboro Brook, Trout Brook, Mineral Springs Brook, Crows Nest Brook, and any unnamed drainage flowing outside of West Point dud danger areas. Highland Brook, Trout Brook, Queensboro Brook, and Mineral Springs Brook are only open to fishing during the NYS trout season. Mineral Springs Brook and Trout Brook are strictly catch-and-release (no kill) fisheries for trout fishing.

#### **4-3. Policies.**

- a. Anglers will not release live bait fish in any West Point waters.
- b. Catch and Release of sportfish species (bass and trout) will be promoted to reduce exploitation of this resource.
- c. Children under 12 years of age must be accompanied by an adult or a responsible person at least 16 years of age while fishing in West Point waters, except at Round Pond and Lake Frederick.
- d. All anglers must check in with Range Control to determine which lakes are open. Some waters may close during training. Any persons who plan on fishing in the training areas would obtain a key to the gate that accesses the area from Range Control during normal business hours, Monday thru Friday, 0830-1700. Range Control will ensure the gates to Camp Buckner, Camp Natural Bridge and other training areas are locked at 1700.
- e. Anglers will not actively fish for species whose season is closed, even if releasing all fish caught.

**4-4. Stocking and Habitat Management.** DPW/EMD will coordinate and implement all fish stockings and habitat management projects, as prescribed in the Cooperative Plan. West Point activities that wish to conduct habitat management projects or to stock additional fish (at their expense) must seek prior approval from the DPW/EMD.

**4-5. Reporting.** There are no mandatory requirements for reporting catch. Anglers are encouraged to voluntarily report the take in trout and any catch in hybrid muskellunge, grass carp, or walleye, as well as unusual conditions or indications of disease in the fishery or habitats.

#### **4-6. Bass Tournaments.**

- a. Aerated live wells will be used by all competitors to keep bass alive.
- b. Bass will be returned to the same lake as caught immediately after weigh-in.
- c. Records will be kept of tournament participants and the catch to include lengths by fish species.
- d. During the tournament, the West Point minimum length and possession limit will be waived and the NYS minimum legal bass length and possession limit may be used for fish that will be released immediately after the competition. Anglers may keep one trophy bass (minimum length 20 inches) per tournament. All other bass must be released.
- e. All anglers in the tournament will possess NYS fishing licenses and West Point fishing permits or guest passes.
- f. Not more than three one-day tournaments will be held on any individual body of water in any one year. Non-participants will not be excluded from fishing lakes and ponds.

## **SECTION II**

#### **4-7. Authorized Use of Boats in Fishing Areas.**

- a. All boats will have the necessary safety equipment aboard IAW current USCG rules. Operators are responsible for complying with Federal and State boating laws.
- b. The term “boat” is intended to mean any watercraft.
- c. Authorized areas and the types of propulsion authorized are:

|                | Powerboats |        | Electric | *Non-Power |
|----------------|------------|--------|----------|------------|
|                | >10 hp     | <10 hp |          |            |
| Beaver Pond    |            |        | X        | X          |
| Brooks Hollow  |            |        | X        | X          |
| Bull Pond      |            |        | X        | X          |
| Cragston Lake  |            |        | X        | X          |
| Cranberry Pond |            |        | X        | X          |
| Lake Frederick |            |        | X        | X          |
| Lake Georgina  |            |        | X        | X          |
| Lusk Reservoir |            |        |          | X          |
| Mine Lake      |            |        | X        | X          |
| Popolopen Lake | X          | X      | X        | X          |
| Round Pond     |            |        | X        | X          |
| Stilwell Lake  | X          | X      | X        | X          |
| Weyants Pond   |            |        | X        | X          |
| Wilkins Pond   |            |        | X        | X          |

\*Non-power boats include canoes, rowboats, kayaks, skiffs, paddleboats, sailboats, or other watercraft without internal combustion engines or motors.

**Note:** Long Pond is leased to the Town of Highlands for use by its residents; use by West Point personnel is not authorized.

- d. On the areas permitting internal combustion engines, no more than five powerboats greater than 10 hp may be used at Stilwell Lake at any one time, and two at Popolopen. The limit on powerboats less than 10 hp will be seven per area. Sanctioned fishing derbies are excluded from this provision.
- e. Powerboats will not be permitted on Popolopen Lake during the period of Cadet Field Training. Powerboats needed to support cadet training will be permitted at the Camp Commander's discretion. Only electric powerboats are authorized on Popolopen Lake during the period of Cadet Field Training.
- f. DPW/EMD may authorize appropriate West Point, Federal and State organizations to use internal combustion engines on all lakes and ponds during water quality, weed control, habitat management, and fisheries investigations.
- g. Lusk Reservoir is limited to two non-power boats on the water at any one time.

**4-8. Recreation Division (RD) Boats.**

- a. RD may position boats and docks at any authorized fishing area.
- b. No more than one RD boat will be stationed on Beaver Pond, Cragston Lake, and Lake Georgina.
- c. No RD boat will be stationed at Lusk Reservoir.

## CHAPTER 5 TRAPPING

**5-1. Eligibility.** Eligibility priorities are listed in Appendix C.

Guests are not authorized for those meeting eligibility priorities 1 through 15 in Appendix C.

**5-2. Policy.** Trapping is an important tool in wildlife management and it is permitted on the reservation primarily for the removal or control of problem and nuisance animals and, secondarily for recreation.

### **5-3. General Procedures.**

a. Individuals who wish to trap on the West Point Military Reservation must apply to RD for West Point Trapping Permit by 28 October for that license year's trapping season.

b. West Point trappers must have a West Point trapping permit and a NYS Trapping License.

c. Upon determination that sufficient densities of furbearers exist to permit limited trapping, DPW/EMD will determine the number of trappers needed for each season (not to exceed 15 individual trappers).

d. DPW/EMD will assign trappers areas to trap. Authorized trapping areas will be listed on the trapper's permit along with the authorized harvest for each area, sign-out procedures, season restrictions and reporting requirements.

e. All traps will be marked with the owner's name and address. Traps will be checked IAW NYS Conservation Laws. Unmarked or unattended traps may be confiscated by West Point Natural Resources personnel, Military Police Game Wardens, or NYS Environmental Conservation Officers.

f. Beaver, river otter, bobcat and fisher trapping areas and harvest must be authorized in advance by DPW/EMD.

g. Legally trapped furbearers must be dispatched immediately after capture. Only .22 rim fire caliber firearms may be carried by the trapper to dispatch animals. Non-target animals, such as stray domestic animals or protected wildlife species, must be immediately released at the capture site.

h. Trapping will not be authorized during the Regular Firearms Big Game Season.

i. Authority to trap live woodchucks, raccoons, skunks, and opossum on the Main Post may also be granted by DPW/EMD. Animals captured on the Main Post in this program will be dispatched at an off-post location to be determined by the DPW/EMD.

j. All harvested animals will be reported to the Natural Resource Branch, DPW/EMD, as stipulated on the trapping permit.

**k. LEG HOLD TRAPS LARGER THAN SIZE 1-3/4 AND SNARES ARE NOT AUTHORIZED FOR USE ON THE RESERVATION.**

l. Should less than five (5) individuals eligible under paragraph 5-1 (see Appendix C) of this regulation apply to RD for a West Point trapping permit, DPW/EMD is authorized to solicit up to five other trappers that do not meet the eligibility requirements set forth in 5-1 to trap problem or nuisance animals. Potential persons will be solicited through written notice sent to local county trappers organizations. Selection will be made on a first-come first-served basis by designating the first five individuals that telephone the Natural Resources Branch at 0001 hours on 11 November. Selected individuals will be sold a USMA trapping permit. All other restrictions and/or guidance provided in this chapter will apply to the selected individuals. Access to the reservation shall be coordinated at all times with Range Control.

**5-4. Land Sets.**

- a. Open area land sets will be restricted to box, cage traps (e.g., Havahart, Tomahawk) up to a size 1-3/4 leg-hold trap, and up to a #3 Soft Catch Trap.
- b. Body gripping traps (e.g., Conibear or similarly designed lethal body gripping traps) may not be used for any type of open land set.

**5-5. Water Sets.**

- a. Submerged body gripping traps with jaw spreads no larger than 10 inches (e.g., Conibear 110 through 330) may be used at designated wetland or open water sites during the mink, muskrat, otter, and beaver open seasons.
- b. Enclosed body gripping traps with jaw spreads no larger than 4.5 inches (e.g., Conibear 110, 120 or 126) may be used in cubby or den sets under the following conditions:
  - (1) The cubby or den sets must be no more than 15 feet from water at the designated wetland or open water sites.
  - (2) The opening of the cubby or den must be eight inches by eight inches or smaller.
  - (3) The bait or lure must be hidden well inside the cubby out of sight of predatory or scavenger birds.
  - (4) The Conibear must be placed no less than eight inches from the opening of the cubby or den.
- c. No dam, den, or lodge belonging to beaver or muskrat may be disturbed by trappers.

## **CHAPTER 6 ENFORCEMENT**

### **SECTION I PROCEDURES**

**6-1. Warnings/Citations.**

- a. Game Wardens will respond to violations of this regulation and will issue warnings and citations using the DA Form 1408, Armed Forces Traffic Ticket, and DD Form 1805, United States District Court Violations Notice, when required.
- b. Game Wardens, in coordination with NYS DEC, will respond to violations of Federal Fish and Wildlife Laws and NYS Environmental Conservation Law.

### **SECTION II SUSPENSIONS AND REVOCATIONS**

Violators of this regulation and applicable Federal and state laws will be notified of suspensions or revocation of privileges by the Provost Marshal Office.

**6-2. West Point Military and Civilian Personnel:** If the violator is a cadet, active duty military person, or civilian employee stationed at West Point, the notification of violation, suspension, and revocation, when not issued directly to the violator, may be forwarded to the violator's organization or activity.

### **SECTION III APPEALS**

Any individual cited for a violation of this regulation, which results in the loss of privileges, may appeal the decision providing the appeal is submitted in writing to the DGC within ten working days of the notice.

**APPENDIX A  
REFERENCES**

1. Title 16, United States Code, Section 670 et seq., Conservation Programs on Military Installations and Title 18, United States Code, Section 1382, Trespassing.
2. Title 16, United States Code Section 718 et seq., Migratory Bird Hunting Stamp Act.
3. Title 18, United States Code Section 1382, Trespassing.
4. DOD Directive 4700.4, Natural Resource Management Program.
5. AR 37-100, Account/Code Structure.
6. AR 37-108, General Finance and Accounting for Finance and Accounting Office.
7. AR 190-45, Law Enforcement Reporting.
8. AR 215-1, Morale, Welfare and Recreation.
9. AR 200-3, Natural Resources - Land Forest and Wildlife Management.
10. Environmental Conservation Law of NYS and Title 6 New York Code of Rules and Regulations.
11. Integrated Natural Resources Management Plan: 2003-2007, at the United States Military Academy.
12. USMA Reg 350-11, Range and Training Complex.
13. Uniform Code of Military Justice (UCMJ).
14. Title 10, United States Code, Section 2671- Military Reservations: Hunting, Fishing, and Trapping.
15. USMA Reg 190-6, Firearms and Dangerous Weapons.

**APPENDIX B  
RULES FOR WEST POINT HUNTERS, TRAPPERS AND ANGLERS**

1. Shall have in their possession a valid NYS license for the activity they are engaged in (small game, turkey, big game firearms/deer management unit/archery big game/muzzleloader big game, fishing, trapping) and a West Point hunting, fishing, or trapping permit or guest pass. In addition, personnel engaged in waterfowl hunting will possess a Federal Migratory Bird Hunting Stamp (duck stamp) and HIP #.
2. Shall present on demand their licenses, permits, weapons and game for inspection to any Range Control personnel or other officials acting on behalf of the Chief Game Warden, Military Police, NYS Environmental Conservation Officer, or any other duly appointed law enforcement official.
3. Shall follow all sign-out/sign-in procedures, tagging procedures, and report all harvested fish and game as required by this regulation. Hunters must sign in at Range Control Building #1403 or the Hunt Control Center, if they leave their hunting areas. Hunters signed out for hunting must be in their area or in transit to or from their area.
4. Are authorized to be accompanied by no more than two guests. Guests must have appropriate licenses and guest passes. Hunters and fishermen must remain with their guests while hunting or fishing and be no more than 200 yards away in the same hunting area. Trappers are not authorized to accompany guests.
5. May be accompanied by one walker while hunting for instructional or learning purposes. The walker must be appropriately dressed, unarmed, and remain within five meters of the hunter. West Point hunters who are already hunting with a junior hunter (young hunters are required to remain with their sponsor) are not eligible to be accompanied by a walker. A walker under the age of 12 does not count against a hunting area's participation level capacity. For spring turkey hunting, an unarmed individual that calls for another hunter does not count against a hunting area's participation level capacity.
6. Shall report the whereabouts of any unexploded ammunition (dud and misfires) to Range Control.
7. Shall not trespass into any woodlands bordering the West Point Military Reservation, into the impact areas, dud danger zones, areas designated off limits or any other area closed to hunting, fishing, or trapping.
8. Shall not interfere with any military activities or disturb any training devices.
9. Shall not discharge longbows or firearms within 500 feet of any occupied West Point dwelling. No weapon shall be discharged so that the path of the load, bullet, or arrow passes over any public highway or within 50 feet of Route 9W, Route 6, Route 293, Route 218, Mine Torne Road, Smith Clove Road, or Mineral Springs Road.
10. Shall not possess firearms in areas designated as "bow only."

11. Shall not target shoot or sight-in weapons in the hunting areas. Hunters will fire only at game. Free-ranging domestic animals may not be shot by hunters.

12. Shall not park their vehicles so an established road, firebreak, or gate is blocked.

13. Shall not consume or be under the influence of any alcoholic beverage and/or other drugs which may impair judgment or activity while hunting, angling, or trapping at West Point or while in the training areas, with exception of angling from shore at Lake Frederick, Bull Pond and Round Pond.

14. Shall remove all spent fishing line, bait containers, lure packaging, ammunition boxes and other trash.

15. Shall (for hunters and fishermen who check out gate keys from Range Control) have one day to check the keys back into Range Control.

16. Shall prominently display the parking pass issued by the Hunt Control Center in the windshield whenever the vehicle is parked in or adjacent to a hunting area. Hunters must park in or immediately adjacent to their hunting area and display their parking pass issued by the Hunt Control Center.

17. Shall not shoot at or kill domestic animals.



**APPENDIX C  
ELIGIBILITY PRIORITIES**

1. Active duty military personnel and their Families assigned to the installation or directly supported by it. This includes military personnel assigned to units attached to the installation for logistical support of FMWR support who have been identified in the host-tenant agreement. This includes cadets of all service academies who are assigned to West Point and military personnel of foreign nations assigned to USMA and their immediate Family.
2. Active duty Army personnel and their Families not assigned to the installation.
3. Active duty military personnel (and their Families) of other services not assigned to the installation.
4. Military personnel retired with pay and their Families.
5. Medal of Honor recipients and their widows or widowers and Family members. Honorably discharged veterans of the US Armed Services with 100 percent service-connected disability.
6. Active drilling Military members assigned or attached to the Ready Reserve and National Guard Units.
7. Surviving spouses of military personnel who have not remarried and their Family members.
8. Air Force Academy cadets, US Naval Academy midshipmen, officer candidates when in active duty training status, and NROTC midshipmen only when on active duty during college vacation periods. ROTC personnel training during summer seasons.
9. DOD civilian employees (appropriated and non-appropriated fund, contract, and AAFES) and their dependents stationed in Alaska, Hawaii, and all US territories and possessions, and foreign countries, who are authorized unlimited exchange.
10. DOD civilian employees (appropriated and non-appropriated fund, contract, and AAFES) and their dependents who reside on the installation and are authorized unlimited Exchange privileges.
11. Military personnel of foreign nations and their dependents when authorized unlimited Exchange privileges.
12. Other US personnel which include members of the Coast Guard, National Oceanic and Atmospheric Administration. Environmental Science Service Administration of the US Public Health Service, and paid members of the Red Cross and other such organizations assigned to or serving in the Armed Forces and dependents of the aforementioned, cadets of the Coast Guard Academy, parents of USMA cadets. Guests may not hunt or fish without their sponsors.
13. Surgeons under contract with the Army.

14. DOD civilian employees (appropriated and non-appropriated fund, contract, and AAFES) employed at West Point. Former Prisoners of War (POW) and their immediate Family members.
15. Guests of military personnel, Family members of DOD civilian employees (appropriated and non-appropriated fund, contract, and AAFES) employed at West Point, and retired DOD employees from West Point and their dependents.
16. Immediate Family members (spouse, son, daughter, father, mother, brother, or sister) who are not dependent but are currently residing with their sponsor. Sponsor must be eligible person under conditions of categories 1 thru 7 and 9 thru 14 above.
17. Guests of West Point DOD civilians. Guests may not fish or hunt without their sponsor.
18. Members of the general public other than those covered under 1 to 17 above, holding a valid NYS Department of Environmental Conservation DMP for the NYS DMU that West Point is within.

**NOTE:** Members of the general public that apply and obtain NYS DMP thru the NYS DMU lottery program for the specified number of days, DMU hunting is allowed.

**APPENDIX D  
OFFENSES AND ADMINISTRATIVE ACTION**

1. Violations of this regulation or violations of US Federal Fish and Wildlife Laws and NYS Environmental Conservation Laws (ECL) need only be proven by preponderance of the evidence standard in order to impose West Point administrative actions. Consequently, the West Point administrative actions listed may be taken against personnel whose civil or criminal prosecutions for violations of NYS and Federal Fish and Wildlife Laws resulted in acquittals, if substantial evidence nevertheless exists that the violations occurred.
2. Suspensions include all hunting, fishing, and trapping privileges and are enforced in aspects of a license year (1 October to 30 September). If a suspension of privileges occurs at or near the end of the license year and the suspension period exceeds the license year, then the remaining suspension period will be carried over to the next license year.
3. Any suspension imposed for a violation will not be shortened except through filing an appeal with the DGC.

| <b>Regulation Paragraph(s)</b>  | <b>Offense</b>   | <b>West Point Admin Action Period of Suspension (Calendar Days)</b> |
|---|--|---|
| 3-5, Appendix B (16)  | Parking in unauthorized area   | 10 days   |
| 2-2, 2-4, 2-5, 3-5, 6-2, Appendix B (3)                               | 1 <sup>st</sup> Offense for failure to sign in from a hunting area<br>2 <sup>nd</sup> Offense for failure to sign in from a hunting area | Written warning<br>30 days  |
| 2-2, Appendix B (3)   | Failure to properly fill out hunting sheets  | 10 days   |
| 3-2, 3-5  | Failure to display West Point back tag   | 30 days   |
| 3-2, 3-5  | Failure to display parking permit  | 10 days   |
| 3-2, 3-4  | Construction and/or use of a permanent tree stand  | 30 days   |
| 1-3, 1-4, 2-2, 2-4, 2-5, 3-2, 3-3, 3-4, 3-5, 4-2, 4-3, Appendix B (3) | Hunting in wrong area  | 90 days   |
| 6-2, Appendix B (1)   | Hunting, Fishing or Trapping with West Point privileges suspended  | 3 License years   |
| 2-2, 4-3  | Hunting in a closed area or area filled to capacity  | 90 days   |

| <b><u>Regulation Paragraphs(s)</u></b> | <b><u>Offense</u></b>  | <b><u>West Point Admin Action Period of Suspension</u></b> |
|--|--|--|
| 2-2, 4-3                               | Fishing in a closed pond/lake  | 30 days  |
| 2-2, 4-5                               | Failure to report kill (small game or fish)  | 90 days  |
| 1-6, 1-12, 2-2<br>2-2, 3-2             | Entering off limits/impact area  | Remainder of season plus 1 license year                    |
| 5-3                                    | Trapping in wrong area   | 90 days  |
| 3-8,<br>Appendix B (4)                 | Failure to accompany guest while hunting or fishing (guest privileges cease immediately)   | 60 days  |
| 4-4, 4-5                               | Possession of fish less than West Point length limits  | 90 days  |
| 4-4                                    | Exceeding West Point fish Possession limits  | 90 days  |
|  | Failure to comply with key procedures  | 30 days  |
| 3-4, 3-5                               | Failure to accompany junior archer, young, small game hunter or beginner firearms big game hunter  | 90 days  |
| 1-14, 5-3<br>Appendix B (1)            | Hunting/Fishing/Trapping without West Point Permit   | Remainder of season plus 2 years                           |
| 3-6                                    | General public hunter failing to comply with provisions of this regulation   | Remainder of season plus 3 years                           |
| 5-3                                    | Failure to comply with requirements stipulated on a West Point Trapping Permit   | Remainder of season and 1 license year license year        |
|  | Habitual Violators (Accumulation of 3 citations during a 365 day period)   | Remainder of season and 5 license years                    |
| 1-5<br>Appendix B (2)                  | Failure to comply with a law enforcement officials, reasonable and prudent order including, but not limited to, orders to produce license or wildlife for inspection, and orders to cease firing, hunting, or trapping | Remainder of season and 5 license years                    |

| <b><u>Regulation Paragraphs(s)</u></b> | <b><u>Offense</u></b>  | <b><u>West Point Admin Action Period of Suspension</u></b> |
|--|--|--|
|  | Firearm in a bow only area   | Remainder of season plus 3 license years                   |
| 5-3                                    | Exceeding trapping quota   | 1 calendar year  |
| Appendix B (13)                        | Consumption of or under the influence of any alcoholic beverage and/or drugs while hunting, angling, or trapping at West Point or while in the training areas, with exception of angling from shore at Lake Frederick, Bull Pond and Round Pond. | Remainder of the season plus 1 license year                |
| 3-5                                    | Failure to comply with the '3 points on a side' rule in selected hunting areas, or antlerless take during the West Point instituted closed period.   | Remainder of the season                                    |

**APPENDIX E**  
**NYS ENVIRONMENTAL CONSERVATION LAW OFFENSES**  
**(LAW SECTIONS ARE SUBJECT TO CHANGE BY NEW YORK STATE**  
**LEGISLATURE.)**

The following list of violations (non-inclusive) will be enforced by the West Point Game Wardens and NYS DEC. For additional information on rules and regulations can be found in the current New York Department of Environmental Conservation, Hunting and Trapping Regulation Guide. The guide may be found where licenses are sold and at [www.dec.state.ny.us](http://www.dec.state.ny.us).

| <b><u>ECL</u></b> | <b><u>Paragraph</u></b> | <b><u>Offense</u></b>  | <b><u>Period of Suspension</u></b>      |
|-------------------|-------------------------|--|---|
|                   | 11-0110                 | Interference with the lawful taking of wildlife  | 120 days                                |
|                   | 11-0705                 | Failure to carry NYS license or stamp  | 90 days                                 |
|                   | 11-0905                 | Exceeding daily bag limits for small game  | 90 days                                 |
|                   | 11-0911                 | Failure to transport deer in the prescribed manner   | 30 days                                 |
|                   | 11-1101                 | Use of a trap within 5 feet from a beaver den or house                                       | 60 days                                 |
|                   | 11-1203                 | Hunting while intoxicated or ability impaired by drugs                                       | Remainder of season and 1 license year  |
|                   | 11-1303                 | Exceeding the daily bag limit for fish; taking fish below the size limit                     | 90 days                                 |
|                   | 11-1307                 | Failure to mark tip ups with name and address  | 30 days                                 |
|                   | 11-0503                 | Disturbing a beaver dam, den or house  | Remainder of season and 1 license year  |
|                   | 11-0931                 | Loaded weapon in motor vehicle   | Remainder of season and 3 license years |
|                   | 11-0931                 | Discharge of a firearm or bow so that the load or arrow passes over a public highway         | Remainder of season and 1 license year  |
|                   | 11-0931                 | Discharge of a firearm or bow within 500 feet of an occupied dwelling, school, or playground | Remainder of season and 1 license year  |

| <b>ECL</b>              | <b>Offense</b>   | <b>Period of Suspension</b>                  |
|-------------------------|--|--|
| <b><u>Paragraph</u></b> |  |  |
| 11-0031                 | Possession of a firearm while bow hunting during the archery season  | Remainder of season and 1 license year       |
| 11-1321                 | Use of explosive to take fish  | Remainder of season and 5 license years      |
| 11-0901                 | Hunting deer or bear with a shotgun less Than 20 gauge   | Remainder of season and 1 license year       |
| 11-0901                 | Hunting deer or bear with shotgun shell other than shells carrying a single ball or slug                                   | Remainder of season and 1 license year       |
| 11-0901                 | Hunting deer or bear with aid of a pre-established bait pile   | Remainder of season and 5 license year       |
| 11-0901                 | Taking raccoons by cutting den trees   | Remainder of season and 1 license year       |
| 11-0901                 | Taking a protected species for which no open season is established or for which the season is closed                       | Remainder of season and up to 1 license year |
| 11-0901                 | Taking of waterfowl or upland game birds with the aid of baiting or over any baited area                                   | Remainder of season and 1 license year       |
| 11-0507                 | Stocking fish without a permit   | Remainder of season and 1 license year       |
| 11-0901                 | Hunting from a motor vehicle   | Remainder of season and 5 license years      |
| 11-0901                 | Taking wildlife from or on a public highway  | Remainder of season and 1 license year       |
| 11-0901                 | Taking wildlife with a crossbow  | Remainder of season and 1 license year       |
| 11-0901                 | Hunting deer or bear with the aid of a light   | Permanent Revocation                         |
| 11-0901                 | Hunting deer or bear with a pistol, revolver, or rifle using rim fire ammunition   | Permanent Revocation                         |
| 11-0931                 | Possession of slug or single ball shotgun shells during the deer season by a person without a valid deer permit or license | Remainder of season and 1 license year       |

**ECL**

| <b><u>Paragraph</u></b> | <b><u>Offense</u></b>   | <b><u>Period of Suspension</u></b>     |
|-------------------------|---|--|
| 11-0901                 | Failure to wear NY back tag   | Up to 30 days                          |
| 11-0901                 | Hunting and/or taking a species outside of an open season, permitted hours, or by permitted methods | Remainder of season and 1 license year |



## **Appendix B2**

Endangered Species Management Plan  
Shortnose Sturgeon (*Acipenser brevirostrum*)

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***FINAL***  
**SHORTNOSE STURGEON (*Acipenser brevirostrum*)**  
**MANAGEMENT PLAN**  
**U.S. ARMY GARRISON WEST POINT**

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***Final***  
**Endangered Species Management Plan**  
**for the**  
**Shortnose Sturgeon (*Acipenser brevirostrum*)**  
**for the**  
**U.S. Army Garrison West Point**  
**West Point, New York**

September 2018

*Prepared For:*



Christopher Pray, Chief  
Natural Resources Branch  
Directorate of Public Works  
U.S. Army Garrison West Point

*Prepared By:*



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## LIST OF ACRONYMS AND ABBREVIATIONS

|         |   |
|---------|---|
| ESA     | Endangered Species Act                                  |
| MS-4    | Municipal separate storm sewer system                   |
| NMFS    | National Marine Fisheries Service                       |
| NYSDEC  | New York State Department of Environmental Conservation |
| rkm     | River kilometer   |
| SSSRT   | Shortnose Sturgeon Status Review Team                   |
| USAG WP | U.S. Army Garrison West Point                           |
| USMA    | U.S. Military Academy                                   |



ENDANGERED SPECIES MANAGEMENT PLAN FOR THE SHORTNOSE STURGEON  
(*Acipenser brevirostrum*) FOR THE U.S. ARMY GARRISON WEST POINT (USAG WP),  
NEW YORK

**1. BACKGROUND**

The shortnose sturgeon (*Acipenser brevirostrum*) is the smallest member of the genus *Acipenser*. It is a fresh water amphidromous species, spawning in the upper reaches of large rivers, but using multiple parts of these systems, to include brackish estuaries, for various life stages and purposes. It is a long-lived species, the oldest documented female was 67 years and the oldest male was 32 years old, both of which were from the St John River, Canada (Smith 1985). In the Hudson River, adults reach spawning age at 3 to 5 years for males and 6 to 10 years for females. Females may spawn every 3 years, males every year. One abundance estimate for the Hudson River shortnose population indicated that age structure strongly favors adults, estimating that spawning adults comprised 93 percent of the populations and juvenile fish estimated to make up just 7 percent of the population (Bain et al. 2000).

The species ranges along the Atlantic coast from Florida to New Brunswick. Extensive fishing pressure, loss to incidental catch (particularly in the shad fishery), habitat loss due to dam building and dredging, and pollution caused the fish to be listed by the federal government as an endangered species in 1967, and by New York State in 1971 (National Marine Fisheries Service [NMFS] 1998). In 1980, the total population was estimated to range between 12,669 and 13,844 spawning fish for the Hudson River, making this population the largest and most important for the species in the United States (Dadswell et al. 1984).

Historically, shortnose sturgeon were known to use the entire freshwater span of the Hudson, and congregated for spawning at confluence of the Mohawk River with the Hudson and at the confluence of the Wallkill River with the Hudson (Shortnose Sturgeon Status Review Team [SSSRT] 2010). In the Hudson River, spawning largely takes place near Troy Dam, river kilometer (rkm) 246 but shortnose sturgeon have been known to spawn from Cossackie to below the Troy Dam (rkm 190-246) (Bain 1997). Adult summer habitat is associated with deep channel habitats with adjacent shallow flats. This includes non-tidal freshwater reaches (starting at rkm 189), but fish concentrate in the brackish waters from Haverstraw Bay to Tappan-Zee Bridge (rkm 43–61). Adult wintering was thought to predominately occur near Kingston, New York, in fresh water at rkm 140; however, recent New York State Department of Environmental Conservation (NYSDEC) surveys have caught adult sturgeon in Haverstraw Bay and as far south as New York Harbor in the winter. Juvenile fish move as they mature from fresh water gradually down river, eventually concentrating for winter in deep water upstream from the freshwater/brackish water interface. In the Hudson, the saltwater intrusion generally occurs about rkm 83 in the late spring and can move as far north as rkm 122 during the summer months (Bain et al. 2000 and 2007).

Adult and juvenile fish feed primarily on benthic organisms: mussels, crustaceans, insects, and worms for adults, insects and small crustaceans for juvenile fish. Juvenile feeding behavior occurs over sand and gravel; adults prefer vegetated flats and mud. Juvenile fish tend to hold at depths of 9 to 20 meters. Adults typically feed in shallower depths ranging from 1 to 5 meters with some variation particularly during the summer months when water temperatures are higher.

Adults usually move to water depths of 13 to 42 meters during the day when they are not foraging (Lyttle 2008).

The Hudson River is described as one of the largest and healthiest stocks on the East coast with a 2000 estimate of spawning fish at 56,708 individuals, and evidence of population stability (Bain et al. 2000). Nationwide, the Hudson River continues to hold its position of importance for this species. Other populations of this species have been slower to increase. A 2010 Biological Assessment and risk assessment of shortnose sturgeon populations determined the health of the Hudson River population to be high, with a very large population, spawning, and all life stages present within the river. However, the population with the Hudson River was also determined to be susceptible to catastrophic events as the population lacks immigration or emigration to other river systems that would serve to replenish the population in such an event (SSSRT 2010). Major stressors to the Hudson River shortnose sturgeon population include dredging and water quality issues, including sediment loading and contamination (SSSRT 2010). Shortnose sturgeon are currently listed as endangered under the Endangered Species Act (ESA) range wide.

## **2. STATUS AT U.S. ARMY GARRISON WEST POINT (USAG WP)**

The Hudson at USAG WP (rkm 83) is an oligohaline reach with changeable salinities, ranging from 0.5 to 5 parts per thousand, depending upon season. In summer, the salt front occurs north of USAG WP, moving southward past the Garrison in autumn and returning to the north in late spring (Hoffman 2007). This reach of the river is deep, ranging to 60 meters. Due to strong currents and a sharp bend in the river, there is little shallow water habitat, generally confined to the lee areas north and south of Constitution Island and north and south of the Academy. At its narrowest, the river is 425 meters wide from Gee's Point to Constitution Island.

The shortnose sturgeon occurs in the Hudson River off USAG WP. Previous studies suggested that sturgeon use of the river offshore from the Academy was minimal, largely restricted to the migration of adult fish between feeding areas in freshwater near Kingston to wintering habitat in brackish waters near Haverstraw, and that juvenile sturgeon use occurred most frequently in the freshwater-saltwater interface (Haley et al. 1996). The 2003 Endangered Species Management Plan for the species reflected this belief. In that plan, USAG WP agreed to consult with NMFS regarding changes in use of the Hudson by USAG WP, comply with all State Pollution Discharge Elimination System permit stipulations, characterize the aquatic habitat around the installation for shortnose sturgeon use, permit access to the river from USAG WP property for sturgeon research, and adapt the plan as needed to account for existing conditions.

In 2008 the U.S. Fish and Wildlife Service was contracted to research the incidence of catch in this region of the Hudson, to assess potential habitat associated with the Garrison, and to research the availability of prey items available to sturgeon in the area. The review of sampling efforts revealed more widespread use of the river for summering adults than previously indicated, and place juvenile sturgeon habitat in close association with the salt front as it moves up and down the river. Both adult and juvenile sturgeons have been captured within 20 kilometers of USAG WP. The U.S. Fish and Wildlife Service Maryland Fishery Resource Office, which maintains the coast-wide cooperative sturgeon tagging database for the Hudson River, reports 36 shortnose sturgeon captures from Cornwall to Cold Spring between 2000 and

2003 during the months July to November (Lyttle 2008). Analysis of substrate found a potential for this species near USAG WP.

At USAG WP, adult fish may be found offshore of the Academy outside of the spawning and wintering periods—July to November. Primary foraging habitat, shallow vegetated flats, is present on the east shore of the Hudson, north and south of Constitution Island. Foraging may also take place over margin-fine (silty clay) substrate, but invertebrate density in this habitat is relatively low. This type of substrate occurs at USAG WP along the west shore of the Hudson to include both North and South dock areas, and offshore of Constitution Island. Adults may also feed on the recently introduced zebra mussel (*Dreissena polymorpha*). The zebra mussel occurs on any suitable hard surface, and has been documented in this reach, but is limited by salinity. Adult sturgeon resting habitat potentially occurs offshore in the channel (Lyttle 2008). No sturgeon spawning occurs at USAG WP. Shortnose sturgeon post yolk-sac larve and young-of-the-year could be present at USAG WP when the water is fresh.

Juvenile sturgeon congregate over sand or gravel at depths exceeding 9 meters. This habitat exists primarily northwest of Academy grounds and along the eastern shore south of Constitution Island. Margin-fine substrate may be used for foraging. Wintering habitat occurs in deep water upriver from the salt front and may occur off USAG WP. Juvenile shortnose sturgeon may occur in waters in the vicinity of USAG WP throughout the year (Lyttle 2008).

### **3. EFFECT ON TRAINING AND OPERATIONS**

The mission of the U.S. Military Academy (USMA) at USAG WP is “To educate, train, and inspire the Corps of Cadets so that each graduate is a commissioned leader of character committed to the values of Duty, Honor, Country and prepared for a career of professional excellence and service to the Nation as an officer in the United States Army.” The mission of the Garrison is to “provide the services, programs and infrastructure to sustain the West Point community.” Military training at USAG WP consists of Cadet Basic Training and Cadet Field Training. This involves small arms and artillery training, instruction in individual soldier skills, and small unit operations. Training at USAG WP includes artillery, howitzer training, ground assault, hand grenade training, small arms, and drone training. All military training occurs in designated areas of the 16,000-acre reservation. None is associated with the Hudson River. As this activity is removed from the Hudson, training is neutral in its impact on shortnose sturgeon, and vice versa.

The Garrison maintains a small marina for private and Garrison watercraft. The docking facility has been in constant use since the 1940s, and is consistent with other marinas in the area. These facilities are used by the Academy for intra- and inter-collegiate sports and clubs, is used to dock private and Garrison recreational vessels, and is visited by commercial touring boats. A second, seasonal floating dock is found on Constitution Island. Upgrades to both these facilities have required ESA Section 7 consultation with NMFS. No special risk is associated with the use of these facilities that is likely to impact individuals or populations of shortnose sturgeon.

The Target Hill Wastewater Treatment Plant is operated by USAG WP for the treatment of sewage. In April 2017, USAG WP sent a proposal to NMFS for a new outfall for the new

Target Hill Wastewater Treatment Plant that is planned to be constructed on the Hudson River. The new treatment plant is being built to replace the old one that will no longer be able to keep up with future treatment needs. The current plant will continue to run until the new plant is finished and tested, upon completion of which the current plant will be demolished. An environmental assessment for the project has been completed with a finding of no significant impact on the current Atlantic or shortnose sturgeon (USAG WP 2017). To minimize the impacts to Atlantic and shortnose sturgeon throughout the construction of the new outfall, the following measures will be carried out.

1. Temporary control measures will be utilized to mitigate for upland erosion and sedimentation to the Hudson River.
2. A cofferdam (or other means to provide for work in dry conditions) will be utilized to install the new replacement outfall in the Hudson River. Best management practices will be utilized to minimize temporary vibration impacts relating to installation of cofferdam.
3. An in-river work window for work within the wetted confines of the Hudson River is limited to a yearly period from December through June.
4. In-river sediment that is temporarily disturbed or removed as part of the installation of the pipelines in the Hudson River will be replaced in-kind.

The Target Hill Wastewater Treatment Plant discharges to the Hudson under a New York State issued State Pollution Discharge Elimination System permit, and is unlikely to adversely affect water quality standards for the Hudson River. The new wastewater treatment plant will improve the quality of effluent discharged and decrease the frequency of wastewater discharges, and will likely have a positive effect on sturgeon habitat.

#### **4. MANAGEMENT GOALS AND OBJECTIVES**

Bain et al. (2000) notes regarding sturgeon management in the Hudson River, "... Therefore we conclude that a patient and natural approach to fishery recovery has succeeded despite intense human use and occupation of the Hudson River and its surroundings." The success of the program has centered upon, protection of the fishery through closure and habitat protection. They note that:

*No major changes are expected in the tidal portion of the Hudson River that would greatly alter or eliminate deep channel waters or the turbulent spawning reach. Finally, likely future causes of high mortality such as unregulated harvest, bycatch in active fisheries, and pollution stress have been and can be controlled through established fishery management and water quality regulations.*

As current activity at USAG WP is considered neutral in impact on shortnose sturgeon, the management plan for this species is to prevent future adverse impact to the species due to a change in USAG training practice, infrastructure, and operations. As in previous management plans, this will be accomplished through the following measures.

1. Consult as necessary, informally and formally, with the NMFS, pursuant to Section 7 of the ESA, and NYSDEC regarding any USMA activities in the Hudson River. Incorporate any modifications into activities that arise from consultations and permits issued.
2. Comply with all provisions stipulated in the permit issued by NYSDEC for the operation of the Target Hill Wastewater Treatment Plant to reduce pollutants that may be discharged into the Hudson River. Comply with stormwater management regulations.
3. Permit access to the Hudson River from USMA properties by federal, state, and other researchers studying the shortnose sturgeon, provided it does not greatly interfere with USMA operations.
4. Consult annually with NYSDEC and NMFS to ascertain status and trends of the Hudson River shortnose sturgeon population. Review, evaluate, and modify this plan, if necessary, based on new information.
5. Seek to improve the quality and volume of stormwater discharges through point source control, strict construction site management, adherence to all municipal separate storm sewer system (MS-4) requirements and the use of best management practices, such as installing Low Impact Design elements to encourage infiltration and diversion.
6. Conduct bathymetric mapping and macroinvertebrate sampling once every five years using a Ponar grab every 20-30 meters along a transect. Data collected can identify areas of high feeding potential and further define sturgeon habitat use. USAG WP will not complete independent fisheries sample for sturgeon species in the Hudson River, but will provide survey assistance if possible and will complete bathymetric mapping.

USAG WP will also share all installation generated data, maps, occurrences, etc. associated with status of the shortnose sturgeon with the NYSDEC, NYNHP, the USFWS, and NMFS. This service will be offered as well to academic researchers as allowed and prudent. Further, USAG WP will make survey sites, equipment, and manpower available as practical to researchers working toward the conservation and stewardship of this species.

## **5. COST TO IMPLEMENT**

All costs associated with this plan would be due to mitigation required of new projects, the cost of which would be identified in the planning stage, and absorbed in the cost of the project.

## **6. LITERATURE CITED**

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## **Appendix B3**

Endangered Species Management Plan  
Atlantic Sturgeon (*Acipenser oxyrinchus oxyrinchus*)

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***FINAL***  
**ATLANTIC STURGEON (*Acipenser oxyrinchus oxyrinchus*)**  
**MANAGEMENT PLAN**  
**U.S. ARMY GARRISON WEST POINT**

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*Final*  
**Endangered Species Management Plan  
for the  
Atlantic Sturgeon (*Acipenser oxyrinchus oxyrinchus*)  
for the  
U.S. Army Garrison West Point  
West Point, New York**

September 2018

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## LIST OF ACRONYMS AND ABBREVIATIONS

|         |   |
|---------|---|
| ASMFC   | Atlantic States Marine Fisheries Commission             |
| FMP     | Fishery Management Plan                                 |
| NMFS    | National Marine Fisheries Service                       |
| NOAA    | National Oceanic and Atmospheric Administration         |
| NYSDEC  | New York State Department of Environmental Conservation |
| rkm     | River kilometer   |
| USAG WP | U.S. Army Garrison West Point                           |
| USMA    | U.S. Military Academy                                   |

# ENDANGERED SPECIES MANAGEMENT PLAN FOR THE ATLANTIC STURGEON (*Acipenser oxyrinchus oxyrinchus*) FOR THE USAG WEST POINT (USAG WP), NEW YORK

## 1. BACKGROUND

The Atlantic sturgeon (*Acipenser oxyrinchus oxyrinchus*) is one of the largest anadromous species in North America, weighing up to 800 pounds as adults and attaining lengths up to 14 feet. It is a freshwater anadromous species that spawns in the upper reaches of large rivers, but uses multiple parts of these systems, including brackish estuaries, for various life stages and purposes. Atlantic sturgeon is a long-lived species; the oldest female was 60 years documented out of the St. Lawrence estuary in 1964 by Magnin (Gilbert 1989). The oldest male recorded was 35 years and was smaller than some younger specimens collected (ASMFC 2017).

In the Hudson River, adults reach spawning age at 11 to 21 years of age (Young et al. 1988 as cited in National Oceanic and Atmospheric Administration [NOAA] 2017). Studies have shown that Hudson River Atlantic sturgeon most likely do not spawn every year, with females spawning every 2 to 5 years and males every 1 to 5 years (Atlantic Sturgeon Status Review Team 2007). Due to these spawning patterns, it is difficult to come up with an accurate abundance estimate (Stevenson and Secor 1999; Smith 1985). One abundance estimate of the Hudson River Atlantic sturgeon population using mark-recapture method of age-1 individuals estimated the population at 4,314 individuals in 1995 (Peterson et al. 2000). This estimate was a decrease of 80 percent from the population estimates completed in 1977. A more recent population study focusing on juveniles was conducted in Newburgh and Haverstraw Bays of the Hudson River. Sampling took place in spring and fall starting in October 2003 and ending in November 2005; the total catch during the survey period was 562 individuals (Sweka et al. 2006).

The species ranges along the Atlantic coast from Florida to Labrador, Canada. Extensive fishing pressure, loss to incidental catch, ship strikes, and habitat loss due to dam building and dredging caused the fishery closure in 1996 and resulted in the banning of harvest and possession in 1998 by the ASMFC. The Atlantic sturgeon was listed as endangered in February 2012 within the New York Bight, Chesapeake Bay, Carolina, and South Atlantic distinct population segments. The Gulf of Maine distinct population segment was listed as threatened. NOAA has yet to create a recovery plan for the Atlantic sturgeon (Atlantic States Marine Fisheries Commission [ASMFC] 2017). The NOAA National Marine Fisheries Service (NMFS) released a final rule for critical habitat for the Atlantic sturgeon on 17 August 2017; the Hudson River at U.S. Army Garrison West Point (USAG WP) falls within this critical habitat (NOAA 2017). The current management plan that is in affect for the Atlantic sturgeon was put together by the ASMFC in 1990 and has since been edited to maintain management goals.

In the Hudson River, spawning is thought to occur from river kilometer (rkm) 98 (near Poughkeepsie) to about rkm 182, upstream of the saltwater intrusion point as Atlantic sturgeon eggs and juveniles not being able to tolerate high salinity (ASMFC 2017). Atlantic sturgeon spawning occurs notably around Hyde Park (rkm 129-135), and Catskill (rkm 182), as well as throughout the span of rkm 113-184 (Bain et al. 1998; Van Eenennaam et al. 1996). Evidence also strongly suggests that spawning also occurs further upstream of rkm 193. After spawning, females migrate back down river to salt water while males typically remain in the area until the onset of cold weather in fall (ASMFC 2017). Females and males have very different spawning

behaviors. The spawning period for Atlantic sturgeon occurs from late April through August in the Hudson River, when the waters around USAG WP are downstream of the saltwater intrusion point (Dovel and Berggren 1983). Females are known to head directly to spawning waters and then head back to coastal waters right after spawning takes place, while males have been known to remain in the Hudson River all the way into November well after spawning has taken place (Dovel and Berggeren 1983).

Juvenile Atlantic sturgeon can be found throughout the Hudson River, but sturgeon in the early life-stages (eggs, yolk-sac, post yolk-sac larvae, and young-of-the-year) are limited by salinity and are only found in freshwater reaches. Juveniles typically spend the first 2 to 8 years of their life in the Hudson River as they grow and develop. Atlantic sturgeon grow and develop very quickly in the first few years of their life, but development slows considerably once they begin to reach the age where they can move into more saline environments (Dovel and Berggeren 1983).

Adult and juvenile fish feed primarily on benthic organisms: amphipods, isopods, shrimp, molluscs, and fish for adults; insects, isopods, amphipods, and small molluscs for juvenile fish. Adult females' feeding behavior within the river is not very well documented as it is believed that females do not eat during the spawning run but instead wait until they have returned to marine environments. Males are known to travel throughout the channel during spawning time but will stay in water greater than 7.6 meters deep (Van Eenennaam et al. 1996). Juvenile feeding behavior occurs within the deep channels of the Hudson during early stages of their life. As temperatures begin to decrease in fall the juveniles will move downstream to slightly more brackish waters and remain there till spring (Bain et al. 1998).

The Hudson River has one of the healthiest populations of Atlantic sturgeon in the nation, even though the species is still in decline and the Atlantic sturgeon population is the lowest it has been in 120 years. To protect the species, the New York State Department of Environmental Conservation (NYSDEC) banned commercial fishing in 1996, and the Hudson River segment population was listed as federally endangered in 2012.

## **2. STATUS AT U.S. ARMY GARRISON WEST POINT (USAG WP)**

The Hudson at USAG WP (rkm 83) is an oligohaline reach with changeable salinities, ranging from 0.5 to 5 parts per thousand, depending upon season. In summer, the salt front occurs north of USAG WP, moving southward past the Garrison in autumn and returning to the north in late May or early June (Hoffman 2007). This reach of the river is deep, ranging to 60 meters. Due to strong currents and a sharp bend in the river, there is little shallow water habitat, generally confined to the lee areas north and south of Constitution Island and north and south of the Academy. At its narrowest, the river is 425 meters wide from Gee's Point to Constitution Island.

In 1998, due to tremendous declines in previous harvests and population surveys, New York State closed the commercial harvest of Atlantic sturgeon. Within the New York Bight distinct population segment, which includes the Hudson River, the Atlantic sturgeon was listed as federally endangered in 2012. The stretch of Hudson River which is at USAG WP is considered critical habitat for the Atlantic sturgeon.



The Atlantic sturgeon may occur in the Hudson River off USAG WP year-round. Atlantic sturgeon spawn in deep water upstream of the salt front in areas with rocky or weedy substrate. While USAG WP is above the salt front, the lack of proper spawning habitat due to depth, current, and substrate would make the area unattractive to spawning Atlantic sturgeon (Pray 2017). The Hudson River at USAG WP likely serves as transient and resting habitat for adult sturgeon and subadult may also be present.

Juvenile sturgeon remain in the Hudson River Estuary for up to 8 years while they grow and develop, eventually congregating in the more saline portions of the river such as Newburgh Bay and Haverstraw Bay before venturing out into more coastal waters (Sweka et al. 2006). At USAG WP, adult and juvenile fish may be found offshore of the Academy. Juveniles may be found in the area year-round, while adults will only stay in the area during the spawning period which runs from late April through August (Dovel and Berggeren 1983). Adults are unlikely to spawn in the waters outside of USAG WP as the habitat is not well-suited to spawning and would likely only use the area for transient and resting habitat. Surveys of Atlantic sturgeon completed in Newburgh and Haverstraw bays indicated that juveniles prefer areas of deep water and silty or soft substrate in the vicinity of USAG WP (Sweka et al. 2006). Similar to adult Atlantic sturgeon, juveniles likely use the waters at USAG WP for resting and are only present in a transitory manner (Pray 2017). Post yolk-sac and young-of-the-year could be present at USAG WP when the water is fresh.

### **3. EFFECT ON TRAINING AND OPERATIONS**

The mission of the U.S. Military Academy (USMA) is “To educate, train, and inspire the Corps of Cadets so that each graduate is a commissioned leader of character committed to the values of Duty, Honor, Country; professional growth throughout a career as an officer in the United States Army; and a lifetime of selfless service to the Nation.”

Military training at USAG WP consists of Cadet Basic Training and Cadet Field Training. This involves small arms and artillery training, instruction in individual soldier skills, and small unit operations. All military training occurs in designated areas of the 16,000-acre reservation. None is associated with the Hudson River. As this activity is removed from the Hudson, training is neutral in its impact on Atlantic sturgeon, and vice versa.

The Garrison maintains a small marina for private and Garrison watercraft. The docking facility has been in constant use since the 1940s, and is consistent with other marinas in the area. These facilities are used by the Academy for intra- and intercollegiate sports and clubs, is used to dock private and Garrison recreational vessels, and is visited by commercial touring boats. A second, seasonal floating dock is found on Constitution Island. Upgrades to both these facilities have required Endangered Species Act Section 7 consultation with NMFS for the shortnose sturgeon (*Acipenser brevirostrum*). No special risk is associated with the use of these facilities that is likely to impact individuals or populations of Atlantic sturgeon.

The Target Hill Wastewater Treatment Plant is operated by USAG WP for the treatment of sewage. In April 2017 USAG WP submitted a proposal to NMFS for a new outfall for the new Target Hill Wastewater Treatment Plant that is planned to be constructed on the Hudson River. The new treatment plant is being built to replace the old one that will no longer be

able to keep up with future treatment needs. The current plant will continue to run until the new plant is finished and tested, upon completion of which the current plant will be demolished. An environmental assessment for the project was completed with a finding of no significant impact on the current Atlantic or shortnose sturgeon (USAG WP 2017). To minimize the impacts to Atlantic and shortnose sturgeon throughout the construction of the new outfall, the following measures will be carried out.

1. Temporary control measures to mitigate for upland erosion and sedimentation to the Hudson River.
2. A cofferdam (or other means to provide for work in dry conditions) will be utilized to install the new replacement outfall in the Hudson River. Best management practices will be utilized to minimize temporary vibration impacts relating to installation of cofferdam.
3. An in-river work window for work within the wetted confines of the Hudson River is limited to a yearly period from December through June.
4. In-river sediment that is temporarily disturbed or removed as part of the installation of the pipelines in the Hudson River will be replaced in-kind.

The Target Hill Wastewater Treatment Plant discharges to the Hudson River under a New York State-issued State Pollution Discharge Elimination System permit, and is unlikely to adversely affect water quality for the Hudson River. The new wastewater treatment plant will improve the quality of effluent discharged and decrease the frequency of wastewater discharges, and will likely have a positive effect on sturgeon habitat.

#### **4. MANAGEMENT GOALS AND OBJECTIVES**

Bain (2000) notes regarding sturgeon management in the Hudson River, "... Therefore we conclude that a patient and natural approach to fishery recovery has succeeded despite intense human use and occupation of the Hudson River and its surroundings." The success of the program has centered upon, protection of the fishery through closure and habitat protection. He notes that:

*No major changes are expected in the tidal portion of the Hudson River that would greatly alter or eliminate deep channel waters or the turbulent spawning reach. Finally, likely future causes of high mortality such as unregulated harvest, bycatch in active fisheries, and pollution stress have been and can be controlled through established fishery management and water quality regulations.*

As current activities at USAG WP are considered neutral in their impact on Atlantic sturgeon, the management plan for this species is to prevent future adverse impact to the species due to changes in USAG training practice, infrastructure, and operations. This will be accomplished through the following measures.

1. Consult as necessary, informally and formally, with NMFS, pursuant to Section 7 of the Endangered Species Act, and NYSDEC regarding any USAG WP activities in the

Hudson River. Incorporate any modifications into activities that arise from consultations and permits issued.

2. Comply with all provisions stipulated in the permit issued by NYSDEC for the operation of the Target Hill Wastewater Treatment Plant to reduce pollutants that may be discharged into the Hudson River. Comply with stormwater management regulations.
3. Permit access to the Hudson River from USMA properties by federal, state, and other researchers studying the Atlantic sturgeon, provided it does not greatly interfere with USMA operations.
4. Consult annually with NYSDEC and NMFS to ascertain status and trends of the Hudson River Atlantic sturgeon population. Review, evaluate, and modify this plan, if necessary, based on new information.
5. Seek to improve the quality and volume of stormwater discharges through point source control, strict construction site management, adherence to all municipal separate storm sewer system (MS-4) requirements and the use of best management practices, such as installing Low Impact Design elements to encourage infiltration and diversion.
6. Conduct bathymetric mapping and macroinvertebrate sampling once every five years using a Ponar grab every 20-30 meters along a transect. Data collected can identify areas of high feeding potential and further define sturgeon habitat use. USAG WP will not complete independent fisheries sample for sturgeon species in the Hudson River, but will provide survey assistance if possible and will complete bathymetric mapping.

USAG WP will also share all installation generated data, maps, occurrences, etc. associated with status of the Atlantic sturgeon with the NYSDEC, NYNHP, the USFWS, and NMFS. This service will be offered as well to academic researchers as allowed and prudent. Further, USAG WP will make survey sites, equipment, and manpower available as practical to researchers working toward the conservation and stewardship of this species.

In 1990 ASMFC created the first Fishery Management Plan (FMP) for the Atlantic sturgeon. By 1998, it was determined that the FMP was not sufficient to restore the Atlantic sturgeon stock, and the plan was revised. The goals listed in the FMP (Atlantic Sturgeon Plan Review Team 2016) are as follows:

- Establish 20 protected year classes of females in each spawning stock;
- Close the fishery for a sufficient time period to reestablish spawning stocks and increase numbers in current spawning stocks;
- Reduce or eliminate bycatch mortality of Atlantic sturgeon;
- Determine the spawning sites and provide protection of spawning habitats for each spawning stock;

- Where feasible, reestablish access to historical spawning habitats for Atlantic sturgeon; and,
- Conduct appropriate research as needed, especially to define unit stocks of Atlantic sturgeon.

There have since been a few more addendums to the FMP mainly concerning continued reporting and evaluation of fishery bycatch and continued research on the sturgeon itself.

## 5. COST TO IMPLEMENT

All costs associated with this plan would be due to mitigation required of new projects, the cost of which would be identified in the planning stage, and absorbed in the cost of the project.

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## **Appendix B4**

Endangered Species Management Plan  
Northern Long-Eared Bat (*Myotis septentrionalis*)

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***FINAL***  
**NORTHERN LONG-EARED BAT (*Myotis septentrionalis*)**  
**MANAGEMENT PLAN**  
**U.S. ARMY GARRISON WEST POINT**

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***Final***  
**Endangered Species Management Plan**  
**for the**  
**Northern Long-Eared Bat (*Myotis septentrionalis*)**  
**for the**  
**U.S. Army Garrison West Point**  
**West Point, New York**

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## ATTACHMENT A – NORTHERN LONG-EARED BAT 4(D) RULE STREAMLINED CONSULTATION FORM

## LIST OF TABLES

| <u>Number</u> | <u>Title</u>                                      |
|---------------|---|
| 1             | ESA 4(d) Rule Permitted and Prohibited Activities |

## LIST OF ACRONYMS AND ABBREVIATIONS

|         |   |
|---------|---|
| ESA     | Endangered Species Act                                  |
| ITAM    | Integrated Training Area Management                     |
| NYNHP   | New York Natural Heritage Program                       |
| NYSDEC  | New York State Department of Environmental Conservation |
| PWE     | Pittsburgh Wildlife and Environmental                   |
| USAG WP | U.S. Army Garrison West Point                           |
| USFWS   | U.S. Fish and Wildlife Service                          |
| WNS     | White-nose syndrome                                     |

# ENDANGERED SPECIES MANAGEMENT PLAN FOR THE NORTHERN LONG-EARED BAT (*Myotis septentrionalis*) FOR THE USAG WEST POINT (USAG WP), NEW YORK

## 1. BACKGROUND

The northern long-eared bat (*Myotis septentrionalis*) is a medium-sized, brown bat, distinguished from other *Myotis* species by their longer ears, larger wings, and a longer tail. Body length ranges from 3 to 3.7 inches, with a wing span of 9 to 10 inches (New York Natural Heritage Program [NYNHP] 2017). Northern long-eared bats may live more than 18 years (U.S. Fish and Wildlife Service [USFWS] 2015).

The species ranges across much of the eastern United States and Canada. They primarily occupy mature interior forests, often near streams or wetlands, and avoid edge habitat (USFWS 2015). Northern long-eared bats emerge from hibernacula in March or April, depending on latitude and weather, and may migrate short distances from their hibernacula to summer colonies (USFWS 2015; U.S. Army Environmental Command [USAEC] 2015). In New York, the active season begins April 1<sup>st</sup> (USAEC 2010). Throughout the active season, they roost singly or in small colonies (USFWS 2015). Roost trees are typically large, tall trees, with exfoliating bark or cavities, but northern long-eared bats roost in trees with a diameter at breast height greater than 3 inches of more than 35 different species (USAEC 2015), and USFWS regulates tree cutting down to a 3-inch diameter at breast height. Sun exposure and proximity to foraging areas also influence roost selection (NYNHP 2017). Northern long-eared bats typically return to hibernacula in August or September, utilizing caves or abandoned mineshafts. The majority of northern long-eared bats are in hibernation by the end of November (USFWS 2015). They hibernate in small numbers, but often share hibernacula with other bat species, including little brown bats, big brown bats, eastern small-footed bats, tri-colored bats, and Indiana bats (Pittsburgh Wildlife and Environmental [PWE] 2015).

Northern long-eared bats feed primarily on moths, beetles, flies, and other insects. Prey is captured in flight as well as by gleaning them from vegetation (USFWS 2015). Locating insects by gleaning may allow the northern long-eared bats to obtain a wider variety of insect prey than other bat species. Northern long-eared bats typically forage under the forest canopy, in small openings, or along streams (USFWS 2015). Northern long-eared bats breed in the fall near the entrance to hibernacula, where they swarm in large numbers between dusk and dawn. Sperm is stored over the winter, with fertilization occurring around the time of emergence the following spring, when the female ovulates. Small groups of females, generally 30 to 60 individuals, gather in maternity roosts, and may use multiple maternity roost locations, depending on weather conditions (USFWS 2015). Gestation last 50 to 60 days, when females gives birth to a single pup, which is able to fly within 18 to 21 days after birth (USFWS 2015).

Northern long-eared bats were once a relatively common species in New York, with at least 90 known northern long-eared bat hibernacula throughout the state and range-wide. In 2006, a fungal infection known as white-nose syndrome (WNS) was first detected in bats in New York State. The fungal growth appears on the bat's face and wings, and may cause skin lesions. This causes the bats to awaken during hibernation to groom and burns winter fat stores; it is ultimately fatal to infected bats (USFWS 2014). While there are no range-wide population estimates prior to the outbreak of WNS, the fungus has caused declines of up to 90 to 100 percent at infected



hibernacula and is spreading throughout the country. WNS has caused drastic population decline in several bat species, and declines in the numbers of northern long-eared bats are expected to continue as WNS extends across the species' range (USFWS 2016a). Severe declines in the numbers of northern long-eared bats range-wide led to a 2010 request for petition to the USFWS to list the species, and the northern long-eared bat was formally listed as federally threatened species under the United States Endangered Species Act (ESA) in 2016.

The USFWS also released a final ESA, Section 4(d) rule under the Endangered Species Act for the northern long-eared bat, which was published on 16 January 2016 in the Federal Register, which defines take and the range map for the species (USFWS 2016a). All New York counties are within the WNS Buffer Zone established by the rule (USFWS 2016a). Guidelines provided by the ESA, Section 4(d) rule allow for protection of areas impacted by WNS while still allowing certain activities to be completed by landowners and managers within the species range. Definitions of take and activities allowed and prohibited under the 4(d) rule are provided in table 1. USFWS has not designated critical habitat for the northern long-eared bat, as summer habitat is not limited or threatened range-wide.

**Table 1. ESA 4(d) Rule Permitted and Prohibited Activities**

|  | <b>Definition</b>   | <b>Permitted and Prohibited Activities</b>   |
|--|---|--|
| Purposeful Take  | When the reason for the activity or action is to conduct some form of take. For instance, conducting a research project that includes collecting and putting bands on bats is a form of purposeful take. Intentionally killing or harming bats is also purposeful take and is prohibited. | <p>For areas outside the WNS zone:</p> <ul style="list-style-type: none"> <li>• All purposeful take in the WNS zone is <b><i>prohibited except for the following activities:</i></b> <ul style="list-style-type: none"> <li>○ Removal of northern long-eared bats from human structures;</li> <li>○ Defense of human life (e.g., public health monitoring for rabies); and</li> <li>○ Removal of hazardous trees for the protection of human life and property.</li> </ul> </li> </ul> <p>For areas inside the WNS zone:</p> <ul style="list-style-type: none"> <li>• Same as outside the WNS Zone</li> </ul>  |
| Incidental Take  | Take that is “incidental to, and not the purpose of, the carrying out of an otherwise lawful activity.” For example, harvesting trees can kill bats that are roosting in the trees, but the purpose of the activity is not to kill bats.  | <p>For areas outside the WNS zone:</p> <ul style="list-style-type: none"> <li>• No Prohibitions on incidental take</li> </ul> <p>For areas inside the WNS zone:</p> <ul style="list-style-type: none"> <li>• Incidental Take in the WNS is <b><i>permitted except for the following activities:</i></b> <ul style="list-style-type: none"> <li>○ If it occurs within a hibernaculum; and</li> <li>○ If it results from tree removal activities and <ul style="list-style-type: none"> <li>▪ If the activity the activity occurs within 0.25 mile (0.4 km) of a known hibernaculum; or,</li> <li>▪ the activity cuts or destroys a known, occupied maternity roost tree or other trees within a 150-foot radius from the maternity roost tree during the pup season from June 1 through July 31.</li> </ul> </li> </ul> </li> </ul> |
| <p>Notes: WNS = White-nose syndrome.<br/>Source: USFWS 2018.</p> |   |  |

The 4(d) rule also provides a streamlined section 7 consultation process for federal agencies engaging in incidental take of northern long-eared bats that is considered not prohibited under the 4(d) rule. If a federal agency undertakes an action that would result in a prohibited take a separate section 7 consultation would be required (USFWS 2016b). The streamlined consultation requires that the federal agency provide a project-level description that documents the proposed activities exempted from incidental take prohibitions under the rule. The streamlined consultation form is provided in Attachment A. The section 7 streamlined framework also provides an optional framework with conservation measures that can be implemented as part of a federal agency's section 7(a)1 responsibilities. Many of these measures, including performing surveys, managing forests to support northern long-eared bats, and downcast lighting are included in the management measures of USAG WP.

## **2. STATUS AT U.S. ARMY GARRISON WEST POINT (USAG WP)**

During mist net surveys conducted at USAG WP in 2002, northern long-eared bats were the second most common bat species captured, comprising 27.5 percent of captures. In the summer of 2008, after the emergence of WNS in New York, northern long-eared bats were still common and accounted for 30.6 percent of all bat captures. Acoustic surveys conducted the following year in 2009 documented northern long-eared bats at 10 of 22 locations in the summer and 3 of 5 fall survey locations (Britzke 2010). During the most recent surveys conducted in 2015, only 2 northern long-eared bats were captured (0.59 percent of all mist net captures), and they were the least common of the 5 bat species caught. Northern long-eared bats were also only documented during acoustic surveys at 2 of the 22 sites (PWE 2015). These declines are attributed to the WNS outbreak.

There are 16 documented northern long-eared bat hibernacula in Ulster, Orange and Putnam Counties; surveys conducted after the outbreak of WNS documented an average population decline of 99 percent, and failed to detect any northern long-eared bats in most of these hibernacula (PWE 2015). Three of these sites—Bull Mine, Zinth Mine, and Long Mountain—are in proximity to USAG WP. A known hibernaculum is also present at USAG WP, but it is in an area of restricted access and is properly secured.

## **3. EFFECT ON TRAINING AND OPERATIONS**

The mission of the U.S. Military Academy at USAG WP is “To educate, train, and inspire the Corps of Cadets so that each graduate is a commissioned leader of character committed to the values of Duty, Honor, Country and prepared for a career of professional excellence and service to the Nation as an officer in the United States Army.” The mission of the Garrison is to “provide the services, programs and infrastructure to sustain the West Point community.” Military training at USAG WP consists of Cadet Basic Training and Cadet Field Training. This involves small arms and artillery training, instruction in individual soldier skills, and small unit operations. Training at USAG WP includes artillery, howitzer training, ground assault, hand grenade training, small arms, and drone training. Previous studies of bat populations at military installations with bat populations have indicated that bats become habituated to existing and ongoing noise associated with training activities (USAEC 2015). Training activities at firing and maneuver ranges would not be expected to have impacts to northern long-eared bats (USAEC 2015).

The ESA, Section 4(d) rule includes a prohibition of intentional take, with the exception of removal from human structures, in defense of human safety, from removal of hazard trees to protect human life or property, and authorized capture. In areas impacted by WNS (including USAG WP), take in winter hibernacula is prohibited, including disturbing or disrupting hibernating bats and hibernacula. Incidental take resulting from tree clearing within a 0.25-mile radius of known hibernacula, or tree maintenance that impacts a known maternity roost or trees within 150 feet of a maternity roost during the pup season (1 June through 31 July) would be prohibited. Hazard tree removal resulting in incidental take would not be prohibited (USFWS 2016a).

Training Activity Impacts: The Integrated Training Area Management (ITAM) program manages trainings and testing lands at USAG WP; this program seeks to integrate mission requirements with land management practices and environmental requirements. ITAM works to develop lands for mission needs while also providing protection for bats and in accordance with the ESA, Section 4(d) rules. In addition, grounds maintenance is responsible for the management of roads and developed grounds in the cantonment area, including tree clearing and other activities. Maintenance of roads by ground crews outside of training areas contributes to the mission and operation of USAG WP. All tree clearing is done in accordance with the guidelines presented in the ESA, Section 4(d) rule for the northern long-eared bat.

Training activities that could impact northern long-eared bats at USAG WP include the use of obscurants, and fires resulting from training activities. Fires and obscurants have the potential to harm bat species. Smoke and certain obscurants can impact roosting northern long-eared bats and result in adverse toxicological effects from prolonged dermal and respiratory exposure (USAEC 2015). As part of management, USAG WP also is considering the use of prescribed burns, and aerial application of pesticides, which may also have adverse effects. Measures to reduce exposure, including limiting training with obscurants known roosts can limit the effects of training on the northern long-eared bat (USAEC 2015). In addition, any aerial pesticide spraying at USAG WP would be done using a pesticide with the lowest possible toxicity, or a bacterium to target gypsy moths that would not impact bats. However, aerial spraying may indirectly affect northern long-eared bats by removing gypsy moths (*Lymantria dispar dispar*) as a food source.

Land Management and Tree-Clearing: Several common management activities have the potential to impact northern long-eared bat. Timber harvest and timber stand improvement have the potential to impact bats, but are permitted under the 4(d) rules, with restrictions for clearing only during the inactive bat season. Disturbance associated with harvest activity completed during the roosting season could cause northern long-eared bats to flee or abandon roosts, and harvest could result in the loss of roost for foraging trees (USFWS 2016c). Timber is managed at USAG WP to keep forest fire danger at ambient natural levels, and clearing of forests can create beneficial habitat for bat species, including the northern long-eared bat. The emerald ash borer (*Agrilus planipennis*) has had a severe impact on ash trees at USAG WP in recent years, with many trees on the installation showing evidence of infection. This condition will likely result in a short-term gain in forage and roosting sites for the northern long-eared bat as the ash die and decay. However, ash species are susceptible to rapid decay, and trees in area used for habitation and training must be removed if they present hazards to human health and safety.

Development and Construction: Land clearing for development and associated construction may also impact northern long-eared bat. In areas within the known range of the northern long-eared bat, construction would be completed under the requirements of the 4(d) rule and in consultation with the USFWS when required. Buildings at USAG WP are designed to adhere to the USAG WP design guide, which includes downcast lighting, which is less disruptive to bats by reducing light pollution.

Access to Hibernacula: USAG WP limits access to known hibernacula sites. A known hibernaculum is present on the installation, but is not available for training or access, and has been properly secured. USAG WP does visit the hibernacula site when the New York Department of Environmental Conservation (NYSDEC) requests a visit, but visits are carefully planned and strict biosecurity measures are followed.

#### **4. MANAGEMENT GOALS AND OBJECTIVES**

As current activities at USAG WP are managed in accordance with state and federal guidelines to protect the northern long-eared bat, activities would be considered neutral in their impact on northern long-eared bats. This management plan serves to help prevent future adverse impacts to the species due to changes in USAG WP training practice, infrastructure, and operations. This will be accomplished through the following measures.

1. Minimize activities in proximity to waterbodies, including any disturbances within a 100-foot buffer of all wetlands, waterbodies, and streams, as well as minimizing use of pesticides.
2. Coordinate with the USFWS early in planning for any proposed wind-power facilities.
3. Complete sampling for bat species, including annual acoustic surveys and mist net surveys every 3 to 5 years.
4. Update this endangered species management plan every 5 years.
5. Protect mines that may be utilized by bats at USAG WP. This will include facilitating NYSDEC or federal inspection as well as implementing measures to prevent unauthorized access.
6. Install bat boxes and review currently installed bat boxes for use.
7. Conduct all tree clearing maintenance and other project activities in accordance with the guidelines provided in the ESA, Section 4(d) rule.
8. Follow the USAG WP design guide, which mandates the use of downward-pointing light fixtures.
9. Consider fencing mines to prevent unauthorized access to potential bat hibernacula.

Projects completed in areas of potential northern long-eared bat habitat should be brought to the attention of the Natural Resources Branch for review and consultation. USAG WP will review all projects for compliance with bat conservation practices, and will seek to minimize both habitat loss and fragmentation as well as individual take by timing tree cutting activities to inactive periods.

USAG WP will also share all installation generated data, maps, occurrences, etc. associated with status of the northern long-eared bat with the NYSDEC, NYNHP, and the USFWS. This service will be offered as well to academic researchers as allowed and prudent. Further, USAG WP will make survey sites, equipment, and manpower available as practical to researchers working toward the conservation and stewardship of this species.

## 5. COST TO IMPLEMENT

All costs associated with this plan would be due to mitigation required of new projects, the cost of which would be identified in the planning stage, and absorbed in the cost of the project.

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***ATTACHMENT A – NORTHERN LONG-EARED BAT 4(D) RULE STREAMLINED  
CONSULTATION FORM***

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**Northern Long-Eared Bat 4(d) Rule Streamlined Consultation Form**

Federal agencies should use this form for the optional streamlined consultation framework for the northern long-eared bat (NLEB). This framework allows federal agencies to rely upon the U.S. Fish and Wildlife Service’s (USFWS) January 5, 2016, intra-Service Programmatic Biological Opinion (BO) on the final 4(d) rule for the NLEB for section 7(a)(2) compliance by: (1) notifying the USFWS that an action agency will use the streamlined framework; (2) describing the project with sufficient detail to support the required determination; and (3) enabling the USFWS to track effects and determine if reinitiation of consultation is required per 50 CFR 402.16.

This form is not necessary if an agency determines that a proposed action will have no effect to the NLEB or if the USFWS has concurred in writing with an agency's determination that a proposed action may affect, but is not likely to adversely affect the NLEB (i.e., the standard informal consultation process). Actions that may cause prohibited incidental take require separate formal consultation. Providing this information does not address section 7(a)(2) compliance for any other listed species.

| <b>Information to Determine 4(d) Rule Compliance:</b>  | <b>YES</b>               | <b>NO</b>                |
|--|--------------------------|--------------------------|
| 1. Does the project occur wholly outside of the WNS Zone <sup>1</sup> ?  | <input type="checkbox"/> | <input type="checkbox"/> |
| 2. Have you contacted the appropriate agency <sup>2</sup> to determine if your project is near known hibernacula or maternity roost trees?                                       | <input type="checkbox"/> | <input type="checkbox"/> |
| 3. Could the project disturb hibernating NLEBs in a known hibernaculum?  | <input type="checkbox"/> | <input type="checkbox"/> |
| 4. Could the project alter the entrance or interior environment of a known hibernaculum?   | <input type="checkbox"/> | <input type="checkbox"/> |
| 5. Does the project remove any trees within 0.25 miles of a known hibernaculum at any time of year?  | <input type="checkbox"/> | <input type="checkbox"/> |
| 6. Would the project cut or destroy known occupied maternity roost trees, or any other trees within a 150-foot radius from the maternity roost tree from June 1 through July 31. | <input type="checkbox"/> | <input type="checkbox"/> |

You are eligible to use this form if you have answered yes to question #1 **or** yes to question #2 **and** no to questions 3, 4, 5 and 6. The remainder of the form will be used by the USFWS to track our assumptions in the BO.

**Agency and Applicant<sup>3</sup>** (Name, Email, Phone No.):

**Project Name:**

**Project Location** (include coordinates if known):

**Basic Project Description** (provide narrative below or attach additional information):

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<sup>1</sup> <http://www.fws.gov/midwest/endangered/mammals/nleb/pdf/WNSZone.pdf>

<sup>2</sup> See <http://www.fws.gov/midwest/endangered/mammals/nleb/nhisites.html>

<sup>3</sup> If applicable - only needed for federal actions with applicants (e.g., for a permit, etc.) who are party to the consultation.

| <b>General Project Information</b>   | <b>YES</b>               | <b>NO</b>                |
|--|--------------------------|--------------------------|
| Does the project occur within 0.25 miles of a known hibernaculum?                        | <input type="checkbox"/> | <input type="checkbox"/> |
| Does the project occur within 150 feet of a known maternity roost tree?                  | <input type="checkbox"/> | <input type="checkbox"/> |
| Does the project include forest conversion <sup>4</sup> ? (if yes, report acreage below) | <input type="checkbox"/> | <input type="checkbox"/> |
| Estimated total acres of forest conversion   |                          |                          |
| If known, estimated acres <sup>5</sup> of forest conversion from April 1 to October 31   |                          |                          |
| If known, estimated acres of forest conversion from June 1 to July 31 <sup>6</sup>       |                          |                          |
| Does the project include timber harvest? (if yes, report acreage below)                  | <input type="checkbox"/> | <input type="checkbox"/> |
| Estimated total acres of timber harvest  |                          |                          |
| If known, estimated acres of timber harvest from April 1 to October 31                   |                          |                          |
| If known, estimated acres of timber harvest from June 1 to July 31                       |                          |                          |
| Does the project include prescribed fire? (if yes, report acreage below)                 | <input type="checkbox"/> | <input type="checkbox"/> |
| Estimated total acres of prescribed fire   |                          |                          |
| If known, estimated acres of prescribed fire from April 1 to October 31                  |                          |                          |
| If known, estimated acres of prescribed fire from June 1 to July 31                      |                          |                          |
| Does the project install new wind turbines? (if yes, report capacity in MW below)        | <input type="checkbox"/> | <input type="checkbox"/> |
| Estimated wind capacity (MW)   |                          |                          |

Agency Determination:

By signing this form, the action agency determines that this project may affect the NLEB, but that any resulting incidental take of the NLEB is not prohibited by the final 4(d) rule.

If the USFWS does not respond within 30 days from submittal of this form, the action agency may presume that its determination is informed by the best available information and that its project responsibilities under 7(a)(2) with respect to the NLEB are fulfilled through the USFWS January 5, 2016, Programmatic BO. The action agency will update this determination annually for multi-year activities.

The action agency understands that the USFWS presumes that all activities are implemented as described herein. The action agency will promptly report any departures from the described activities to the appropriate USFWS Field Office. The action agency will provide the appropriate USFWS Field Office with the results of any surveys conducted for the NLEB. Involved parties will promptly notify the appropriate USFWS Field Office upon finding a dead, injured, or sick NLEB.

Signature: \_\_\_\_\_ Date Submitted: \_\_\_\_\_

<sup>4</sup> Any activity that temporarily or permanently removes suitable forested habitat, including, but not limited to, tree removal from development, energy production and transmission, mining, agriculture, etc. (see page 48 of the BO).

<sup>5</sup> If the project removes less than 10 trees and the acreage is unknown, report the acreage as less than 0.1 acre.

<sup>6</sup> If the activity includes tree clearing in June and July, also include those acreage in April to October.

**Appendix B5**  
**Bear Management at USAG WP**

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New York is home to the American Black Bear in almost every county in the state. The American Black Bear is the only bear native to New York and West Point. It typically ranges in size from 160 to 300 pounds as an adult. They are omnivorous, so they will eat just about anything, including nuts, berries, insect larvae, plants, grasses, carrion, small mammals and deer. Man-made foods they eat include garbage, bird seed and pet food. Access to these food sources can result in human interaction. However, while this is a nuisance, actual physical harm to humans is extremely rare.

Black bears are highly mobile and proficient in search of food and other resources. Home ranges can stretch from five to 60 square miles, depending upon their gender and resources. Predictable resources tend to result in smaller ranges and a higher concentration of bears. Easily procured resources, in or close to their home range, have a tendency to attract bears to that area.

As a game and nuisance species, the black bear is heavily managed in the state of New York. Once, bears were almost completely exterminated in the Hudson Highlands, but the species is highly adaptive, and having adjusted to the modern environment, has recovered completely. Currently, bears are one of the most reported nuisance animals in the state, and are now hunted regularly. In addition to hunting mortality, some bears succumb to being struck on the highway. For instance, two bears were killed this summer by cars at West Point.

The estimated population for the 16,000 acre reservation of West Point varies but is estimated to be 12-15 bears. Female bears will typically produce a litter of two to three offspring every other year during their inactive winter period. The young will stay with the mother through the first year after which they become independent and begin the search for their own home territory. This first year away from their mother is often a key time where the young, inexperienced bears become a nuisance, garbage-eating bear.

The West Point bear population is also bolstered by immigration from nearby areas. Northern New Jersey has one of the highest concentration of bears in the United States, and bears from this region are known to travel to West Point.

The fact that bears do migrate highlights the limited value of population reduction by relocation efforts. Yes, individual bears can be removed from the area but there is a great deal of resilience to the population through reproduction and immigration. A territory left by the removal of one animal is likely to be filled with another.

### **West Point Bear Management**

Bear management on West Point is governed by the rules and regulations of the state of New York. The aim of West Point's bear management is three fold: population control, aversion conditioning and reward reduction. Each effort has its place but it is reward management, the most difficult item to control, which is most likely to result in

management success. Below each line of effort is described in terms of availability, implementation and effect.

- **Population Control**

In the United States, legal jurisdiction, with the exception federally managed species such as of migratory or federally listed wildlife, is retained by the states. So, from a regulatory sense, bears are 'owned' by the state of New York and managed by the New York State Department of Environmental Conservation. This department issues permits for all management actions, and this directly impacts West Point in how it can deal with bears.

Virtually all wildlife interactions conducted on West Point undergo a permitting and review process by the state of New York and/or the U.S. Fish and Wildlife Service. New York predominately manages the bear population through sport hunting for which interested persons may obtain a hunting license and tag.

New York does not pursue trap and relocation efforts as a way to reduce local bear populations, nor do they issue permits for this action. Relocating black bears is rarely effective as the bear typically attempts to return to familiar territory shortly after release. Such transient bears experience high mortality as they become vulnerable to road danger, food stress, increased hunting vulnerability and conflict with dominant bears whose territory they must pass through. Translocation of wildlife may also introduce disease into a distant population. Finally, relocation tends to simply export a local problem. Released bears will very often become a nuisance in another community.

Depredation, or lethal control of bears is permitted in New York but within very narrow limits. Any bear that represents an **immediate** threat to people or pets may be euthanized on the spot. This means that there is an attack happening, and there is no need for permitting because the threat is occurring at that moment in time. This is normally a law enforcement action and not appropriate for nuisance conditions.

Very rarely New York will issue depredation permits for the lethal control of bears. This is done when a specific bear has demonstrated an unequivocal hazard to people or livestock. The New York office responsible for issuing this permission stated that only one such permit has been issued, and the permission was issued for a bear that was adjacent to a summer camp. The bear was completely habituated to trash as a food source and had lost all fear of people due to camp residents intentionally feeding it. The bear began to behave aggressively toward people as it would toward other bears, repeatedly bluff charging camp residents and making threat displays. The permit was issued to local law enforcement, and they eliminated it.

Bears may be hunted in New York from mid-September through mid-December but only using state-approved methods. At West Point, the annual bear take is

normally three to five bears. As of November 2016 in the West Point area, five bears have been taken through sport hunting. Bears may be taken with Special Archery Season, but it is during the 'Regular,' firearms Big Game Season concluding in December, when New York normally sees the bulk of the bear harvest.

- **Aversion Conditioning**

There is a balance in every animal's behavior between risk and reward. Behaviors that cost more calories than can be gathered will be abandoned. Bears don't try to catch adult birds, but they will raid nests. They weigh the potential for harm and conflict the same way. Bears are naturally shy animals around humans. A wild bear encountered in the woods will normally flee. To a wild bear, we are strange animals not to be trusted. There is no reward in remaining, so the bear avoids us.

At West Point, the reward for a visiting bear can be high. Inadequate trash management practices put food where bears can easily access it. Human garbage is high in calories as well as palatable. For a bear, this is a valuable resource. They have learned from experience how to access the reward and evaluate the risk. As humans, our task is to shift the balance by increasing the risk and decreasing the reward.

Our largest effort at West Point has been to increase risk and aversion of visiting bears through the use of hazing techniques. These methods seek to train bears to avoid humans and human environs through negative reinforcement. Hazing is reactive. It can only be employed in response to a bear's behavior. While bears will learn that humans do represent some threat, and this has value, bears may not associate the hazing with the behavior – i.e. foraging through trash. They will simply vary their behavior to get the reward (trash) but avoid the risk (the Military Police). Hazing will not be successful without reward (trash) management.

We use a variety of hazing techniques. The method that is used is dependent upon personnel, available equipment, available escape routes for the hazed bear and conditions. On a sliding scale of severity, the techniques are listed below:

- **Commanding Voice and Attitude:** Simply shouting and clapping hands is usually enough to frighten an inexperienced bear. They do not understand the behavior, so they respond with caution. Bears quickly decide that this kind of human is of little threat, and any aversion is easily overcome with minimal reward.
- **Sirens:** The sounds employed are louder and of an unnatural pitch. The noise may cause slight discomfort to a bear's ears, but similar to a loud voice, is overcome by reward.

- **Pyrotechnics:** The noise and concussive force of closely used ‘scare shot,’ a kind of firecracker, is heard and felt by the bear. This is frightening and quite uncomfortable to sensitive ears. This hazing technique will immediately turn a bear and make it flee for cover. Once away, the bear may forget about the experience as there are no lasting effects. An exception is with a treed bear where multiple rounds may be aimed at the animal to create a prolonged ordeal in what should be a safe space for the bear. Such an experience would serve to create a permanent memory for a bear to avoid the location. Scare shots work very well with an unhabituated bear, but less well if the garbage habit is well ingrained, and rewards are available. The Military Police and Natural Resources have employed this method many times this season.
- **Pepper Ball:** Similar to pyrotechnics, this causes mild alarm when the pepper ball, similar to a paintball, impacts the bear. On Impact, the ball releases a sticky capsicum which stays with the animal causing significant discomfort. This is more useful than noise and firecrackers in that there is a lasting effect with the bear, but it may associate the effect with the user more than with the behavior. The Military Police exclusively use the pepper ball as it is a law enforcement device.
- **Bear Barrel:** This method employs a barrel rigged to fire pepper spray when the bear pulls on a bait. In this case, the discomfort is associated with a specific foraging behavior and place. The bear learns that not all garbage is to be trusted, and there is no human present so there is not the association with a user. Natural Resources has treated three bears with the barrel. Deployed to USMAPS, in conjunction with the use of bear-proof dumpsters, the bears did not return.
- **Rubber Buckshot/Beanbag Rounds:** This is for law enforcement only on-post. In this method, the bear is struck with rubber-coated buckshot or non-lethal bean-bag rounds from a 12-gauge shotgun. This level of hazing results in significant discomfort and should result in significant avoidance. This method is only to be used by law enforcement and only after careful consideration of the hazards associated with the use of firearms close to human habitation.
- **Capture and Hazing:** This summer the New York State Department of Environmental Conservation lent West Point one of their bear traps to address a nuisance bear near Keller Army Community Hospital and the West Point Schools area. Within a few days the bear, a young female, was captured. The bear was sedated with a controlled substance, tagged, tattooed and various biological data collected. She was then placed back into the trap and allowed to recover. Once recovered, but still groggy, she was released off-post. As she left the trap the bear was further hazed with sirens, pepper ball and rubber buckshot by New York State Department of Environmental Conservation staff in an effort to permanently create a negative memory of humans as well as of West Point. This is the strongest hazing method available, requiring multiple agency coordination, staff time and expense, and the acceptance of risk in regards to the use of the trap, luring the bear and associated firearms. Unfortunately all these efforts were unsuccessful in permanently removing the bear. With trash unavailable to it at the school or



hospital, the bear moved its area of interest to Lee Housing two weeks later, as reported by the Military Police, due to lack of reward management – easy access to garbage and food in poorly secured trashcans.

- **Reward Management**

Reward management is the best and most durable way of decreasing the number of bear issues on West Point. Hunting and other mortality can be overcome through immigration and reproduction. Hazing is reactive, spotty and represents risk due to the use of hazardous equipment and the unpredictable nature of the results. Bears are clever and resilient. If the reward is worth their while, the bears will find a way.

Reward reduction means no bears, or at least, it fosters bears that are possible to manage. The key here is a Garrison and Community-wide consistent effort. Below are a variety of methods used or to be considered to reduce rewards and improve control efforts:

- **Treat Trash:** In residential settings, this method has been suggested as a way to manage food rewards. By adulterating (contaminating) food waste with cayenne pepper and ammonia prior to sealing the garbage bag, the food is no longer palatable and will be avoided. Bears will quickly move on to other, hopefully natural, foods once it is clear that there is nothing here for them. Adulteration is effective but only if all food waste is treated every time throughout the neighborhood.
- **Keep Trash Indoors:** Like adulteration, this is a low cost, effective means of excluding bears from food waste reward. The down-side is that the indoor space requirement, associated smells and the potential for insect pests can be a burden to residents. Also, on pick-up day the waste is available to bears, and this can be difficult to manage. In spite of this, as a temporary measure, keeping food waste in the garage in a tightly sealed container can be effective.
- **Bear-Proof Waste-toters:** These are similar to the typical toters used for residential trash throughout West Point but have been engineered with stronger materials and a latch shut. BearSaver in California makes such a can and has been considered for West Point. Replacement of all the current containers on post represents a significant cost. The down side is that the latches prevent automated pick-up as they must be manually released either by the homeowner the morning of pick-up or the waste management provider at pick-up. Some residents have rigged resistant toters with bungee cords or tie-down straps to mixed results.
- **Re-engineer Garbage Corrals:** The fenced corrals for organizing the outdoor waste-toters currently in use throughout post are solely aesthetic and completely inadequate to prevent bears from accessing garbage. One solution could be to re-design and replace the corrals with a more resilient,

bear-proof design. When implemented, this will provide a secure place to store trash and avoids the need to treat waste or store trash indoors.

- Centralized Trash Collection Site: Bear-proof dumpsters and compactors are effective at institutional settings because they create and manage a single resource. That is, there is only one location to manage and only one door to close. All wastes would be brought to a secure location, removed from any proximity to homes, where the attractants can be best managed. No trash equals no bears. Of course, this does present a significant time investment for the residents. But if pursued, this method of managing reward would be 100 percent effective in removing the threat of conflict associated with keeping wastes close to home. Barring success with a re-engineered trash corral program, installed in an appropriate time frame, the adoption of a neighborhood-level, centralized trash collection site, placed away from homes, and using bear resistant containers, is the quickest, most effective method for managing food reward at West Point.

Bear management is an important issue at West Point. The American Black Bear is indigenous to this region and will continue to live in and around West Point.

By working together, our Garrison and Community, we can manage and train our animal neighbors that it is not worth their while to come to West Point.

The Garrison, tenants, residents and our housing partners all have a part to play, and by working together it is possible to make West Point unattractive to bears, making this a better, safer West Point Garrison and Community.

**Appendix B6**  
**Forest Management Plan**

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An aerial photograph of a forested landscape. In the foreground, a large lake is surrounded by dense forest with vibrant autumn foliage in shades of orange, red, and yellow. The forest extends into the distance, covering rolling hills and mountains. The sky is clear and blue. The text of the title is overlaid on the upper portion of the image.

**Forest Management Plan**  
**United States Army Garrison**  
**West Point, New York**  
**2015-2020**

**Prepared By:**  
**Brett Walker: Installation Forester**  
**Christopher Pray: Natural Resources Manager**  
**Directorate of Public Works**  
**Environmental Management Division**  
**Natural Resources Branch**

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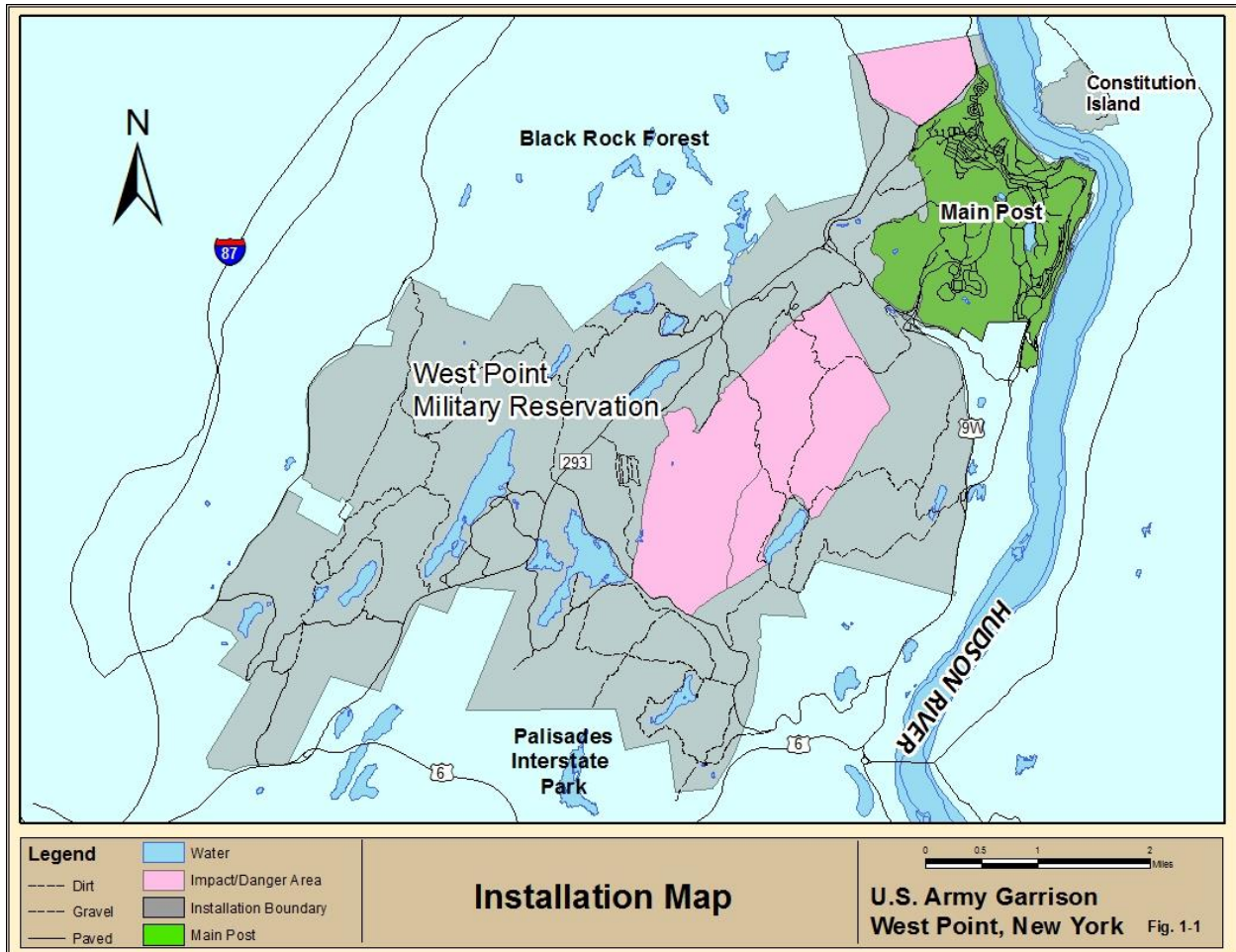
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## Property Description

United States Army Garrison (USAG)-West Point is located in southeastern New York State on the western banks of the Hudson River, approximately 45 miles north of New York City and 100 miles south of Albany. The installation can be considered to consist generally of three parts: (1) Main Post, (2) the outlying reservation, and (3) Constitution Island (Figure 1-1). Main Post, or the cantonment, is approximately 2,500 acres and is the academic, administrative and community area along the Hudson River. The WPMR is generally considered to be the 14,000-acre area to the west of Main Post that serves as the field training facility for USAG – West Point. The Main Post and the WPMR are separated by Route 9W.

Both the Main Post and reservation lie entirely in Orange County, New York. Directly across the Hudson River from the Main Post is Constitution Island, which is located in the township of Philipstown, Putnam County, New York. Constitution Island is bounded by the Hudson River on all of its borders except the eastern border, where it is bounded by Metro-North railroad tracks (USMA, 1994a).





## **Background and History**

West Point is the oldest continuously occupied military post in the United States (USMA, 1984). Founded in 1802 at the urging of Thomas Jefferson, USMA has held the mission of educating and training cadets to provide the Nation with “leaders of character who serve the common defense” (USMA, 1984).

Originally established as a military base, West Point provides medical, administrative, commissary, post exchange, and other logistical support to military personnel, both active and retired (USMA, 1996a). Today, approximately 4,800 cadets, 1,100 active military personnel, and 2,900 civilians live at West Point, and 4,000 civilians and 750 contract workers are employed there. The installation serves approximately 150,000 retired military personnel and dependents, which reside within a 50-mile radius of the installation (Pray, 2010. Pers. Comm.).

Constitution Island is the oldest occupied portion of West Point. During the Revolutionary War, Constitution Island, then known as Martelaer's Rock, was fortified by George Washington's troops to keep out the British (HQDA, 1985). In 1777, the British occupied the island for 3 weeks until it was retaken by colonists, who rebuilt fortifications on the island and started stronger fortification at Fort Putnam on what is now the West Point reservation (HQDA, 1985).

From the early 1800s until 1908, Constitution Island was owned by the Warner Family, who donated the island to the Army (USMA, 1994a). In 1916, the Constitution Island Association was founded to preserve and protect the history and traditions of this unique American site. Today, Constitution Island is used primarily by the Constitution Island Association for tours and for cadet outdoor recreation and training (USMA, 1994a).

The first troops were stationed at West Point on January 20, 1778, and a regular garrison remained there after the end of the Revolutionary War (USMA, 1984). It was not until 1801 that Congress created the Military Academy at West Point. It was then occupied by the U.S. Army Corps of Engineers (USACE) and held the mission “to train military technicians for all branches of the military, to encourage the study of military art, and to encourage the practical study of every science” (USMA, 1984). The Academy consisted of 5 officers and 10 cadets and was increased in size to 2,400 acres (USMA, 1984, 1994b).

In April 1812, in the face of war with England, Congress increased the size of the Corps of Cadets to 250 (USMA, 1984). It was after this war that the mission of the Academy was changed to focus on civil engineering to equip the cadets with the ability to serve an expanding nation (USMA, 1984). In addition to military training, course work included architecture and civil engineering. By 1835, land at West Point included what is now the North Athletic Field and the higher ground that surrounds it. By 1850, it included officers' quarters along Wilson Road to the south and Professors Row to the north (USMA, 1989).

The next major action to affect the Academy was the Civil War, during which many West Point graduates served in the armies of the Union and the Confederacy. At the end of the Civil War, technical and engineering schools were being established throughout the country. West Point responded by separating the Academy from USACE and by shifting its curriculum from civil engineering to a more diversified educational program (USMA, 1984). By 1880, West Point included the area of enlisted and civilian quarters and gardens along Washington Road (USMA, 1989).

In 1902, West Point became the New West Point, which provided a liberal education with practical training in minor tactics and field work to 580 cadets. By 1910, land at West Point included most of what exists today (USMA, 1989). Following World War I, the curriculum focused on international tactics and physical education (USMA, 1984). By 1935, the Corps of Cadets had increased to 2,000.

Following World War II and the Korean War, the Academy's curriculum changed to focus on modern technology and national security and international relations (USMA, 1984). The Congress increased the Corps of Cadets to 2,781 (USMA, 1984).

Two recent major changes that have occurred at West Point are the decision to end compulsory chapel in 1973 and the decision to admit women in 1976 (USMA, 1984). In response to the admittance of women, Congress increased the Corps of Cadets to 4,500 (USMA, 1984).

### **Terrain and Topography**

The topography of West Point reflects glacial forces and differential weathering of ancient rock that resulted in formation of the mountains known as the Hudson Highlands, which run in a northeast-southwest direction. This topography is best described as having moderately steep hills and numerous escarpments. The highest elevation (1,433 ft) on the Reservation occurs at Burke Mountain and the lowest elevation (near sea level) occurs at the Hudson River. Slopes from 10 to 60 percent are common on the installation (Lewis, 1962; Olsson, 1981). Areas in between the hills are interspersed with small plains, basins, and narrow valleys with slopes less than 3 percent (Lewis, 1962).

The topography of the surrounding region is undulating and rugged. These characteristics, along with the alluvium and till deposits in the lowland areas and the relatively flat valley bottoms of the region, are the result of glaciation (USMA, 1984).

The topography of Constitution Island has small variations in elevation and consists of one hill rising to 140 feet above mean sea level (USMA, 1994a). The western third of the island is steeply sloped toward the Hudson River while the eastern portion of the island slopes gradually, generally to the east.

Surficial geologic formations on the installation predominantly consist of glacial till and areas of exposed or nearly exposed bedrock. Linear deposits of outwash sand and gravel, and more localized kame deposits are more apparent in the western most areas of the installation (Cadwell, 1989). During glacier retreat, features were formed along the valley walls. The most prominent features were the kame terraces. In all but the flat, marshy areas, bedrock can be observed (Hamilton et al., 1980).

A thin veneer layer of Pleistocene-age glacial deposits, both stratified and unstratified, overlies the igneous and metamorphic bedrock sequence (USMA, 1996a). The stratified drift consists primarily of sand and gravel deposited in glacial lakes and streams. The unstratified drift consists of glacial till material, which consists mainly of large boulders and clay, sand, and gravel that was deposited directly from glacial ice as it progressed or regressed across the area. Other unconsolidated sediments are recent-age alluvial deposits of clay, silt, and sand. These thin deposits are along the Hudson River and in the smaller streams of the installation (USMA, 1996a).

### **Current Uses**

The mission of the United States Military Academy (USMA) is "To educate, train, and inspire the Corps of Cadets so that each graduate is a commissioned leader of character committed to the values of Duty, Honor, Country and prepared for a career of professional excellence and service to the Nation as an officer in the United States Army." West Point also provides opportunities for Army reservists, Reserve Officer Training Corps (ROTC) students, active duty units, and other government agencies to conduct field training at West Point.

There are approximately 14,254 acres of training area, including range impact/danger zones, available for seasonal field training and military field training (USMA, 1996a). Training areas are in use throughout the year, but are most heavily used from May until August to conduct Cadet Basic Training (CBT) and Cadet Field Training (CFT). Training activities, which include light infantry (i.e., foot traffic) and wheeled vehicles (e.g., commercial trucks and HMMV's), train the cadets in basic individual soldier skills and small-unit operations and are generally short-term and scattered throughout the training areas (USMA, 1994a). The 105 mm Howitzer, the largest weapon used at USAG – West Point, has a range of two miles and is fired from a fixed position. Currently, tracked vehicles are not permitted in the training

areas, however this policy is under review. Water-borne activities in the CFT include amphibious assault training at White Oak Island, Training Area W and Stilwell Lake, a confidence course and scuba diving at Popolopen Lake, and pontoon bridging techniques at Stilwell Lake. Special Forces have used Lake Georgina, Bull Pond, and Lake Frederick to teach rubber boat assault/infiltration techniques (USMA, 1994a; Pray, personal communication, 2010). Small arms training occurs on all ranges.

Activities on the West Point reservation primarily exist to serve the needs of USMA. They also provide medical, dental, administrative, commissary, Post Exchange, and other logistics support to active duty personnel of the services stationed in the region, to authorized reserve personnel, and to a substantial retiree population” (USMA, 1989).

The lands that now constitute West Point were historically used for tree harvesting, agriculture, and settlement. During the 19th and 20th centuries, much of the land was deforested to provide timber to the charcoal and brick industries in the region (Barbour, S., 1995a). After being acquired by the U.S. government in the 1930s and 1940s, most of the lands have been used to support the military mission of USAG – West Point.

The present land uses on West Point are the result of the lack of buildable areas, past policy objectives, and support for the military mission. Most of the lands on the Main Post are highly developed or are considered undevelopable due to steep slopes. In addition to the Stony Lonesome II housing area, there is a PX, a shoppette, a gas station with two service bays, and a fire station. As indicated in Table 1-2, most lands on the Reservation are used to support field training and maneuvering and therefore have not been developed. For planning purposes, USAG – West Point lands have been divided into four land use zones based on functional categories which reflect the missions (Galloway, 1988). A description of these land use zones and their uses are provided in Table 1-3.

**Table 1-2.  
Land Categories on West Point**

| <b>Habitat Type</b>                         | <b>Acreage</b> |
|---|----------------|
| <i>West Point Main Post and Reservation</i> |                |
| Open Water                                  | 552            |
| Wetlands                                    | 567            |
| Deciduous Shrubland                         | 109            |
| Deciduous Forest                            | 11,308         |
| Evergreen Forest                            | 188            |
| Built-up                                    | 1,393          |
| Open Space                                  | 1,576          |
| <i>Constitution Island</i>                  |                |
| Wetland                                     | 13             |
| Deciduous Forest                            | 262            |
| Built-up                                    | 4              |
| Open Space                                  | 1              |
| <b>Total Acreage</b>                        | <b>15,973</b>  |

Source: USMA, 1994a.

**Table 1-3.  
Land Use Zones at West Point**

| <b>Land Use Zone</b>                     | <b>Uses</b>   |
|--|---|
| Cadet                                    | Academic, intramural athletic, billeting, and parading. The center of the Cadet zone is Washington Hall, and the zone was designed so that anything within the zone was less than a 10 minute walk from the center. |
| Cadet Support                            | Intercollegiate athletic fields and some cadet support facilities.  |
| Post Support                             | Housing, commercial, and service support to staff and faculty, non-West Point military personnel, and military retirees.  |
| Recreational, Industrial, Field Training | Building and storage area support for industrial operation, field TAs, recreation areas, and open space.  |

Source: Galloway, 1988.

### **Timber Management History**

West Point was the first Army installation to begin managing their own forests with a focus of sustaining the landscape to ensure future training opportunities. Gifford Pinchot, head of the USFS, was approached by West Point at the turn of the 20th century for assistance in managing their forested lands. The Forest Service appointed a forester to West Point, and the first Army installation forestry program was born.

The success of the forest management program at West Point was recognized by the Army and other installations began to follow suit, appointed their own foresters to manage the installations natural resources.

In the past, the role of Army foresters was to manage and develop forest resources for the commercial production of forest products. Both this role and the management of the Army's forestry program have changed in response to mission needs, land management philosophies, and environmental stewardship requirements.

During World War I, the U.S. forces in Europe required vast quantities of wood products, such as lumber, railroad ties, poles, piling, bridge timbers, cordwood, and stakes for barbed wire. American foresters were sent to Europe to assist in local wood procurement operations. While forestry operations were proceeding in Europe, the first U.S. Army installation forestry program was implemented in 1918 at the U.S. Military Academy at West Point. The Secretary of Agriculture and Secretary of Defense formed Military National Forests cooperatively, planning that these areas could be used jointly for Army training and timber production. Because of jurisdictional disputes, the Secretary of Agriculture requested release from the agreement and suggested that the Army independently conduct forestry operations on Army lands by employing civilian foresters. Some installations attempted to follow this advice, but for the most part Army forestry programs were in a state of inactivity until World War II.

The advent of World War II meant that, as in World War I, forest products would be needed for war material. Large supplies of U.S. timber were assembled for shipment to Europe. However, the Allied Forces were able to obtain the necessary timber in Europe, and the U.S. supplies were not needed. Following the war, the U.S. timber products generated as part of the war effort were sold as surplus property. The sale of these surplus products showed that significant supplies of timber existed on U.S. military lands.

In 1947, the Chief of Engineers, U.S. Army, requested that the USFS conduct a study of installation resources and make recommendations to place the forests under sound management plans. These first forest management plans provided for personnel, improvements, equipment, and a harvesting schedule.

## **Establishment of the Reimbursable Forestry Program**

In 1956, legislation was passed that established a reimbursable fund for the DoD's forestry program (Sale of Certain Interests in Land; Logs. 10 USC 2665). This established the program that is known today as the Army conservation reimbursable forestry program. Congress provided authority for the military departments to retain the receipts from sales of forest products; these receipts would otherwise have been deposited as miscellaneous receipts in the U.S. Treasury. The law stated that "appropriations of the DoD available for operation and maintenance may be reimbursed during the current fiscal year ... for all expenses of production of lumber or timber products ... from amounts received as proceeds from the sale" of timber.

Following the passage of the law, the forestry program expanded and management activities increased. Over the next 7 years, the number of woodland acres increased from 1.1 million to 1.5 million, and the gross income derived from these lands increased from \$10.5 million to \$26.7 million. In 1967, Army installations planted a total of 9,742 acres of trees, completed 20,672 acres of stand improvement, built 1,108 miles of fire lanes and access roads, maintained 6,753 miles of road, harvested trees from 129,000 acres, and conducted controlled burns on 197,000 acres. In addition, 89 million board feet and 205,000 cords of wood were sold from Army lands.

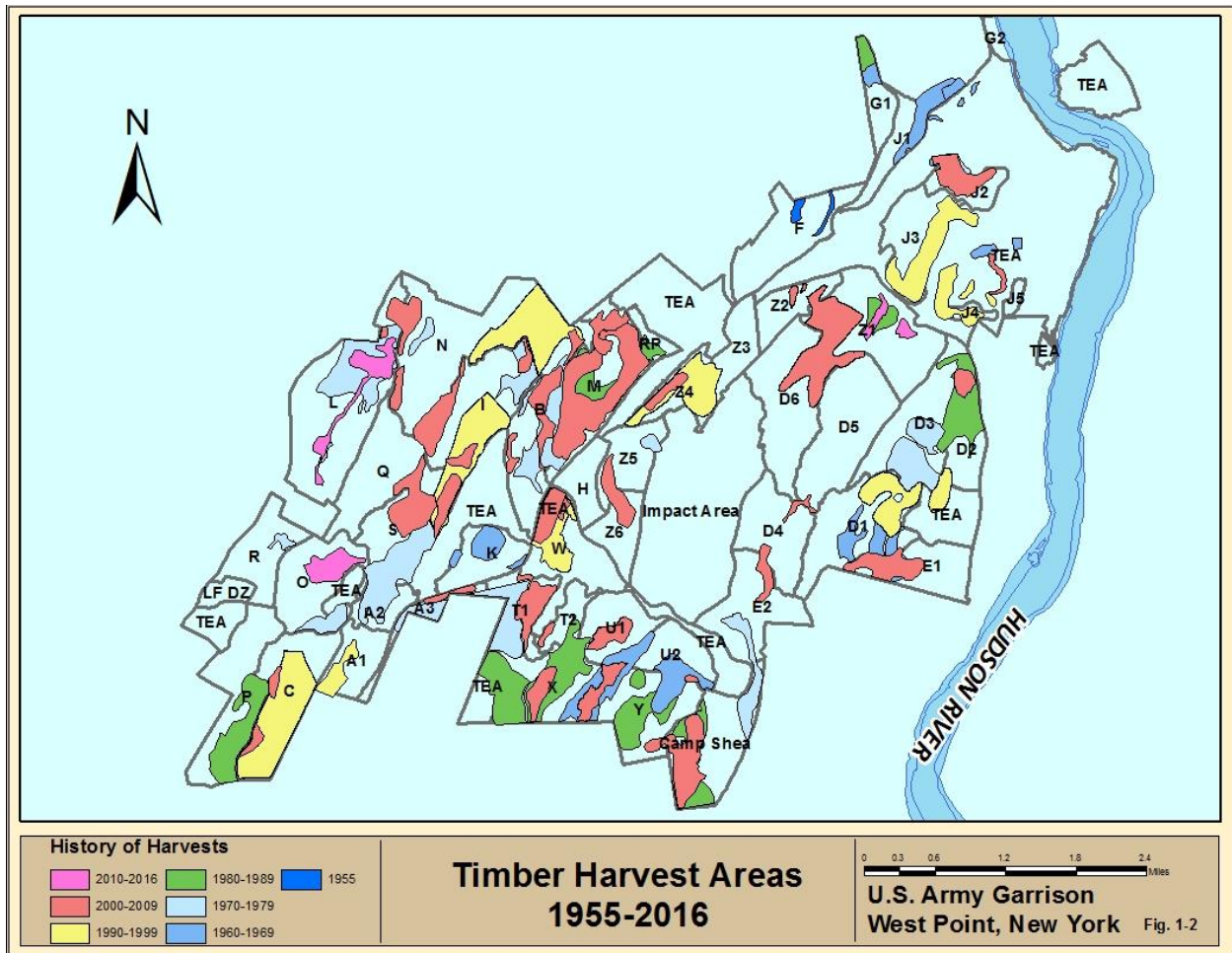
Since the 1961 authorization to use timber sale proceeds to reimburse program expenses, the Army-wide forestry program has only once required appropriated funds. That occurred in 1982 with the creation of the state entitlement program. This program was developed in response to complaints by state and local officials that Army installations had removed large blocks of land from the local tax base. To compensate for the tax revenue loss, the state entitlement program required installations to distribute 25 percent of net proceeds from timber sales to the host states, which in turn distributed the money to the host counties. The revenues distributed to the states are intended to be used for roads and schools. The state share of the entitlement rose to 40 percent in 1984.

## **The Forestry Program Today**

Unlike the initial focus on soil stabilization, erosion control, and coordinating the production of commercial forestry products, the modern Army forester sees Army lands as an integral part of Army training that also provide biological diversity, wildlife habitat, air and water quality, soil conservation, watershed protection, and recreational opportunities. While all installations with forests have forestry responsibilities, not all installations have reimbursable forestry programs.

## **Timber Management and Harvest**

There has been a timber harvesting program at USMA since the early 1950s when a salvage logging operation was conducted to remove trees blown down or otherwise damaged by hurricane winds. That event highlighted a need for active forest management to maintain the woodlands in a healthy condition to support the military training mission. Figure 1-2 shows areas on the reservation harvested since the inception of the program.



Several management guidelines have been established to direct timber harvest activities at USMA. These include the following:

- To meet the military training requirement of maintaining a generally continuous forest cover throughout the training areas, the forest is managed under the selection silviculture system. Trees, generally the oldest, removed in a harvest are selected by the forester so as to leave a stand with a broad range of age classes. Openings created by the individual tree removal provide for establishment of new seedlings. This system most closely mimics natural succession in the absence of fire. Harvests in any one stand will not generally occur more frequently than every twenty years.
- The selection system is designed for use in uneven-aged, or all-aged, stands where there is an existing range of age classes. Most of the oak-dominated stands at USMA are relatively even-aged, making application of the selection system difficult; gradual conversion to a uneven-aged condition will be a very long process. The conversion will mean a decline in the preponderance of moderately shade tolerant oak species in favor of more tolerant species such as sugar maple, beech and hemlock. The species conversion will result in a gradual change in wildlife values and the slower growing species may represent an overall decline in timber value. Maintenance of an oak component, important for wildlife, may require selection harvest of small groups rather than individual trees in some cases.

- Stand condition is the primary consideration in the selection of harvest areas. Evidence of declining vigor and damage from abiotic (such as wind or fire) or biotic (such as insects and fungi) factors may signal the need for harvest. Such factors frequently coincide with increasing age, and the rotation age (age at which the oldest trees are harvested) is set at 120 years. This may be adjusted as stands approach harvest age: it may be too long on poorer sites and may be extended on sites with higher productive capacity. The variability of site conditions even within designated stands makes it difficult to establish a firm rotation target. Few locations on USMA support healthy stands over 130 years of age, but this may change as stands now develop under management. Changing species mix as conversion to uneven-aged conditions occur may also affect rotation age.
- The timber product objective is high quality hardwood sawlogs. There is virtually no other significant market in the region. The existing species mix makes this objective reasonable, and the associated long rotation is compatible with other ecosystem management objectives of the natural resources program.
- Timber harvest occurs only on the approximately 7,000 acres (some areas are undergoing reevaluation as part of the ongoing inventory project) of the reservation occurring outside of danger and other exclusion areas and designated as site quality two or better. No commercial timber management activity occurs on the remaining 9,000 acres.
- Timber harvests over the 5-year duration of this INRMP will not exceed 250,000 board feet per year (unless special circumstances warrant larger sales) and may occur throughout the reservation except in no-harvest areas as designated in this plan, such as wetlands and Special Natural Areas. This figure is consistent in scope with past harvest levels on the reservation. Individual harvest projects are subject to annual coordination with military training officials through Range Control.
- Timber harvest does not routinely occur in riparian buffers and in the buffers around large wetlands. There are instances, however, where harvest of specific trees can enhance wetland or wildlife values, such as removing competition from rare plants or from trees of particular value to wildlife. Cutting in buffers around small wetlands (under three acres) and streams takes into account specific circumstances. Harvest does not occur in wetlands.
- In general, an attempt will be made to retain representation of all existing ecological communities. This will be difficult and perhaps impractical given natural successional trends and will be attempted only when chances of success are good. A diversity of communities is the goal, but the nature and mix of the communities 50 to 100 years or more in the future needs further consideration.
- Timber harvesters are required to follow the Timber Harvest Guidelines for New York published by NYSDEC. Required stream crossing permits are obtained from NYSDEC.
- Logging operations are timed to avoid periods of excessively wet soil conditions to protect soils and to prevent erosion and possible sedimentation of streams. Diversion ditches are constructed on skid trails and forwarder roads to prevent erosion.
- All snags, fallen trees, active den trees, active raptor nests and most wolf trees are retained in harvest areas. Occasionally trees are ring girdled to create snags, but this management practice will be limited because of the danger posed by creating hazard trees. Marking for harvest favors

the retention of soft-wooded species such as ash, basswood and tulip poplar as potential cavity trees.

- In general, for every 40 acres of timber harvest, a clearcut upland opening is created as part of the logging operation to enhance habitat and species diversity.

## Goals and Actions

We have identified and reviewed 5 goals for the management of the timber resources and forested ecosystem on the USMA-West Point Installation to be implemented over the next 5 years.

|                   |   |
|-------------------|---|
| <b>Goal #1</b>    | Perform a detailed, up-to-date, inventory on all timber stands that hold potentially commercially viable wood products.   |
| Completed Actions | 1. <i>Secured funding for installation timber inventory for FY 2016.</i>  |
| Planned Actions:  | 1. <i>Utilize FRA funds to contract CSE for remaining acreage that was not previously inventoried in 2008. Identify areas of installation to inventory in interest of commercial timber management FY 2016.</i><br>2. <i>Determine size and scope of inventory project based on data required for making informed management and harvest recommendations FY 2016.</i><br>3. <i>Rank timber stands based on timber quality and availability FY 2017.</i> |
| <b>Goal #2</b>    | Implement Smaller Timber Sales on Installation. Perhaps 40-70MBF per sale.  |
| Completed Actions | 1. <i>Cursory inspection of timber stands and past logging operations reveals harvests are occurring at unsustainable rates for the long rotations necessary for Oak/Maple dominated forest types.</i>  |
| Planned Actions:  | 1. <i>If it is feasible, find a market or logger for smaller sales that would help target remaining mature timber tracts and mimic smaller natural disturbances FY 2016-2020.</i><br>2. <i>Following updated timber inventory, identify areas that would meet these specifications for smaller sales FY 2017-2018.</i><br>3. <i>Rank areas based on age, quality, size, species composition FY2017-2018.</i>  |
| <b>Goal #3</b>    | Identify and Perform Timber Stand Improvement (TSI) on Select Areas of installation forest.   |
| Completed Actions | 1. <i>Cursory examinations of timber areas revealed easy access to perform understory removal of undesirable, invasive and exotic species.</i><br>2. <i>Winter removal of understory hardwoods has begun, focusing on reducing competition, promoting regeneration of desired species and expedite succession.</i>  |
| Planned Actions:  | 1. <i>Develop a more comprehensive map that will identify target areas and ranking them in accordance with value and importance FY 2016.</i><br>2. <i>Identify management actions that reveal the best options for control FY2016-2020.</i>   |
| <b>Goal #4</b>    | Identify and Perform Shelterwood Prep Cuts on Select Areas of Installation Forest.  |
| Completed         | 1. <i>Identified the need for this method of management based on desired outcomes for</i>   |



|                   |   |
|-------------------|---|
| Actions           | <i>current and future wildlife habitat, timber quality and future sales.</i>  |
| Planned Actions:  | <ol style="list-style-type: none"> <li>1. <i>Utilize timber cruising and updated inventory to identify target areas for shelterwood prep cuts. FY2017-2020</i></li> <li>2. <i>Determine if this type of harvesting and management can be provided by in house labor or necessitate contracted professionals. FY2017-2020</i></li> </ol> |
| Goal #5           | Attempt to Implement Prescribed Burn Program for Ecological Enhancement of Forest Ecosystem   |
| Completed Actions | <ol style="list-style-type: none"> <li>1. <i>Add additional actions already completed as needed</i></li> </ol>  |
| Planned Actions:  | <ol style="list-style-type: none"> <li>1. <i>General description, who will complete and desired timeframe for completion</i></li> <li>2. <i>Add additional actions as needed</i></li> </ol>   |

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## **Appendix C**

### **Data Management & Supplemental References Tables**

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Table C1. Data Management

| Data Description            | Information / Hyperlink  | Frequency of Collection | Last Update | Natural Resource Management | Geospatial Information Systems | Conservation Law Enforcement | Climate Change | Soils, Erosion, and Sedimentation | Geology | General Water Conservation | Coastal & Marine Resources | Wetlands | Floodplains | Threatened & Endangered Species | Species of Concern | Migratory Bird Treaty Act | Bald and Golden Eagle Protection Act | Recreation | Fisheries Management | Game Management | Non-Game Management | Flora & Habitat | Forest Management | Special Natural areas | Wildland Fire Management | Grounds maintenance | Agricultural Leases | Integrated Pest Management | Noxious Weeds & Invasive Species | Wildlife Aircraft Strike Hazard | Army Compatible Use Buffer | Other Programs |  |
|-----------------------------|--|-------------------------|-------------|-----------------------------|--------------------------------|------------------------------|----------------|-----------------------------------|---------|----------------------------|----------------------------|----------|-------------|---------------------------------|--------------------|---------------------------|--------------------------------------|------------|----------------------|-----------------|---------------------|-----------------|-------------------|-----------------------|--------------------------|---------------------|---------------------|----------------------------|----------------------------------|---------------------------------|----------------------------|----------------|--|
| Aerial Infrared Deer Survey | <a href="https://westpoint.isportsman.net/Reports.aspx">https://westpoint.isportsman.net/Reports.aspx</a>  | As needed               | 2017        |                             |                                |                              |                |                                   |         |                            |                            |          |             |                                 |                    |                           |                                      | X          |                      | X               |                     |                 |                   |                       |                          |                     |                     |                            |                                  |                                 |                            |                |  |
| Aquatic Habitat Survey      | RBPs assessing macroinvertebrate communities   | As needed               | 2017        |                             |                                |                              |                |                                   |         |                            |                            | X        |             |                                 |                    |                           |                                      |            |                      |                 |                     |                 |                   |                       |                          |                     |                     |                            |                                  |                                 |                            |                |  |
| Aquatic Survey              | Data sheets – fish sampling, temperature, water chemistry of West Point waters (Adirondack Lake Survey Corporation)  | One-time                | 1987        |                             |                                |                              |                |                                   |         |                            |                            |          |             |                                 |                    |                           |                                      |            | X                    |                 |                     |                 |                   |                       |                          |                     |                     |                            |                                  |                                 |                            |                |  |
| Avian Survey                | Golden Winged Warbler potential habitat and locations  | One-time                | 2006        |                             | X                              |                              |                |                                   |         |                            |                            |          |             |                                 |                    |                           |                                      |            |                      |                 |                     |                 |                   |                       |                          |                     |                     |                            |                                  |                                 |                            |                |  |
| Avian Survey                | USAG WP Bird Count Data  | Annually                | 2015        |                             |                                |                              |                |                                   |         |                            |                            |          |             |                                 |                    | X                         |                                      |            |                      |                 |                     |                 |                   |                       |                          |                     |                     |                            |                                  |                                 |                            |                |  |
| Avian Survey                | Final Report for Fall 2005 and Spring 2006, Legacy Program: Migratory Bird Monitoring Using Automated Acoustic and Internet Technologies (Rosenberg)   | One-time                | 2007        |                             |                                |                              |                |                                   |         |                            |                            |          |             |                                 |                    | X                         |                                      |            |                      |                 | X                   |                 |                   |                       |                          |                     |                     |                            |                                  |                                 |                            |                |  |
| Avian Survey                | Mapping and Modeling the Distribution and Habitat Associations of Cerulean Warblers and other Forest-nesting Birds on the West Point Military Reservation (Dawson)                                 | One-time                | 1998        |                             |                                |                              |                |                                   |         |                            |                            |          |             | X                               |                    | X                         |                                      |            |                      |                 | X                   |                 |                   |                       |                          |                     |                     |                            |                                  |                                 |                            |                |  |
| Avian Survey                | Cerulean Warbler Atlas Project (Cornell Lab of Ornithology)  | One-time                | 2000        |                             |                                |                              |                |                                   |         |                            |                            |          |             |                                 | X                  | X                         |                                      |            |                      |                 |                     |                 |                   |                       |                          |                     |                     |                            |                                  |                                 |                            |                |  |
| Bat Survey Data             | Bat survey data  | One-time                | 2014        |                             | X                              |                              |                |                                   |         |                            |                            |          |             |                                 |                    |                           |                                      |            |                      |                 |                     |                 |                   |                       |                          |                     |                     |                            |                                  |                                 |                            |                |  |
| Bat Survey Data             | Final Report, bat survey work conducted at West Point Military Academy (Gannon and Sherwin)  | Twice                   | 2001        |                             |                                |                              |                |                                   |         |                            |                            |          |             | X                               |                    |                           |                                      |            |                      |                 |                     |                 | X                 |                       |                          |                     |                     |                            |                                  |                                 |                            |                |  |
| Bat Survey Data             | Indiana bat (Myotis sodalists) survey at West Point Military Reservation (Jaycox)  | One-time                | 2003        |                             |                                |                              |                |                                   |         |                            |                            |          |             | X                               |                    |                           |                                      |            |                      |                 |                     |                 |                   |                       |                          |                     |                     |                            |                                  |                                 |                            |                |  |
| Bat Survey Data             | Federal Protocol mist net survey for Indiana bats (Myotis sodalis) at the West Point Military Reservation towns of Highlands, Woodbury, and Cornwall Orange County, New York (Stearns and Wheeler) | One-time                | 2008        |                             |                                |                              |                |                                   |         |                            |                            |          |             | X                               |                    |                           |                                      |            |                      |                 |                     |                 |                   |                       |                          |                     |                     |                            |                                  |                                 |                            |                |  |
| Bat Survey Data             | Acoustical Bat Survey of the West Point Military Reservation (Britzke)   | Three seasons           | 2011        |                             |                                |                              |                |                                   |         |                            |                            |          |             | X                               |                    |                           |                                      |            |                      |                 |                     |                 |                   |                       |                          |                     |                     |                            |                                  |                                 |                            |                |  |
| Bat Survey Data             | Federally Listed Bat Survey Report (Pittsburgh Wildlife & Environmental)   | One-time                | 2015        |                             |                                |                              |                |                                   |         |                            |                            |          |             | X                               |                    |                           |                                      |            |                      |                 |                     |                 |                   |                       |                          |                     |                     |                            |                                  |                                 |                            |                |  |
| Bat Survey Data             | West Point Bat Survey (PWE)  | As needed               | 2015        |                             |                                |                              |                |                                   |         |                            |                            |          |             |                                 |                    |                           |                                      |            |                      |                 | X                   |                 |                   |                       |                          |                     |                     |                            |                                  |                                 |                            |                |  |
| Bathymetric maps            | Survey area for a bathymetric survey   | --                      | --          |                             | X                              |                              |                |                                   |         |                            |                            |          |             |                                 |                    |                           |                                      |            |                      |                 |                     |                 |                   |                       |                          |                     |                     |                            |                                  |                                 |                            |                |  |
| Bird County locations       | Locations where bird annual counts are conducted   | --                      | --          |                             | X                              |                              |                |                                   |         |                            |                            |          |             |                                 |                    |                           |                                      |            |                      |                 |                     |                 |                   |                       |                          |                     |                     |                            |                                  |                                 |                            |                |  |
| Butterfly and Moth Survey   | Dragonfly and damselfly survey (Soltesz)   | As needed               | 2000        |                             |                                |                              |                |                                   |         |                            |                            |          |             |                                 |                    |                           |                                      |            |                      |                 | X                   |                 |                   |                       |                          |                     |                     |                            |                                  |                                 |                            |                |  |
| Butterfly and Moth Survey   | Butterfly survey on USAG WP (Barbour)  | As needed               | 2002        |                             |                                |                              |                |                                   |         |                            |                            |          |             |                                 |                    |                           |                                      |            |                      |                 | X                   |                 |                   |                       |                          |                     |                     |                            |                                  |                                 |                            |                |  |
| Butterfly and Moth Survey   | Moth survey on USAG WP (Barbour)   | As needed               | 2002        |                             |                                |                              |                |                                   |         |                            |                            |          |             |                                 |                    |                           |                                      |            |                      |                 | X                   |                 |                   |                       |                          |                     |                     |                            |                                  |                                 |                            |                |  |
| Butterfly and Moth Survey   | A field survey of the Odonata of the United States Military Reservation, West Point, New York (Soltesz)  | One-time                | 2000        |                             |                                |                              |                |                                   |         |                            |                            |          |             |                                 | X                  |                           |                                      |            |                      |                 |                     |                 |                   |                       |                          |                     |                     |                            |                                  |                                 |                            |                |  |
| Butterfly and Moth Survey   | Results of a Sampling Survey of Moths at West Point Military Reservation during the 1999 Frowing Season (Barbour)  | One-time                | 2000        |                             |                                |                              |                |                                   |         |                            |                            |          |             |                                 | X                  |                           |                                      |            |                      |                 |                     |                 |                   |                       |                          |                     |                     |                            |                                  |                                 |                            |                |  |
| Butterfly and Moth Survey   | West Point Butterflies (Barbour)   | One-time                | 1995-1996   |                             |                                |                              |                |                                   |         |                            |                            |          |             |                                 | X                  |                           |                                      |            |                      |                 |                     |                 |                   |                       |                          |                     |                     |                            |                                  |                                 |                            |                |  |
| Deer Harvest Report         | <a href="https://westpoint.isportsman.net/Reports.aspx">https://westpoint.isportsman.net/Reports.aspx</a>  | Annually                | 2017        |                             |                                |                              |                |                                   |         |                            |                            |          |             |                                 |                    |                           |                                      | X          |                      | X               |                     |                 |                   |                       |                          |                     |                     |                            |                                  |                                 |                            |                |  |
| Eagle Survey                | West Point Eagle Survey (Shook)  | One-time                | 2011        |                             |                                |                              |                |                                   |         |                            |                            |          |             |                                 |                    |                           | X                                    |            |                      |                 |                     |                 |                   |                       |                          |                     |                     |                            |                                  |                                 |                            |                |  |
| Eagle Survey                | Lower Hudson River Bald Eagle Survey, Winter 1995-1996 (McGowan and Nye)   | One-time                | 1996        |                             |                                |                              |                |                                   |         |                            |                            |          |             |                                 | X                  |                           | X                                    |            |                      |                 |                     |                 |                   |                       |                          |                     |                     |                            |                                  |                                 |                            |                |  |
| Fish Survey                 | Annual in-house fisheries sampling data  | Annual                  | 2017        |                             |                                |                              |                |                                   |         |                            |                            |          |             | X                               | X                  |                           |                                      |            | X                    |                 | X                   |                 |                   |                       |                          |                     |                     |                            |                                  |                                 |                            |                |  |

| Data Description | Information / Hyperlink   | Frequency of Collection | Last Update   | Natural Resource Management | Geospatial Information Systems | Conservation Law Enforcement | Climate Change | Soils, Erosion, and Sedimentation | Geology | General Water Conservation | Coastal & Marine Resources | Wetlands | Floodplains | Threatened & Endangered Species | Species of Concern | Migratory Bird Treaty Act | Bald and Golden Eagle Protection Act | Recreation | Fisheries Management | Game Management | Non-Game Management | Flora & Habitat | Forest Management | Special Natural areas | Wildland Fire Management | Grounds maintenance | Agricultural Leases | Integrated Pest Management | Noxious Weeds & Invasive Species | Wildlife Aircraft Strike Hazard | Army Compatible Use Buffer | Other Programs |  |  |
|------------------|---|-------------------------|---------------|-----------------------------|--------------------------------|------------------------------|----------------|-----------------------------------|---------|----------------------------|----------------------------|----------|-------------|---------------------------------|--------------------|---------------------------|--------------------------------------|------------|----------------------|-----------------|---------------------|-----------------|-------------------|-----------------------|--------------------------|---------------------|---------------------|----------------------------|----------------------------------|---------------------------------|----------------------------|----------------|--|--|
| Fish Survey      | Report of 1996 field season (June 25-28, 1996) (Linck)  | Annual                  | 1996          |                             |                                |                              |                |                                   |         |                            |                            |          |             |                                 |                    |                           |                                      |            |                      |                 |                     |                 | X                 |                       |                          |                     |                     |                            |                                  |                                 |                            |                |  |  |
| Fish Survey      | Juvenile sturgeon habitat use in the Hudson River (Haley et al.)  | One-time                | 1996          |                             |                                |                              |                |                                   |         |                            |                            |          |             | X                               |                    |                           |                                      |            |                      |                 |                     |                 |                   |                       |                          |                     |                     |                            |                                  |                                 |                            |                |  |  |
| Fish Survey      | USMA creel census in Bull Pond, Round Pond, and Poplopen Brook (Baren)  | One-time                | 1981          |                             |                                |                              |                |                                   |         |                            |                            |          |             |                                 |                    |                           |                                      |            | X                    |                 |                     |                 |                   |                       |                          |                     |                     |                            |                                  |                                 |                            |                |  |  |
| Fish Survey      | USMA Fish Distribution (Beemer)   | Annual                  | 2002          |                             |                                |                              |                |                                   |         |                            |                            |          |             |                                 |                    |                           |                                      |            | X                    |                 |                     |                 |                   |                       |                          |                     |                     |                            |                                  |                                 |                            |                |  |  |
| Fish Survey      | USMA Fish Harvest Data Report (Beemer)  | Annual                  | 2002          |                             |                                |                              |                |                                   |         |                            |                            |          |             |                                 |                    |                           |                                      |            | X                    |                 |                     |                 |                   |                       |                          |                     |                     |                            |                                  |                                 |                            |                |  |  |
| Fish Survey      | Summary report of electrofishing survey of Popolopen Brook (Linck)  | As needed               | 1993          |                             |                                |                              |                |                                   |         |                            |                            |          |             |                                 |                    |                           |                                      |            | X                    |                 |                     |                 |                   |                       |                          |                     |                     |                            |                                  |                                 |                            |                |  |  |
| Fish Survey      | USMA Fish Harvest Data Reports and Stocking Reports   | Annual                  | 2017          |                             |                                |                              |                |                                   |         |                            |                            |          |             |                                 |                    |                           |                                      |            | X                    |                 |                     |                 |                   |                       |                          |                     |                     |                            |                                  |                                 |                            |                |  |  |
| Fish Survey      | Fish survey in USAG WP water bodies (Adirondack Lakes Survey Corp)  | As needed               | 1987          |                             |                                |                              |                |                                   |         |                            |                            |          |             |                                 |                    |                           |                                      |            |                      |                 | X                   |                 |                   |                       |                          |                     |                     |                            |                                  |                                 |                            |                |  |  |
| Fish Survey      | Fish survey in USAG WP water bodies (Cornell University)  | As needed               | 1995          |                             |                                |                              |                |                                   |         |                            |                            |          |             |                                 |                    |                           |                                      |            |                      |                 | X                   |                 |                   |                       |                          |                     |                     |                            |                                  |                                 |                            |                |  |  |
| Fish Survey      | Fish harvest data on USAG WP  | As needed               | Present       |                             |                                |                              |                |                                   |         |                            |                            |          |             |                                 |                    |                           |                                      |            |                      |                 | X                   |                 |                   |                       |                          |                     |                     |                            |                                  |                                 |                            |                |  |  |
| Flora Survey     | A checklist of the flora of West Point Military Academy Reservation (Mitchell and Tucker)                                       | One-time                | 1993          |                             |                                |                              |                |                                   |         |                            |                            |          |             |                                 |                    |                           |                                      |            |                      |                 |                     | X               | X                 |                       |                          |                     |                     |                            |                                  |                                 |                            |                |  |  |
| Flora Survey     | Community Survey of the West Point Military Reservation (Barbour)   | One-time                | 1995          |                             |                                |                              |                |                                   |         |                            |                            |          |             |                                 |                    |                           |                                      |            |                      |                 |                     | X               | X                 |                       |                          |                     |                     |                            |                                  |                                 |                            |                |  |  |
| Flora Survey     | Ecological communities of the West Point Military Reservation (Kakerback)   | One-time                | 1995          |                             |                                |                              |                |                                   |         |                            |                            |          |             |                                 |                    |                           |                                      |            |                      |                 |                     | X               | X                 |                       |                          |                     |                     |                            |                                  |                                 |                            |                |  |  |
| Flora Survey     | Plant Rarities at West Point, a 200 year overview including details from intensive surveys in 2011                              |                         |               |                             |                                |                              |                |                                   |         |                            |                            |          |             | X                               | X                  |                           |                                      |            |                      |                 |                     |                 |                   |                       |                          |                     |                     |                            |                                  |                                 |                            |                |  |  |
| Flora Survey     | West Point Rare Plant Survey (Barbour)  | As needed               | 1996 and 2001 |                             |                                |                              |                |                                   |         |                            |                            |          |             |                                 | X                  |                           |                                      |            |                      |                 |                     |                 |                   |                       |                          |                     |                     |                            |                                  |                                 |                            |                |  |  |
| Geologic Map     | Surficial Geologic Map of New York (Lower Hudson Sheet) (Cadwell)   | One-time                | 1989          |                             |                                |                              |                |                                   | X       |                            |                            |          |             |                                 |                    |                           |                                      |            |                      |                 |                     |                 |                   |                       |                          |                     |                     |                            |                                  |                                 |                            |                |  |  |
| Geologic Map     | Geologic Map of New York (Fisher)   | One-time                | 1970          |                             |                                |                              |                |                                   | X       |                            |                            |          |             |                                 |                    |                           |                                      |            |                      |                 |                     |                 |                   |                       |                          |                     |                     |                            |                                  |                                 |                            |                |  |  |
| Geologic Survey  | Bedrock Geology of the Monroe Quadrangle, Orange County, New York (Jaffe and Jaffe)   | One-time                | 1973          |                             |                                |                              |                |                                   | X       |                            |                            |          |             |                                 |                    |                           |                                      |            |                      |                 |                     |                 |                   |                       |                          |                     |                     |                            |                                  |                                 |                            |                |  |  |
| Geologic Survey  | <a href="https://mrdata.usgs.gov/geology/state/state.php?state=NY">https://mrdata.usgs.gov/geology/state/state.php?state=NY</a> | Updated regularly       | 1999          |                             |                                |                              |                |                                   | X       |                            |                            |          |             |                                 |                    |                           |                                      |            |                      |                 |                     |                 |                   |                       |                          |                     |                     |                            |                                  |                                 |                            |                |  |  |
| Geologic Survey  | Military Geology of the West Point Area (Engineer Intelligence Study)   | One-time                | 1958          |                             |                                |                              |                |                                   | X       |                            |                            |          |             |                                 |                    |                           |                                      |            |                      |                 |                     |                 |                   |                       |                          |                     |                     |                            |                                  |                                 |                            |                |  |  |
| Geologic Survey  | Field Guide to Geology of the West Point Area (Curran and Justis)   | One-time                | 1970          |                             |                                |                              |                |                                   | X       |                            |                            |          |             |                                 |                    |                           |                                      |            |                      |                 |                     |                 |                   | X                     |                          |                     |                     |                            |                                  |                                 |                            |                |  |  |
| GIS Layer        | Golden Winged Warbler Locations   | One-time                | 2013          |                             |                                |                              |                |                                   |         |                            |                            |          |             |                                 |                    | X                         |                                      |            |                      |                 |                     |                 |                   |                       |                          |                     |                     |                            |                                  |                                 |                            |                |  |  |
| GIS Layer        | Golden Winged Warbler Habitat   | One-time                | 2013          |                             |                                |                              |                |                                   |         |                            |                            |          |             |                                 |                    | X                         |                                      |            |                      |                 |                     |                 |                   |                       |                          |                     |                     |                            |                                  |                                 |                            |                |  |  |
| GIS Layer        | Nightjar  | One-time                | -             |                             |                                |                              |                |                                   |         |                            |                            |          |             |                                 |                    | X                         |                                      |            |                      |                 |                     |                 |                   |                       |                          |                     |                     |                            |                                  |                                 |                            |                |  |  |
| GIS Layer        | Bathymetric Map   | As needed               | -             |                             |                                |                              |                |                                   |         | X                          |                            |          |             |                                 |                    |                           |                                      |            |                      |                 |                     |                 |                   |                       |                          |                     |                     |                            |                                  |                                 |                            |                |  |  |
| GIS Layer        | Hudson River  | As needed               | 2017          |                             |                                |                              |                |                                   |         | X                          |                            |          |             |                                 |                    |                           |                                      |            |                      |                 |                     |                 |                   |                       |                          |                     |                     |                            |                                  |                                 |                            |                |  |  |
| GIS Layer        | Lakes and Ponds   | As needed               | 2005          |                             |                                |                              |                |                                   |         | X                          |                            |          |             |                                 |                    |                           |                                      |            |                      |                 |                     |                 |                   |                       |                          |                     |                     |                            |                                  |                                 |                            |                |  |  |
| GIS Layer        | Watersheds  | As needed               | -             |                             |                                |                              |                |                                   |         | X                          |                            |          |             |                                 |                    |                           |                                      |            |                      |                 |                     |                 |                   |                       |                          |                     |                     |                            |                                  |                                 |                            |                |  |  |
| GIS Layer        | Wetlands  | As needed               | 2014          |                             |                                |                              |                |                                   |         |                            |                            | X        |             |                                 |                    |                           |                                      |            |                      |                 |                     |                 |                   | X                     |                          |                     |                     |                            |                                  |                                 |                            |                |  |  |
| GIS Layer        | Vernal Pools  | As needed               | 2014          |                             |                                |                              |                |                                   |         |                            |                            | X        |             |                                 |                    |                           |                                      |            |                      |                 |                     |                 | X                 |                       |                          |                     |                     |                            |                                  |                                 |                            |                |  |  |
| GIS Layer        | Anabat Survey Route 2014  | One-time                | 2014          |                             |                                |                              |                |                                   |         |                            |                            |          |             | X                               |                    |                           |                                      |            |                      |                 |                     |                 |                   |                       |                          |                     |                     |                            |                                  |                                 |                            |                |  |  |
| GIS Layer        | Bat locations 7_9_14  | One-time                | 2014          |                             |                                |                              |                |                                   |         |                            |                            |          |             | X                               |                    |                           |                                      |            |                      |                 |                     |                 |                   |                       |                          |                     |                     |                            |                                  |                                 |                            |                |  |  |
| GIS Layer        | Location of Species   | One-time                | 2013          |                             |                                |                              |                |                                   |         |                            |                            |          |             |                                 |                    | X                         |                                      |            |                      |                 |                     |                 |                   |                       |                          |                     |                     |                            |                                  |                                 |                            |                |  |  |
| GIS Layer        | Eagle Nest No Fly Buffer  | As needed               | 2015          |                             |                                |                              |                |                                   |         |                            |                            |          |             |                                 |                    |                           | X                                    |            |                      |                 |                     |                 |                   |                       |                          |                     |                     |                            |                                  |                                 |                            |                |  |  |
| GIS Layer        | Eagle Nests   | As needed               | 2014          |                             |                                |                              |                |                                   |         |                            |                            |          |             |                                 |                    |                           | X                                    |            |                      |                 |                     |                 |                   |                       |                          |                     |                     |                            |                                  |                                 |                            |                |  |  |
| GIS Layer        | Eagle No Fly Zones  | As needed               | 2015          |                             |                                |                              |                |                                   |         |                            |                            |          |             |                                 |                    |                           | X                                    |            |                      |                 |                     |                 |                   |                       |                          |                     |                     |                            |                                  |                                 |                            |                |  |  |
| GIS Layer        | Fishing Areas   | As needed               | 2017          |                             |                                |                              |                |                                   |         |                            |                            |          |             |                                 |                    |                           |                                      | X          | X                    |                 |                     |                 |                   |                       |                          |                     |                     |                            |                                  |                                 |                            |                |  |  |
| GIS Layer        | Hunting Areas 2017  | As needed               | 2017          |                             |                                |                              |                |                                   |         |                            |                            |          |             |                                 |                    |                           |                                      | X          |                      |                 | X                   |                 |                   |                       |                          |                     |                     |                            |                                  |                                 |                            |                |  |  |
| GIS Layer        | Trapping Areas  | As needed               | 2014          |                             |                                |                              |                |                                   |         |                            |                            |          |             |                                 |                    |                           |                                      | X          |                      |                 | X                   |                 |                   |                       |                          |                     |                     |                            |                                  |                                 |                            |                |  |  |
| GIS Layer        | Nuisance Beaver   | As needed               | --            |                             |                                |                              |                |                                   |         |                            |                            |          |             |                                 |                    |                           |                                      |            |                      |                 | X                   |                 |                   |                       |                          |                     |                     |                            | X                                |                                 |                            |                |  |  |
| GIS Layer        | Natural Heritage Communities (Kakerback)  | One-time                | 2004          |                             |                                |                              |                |                                   |         |                            |                            |          |             |                                 |                    |                           |                                      |            |                      |                 |                     | X               | X                 | X                     |                          |                     |                     |                            |                                  |                                 |                            |                |  |  |
| GIS layer        | Flora species forest stands   | One-time                | 2008          |                             |                                |                              |                |                                   |         |                            |                            |          |             |                                 |                    |                           |                                      |            |                      |                 |                     |                 | X                 |                       |                          |                     |                     |                            |                                  |                                 |                            |                |  |  |
| GIS layer        | NRB Natural Resources Flora Species Forest Stands   | Multiple years          | 2000          |                             |                                |                              |                |                                   |         |                            |                            |          |             |                                 |                    |                           |                                      |            |                      |                 |                     |                 | X                 |                       |                          |                     |                     |                            |                                  |                                 |                            |                |  |  |

| Data Description   | Information / Hyperlink   | Frequency of Collection | Last Update | Natural Resource Management | Geospatial Information Systems | Conservation Law Enforcement | Climate Change | Soils, Erosion, and Sedimentation | Geology | General Water Conservation | Coastal & Marine Resources | Wetlands | Floodplains | Threatened & Endangered Species | Species of Concern | Migratory Bird Treaty Act | Bald and Golden Eagle Protection Act | Recreation | Fisheries Management | Game Management | Non-Game Management | Flora & Habitat | Forest Management | Special Natural areas | Wildland Fire Management | Grounds maintenance | Agricultural Leases | Integrated Pest Management | Noxious Weeds & Invasive Species | Wildlife Aircraft Strike Hazard | Army Compatible Use Buffer | Other Programs |  |  |   |
|--|---|-------------------------|-------------|-----------------------------|--------------------------------|------------------------------|----------------|-----------------------------------|---------|----------------------------|----------------------------|----------|-------------|---------------------------------|--------------------|---------------------------|--------------------------------------|------------|----------------------|-----------------|---------------------|-----------------|-------------------|-----------------------|--------------------------|---------------------|---------------------|----------------------------|----------------------------------|---------------------------------|----------------------------|----------------|--|--|---|
| GIS Layer  | Soils   | As needed               | -           |                             |                                |                              |                | X                                 |         |                            |                            |          |             |                                 |                    |                           |                                      |            |                      |                 |                     |                 |                   |                       | X                        |                     |                     |                            |                                  |                                 |                            | X              |  |  |   |
| GIS Layer  | Special Natural Areas   | One-time                | 2007        |                             |                                |                              |                |                                   |         |                            |                            |          |             |                                 |                    |                           |                                      |            |                      |                 |                     |                 | X                 |                       |                          |                     |                     |                            |                                  |                                 |                            |                |  |  |   |
| GIS Layer  | Streams   | One-time                | -           |                             |                                |                              |                |                                   |         | X                          |                            |          |             |                                 |                    |                           |                                      | X          |                      |                 |                     |                 |                   |                       |                          |                     |                     |                            |                                  |                                 |                            |                |  |  |   |
| GIS Layer  | Ecological communities  | One-time                | 1995        |                             |                                |                              |                |                                   |         |                            |                            |          |             |                                 | X                  |                           |                                      |            |                      |                 |                     | X               | X                 |                       |                          |                     |                     |                            |                                  |                                 |                            |                |  |  |   |
| GIS Layer  | Forest Fire Areas   | One-time                | 2005        |                             |                                |                              |                |                                   |         |                            |                            |          |             |                                 |                    |                           |                                      |            |                      |                 |                     |                 |                   | X                     |                          |                     |                     |                            |                                  |                                 |                            |                |  |  |   |
| GIS Layer  | Wildlife Clearings  | As needed               | 2014        |                             |                                |                              |                |                                   |         |                            |                            |          |             |                                 |                    |                           |                                      |            |                      |                 |                     |                 |                   |                       | X                        |                     |                     |                            |                                  |                                 |                            |                |  |  |   |
| GIS Layer  | Invasive Plants   | As needed               | 2014        |                             |                                |                              |                |                                   |         |                            |                            |          |             |                                 |                    |                           |                                      |            |                      |                 |                     |                 |                   |                       | X                        |                     |                     |                            |                                  |                                 |                            |                |  |  |   |
| GIS Layer  | Gypsy Moth Spray  | As needed               | 2014        |                             |                                |                              |                |                                   |         |                            |                            |          |             |                                 |                    |                           |                                      |            |                      |                 |                     |                 |                   |                       | X                        |                     |                     |                            |                                  |                                 |                            |                |  |  |   |
| GIS Layer  | Gypsy Moth  | As needed               | 2014        |                             |                                |                              |                |                                   |         |                            |                            |          |             |                                 |                    |                           |                                      |            |                      |                 |                     |                 |                   |                       |                          |                     |                     | X                          |                                  |                                 |                            |                |  |  |   |
| GIS Layer  | Nuisance Species Management   | As needed               | -           |                             |                                |                              |                |                                   |         |                            |                            |          |             |                                 |                    |                           |                                      |            |                      |                 |                     |                 |                   |                       |                          |                     |                     |                            | X                                |                                 |                            |                |  |  |   |
| GIS Layer  | Rare Plants   | As needed               | 2011        |                             |                                |                              |                |                                   |         |                            |                            |          |             |                                 | X                  |                           |                                      |            |                      |                 |                     |                 |                   |                       |                          |                     |                     |                            |                                  |                                 |                            |                |  |  |   |
| GIS Layer  | Spotted Turtle Locations  | As needed               | 2016        |                             |                                |                              |                |                                   |         |                            |                            |          |             |                                 | X                  |                           |                                      |            |                      |                 |                     |                 |                   |                       |                          |                     |                     |                            |                                  |                                 |                            |                |  |  |   |
| GIS Layer  | Wood Turtle Locations   | As needed               | 2016        |                             |                                |                              |                |                                   |         |                            |                            |          |             |                                 | X                  |                           |                                      |            |                      |                 |                     |                 |                   |                       |                          |                     |                     |                            |                                  |                                 |                            |                |  |  |   |
| Goals and Objectives of the ITAM Program                       | Summary of ITAM Training Needs  | Annually                | 2018        | X                           |                                |                              |                |                                   |         |                            |                            |          |             |                                 |                    |                           |                                      |            |                      |                 |                     |                 |                   |                       |                          |                     |                     |                            |                                  |                                 |                            |                |  |  |   |
| Harvests (white-tailed deer, black bear, ring-necked pheasant) | <a href="https://westpoint.isportsman.net/default.aspx">https://westpoint.isportsman.net/default.aspx</a>   | Annual                  | 2017        |                             |                                | X                            |                |                                   |         |                            |                            |          |             |                                 |                    |                           |                                      |            |                      |                 |                     |                 |                   |                       |                          |                     |                     |                            |                                  |                                 |                            |                |  |  |   |
| Invertebrate Survey  | Mollusc and crayfish survey of the Drainages within the United States Military Academy at West Point, New York (Prezant and Chapman)                            | One-time                | 2002        |                             |                                |                              |                |                                   |         |                            |                            |          |             |                                 | X                  |                           |                                      |            |                      |                 | X                   |                 |                   |                       |                          |                     |                     |                            |                                  |                                 |                            |                |  |  |   |
| List   | Checklist for the birds of the West Point Military Reservation  | As needed               | 1988        |                             |                                |                              |                |                                   |         |                            |                            |          |             |                                 |                    |                           |                                      |            |                      |                 |                     |                 |                   |                       |                          |                     |                     |                            |                                  |                                 |                            |                |  |  |   |
| Map  | FEMA Flood Maps (36071C0501E, 36071C0502E, 36071C0503E, 36071C0504E, 36071C0510E, 36071C0526E, 36071C0527E, 36071C0528E, 36071C0339E, 36071C0361E, 36071C0364E) | 20+ years               | 2009        |                             |                                |                              |                |                                   |         |                            |                            |          | X           |                                 |                    |                           |                                      |            |                      |                 |                     |                 |                   |                       |                          |                     |                     |                            |                                  |                                 |                            |                |  |  |   |
| NRCS Web Soil Survey   | <a href="https://websoilsurvey.sc.egov.usda.gov/App/HomePage.htm">https://websoilsurvey.sc.egov.usda.gov/App/HomePage.htm</a>                                   | Updated regularly       | 2017        |                             |                                |                              |                | X                                 |         |                            |                            |          |             |                                 |                    |                           |                                      |            |                      |                 |                     |                 |                   |                       |                          |                     |                     |                            |                                  |                                 |                            |                |  |  |   |
| Permit   | Migratory Bird Depredation Permit #MB100637-0   | Annually                | 2018        |                             |                                |                              |                |                                   |         |                            |                            |          |             |                                 |                    | X                         |                                      |            |                      |                 | X                   |                 |                   |                       |                          |                     |                     |                            |                                  |                                 |                            |                |  |  |   |
| Permit   | NYSDEC Nuisance Beaver Permit   | Annually                | 2018        |                             |                                |                              |                |                                   |         |                            |                            |          |             |                                 |                    |                           |                                      |            |                      | X               |                     |                 |                   |                       |                          |                     |                     |                            |                                  |                                 |                            |                |  |  |   |
| Permit   | NYSDEC Liberation of Fish or Wildlife Biocontrol #16 ( <i>Rhinocomimus latipes</i> )  | Annually                | 2018        |                             |                                |                              |                |                                   |         |                            |                            |          |             |                                 |                    |                           |                                      |            |                      |                 |                     |                 |                   |                       | X                        |                     | X                   | X                          |                                  |                                 |                            |                |  |  |   |
| Permit   | USDA APHIS Permit to Move Live Plant Pests, Noxious Weeds, and Soils #P526P-16-02139 ( <i>Rhinocomimus latipes</i> )  | Every 3 years           | 2018        |                             |                                |                              |                |                                   |         |                            |                            |          |             |                                 |                    |                           |                                      |            |                      |                 |                     |                 |                   |                       | X                        |                     | X                   | X                          |                                  |                                 |                            |                |  |  |   |
| Permit   | NYS Endangered/Threatened Species permit # 196 ( <i>Croatalus horridus</i> )  | Annually                | 2018        |                             |                                |                              |                |                                   |         |                            |                            |          |             |                                 | X                  |                           |                                      |            |                      |                 | X                   |                 |                   |                       |                          |                     |                     |                            |                                  |                                 |                            |                |  |  |   |
| Permit   | NYS Tripolid Carp Stocking  | As needed               | 2018        |                             |                                |                              |                |                                   |         |                            |                            |          |             |                                 |                    |                           |                                      | X          | X                    | X               |                     |                 |                   |                       |                          |                     |                     |                            |                                  |                                 |                            |                |  |  |   |
| Permit   | NYS Fish Stocking Permit (game fish)  | Annually                | 2018        |                             |                                |                              |                |                                   |         |                            |                            |          |             |                                 |                    |                           |                                      | X          | X                    |                 |                     |                 |                   |                       |                          |                     |                     |                            |                                  |                                 |                            |                |  |  |   |
| Permit   | NYS License to Liberate Fish or Wildlife #157 (pheasants, quail)  | Annually                | 2018        |                             |                                |                              |                |                                   |         |                            |                            |          |             |                                 |                    |                           |                                      | X          |                      | X               |                     |                 |                   |                       |                          |                     |                     |                            |                                  |                                 |                            |                |  |  |   |
| Permit   | NYS License to Collect or Possess #1718 (protected wildlife)  | Annually                | 2018        |                             |                                |                              |                |                                   |         |                            |                            |          |             |                                 | X                  |                           |                                      |            |                      |                 |                     |                 |                   |                       |                          |                     |                     |                            |                                  |                                 |                            |                |  |  |   |
| Permit   | NYS Protection of Waters  | As needed               | 2018        |                             |                                |                              |                |                                   |         | X                          | X                          | X        | X           |                                 |                    |                           |                                      |            |                      |                 |                     |                 |                   |                       |                          |                     |                     |                            |                                  |                                 |                            |                |  |  |   |
| Permit   | License to Apply Aquatic Pesticide  | As needed               | 2018        |                             |                                |                              |                |                                   |         | X                          |                            | X        |             |                                 |                    |                           |                                      |            | X                    |                 |                     |                 |                   |                       |                          |                     |                     |                            |                                  |                                 |                            |                |  |  | X |
| Policy Letter  | USAG WP Policy #14 - Euthanizing Wild Animals within the Cantonment Area  | Every 3 years           | 2016        |                             |                                |                              |                |                                   |         |                            |                            |          |             |                                 |                    |                           |                                      |            |                      |                 | X                   |                 |                   |                       | X                        |                     |                     |                            |                                  |                                 |                            |                |  |  |   |
| Policy Letter  | USAG WP Policy #56 - Stray Animal Control Policy  | Every 3 years           | 2016        |                             |                                |                              |                |                                   |         |                            |                            |          |             |                                 |                    |                           |                                      |            |                      |                 | X                   |                 |                   |                       | X                        |                     |                     |                            |                                  |                                 |                            |                |  |  |   |

| Data Description                                      | Information / Hyperlink   | Frequency of Collection | Last Update | Natural Resource Management | Geospatial Information Systems | Conservation Law Enforcement | Climate Change | Soils, Erosion, and Sedimentation | Geology | General Water Conservation | Coastal & Marine Resources | Wetlands | Floodplains | Threatened & Endangered Species | Species of Concern | Migratory Bird Treaty Act | Bald and Golden Eagle Protection Act | Recreation | Fisheries Management | Game Management | Non-Game Management | Flora & Habitat | Forest Management | Special Natural areas | Wildland Fire Management | Grounds maintenance | Agricultural Leases | Integrated Pest Management | Noxious Weeds & Invasive Species | Wildlife Aircraft Strike Hazard | Army Compatible Use Buffer | Other Programs |
|---|---|-------------------------|-------------|-----------------------------|--------------------------------|------------------------------|----------------|-----------------------------------|---------|----------------------------|----------------------------|----------|-------------|---------------------------------|--------------------|---------------------------|--------------------------------------|------------|----------------------|-----------------|---------------------|-----------------|-------------------|-----------------------|--------------------------|---------------------|---------------------|----------------------------|----------------------------------|---------------------------------|----------------------------|----------------|
| Policy Letter   | USAG WP Policy #35 - Environmental Policy   | Every 3 years           | 2016        |                             |                                |                              |                |                                   |         |                            |                            |          |             |                                 |                    |                           |                                      |            |                      |                 |                     | X               |                   |                       |                          |                     |                     | X                          |                                  |                                 |                            |                |
| Regulatory List                                       | New York State Prohibited and Regulated Invasive Plants   | As needed               | 2014        |                             |                                |                              |                |                                   |         |                            |                            |          |             |                                 |                    |                           |                                      |            |                      |                 |                     |                 |                   |                       | X                        |                     |                     | X                          |                                  |                                 |                            |                |
| Report  | Goose Hazing and Depredation Report for the United States Army Garrison – West Point  | Annually                | 2015        |                             |                                |                              |                |                                   |         |                            |                            |          |             |                                 |                    |                           |                                      |            |                      | X               |                     |                 |                   |                       |                          |                     |                     | X                          |                                  |                                 |                            |                |
| Report  | Wildland Fire Risk and Management. Center for Ecological Management of Military Lands   | One-time                | 2000        |                             |                                |                              |                |                                   |         |                            |                            |          |             |                                 |                    |                           |                                      |            |                      |                 |                     |                 |                   | X                     |                          |                     |                     |                            |                                  |                                 |                            |                |
| Reptile Survey  | Timber rattlesnake ( <i>Crotalus horridus</i> ) telemetry study at West Point Military Reservation (Stechert)   | One-time                | 1995 - 1997 |                             |                                |                              |                |                                   |         |                            |                            |          |             |                                 | X                  |                           |                                      |            |                      |                 |                     |                 | X                 |                       |                          |                     |                     |                            |                                  |                                 |                            |                |
| Reptile Survey  | Planning Level Survey for Bog Turtle ( <i>Glyptemys {Clemmys} muhlenbergii</i> ) for the US Department of the Army at West Point Army Garrison (Greene Environmental Consultants) | One-time                | 2011        |                             |                                |                              |                |                                   |         |                            |                            |          |             | X                               |                    |                           |                                      |            |                      |                 |                     |                 |                   |                       |                          |                     |                     |                            |                                  |                                 |                            |                |
| Reptile Survey  | Presence-Absence Surveys of Bog Turtles at Selected West Point Military Reserve Wetland Complexes (Natural Resource Consulting Services)  | One-time                | 2013        |                             |                                |                              |                |                                   |         |                            |                            |          |             | X                               |                    |                           |                                      |            |                      |                 |                     |                 |                   |                       |                          |                     |                     |                            |                                  |                                 |                            |                |
| Reptile Survey  | Lead Blood Levels in Wood Turtles from an Artillery Range at West Point Military Installation   | One-time                | 2014        |                             |                                |                              |                |                                   |         |                            |                            |          |             |                                 | X                  |                           |                                      |            |                      |                 |                     |                 |                   |                       |                          |                     |                     |                            |                                  |                                 |                            |                |
| Reptile Survey  | Wood and Spotted Turtle Planning Level Survey   | One-time                | 2017        |                             |                                |                              |                |                                   |         |                            |                            |          |             |                                 | X                  |                           |                                      |            |                      |                 |                     |                 |                   |                       |                          |                     |                     |                            |                                  |                                 |                            |                |
| Reptile Survey  | Wood Turtle Survey  | One-time                | 2016        |                             |                                |                              |                |                                   |         |                            |                            |          |             |                                 | X                  |                           |                                      |            |                      |                 |                     |                 |                   |                       |                          |                     |                     |                            |                                  |                                 |                            |                |
| Seasonal Harvest Report                               | <a href="https://westpoint.isportsman.net/harvests.aspx">https://westpoint.isportsman.net/harvests.aspx</a>   | Annually                | 2017        |                             |                                |                              |                |                                   |         |                            |                            |          |             |                                 |                    |                           |                                      | X          |                      | X               |                     |                 |                   |                       |                          |                     |                     |                            |                                  |                                 |                            |                |
| Soil Survey   | Land Condition Trend Analysis at West Point Military Reservation (Coleman)  | One-time                | 1995        |                             |                                |                              |                | X                                 |         |                            |                            |          |             |                                 |                    |                           |                                      |            |                      |                 |                     |                 |                   |                       |                          |                     |                     |                            |                                  |                                 |                            |                |
| Soil Survey   | Soil Survey of Orange County, New York (Olsson); Appendix X   | One-time                | 1981        |                             |                                |                              |                | X                                 |         |                            |                            |          |             |                                 |                    |                           |                                      |            |                      |                 |                     |                 |                   |                       |                          |                     |                     |                            |                                  |                                 |                            |                |
| Survey  | Summary report of 1988 field surveys (Linck)  | As needed               | 1988        |                             |                                |                              |                |                                   |         |                            |                            |          |             |                                 |                    |                           |                                      |            | X                    |                 |                     |                 |                   |                       |                          |                     |                     |                            |                                  |                                 |                            |                |
| Survey  | Summary Report of the Field Season (Linck)  | Annual                  | 2006        |                             |                                |                              |                |                                   |         |                            |                            |          |             |                                 |                    |                           |                                      |            | X                    |                 |                     |                 |                   |                       |                          |                     |                     |                            |                                  |                                 |                            |                |
| T&E Survey  | Rare and endangered species survey, United States Military Academy, West Point, New York (NYS Museum)   | One-time                | 1994        |                             |                                |                              |                |                                   |         |                            |                            |          |             | X                               | X                  |                           |                                      |            |                      |                 |                     |                 |                   |                       |                          |                     |                     |                            |                                  |                                 |                            |                |
| T&E Survey  | Analysis of Potential Habitat for Selected Threatened and Endangered Species at West Point Military Reservation, New York (Batcher)   |                         | 2006        |                             |                                |                              |                |                                   |         |                            |                            |          |             | X                               | X                  |                           |                                      |            |                      |                 |                     |                 |                   |                       |                          |                     |                     |                            |                                  |                                 |                            |                |
| The Army Compatible Use Buffer (ACUB) Program summary | <a href="https://www.aec.army.mil/index.php?CID=329">https://www.aec.army.mil/index.php?CID=329</a>   | As needed               | -           |                             |                                |                              |                |                                   |         |                            |                            |          |             |                                 |                    |                           |                                      |            |                      |                 |                     |                 |                   |                       |                          |                     |                     |                            |                                  |                                 | X                          |                |
| Vernal Pool Survey                                    | Assessed and grouped vernal pools   | Updated as needed       | 2001        |                             |                                |                              |                |                                   |         |                            |                            | X        |             |                                 |                    |                           |                                      |            |                      |                 |                     |                 |                   |                       |                          |                     |                     |                            |                                  |                                 |                            |                |
| Water Quality Survey                                  | Water Quality Data (USMA)   | As needed               | 2008        |                             |                                |                              |                |                                   |         | X                          |                            |          |             |                                 |                    |                           |                                      |            |                      |                 |                     |                 |                   |                       |                          |                     |                     |                            |                                  |                                 |                            |                |
| West Point Cantonment Hunting Map                     | <a href="https://westpoint.isportsman.net/Othermaps.aspx">https://westpoint.isportsman.net/Othermaps.aspx</a>   | As needed               | 2017        |                             |                                |                              |                |                                   |         |                            |                            |          |             |                                 |                    |                           |                                      | X          |                      | X               |                     |                 |                   |                       |                          |                     |                     |                            |                                  |                                 |                            |                |
| West Point Fishing & Boating Map                      | <a href="https://westpoint.isportsman.net/Othermaps.aspx">https://westpoint.isportsman.net/Othermaps.aspx</a>   | As needed               | 2017        |                             |                                |                              |                |                                   |         |                            |                            |          |             |                                 |                    |                           |                                      | X          | X                    |                 |                     |                 |                   |                       |                          |                     |                     |                            |                                  |                                 |                            |                |
| West Point Hunting Map                                | <a href="https://westpoint.isportsman.net/Othermaps.aspx">https://westpoint.isportsman.net/Othermaps.aspx</a>   | As needed               | 2017        |                             |                                |                              |                |                                   |         |                            |                            |          |             |                                 |                    |                           |                                      | X          |                      | X               |                     |                 |                   |                       |                          |                     |                     |                            |                                  |                                 |                            |                |
| West Point Trapping Map                               | <a href="https://westpoint.isportsman.net/Othermaps.aspx">https://westpoint.isportsman.net/Othermaps.aspx</a>   | As needed               | 2017        |                             |                                |                              |                |                                   |         |                            |                            |          |             |                                 |                    |                           |                                      | X          |                      | X               |                     |                 |                   |                       |                          |                     |                     |                            |                                  |                                 |                            |                |
| Wetland Delineation                                   | Determination of wetland boundaries and classifications   | Updated as needed       | 1996        |                             |                                |                              |                |                                   |         |                            |                            | X        |             |                                 |                    |                           |                                      |            |                      |                 |                     |                 | X                 |                       |                          |                     |                     |                            |                                  |                                 |                            |                |
| Wetland Delineation                                   | West Point Wetland Inventory, Summer 1993   | One-time                | 1993        |                             |                                |                              |                |                                   |         |                            |                            | X        |             |                                 |                    |                           |                                      |            |                      |                 |                     |                 | X                 |                       |                          |                     |                     |                            |                                  |                                 |                            |                |



Table C2. Supplemental References

| Document Title   | Location & Hyperlink  | Last Update   | Natural Resource Management | Geospatial Information Systems | Conservation Law Enforcement | Climate Change | Soils, Erosion, and Sedimentation | Geology | General Water Conservation | Coastal & Marine Resources | Wetlands | Floodplains | Threatened & Endangered Species | Species of Concern | Migratory Bird Treaty Act | Bald and Golden Eagle Protection Act | Recreation | Fisheries Management | Game Management | Non-Game Management | Flora & Habitat | Forest Management | Special Natural areas | Wildland Fire Management | Grounds maintenance | Agricultural Leases | Integrated Pest Management | Noxious Weeds & Invasive Species | Wildlife Aircraft Strike Hazard | Army Compatible Use Buffer | Other Programs |
|--|---|---------------|-----------------------------|--------------------------------|------------------------------|----------------|-----------------------------------|---------|----------------------------|----------------------------|----------|-------------|---------------------------------|--------------------|---------------------------|--------------------------------------|------------|----------------------|-----------------|---------------------|-----------------|-------------------|-----------------------|--------------------------|---------------------|---------------------|----------------------------|----------------------------------|---------------------------------|----------------------------|----------------|
| 2017 Atlantic sturgeon Benchmark Stock Assessment and Peer Review Report   | <a href="http://www.asmfc.org/uploads/file/59f8d5ebAtlSturgeonBenchmarkStockAssmt_PeerReviewReport_2017.pdf">http://www.asmfc.org/uploads/file/59f8d5ebAtlSturgeonBenchmarkStockAssmt_PeerReviewReport_2017.pdf</a> | 2017          |                             |                                |                              |                |                                   |         |                            |                            |          |             | X                               |                    |                           |                                      |            |                      |                 |                     |                 |                   |                       |                          |                     |                     |                            |                                  |                                 |                            |                |
| 2017-18 West Point Fishing Seasons Memo  | <a href="https://westpoint.isportsman.net/Regulations.aspx">https://westpoint.isportsman.net/Regulations.aspx</a>   | 2017          |                             |                                |                              |                |                                   |         |                            |                            |          |             |                                 |                    |                           |                                      | X          | X                    |                 |                     |                 |                   |                       |                          |                     |                     |                            |                                  |                                 |                            |                |
| 2017-18 West Point Hunting Seasons Memo  | <a href="https://westpoint.isportsman.net/Regulations.aspx">https://westpoint.isportsman.net/Regulations.aspx</a>   | 2017          |                             |                                |                              |                |                                   |         |                            |                            |          |             |                                 |                    |                           |                                      | X          |                      | X               |                     |                 |                   |                       |                          |                     |                     |                            |                                  |                                 |                            |                |
| 2017-18 West Point Trapping Seasons Memo   | <a href="https://westpoint.isportsman.net/Regulations.aspx">https://westpoint.isportsman.net/Regulations.aspx</a>   | 2017          |                             |                                |                              |                |                                   |         |                            |                            |          |             |                                 |                    |                           |                                      | X          |                      | X               |                     |                 |                   |                       |                          |                     |                     |                            |                                  |                                 |                            |                |
| 4(d) Rule for the Northern Long-Eared Bat  | <a href="http://www.asmfc.org/uploads/file/59f8d5ebAtlSturgeonBenchmarkStockAssmt_PeerReviewReport_2017.pdf">http://www.asmfc.org/uploads/file/59f8d5ebAtlSturgeonBenchmarkStockAssmt_PeerReviewReport_2017.pdf</a> | 2016          |                             |                                |                              |                |                                   |         |                            |                            |          |             | X                               |                    |                           |                                      |            |                      |                 |                     |                 |                   |                       |                          |                     |                     |                            |                                  |                                 |                            |                |
| Approved Pesticides  | Available at USAG WP  | 2017          |                             |                                |                              |                |                                   |         |                            |                            |          |             |                                 |                    |                           |                                      |            |                      |                 |                     |                 |                   |                       |                          |                     |                     |                            | X                                | X                               |                            |                |
| AR 215-1, Military Morale, Welfare, and Recreation Programs for Nonappropriated Fund Instrumentalities   | <a href="http://www.ssi.army.mil/ncoa/AGS_SLC_ALC_REGS/AR%20215-1%202010.pdf">http://www.ssi.army.mil/ncoa/AGS_SLC_ALC_REGS/AR%20215-1%202010.pdf</a>   | 2010          |                             |                                |                              |                |                                   |         |                            |                            |          |             |                                 |                    |                           |                                      | X          |                      | X               | X                   |                 |                   |                       |                          |                     |                     |                            |                                  |                                 |                            |                |
| Biology, Status, and Management of the Timber Rattlesnake (Crotalus horridus): A Guide for Conservation (Brown)  | Available at USAG WP  | 1993          |                             |                                |                              |                |                                   |         |                            |                            |          |             |                                 |                    |                           |                                      |            |                      |                 |                     |                 |                   | X                     |                          |                     |                     |                            |                                  |                                 |                            |                |
| Coastal Zone Management Act  | <a href="https://coast.noaa.gov/czm/act/">https://coast.noaa.gov/czm/act/</a>   | 1972          |                             |                                |                              |                |                                   |         |                            | X                          |          |             |                                 |                    |                           |                                      |            |                      |                 |                     |                 |                   |                       |                          |                     |                     |                            |                                  |                                 |                            |                |
| Endangered Species Management Plan for the Bald Eagle ( <i>Haliaeetus leucocephalus</i> ) on the Properties at the United States Military Academy (Beemer) | Available at USAG WP  | 2001          |                             |                                |                              |                |                                   |         |                            |                            |          |             |                                 |                    |                           | X                                    |            |                      |                 |                     |                 |                   |                       |                          |                     |                     |                            |                                  |                                 |                            |                |
| Final Recovery Plan for the Shortnose Sturgeon ( <i>Acipenser brevirostrum</i> )   | <a href="http://www.nmfs.noaa.gov/pr/pdfs/recovery/sturgeon_shortnose.pdf">http://www.nmfs.noaa.gov/pr/pdfs/recovery/sturgeon_shortnose.pdf</a>   | 1998          |                             |                                |                              |                |                                   |         |                            |                            |          |             | X                               |                    |                           |                                      |            |                      |                 |                     |                 |                   |                       |                          |                     |                     |                            |                                  |                                 |                            |                |
| Forest Management Plan   | Available at USAG WP  | 2015          |                             |                                |                              |                |                                   |         | X                          |                            | X        | X           |                                 |                    |                           |                                      |            |                      |                 |                     | X               | X                 | X                     |                          | X                   | X                   |                            |                                  |                                 |                            |                |
| Goals and Objectives of the ITAM Program   | Available at USAG WP  | 2017 and 2018 |                             |                                |                              |                | X                                 |         |                            |                            | X        | X           |                                 |                    |                           |                                      |            |                      |                 |                     | X               | X                 | X                     | X                        |                     | X                   |                            |                                  |                                 |                            |                |
| Hudson Highlands Coastal Fish and Wildlife Rating Form   | <a href="https://www.dos.ny.gov/opd/programs/consistency/Habitats/HudsonRiver/Hudson_Highlands_FINAL.pdf">https://www.dos.ny.gov/opd/programs/consistency/Habitats/HudsonRiver/Hudson_Highlands_FINAL.pdf</a>       | 2012          |                             |                                |                              |                |                                   |         |                            | X                          |          |             |                                 |                    |                           |                                      |            |                      |                 |                     |                 |                   |                       |                          |                     |                     |                            |                                  |                                 |                            |                |
| Indiana Bat ( <i>Myotis sodalis</i> ) Draft Recovery Plan: First Revision  | <a href="https://ecos.fws.gov/docs/recovery_plan/070416.pdf">https://ecos.fws.gov/docs/recovery_plan/070416.pdf</a>   | 2007          |                             |                                |                              |                |                                   |         |                            |                            |          |             | X                               |                    |                           |                                      |            |                      |                 |                     |                 |                   |                       |                          |                     |                     |                            |                                  |                                 |                            |                |
| Integrated Pest Management Plan  | Available at USAG WP  | 2015          |                             |                                |                              |                |                                   |         | X                          |                            | X        | X           |                                 |                    |                           |                                      |            |                      |                 |                     | X               | X                 |                       |                          |                     | X                   | X                          |                                  |                                 |                            |                |
| Integrated Wildland Fire Management Plan   | Available at USAG WP  | 2011          |                             |                                |                              |                | X                                 |         |                            |                            |          |             |                                 |                    |                           |                                      |            |                      |                 |                     |                 |                   |                       |                          |                     |                     |                            |                                  |                                 |                            |                |
| Invasive Management Plan Animals   | Available at USAG WP  | --            |                             |                                |                              |                |                                   |         |                            |                            |          |             |                                 |                    |                           |                                      |            |                      |                 |                     |                 |                   |                       |                          |                     |                     | X                          |                                  |                                 |                            |                |
| Management in Lakes and Reservoirs: Technical supplement to the Lake and Restoration Guidance Manual   | Available at USAG WP  | 1993          |                             |                                |                              |                |                                   |         |                            |                            |          |             |                                 |                    |                           |                                      |            | X                    |                 |                     |                 |                   |                       |                          |                     |                     |                            |                                  |                                 |                            |                |
| National Bald Eagle Management Guidelines  | <a href="https://www.fws.gov/northeast/ecologicalservices/pdf/NationalBaldEagleManagementGuidelines.pdf">https://www.fws.gov/northeast/ecologicalservices/pdf/NationalBaldEagleManagementGuidelines.pdf</a>         | 2007          |                             |                                |                              |                |                                   |         |                            |                            |          |             |                                 |                    |                           | X                                    |            |                      |                 |                     |                 |                   |                       |                          |                     |                     |                            |                                  |                                 |                            |                |
| New York Fishing Regulations   | <a href="http://www.eregulations.com/newyork/fishing/">http://www.eregulations.com/newyork/fishing/</a>   | 2017          |                             |                                |                              |                |                                   |         |                            |                            |          |             |                                 |                    |                           |                                      | X          | X                    |                 |                     |                 |                   |                       |                          |                     |                     |                            |                                  |                                 |                            |                |
| New York Forestry Best Management Practices for Water Quality  | <a href="http://www.dec.ny.gov/docs/lands_forests_pdf/dlfbmpguide.pdf">http://www.dec.ny.gov/docs/lands_forests_pdf/dlfbmpguide.pdf</a>   | 2011          |                             |                                |                              |                | X                                 |         |                            |                            |          |             |                                 |                    |                           |                                      |            |                      |                 |                     |                 |                   | X                     |                          |                     |                     |                            |                                  |                                 |                            |                |
| New York Hunting & Trapping Regulations  | <a href="http://www.eregulations.com/newyork/hunting/">http://www.eregulations.com/newyork/hunting/</a>   | 2017          |                             |                                |                              |                |                                   |         |                            |                            |          |             |                                 |                    |                           |                                      | X          |                      | X               |                     |                 |                   |                       |                          |                     |                     |                            |                                  |                                 |                            |                |
| New York State Coastal Management Program and Final Environmental Impact Statement   | <a href="https://www.dos.ny.gov/opd/programs/pdfs/NY_CMP.pdf">https://www.dos.ny.gov/opd/programs/pdfs/NY_CMP.pdf</a>   | 2017          |                             |                                |                              |                |                                   |         |                            | X                          |          |             |                                 |                    |                           |                                      |            |                      |                 |                     |                 |                   |                       |                          |                     |                     |                            |                                  |                                 |                            |                |
| NYS Standards and Specifications for Erosion and Sediment Control  | <a href="http://www.dec.ny.gov/chemical/25066.html">http://www.dec.ny.gov/chemical/25066.html</a>   | 2016          |                             |                                |                              |                | X                                 |         |                            |                            |          |             |                                 |                    |                           |                                      |            |                      |                 |                     |                 | X                 |                       |                          |                     |                     |                            |                                  |                                 |                            |                |
| NYSDEC Deer and Bear Hunting Seasons   | <a href="http://www.dec.ny.gov/outdoor/28605.html">http://www.dec.ny.gov/outdoor/28605.html</a>   | 2017          |                             |                                |                              |                |                                   |         |                            |                            |          |             |                                 |                    |                           |                                      | X          |                      | X               |                     |                 |                   |                       |                          |                     |                     |                            |                                  |                                 |                            |                |
| NYSDEC Hunting Regulations   | <a href="http://www.dec.ny.gov/outdoor/28182.html">http://www.dec.ny.gov/outdoor/28182.html</a>   | 2017          |                             |                                |                              |                |                                   |         |                            |                            |          |             |                                 |                    |                           |                                      | X          |                      | X               |                     |                 |                   |                       |                          |                     |                     |                            |                                  |                                 |                            |                |

| Document Title   | Location & Hyperlink  | Last Update | Natural Resource Management | Geospatial Information Systems | Conservation Law Enforcement | Climate Change | Soils, Erosion, and Sedimentation | Geology | General Water Conservation | Coastal & Marine Resources | Wetlands | Floodplains | Threatened & Endangered Species | Species of Concern | Migratory Bird Treaty Act | Bald and Golden Eagle Protection Act | Recreation | Fisheries Management | Game Management | Non-Game Management | Flora & Habitat | Forest Management | Special Natural areas | Wildland Fire Management | Grounds maintenance | Agricultural Leases | Integrated Pest Management | Noxious Weeds & Invasive Species | Wildlife Aircraft Strike Hazard | Army Compatible Use Buffer | Other Programs |
|--|---|-------------|-----------------------------|--------------------------------|------------------------------|----------------|-----------------------------------|---------|----------------------------|----------------------------|----------|-------------|---------------------------------|--------------------|---------------------------|--------------------------------------|------------|----------------------|-----------------|---------------------|-----------------|-------------------|-----------------------|--------------------------|---------------------|---------------------|----------------------------|----------------------------------|---------------------------------|----------------------------|----------------|
| NYSDEC New York State Wildlife Action Plan   | <a href="http://www.dec.ny.gov/docs/wildlife_pdf/swapfinaldraft2015.pdf">http://www.dec.ny.gov/docs/wildlife_pdf/swapfinaldraft2015.pdf</a>                     | 2015        |                             |                                |                              |                |                                   |         |                            |                            |          |             |                                 |                    |                           |                                      |            |                      | X               | X                   |                 |                   |                       |                          |                     |                     |                            | X                                | X                               |                            |                |
| Range-wide Indiana Bat Protection and Enhancement Guidelines                       | <a href="https://www.fws.gov/frankfort/pdf/INBATPEPGuidelines.pdf">https://www.fws.gov/frankfort/pdf/INBATPEPGuidelines.pdf</a>                                 | 2009        |                             |                                |                              |                |                                   |         |                            |                            |          |             | X                               |                    |                           |                                      |            |                      |                 |                     |                 |                   |                       |                          |                     |                     |                            |                                  |                                 |                            |                |
| Rare Plant Management Plan   | Available at USAG WP  | 2010        |                             |                                |                              |                |                                   |         |                            |                            |          |             |                                 | X                  |                           |                                      |            |                      |                 |                     |                 | X                 | X                     |                          | X                   | X                   |                            |                                  |                                 |                            |                |
| Real Property Vision Plan Installation Planning Standards                          | Available at USAG WP  | 2017        |                             |                                |                              |                |                                   |         |                            |                            |          |             |                                 |                    |                           |                                      |            |                      |                 |                     |                 |                   |                       |                          |                     | X                   |                            |                                  | X                               |                            |                |
| Significant Coastal Fish and Wildlife Habitats                                     | <a href="https://www.dos.ny.gov/opd/programs/consistency/scfwhabitats.html#hudson">https://www.dos.ny.gov/opd/programs/consistency/scfwhabitats.html#hudson</a> | 2018        |                             |                                |                              |                |                                   |         |                            | X                          |          |             |                                 |                    |                           |                                      |            |                      |                 |                     |                 |                   |                       |                          |                     |                     |                            |                                  |                                 |                            |                |
| Small Whorled Pogonia ( <i>Isotria medeoloides</i> ) Recovery Plan: First Revision | <a href="https://ecos.fws.gov/docs/recovery_plan/921113b.pdf">https://ecos.fws.gov/docs/recovery_plan/921113b.pdf</a>   | 1992        |                             |                                |                              |                |                                   |         |                            |                            |          |             | X                               |                    |                           |                                      |            |                      |                 |                     |                 |                   |                       |                          |                     |                     |                            |                                  |                                 |                            |                |
| Stream Crossings: Guidelines and Best Management Practices                         | <a href="http://www.dec.ny.gov/docs/permits_ej_operations_pdf/streamcrossbmp.pdf">http://www.dec.ny.gov/docs/permits_ej_operations_pdf/streamcrossbmp.pdf</a>   | -           |                             |                                |                              |                |                                   |         | X                          |                            |          |             |                                 |                    |                           |                                      |            |                      |                 |                     |                 |                   |                       |                          |                     |                     |                            |                                  |                                 |                            |                |
| The American Black Bear on West Point  | Available at USAG WP  | --          |                             |                                |                              |                |                                   |         |                            |                            |          |             |                                 |                    |                           |                                      |            |                      | X               |                     |                 |                   |                       |                          |                     |                     |                            |                                  | X                               |                            |                |
| USAG WP Integrated Wildland Fire Management Plan                                   | Available at USAG WP  | 2011        |                             |                                |                              |                |                                   |         |                            |                            |          |             |                                 |                    | X                         |                                      |            |                      |                 |                     |                 | X                 | X                     | X                        |                     | X                   |                            |                                  | X                               |                            |                |
| USAG WP Policy #14: Euthanizing Wild Animals within the Cantonment Area            | Available at USAG WP  | 2016        |                             |                                |                              |                |                                   |         |                            |                            |          |             |                                 |                    |                           |                                      |            |                      |                 |                     |                 |                   |                       |                          |                     |                     |                            | X                                |                                 |                            |                |
| USAG WP Policy #56: Stray Animal Control Policy                                    | Available at USAG WP  | 2016        |                             |                                |                              |                |                                   |         |                            |                            |          |             |                                 |                    |                           |                                      |            |                      |                 |                     |                 |                   |                       |                          |                     |                     |                            | X                                |                                 |                            |                |
| USEPA Fish and Fisheries   | Available at USAG WP  | 1993        |                             |                                |                              |                |                                   |         |                            |                            |          |             |                                 |                    |                           |                                      |            | X                    |                 |                     |                 |                   |                       |                          |                     |                     |                            |                                  |                                 |                            |                |
| USMA Reg 215-5, Recreational Activities  | <a href="https://westpoint.isportsman.net/Regulations.aspx">https://westpoint.isportsman.net/Regulations.aspx</a>   | 2017        |                             |                                | X                            |                |                                   |         |                            |                            |          |             |                                 |                    |                           | X                                    | X          | X                    | X               |                     |                 |                   |                       |                          |                     |                     |                            |                                  |                                 |                            |                |
| West Point Atlantic Sturgeon Management Plan                                       | Appendix B7   | 2018        |                             |                                |                              |                |                                   |         |                            |                            |          |             | X                               |                    |                           |                                      |            |                      |                 |                     |                 |                   |                       |                          |                     |                     |                            |                                  |                                 |                            |                |
| West Point Hunting Areas & Regulations   | <a href="https://westpoint.isportsman.net/Regulations.aspx">https://westpoint.isportsman.net/Regulations.aspx</a>   | 2017        |                             |                                |                              |                |                                   |         |                            |                            |          |             |                                 |                    |                           | X                                    | X          | X                    |                 |                     |                 |                   |                       |                          |                     |                     |                            |                                  |                                 |                            |                |
| West Point Installation Planning Standards   | Available at USAG WP  | May-17      |                             |                                |                              |                | X                                 |         | X                          |                            |          |             |                                 |                    |                           |                                      |            |                      |                 |                     |                 | X                 |                       |                          |                     |                     |                            |                                  |                                 |                            |                |
| West Point Military Reservation Bird Checklist                                     | <a href="https://www.mbr-pwrc.usgs.gov/Infocenter/Westpoint/checklist.htm">https://www.mbr-pwrc.usgs.gov/Infocenter/Westpoint/checklist.htm</a>                 | 2000        |                             |                                |                              |                |                                   |         |                            |                            |          |             |                                 | X                  |                           |                                      |            |                      |                 |                     |                 |                   |                       |                          |                     |                     |                            |                                  |                                 |                            |                |
| West Point Northern Long-Eared Bat Management Plan                                 | Appendix B5   | 2018        |                             |                                |                              |                |                                   |         |                            |                            |          |             | X                               |                    |                           |                                      |            |                      |                 |                     |                 |                   |                       |                          |                     |                     |                            |                                  |                                 |                            |                |
| West Point Shortnose Sturgeon Management Plan                                      | Appendix B6   | 2018        |                             |                                |                              |                |                                   |         |                            |                            |          |             | X                               |                    |                           |                                      |            |                      |                 |                     |                 |                   |                       |                          |                     |                     |                            |                                  |                                 |                            |                |
| Wildlife Encounters  | Available at USAG WP  | 2014        |                             |                                |                              |                |                                   |         |                            |                            |          |             |                                 |                    |                           |                                      |            |                      |                 |                     |                 |                   |                       |                          |                     |                     |                            | X                                |                                 |                            |                |
| Wintertime No-Fly Zone   | Available at USAG WP  | 2014        |                             |                                |                              |                |                                   |         |                            |                            |          |             |                                 |                    |                           | X                                    |            |                      |                 |                     |                 |                   |                       |                          |                     |                     |                            |                                  |                                 |                            |                |
| Wood and Spotted Turtle Planning Level Survey                                      | Available at USAG WP  | 2017        |                             |                                |                              |                |                                   |         |                            |                            |          |             |                                 | X                  |                           |                                      |            |                      |                 |                     |                 |                   |                       |                          |                     |                     |                            |                                  |                                 |                            |                |

## **Appendix D**

### **Soils Data for USAG WP**

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**Table D-1. Soils Mapped on USAG WP – General Characteristics**

| Soil Series   | Map Unit | Drainage Class                               | Hydric | Limitations  | Landscape Occurrence   |
|---|----------|--|--------|--|--|
| Alden silt loam   | Ab       | Very poorly drained                          | Yes    | Water table at or near the surface for prolonged period; erodes easily; wetness limits timber production; IVw    | Nearly level in low areas and depressions in uplands   |
| Alden extremely stony soils                             | AC       | Very poorly drained                          | Yes    | Water table at or near the surface for prolonged periods; erodes easily; wetness limits timber productions; VIIs | Nearly level in depressions and low areas  |
| Bath-Nassau shaly silt loams, 3%-8% slopes              | BnB      | Well-drained and excessively drained         | No     | Moderate erosion potential; IIIe   | Hilltops and ridges in uplands   |
| Canadiagua silt loam                                    | Ca       | Poorly and very poorly drained               | Yes    | Water table at or near the surface for prolonged periods; erodes easily; wetness limits timber production; IVw   | Small depressions in uplands and broad, flat lowland plains; slope<3%                          |
| Carlisle muck, ponded                                   | Cf       | Very poorly drained                          | Yes    | Water table at or near the surface most of the year; wetness limits timber production; Vw                        | Depressional swamps, bogs and marshes in upland till plains and lowland lake plains; slope <2% |
| Charlton fine sandy loam, 3%-8% slopes                  | ChB      | Well-drained                                 | No     | Slight erosion potential; IIe  | Ridge crests, hilltops, and mountaintops in uplands  |
| Charlton fine sandy loam, 8%-15% slopes                 | ChC      | Well-drained                                 | No     | Slope; potential erosion limitation; IIIe  | Ridges, hillsides, and upper mountainsides of uplands  |
| Carlton-Paxton (loam) Complex, extremely stony, sloping | CLC      | Well-drained                                 | No     | Extremely stony; erodes easily; VIIs   | Hilltops, hillcrests, and mountainsides in uplands   |
| Carlton-Paxton Complex, extremely stony, mod. steep     | CLD      | Well-drained                                 | No     | Slope; extremely stony; erodes easily; VIIs  | Hillsides and mountainsides of the uplands; slopes 15%-35%                                     |
| Chenango gravelly silt loam, 0%-3% slopes               | CnA      | Well-drained                                 | No     | IIs  | Terraces along valley floors and on broad lowland plains                                       |
| Chenango gravelly silt loam, 3%-8% slopes               | CnB      | Well-drained                                 | No     | Moderate erosion potential; IIs  | Undulating terraces along valley floors and on plains  |
| Chenango gravelly silt loam, 8%-15%                     | CnC      | Well-drained to somewhat excessively drained | No     | Slope, serious erosion potential; droughtiness; IIIe   | Terraces, along valley floors, and on low rounded hills on plains                              |
| Erie extremely stony soils, gently sloping              | ESB      | Somewhat poorly drained                      | HC     | Seasonal wetness; potential erosion limitation; extremely stony; VIIs  | Lower hillsides, foot slopes, and hilltops and along shallow drainage ways                     |

| Soil Series                                | Map Unit | Drainage Class                                     | Hydric | Limitations   | Landscape Occurrence  |
|--|----------|--|--------|---|---|
| Fredon loam                                | Fd       | Somewhat poorly drained                            | Yes    | Seasonal high water table; IIIw   | Low terraces and outwash plains along valley floors and lowlands                                |
| Histic Humaquepts, ponded                  | HH       | Very poorly drained                                | Yes    | Typically inundated by 1-6 inches of water; VIIIw   | Natural depressions, some created by man or by beaver dams; slopes #1%                          |
| Hollis soils, sloping hills                | HLC      | Somewhat excessively drained                       | No     | Shallow to rock; moderate erosion potential when exposed; shallowness limits timber production; IVe             | Hillcrests, hilltops and valley sides, and ridges of the mountainous uplands; slopes 3%-15%     |
| Hollis soils, mod. steep                   | HLD      | Well- to somewhat excessively drained              | No     | Shallow to rock; high erosion potential when exposed; shallowness and droughtiness limit timber production; VIe | Hillsides, valley sides, and ridges of mountainous uplands; slopes 15%-25%                      |
| Hoosic gravelly sandy loam, 0%-3% slopes   | HoA      | Somewhat excessively drained                       | No     | III <sub>s</sub>  | Terraces and broad flat areas along valley floors and on lowland plains                         |
| Hoosic gravelly sandy loam, 3%-8%          | HoB      | Somewhat excessively drained                       | No     | Slight erosion hazard; III <sub>s</sub>   | Terraces and undulating areas along valley floors and on lowland plains                         |
| Hoosic gravelly sandy loam, 8%-15% slopes  | HoC      | Somewhat excessively drained                       | No     | Moderate erosion potential; IV <sub>S</sub>   | Low rounded hills, on ridges, and along the fronts of terraces on valleys and on lowland plains |
| Hoosic gravelly sandy loam, 15%-25% slopes | HoD      | Somewhat excessively drained                       | No     | Slope; high erosion potential; droughtiness; IVe  | Sides of terraces and on low rounded hills and on ridges in valleys and on lowland plains       |
| Mardin gravelly silt loam, 3%-8% slopes    | MdB      | Moderately well drained                            | No     | Seasonal wetness; moderate erosion potential; IIw   | Broad divides, hilltops, and ridges in uplands  |
| Mardin gravelly silt loam, 8%-15% slopes   | MdC      | Moderately well drained                            | No     | Seasonal wetness; high erosion potential in exposed areas; slope; IIIe  | Valley sides, hillsides, and ridges in uplands  |
| Mardin gravelly silt loam, 15%-25% slopes  | MdD      | Moderately well drained                            | No     | Seasonal wetness; high erosion potential where soils are exposed; slope; IVe                                    | Hillsides and valley sides in uplands   |
| Middlebury silt loam                       | My       | Moderately well drained to somewhat poorly drained | No     | Seasonal high water table; potential flood hazard; IIw  | On floodplains adjacent to streams that flood periodically; slopes #3%                          |

| Soil Series                                  | Map Unit | Drainage Class  | Hydric | Limitations  | Landscape Occurrence  |
|--|----------|---|--------|--|---|
| Otisville gravelly sandy loam; 8%-15% slopes | OtC      | Excessively drained   | No     | Stony; droughtiness limits suitability for timber; IVS   | Terraces, ridges, and low rolling hills in valleys and on lowland plains  |
| Otisville and Hoosic soils, steep            | OVE      | Otisville-excessively drained/Hoosic – somewhat excessively drained | No     | Slope; very high erosion potential where soils are exposed; droughtiness; poor suitability for timber; VIIs  | Along the front of terraces, on the sides of low hills, on ridges in valleys, and on lowland plains; slopes 25%-45% |
| Palms muck                                   | Pa       | Very poorly drained   | Yes    | Occasional ponding and flooding in early spring; potential wind erosion hazard; poor suitability for timber; IIIw  | In drained depressions and concave basins in lowland lake outwash plains, and flood plains                          |
| Palms muck, ponded                           | Pb       | Very poorly drained   | Yes    | Ponding in spring; water table at or near the surface for most of the year; potential wind erosion hazard; poor suitability for timber; Vw                       | In depressions and bogs in uplands and in concave basins in lowland plains  |
| Raynham silt loam                            | Ra       | Somewhat poorly drained to poorly drained                           | Yes    | High water table in spring; poor to fair timber suitability; IIIw  | Slight depressional areas in uplands and on low benches in valleys  |
| Rock outcrop-Hollis complex, sloping         | ROC      | Somewhat excessively drained to well-drained                        | No     | Shallow to bedrock; excessive droughtiness; poor suitability for timber; VIIs  | Hillcrests, hilltops, and ridges of mountainous uplands; slopes 3%-15%  |
| Rock-outcrop-Hollis complex, mod. steep      | ROD      | Somewhat excessively drained to well-drained                        | No     | Shallow to bedrock; excessive droughtiness; very high erosion potential where vegetation has been removed; poor suitability for timber; VIIIs                    | Hillcrests, hilltops, and ridges of the mountainous uplands; slope 15%-35%  |
| Rock outcrop-Hollis complex, very steep      | ROF      | Somewhat excessively drained to well-drained                        | No     | Very steep slopes; shallow to bedrock; very high erosion potential where vegetation has been removed; excessive droughtiness; poor suitability for timber; VIIIs | Hillsides and valley sides of mountainous uplands; slopes 35%-60%   |
| Suncock sandy loam                           | Su       | Excessively drained   | No     | Flooding for brief periods in early spring; droughtiness in summer; fair to poor timber suitability; IIIs  | Floodplains adjacent to streams that periodically overflow; slopes <3%  |
| Swartwood gravelly loam, 3%-8% slopes        | SwB      | Well-drained and mod. well-drained                                  | No     | Wetness due to perched water table in the spring; moderate erosion potential   | Convex hilltops and ridges in uplands   |

| Soil Series  | Map Unit | Drainage Class  | Hydric | Limitations   | Landscape Occurrence  |
|--|----------|---|--------|---|---|
|  |          |   |        | where soils are exposed; IIe  |   |
| Swartwood gravelly loam, 15%-25% slopes            | SwD      | Well-drained and mod. well-drained  | No     | Very high erosion potential where soils are exposed; IVE  | Hillsides and valley sides in uplands                                     |
| Swartwood and Mardin, very stony soils, sloping    | SXC      | Swartwood – well-drained and mod. well-drained/Mardin – mod. well-drained | No     | Stony; wetness due to perched water table in the spring; VIs  | Hill crests, hilltops, and ridges in uplands; slopes 3%-15%               |
| Swartwood and Mardin, very stony soils, mod. steep | SXD      | Swartwood – well-drained and mod. well drained/Mardin – mod. well drained | No     | Stony; wetness due to perched water table in the spring; high erosion potential where soils are exposed; VIIs                             | Hillsides and ridges in uplands; slopes 15%-35%                           |
| Tioga silt loam                                    | Tg       | Well-drained  | No     | Subject to flooding in early spring; I  | Valleys along streams that are subject to periodic overflow; slopes 0%-3% |
| Udifluents-Fluvaquents complex, frequently flooded | UF       | Well-drained to very poorly drained                                       | Yes    | Subject to frequent flooding; soil characteristics are highly variable and onsite investigation is essential for any intended use; Vw     | Formed in recent alluvial deposits adjacent to streams; slopes #5%        |
| Udorthents, smoothed                               | UH       | Excessively to mod. well-drained  | No     | Onsite investigation is needed to determine feasibility for any use; no subclass assigned   | Man-made cut-and-fill areas   |
| Wayland silt loam                                  | Wd       | Poorly to very poorly drained   | Yes    | Subject to flooding in early spring; water table at or near the surface for prolonged periods; poor suitability for timber production; Vw | Low floodplains adjacent to streams that overflow; slopes #3%             |

**HC = Hydric Inclusions**

**\* Capability Classes**

I – soils have slight limitations that restrict their use

II – soils have moderate limitations that reduce choice of plants or that require moderate conservation practices

III – soils have severe limitations that reduce choice of plants or that require special conservation practices, or both

IV – soils have very severe limitations that reduce choice of plants or that require very careful management, or both

V – soils are not likely to erode but have other limitations, impractical to remove, that limit their use

VI – soils have severe limitations that make them generally unsuitable for cultivation

VII – soils have very severe limitations that make them unsuitable for cultivation

VIII – soils and miscellaneous areas have limitations that nearly preclude their use for commercial crop production

**Capability Subclasses (Major Management Concern / Main Limitation)**

e – Erosion

w – Wetness

s – Soil Problem

c – Climate

Source: Olsson 1981



**Table D-2. Soil Types, Acreage, and Percent of Total Area**

| Soil Mapping Unit | Unit Description      | Acreage  | Percent of Total Area |
|-------------------|-----------------------|----------|-----------------------|
| Ab                | Alden                 | 19.82    | 0.12%                 |
| AC                | Alden                 | 137.09   | 0.85%                 |
| BnB               | Bath-Nassau           | 1.15     | 0.01%                 |
| Ca                | Canandaigua           | 10.91    | 0.07%                 |
| Cf                | Carlisle              | 55.46    | 0.35%                 |
| ChB               | Charlton              | 45.15    | 0.28%                 |
| ChC               | Charlton              | 160.67   | 1.00%                 |
| CLC               | Charlton-Paxton       | 644.66   | 4.02%                 |
| CLD               | Charlton-Paxton       | 146.48   | 0.91%                 |
| CnA               | Chenango              | 45.61    | 0.28%                 |
| CnB               | Chenango gsl-3s       | 72.81    | 0.45%                 |
| CnC               | Chenango gsl-8s       | 63.97    | 0.40%                 |
| ErB               | Erie                  | 13.60    | 0.08%                 |
| ESB               | Erie                  | 222.96   | 1.39%                 |
| Fd                | Fredon                | 5.74     | 0.04%                 |
| HH                | Histic Humaquepts     | 114.75   | 0.72%                 |
| HLC               | Hollis                | 1,782.40 | 11.11%                |
| HLD               | Hollis                | 832.27   | 5.19%                 |
| HoA               | Hoosic                | 6.21     | 0.04%                 |
| HoB               | Hoosic                | 1.93     | 0.01%                 |
| HoC               | Hoosic                | 56.09    | 0.35%                 |
| HoD               | Hoosic                | 5.43     | 0.03%                 |
| MdB               | Mardin                | 132.68   | 0.83%                 |
| MdC               | Mardin                | 119.30   | 0.74%                 |
| MdD               | Mardin                | 24.01    | 0.15%                 |
| My                | Middlebury            | 26.47    | 0.17%                 |
| OtC               | Otisville             | 1.94     | 0.01%                 |
| OVE               | Otisville-Hoosic      | 10.54    | 0.07%                 |
| Pa                | Palms                 | 23.85    | 0.15%                 |
| Pb                | Palms                 | 90.06    | 0.56%                 |
| Pg                | Pits                  | 34.31    | 0.21%                 |
| Qu                | Quarries              | 5.20     | 0.03%                 |
| Ra                | Raynham               | 5.28     | 0.03%                 |
| ROC               | Rock Outcrop - Hollis | 2,972.78 | 18.53%                |
| ROD               | Rock Outcrop - Hollis | 4,508.04 | 28.10%                |
| ROF               | Rock Outcrop - Hollis | 1,724.40 | 10.75%                |
| RSB               | Rock Outcrop - Nassau | 8.64     | 0.05%                 |
| Su                | Suncook               | 4.22     | 0.03%                 |
| SwB               | Swartswood            | 104.79   | 0.65%                 |
| SwD               | Swartswood            | 21.88    | 0.14%                 |
| SXC               | Swartswood-Mardin     | 417.32   | 2.60%                 |
| SXD               | Swartswood-Mardin     | 244.68   | 1.53%                 |
| Tg                | Tioga                 | 8.76     | 0.05%                 |
| UF                | Fluvaquents           | 98.60    | 0.61%                 |

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| Soil Mapping Unit | Unit Description | Acreage          | Percent of Total Area |
|-------------------|------------------|------------------|-----------------------|
| UH                | Udorthents       | 184.60           | 1.15%                 |
| W                 | Water            | 543.53           | 3.39%                 |
| Wd                | Wayland          | 281.76           | 1.76%                 |
|                   | <b>TOTAL</b>     | <b>16,042.81</b> | <b>100.00%</b>        |

Source: USAG 2009

**References:**

Olsson, D.S. 1981. *Soil Survey of Orange County, New York*. United States Department of Agriculture, Natural Resources Conservation Service in cooperation with Cornell University Agricultural Experiment Station. National Cooperative Soil Survey, United States Department of Agriculture.

USAG WP. 2009. *Facility Utilization Report*. USAG WP ITAM Program, West Point, NY.

## **Appendix E**

# **Waterbody Classification and Water Quality Data for USAG WP**

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**Table E1. New York State Surface Water Classifications**

| <b>Classification</b>        | <b>Usages</b>   |
|------------------------------|---|
| Class A fresh surface waters | The best usages of Class A waters are: a source of water supply for drinking, culinary or food processing purposes; primary and secondary contact recreation; and fishing. The waters shall be suitable for fish, shellfish, and wildlife propagation and survival.   |
| Class B fresh surface waters | The best usages of Class B waters are primary and secondary contact recreation and fishing. These waters shall be suitable for fish, shellfish, and wildlife propagation and survival.  |
| Class C fresh surface waters | The best usage of Class C waters is fishing. These waters shall be suitable for fish, shellfish, and wildlife propagation and survival. The water quality shall be suitable for primary and secondary contact recreation, although other factors may limit the use for these purposes.  |
| Class D fresh surface waters | The best usage of Class D waters is fishing. Due to such natural conditions as intermittency of flow, water conditions not conducive to propagation of game fishery, or stream bed conditions, the waters will not support fish propagation. These waters shall be suitable for fish, shellfish, and wildlife survival. The water quality shall be suitable for primary and secondary contact recreation, although other factors may limit the use for these purposes.  |
| Trout waters (T or TS)       | (a) The symbol (T), appearing in an entry in the "standards" column in the classification tables of Parts 800 through 941 of this Title, means that the classified waters in that specific Item are trout waters. Any water quality standard, guidance value, or thermal criterion that specifically refers to trout or trout waters applies.<br><br>(b) The symbol (TS), appearing in an entry in the "standards" column in the classification tables of Parts 800 through 941 of this Title, means that the classified waters in that specific Item are trout spawning waters. Any water quality standard, guidance value, or thermal criterion that specifically refers to trout, trout spawning, trout waters, or trout spawning waters applies |

Source: NYSDEC, 1993.

**Table E2. Average Water Quality Data for Bull Pond**

| Year | Temp (°F) | Conductivity (µmhos/cm) | pH   | Dissolved Oxygen (ppm) |
|------|-----------|-------------------------|------|------------------------|
| 2006 | 69.69     | ---                     | 6.9  | 8.26                   |
| 2007 | 62.47     | 42.5                    | 7.58 | 9.55                   |
| 2008 | 76.89     | 45                      | 7.25 | 5.64                   |

**Table E3. Average Water Quality Data for Cat Hollow Brook**

| Year | Temp (°F) | Conductivity (µmhos/cm) | Total Dissolved Solids (ppm) | pH   | Dissolved Oxygen (ppm) |
|------|-----------|-------------------------|------------------------------|------|------------------------|
| 2000 | ---       | 70                      | 50                           | 6.94 | ---                    |
| 2003 | 68.36     | 50                      | ---                          | 7.39 | ---                    |
| 2006 | 65.57     | ---                     | ---                          | ---  | 7.05                   |
| 2008 | 68.05     | 38                      | 18.5                         | 7.18 | 6.38                   |

**Table E4. Average Water Quality Data for Lower Cragston Lake**

| Year | Temp (°F) | Conductivity (µmhos/cm) | pH   | Dissolved Oxygen (ppm) |
|------|-----------|-------------------------|------|------------------------|
| 2004 | 68        | 50                      | 7.43 | ---                    |
| 2006 | 71.21     | ---                     | 7.2  | 8                      |
| 2007 | 75.26     | 97.5                    | 7.7  | 8.07                   |

**Table E5. Average Water Quality Data for Crow's Nest Brook**

| Year | Temp (°F) | Conductivity (µmhos/cm) | Total Dissolved Solids (ppm) | pH   | Dissolved Oxygen (ppm) |
|------|-----------|-------------------------|------------------------------|------|------------------------|
| 1996 | 66.5      | 690                     | 470                          | N/A  | 10.55                  |
| 2000 | 66.2      | 190                     | 120                          | 7.35 | 7.87                   |
|      | 67.3      | 420                     | 280                          | 7.43 | 7.43                   |
| 2006 | 60.29     | ---                     | ---                          | 8.04 | 9.62                   |
| 2008 | 73.11     | 690                     | 345                          | 8.19 | 7.88                   |

Source: Linck, 1996b, 2001.

**Table E6. Temperature and Dissolved Oxygen Data for Lake Frederick**

| Depth (feet) | DO (ppm) | Temp (°F) |
|--------------|----------|-----------|
| Surface      | 6.32     | 81.1      |
| 5            | 6.34     | 79.5      |
| 10           | 5.96     | 78.5      |
| 15           | 0.84     | 67.5      |
| 20           | 0.32     | 58.5      |

Source: Linck, 1994.

**Table E7. Phosphate Levels for Lake Fredrick**

| Date      | Secchi Depth (feet) | Sample Depth (feet) | Phosphate (mg/l) | Temp (°F) |
|-----------|---------------------|---------------------|------------------|-----------|
| 5/1/1961  | 8                   | 3.3                 | 0.09             | 63.86     |
|           |                     | 13.12               | 0.05             | 55.94     |
|           |                     | 16.4                | 0.13             | 53.06     |
| 5/4/2005  | 8'7"                | 3.3                 | 0.05             | 62.6      |
|           |                     | 9.84                | 0.96             | 62.24     |
|           |                     | 16.4                | 0.08             | 57.2      |
|           |                     | 9.84                | 0.07             | 63.5      |
| 6/7/2005  | 13                  | 3.3                 | 0.06             | 76.1      |
|           |                     | 9.84                | 0.09             | 6.5       |
|           |                     | 16.4                | 0.19             | ---       |
| 6/23/2005 | 19'1"               | 3.3                 | 0.06             | 73.4      |
|           |                     | 9.84                | 0.07             | 72.86     |
|           |                     | 19.69               | 0.1              | 59.36     |
| 7/28/2005 | 16'6                | 3.3                 | 0.05             | 80.78     |
|           |                     | 9.84                | 0.01             | 80.96     |
|           |                     | 16.4                | 0.08             | 68.36     |
| 8/4/2005  | 11'7                | 3.3                 | 0.04             | 84.9      |
|           |                     | 9.84                | 0.01             | 83.3      |
|           |                     | 16.4                | 0.02             | 77.18     |
| 8/15/2005 | 13'10               | 3.3                 | 0.02             | 69.8      |
|           |                     | 9.84                | 0.04             | 80.24     |
|           |                     | 19.69               | 0.03             | 80.24     |

**Table E8. Average Water Quality Data for Bull Pond**

| Year | Temp (°F) | Conductivity (µmhos/cm) | pH   | Dissolved Oxygen (ppm) |
|------|-----------|-------------------------|------|------------------------|
| 2006 | 66.81     | ---                     | 7.1  | 5.8                    |
| 2007 | 68.7      | 92.5                    | 7.7  | 7.33                   |
| 2008 | 78.49     | ---                     | 7.25 | 6.91                   |

**Table E9. Average Water Quality Data for Lake Georgina**

| Year | Temp (°F) | Conductivity (µmhos/cm) | pH   | Dissolved Oxygen (ppm) |
|------|-----------|-------------------------|------|------------------------|
| 2006 | 70.87     | ---                     | 6.63 | 7.83                   |
| 2007 | 72.43     | 40                      | 7.68 | 6.7                    |
| 2008 | 78.85     | ---                     | 6.94 | 13.27                  |

**Table E10. Average Water Quality Data for Highland Brook**

| Year | Temp (°F) | Dissolved Oxygen (PPM) | pH   | Total Dissolved Solids (ppm) | Conductivity (µmhos/cm) |
|------|-----------|------------------------|------|------------------------------|-------------------------|
| 2003 | 74.12     | ---                    | 7.36 | ---                          | 105                     |
| 2006 | 62.33     | 9.2                    | 7.63 | ---                          | ---                     |
| 2008 | 75.89     | 7                      | 7.97 | 20                           | 39.67                   |

**Table E11. Average Water Quality Data for Johnson Meadow Brook**

| Year | Temp (°F) | Conductivity (µmhos/cm) | Total Dissolved Solids (ppm) | pH   | Dissolved Oxygen (ppm) |
|------|-----------|-------------------------|------------------------------|------|------------------------|
| 1996 | 70        | 110                     | N/A                          | N/A  | N/A                    |
| 1998 | 70.7      | 200                     | 140                          | N/A  | 6.42                   |
| 2004 | ---       | 200                     |                              | 8.82 | ---                    |
| 2006 | 75.14     | ---                     | ---                          | 7.83 | 5.73                   |
| 2008 | 71.91     | 154                     | 77                           | 7.38 | 3.25                   |

Source: Linck, 1996a, 1999.

**Table E12. Average Water Quality Data for Long Pond**

| Year | Temp (°F) | Conductivity (µmhos/cm) | pH         | Dissolved Oxygen (ppm)                                  |
|------|-----------|-------------------------|------------|---|
| 1980 | ---       | 108.4                   | 6.4 – 7.0  | 11.5 – 12.3   |
| 1987 | ---       | 108.4                   | 6.72 – 6.8 | 9.0 (at depth of 5 feet)<br>2.0 (at depth of 16.4 feet) |
| 2006 | 74.14     | ---                     | 7.18       | 7.59  |
| 2007 | 68.99     | 123.33                  | 7.57       | 7.73  |
| 2008 | 77.17     | ---                     | 7.37       | 6.61  |

Source: Adirondack Lakes Survey Corp., 1987; Linck, 1999.

**Table E13. Average Water Quality Data for Lusk Reservoir**

| Year | Temp (°F) | Conductivity (µmhos/cm) | pH   | Dissolved Oxygen (ppm) |
|------|-----------|-------------------------|------|------------------------|
| 2006 | 73.4      | ---                     | 7.25 | 8.7                    |
| 2007 | 68.54     | 93.33                   | 7.43 | 9.23                   |
| 2008 | 74.83     | ---                     | 8.07 | 8.57                   |

**Table E14. Average Water Quality Data for Mine Lake**

| Year | Temp (°F) | Conductivity (µmhos/cm) | pH   | Dissolved Oxygen (ppm) |
|------|-----------|-------------------------|------|------------------------|
| 2006 | 74.84     | ---                     | 7.34 | 7.66                   |
| 2007 | 67.95     | 92.50                   | 7.65 | 7.42                   |
| 2008 | 78.88     | ---                     | 7.33 | 6.94                   |



**Table E15. Average Water Quality Data for Mineral Springs Brook**

| Year | Temp (°F) | Conductivity (µmhos/cm)   | Total Dissolved Solids (ppm) | pH        | Dissolved Oxygen (ppm) |
|------|-----------|---|------------------------------|-----------|------------------------|
| 1996 | 60        | 30 (Firebreak 21 crossing)<br>66 (Mineral Springs Brook Natural Area) | ---                          | 6.4 – 7.0 | 11.5 – 12.3            |
| 1998 | 62.6      | 270   | 140                          | ---       | ---                    |
| 2003 | 68.72     | 140   | ---                          | 7.75      | ---                    |
| 2004 | ---       | 210   | ---                          | 8.80      | ---                    |
| 2006 | 56.48     | ---   | ---                          | 7.7       | 9.45                   |
| 2007 | 60        | 130   | ---                          | 7.8       | ---                    |
| 2008 | 66        | ---   | ---                          | 8.1       | 7.2                    |

Source: Linck, 1996a, 1999.

**Table E16. Average Water Quality Data for Popolopen Brook**

| Year | Temp (°F)     | Conductivity (µmhos/cm) | Total Dissolved Solids (ppm) | pH        | Dissolved Oxygen (ppm) |
|------|---------------|-------------------------|------------------------------|-----------|------------------------|
| 1996 | Low 70s to 83 | 90                      | 60                           | 6.4 – 7.0 | 9.23                   |
| 1998 | 69.8 - 71     | 90                      | 60                           | N/A       | N/A                    |
| 2000 | 70.3          | 90                      | 60                           | 7.37      | N/A                    |
| 2004 | 76.82         | 85                      | ---                          | 7.3       | ---                    |
| 2006 | 70.07         | ---                     | ---                          | 7.78      | 8.84                   |
| 2008 | 74.39         | 62.67                   | 31.33                        | 7.63      | 7.44                   |

Source: Linck, 1996a, 1999, 2001.

**Table E17. Average Water Quality Data for Popolopen Lake**

| Year | Temp (°F) | Conductivity (µmhos/cm) | pH   | Dissolved Oxygen (ppm) |
|------|-----------|-------------------------|------|------------------------|
| 2006 | 76.41     | ---                     | 7.53 | 7.66                   |
| 2007 | 75.72     | 88.57                   | 7.9  | 6.63                   |
| 2008 | 78        | ---                     | 7.53 | 5.25                   |

**Table E18. Phosphate Levels for Popolopen Lake**

| Date      | Secchi Depth (feet) | Sample Depth (feet) | Phosphate (mg/l) | Temp (°F) |
|-----------|---------------------|---------------------|------------------|-----------|
| 5/13/2005 | 10'10"              | 3.3                 | 0.12             | 62.6      |
|           |                     | 6.5                 | 0.03             | 61.88     |
|           |                     | 6.5                 | 0.07             | 61.7      |
| 5/23/2005 | 9'4"                | 3.3                 | 0.05             | 18        |
|           |                     | 9.84                | 0.21             | 64.4      |
| 6/7/2005  | 9'8"                | 3.3                 | 0.04             | 76.1      |
|           |                     | 8.2                 | 0.04             | 68.18     |
| 6/14/2005 | 10'4"               | 3.3                 | 0.04             | 77.54     |
|           |                     | 9.84                | 0.05             | 72.32     |
|           |                     | 3.3                 | 0.05             | 84.2      |
| 6/20/2005 | 8'5"                | 3.3                 | 0.06             | 77.72     |
|           | 7'4"                | 9.84                | 0.05             | 72.5      |
|           | 7'4"                | 6.8                 | 0.03             | 73.03     |
|           | 8'6"                | 6.8                 | 0.06             | 73.22     |
| 7/7/2005  | 8'3"                | 3.3                 | 0.05             | 78.44     |
|           |                     | 8.2                 | 0.06             | 77.72     |
| 7/19/2005 | 9'2"                | 3.3                 | 0.14             | 82.94     |
|           |                     | 8.2                 | 0.05             | 77.72     |
| 7/28/2005 | 7'5"                | 6.8                 | 0.03             | 80.78     |
|           |                     | 1.64                | 0.08             | ---       |
|           |                     | 19.69               | 0.08             | 57.2      |
|           |                     | 6.8                 | 0.06             | 82.04     |
|           |                     | 22.97               | 0.03             | ---       |
| 8/4/2005  | 10                  | 3.3                 | 0.03             | 84.2      |
|           |                     | 8.2                 | 0.02             | 82.76     |
|           |                     | 3.3                 | 0.05             | 83.84     |
|           |                     | 1.64                | 0.02             | ---       |
| 8/15/2005 | 7'4"                | 3.3                 | 0.03             | 81.32     |
|           |                     | 8.2                 | 0.06             | 81.14     |
|           |                     | 14.76               | 0.02             | 79.7      |

**Table E19. Average Water Quality Data for Round Pond**

| Year | Temp (°F) | Conductivity (µmhos/cm) | pH   | Dissolved Oxygen (ppm) |
|------|-----------|-------------------------|------|------------------------|
| 2006 | 70.21     | ---                     | 7.25 | 8.05                   |
| 2007 | 69.46     | 152.5                   | 7.5  | 9.96                   |
| 2008 | 74.25     | ---                     | 7.71 | 5.83                   |

**Table E20. Average Water Quality Data for Stilwell Lake**

| Year | Temp (°F) | Conductivity (µmhos/cm) | pH   | Dissolved Oxygen (ppm) |
|------|-----------|-------------------------|------|------------------------|
| 2006 | 71.8      | ---                     | 7.44 | 7.18                   |
| 2007 | 72.23     | 80                      | 7.87 | 8.16                   |
| 2008 | 76.54     | ---                     | 7.95 | 7.58                   |

**Table E21. Average Water Quality Data for Trout Brook**

| Year | Temp (°F) | Conductivity (µmhos/cm) | Total Dissolved Solids (ppm) | pH   | Dissolved Oxygen (ppm) |
|------|-----------|-------------------------|------------------------------|------|------------------------|
| 1998 | ---       | 470                     | 310                          | ---  | ---                    |
| 2003 | 66.92     | 370                     | ---                          | 7.84 | ---                    |
| 2004 | ----      | 540                     | ---                          | 8.9  | ---                    |
| 2006 | 62.78     | ---                     | ---                          | 7.85 | 9.33                   |
| 2007 | 63        | 500                     | ---                          | 7.5  | ---                    |
| 2008 | 72.36     | 357                     | 176                          | 8.1  | 7.8                    |

Source: Linck, 1996a, 1999, 2001.

**Table E22. Average Water Quality Data for Weyants Pond**

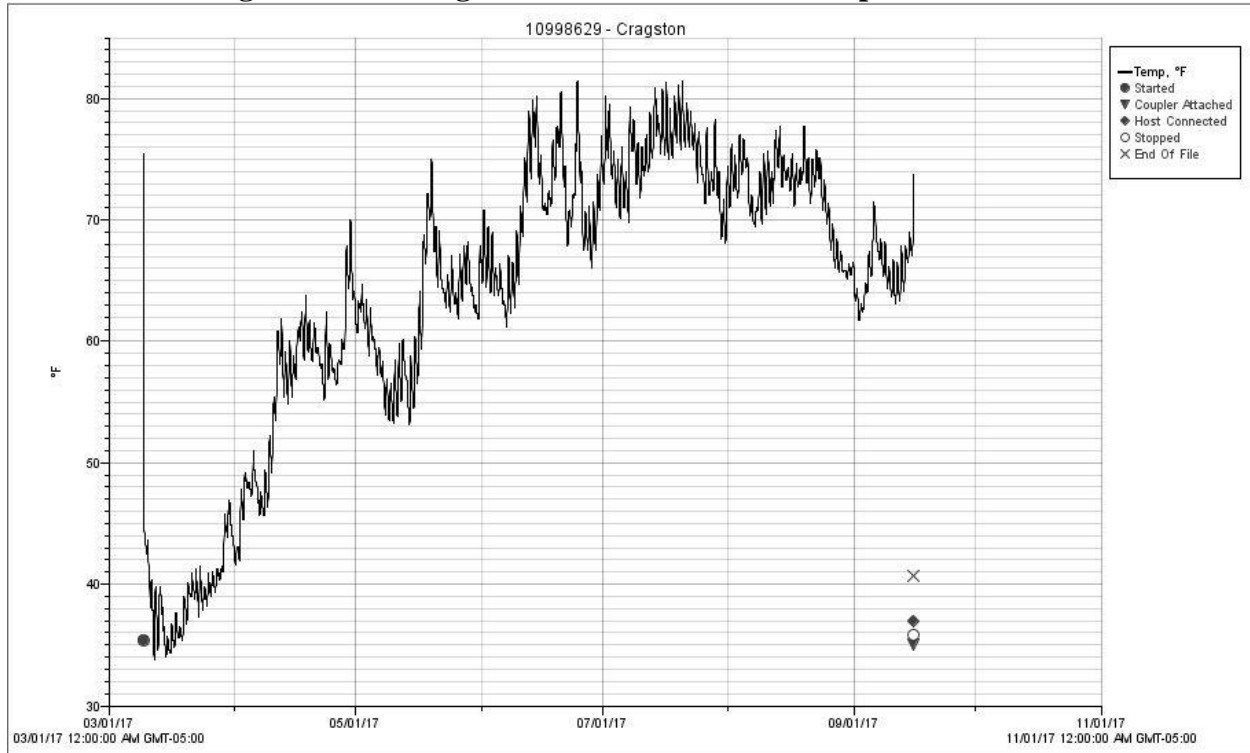
| Year | Temp (°F) | Conductivity (µmhos/cm) | pH   | Dissolved Oxygen (ppm) |
|------|-----------|-------------------------|------|------------------------|
| 2006 | 74.17     | ---                     | 5.93 | 4.78                   |
| 2007 | 70.12     | 26.67                   | 7.2  | 3.87                   |
| 2008 | 80.39     | ---                     | 6.66 | 2.14                   |

**Table E23. Average Water Quality Data for Wilkins Pond**

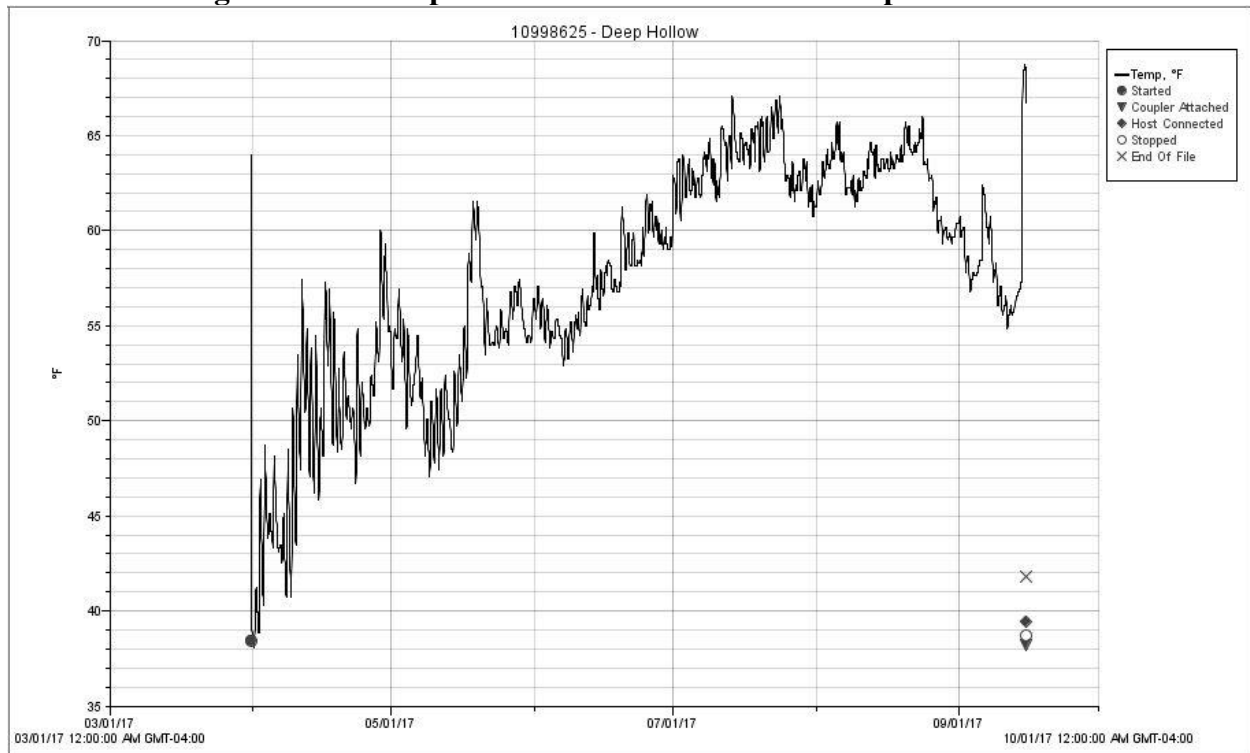
| Year | Temp (°F) | Conductivity (µmhos/cm) | Total Dissolved Solids (ppm) | pH         | Dissolved Oxygen (ppm) |
|------|-----------|-------------------------|------------------------------|------------|------------------------|
| 1987 | N/A       | N/A                     | N/A                          | 6.2 to 7.5 | 9.0                    |
| 1998 | 68        | 90                      | 60                           | 7.26       | N/A                    |
| 2000 | 64.2      | 70                      | 50                           | 6.58       | N/A                    |
| 2006 | 70.97     | ---                     | ---                          | 6.53       | 8.2                    |
| 2007 | 72.46     | 30                      | ---                          | 5.88       | 7.11                   |
| 2008 | 77.73     | ---                     | ---                          | 7.31       | 5.13                   |

Source: Linck 1999, 2001.

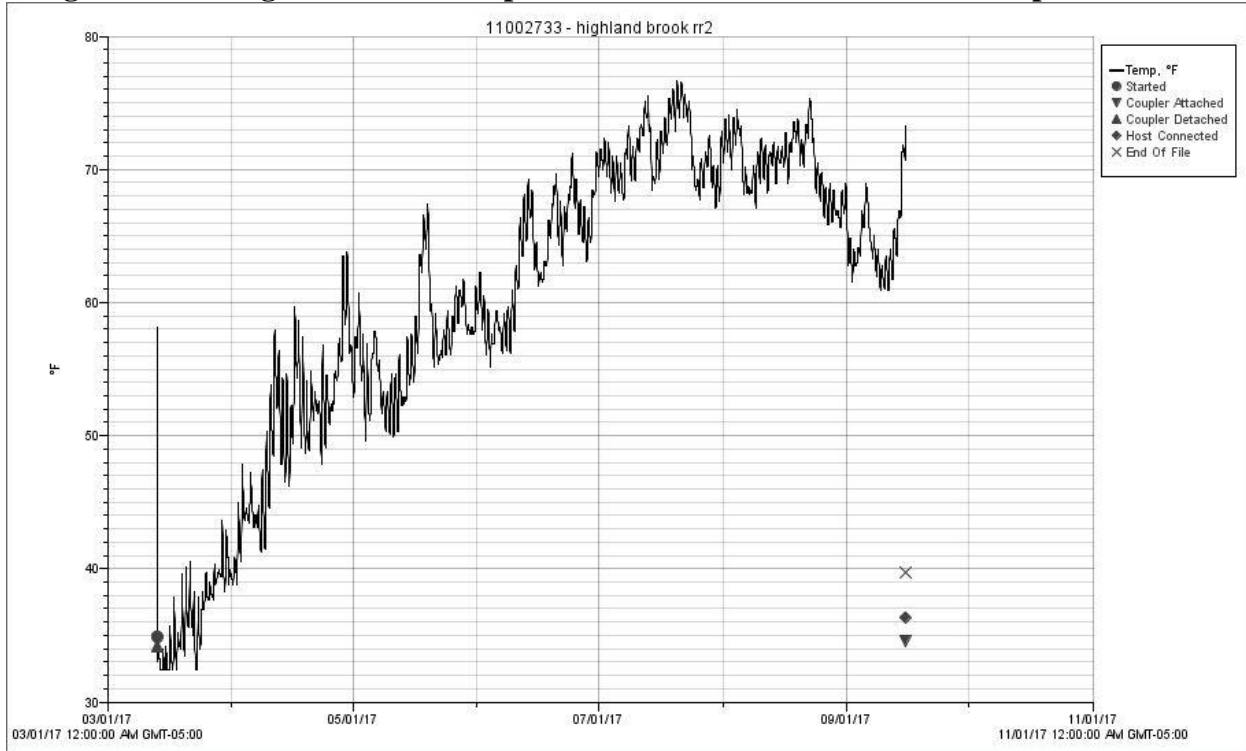
**Figure E1. Cragston Brook 2017 Water Temperature Data**



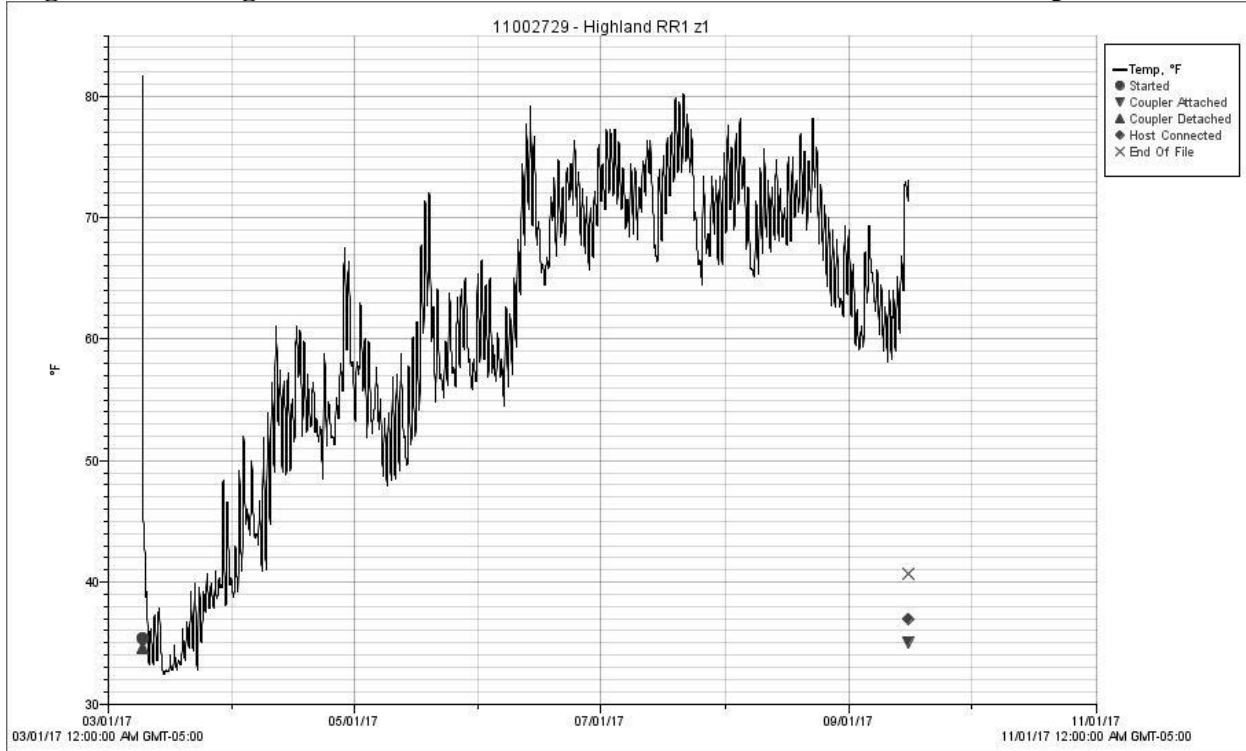
**Figure E2. Deep Hollow Brook 2017 Water Temperature Data**



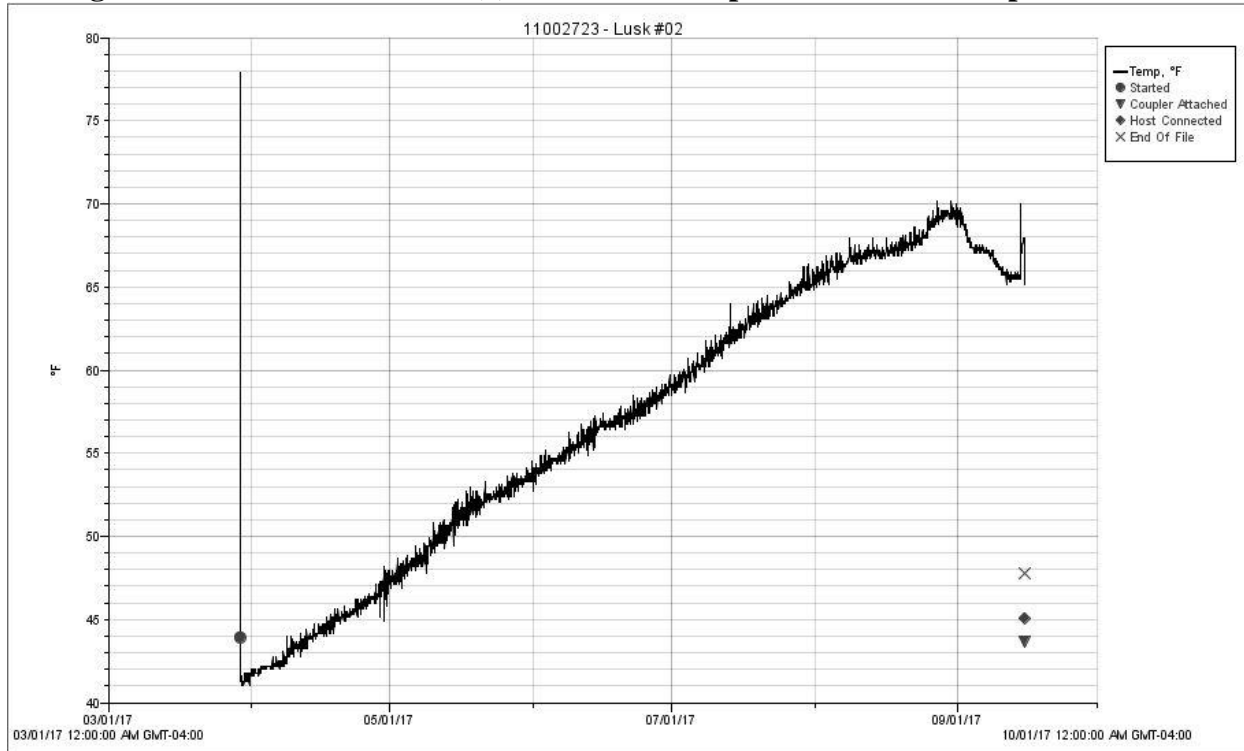
**Figure E3. Highland Brook – Upstream at Area Z2 – 2017 Water Temperature Data**



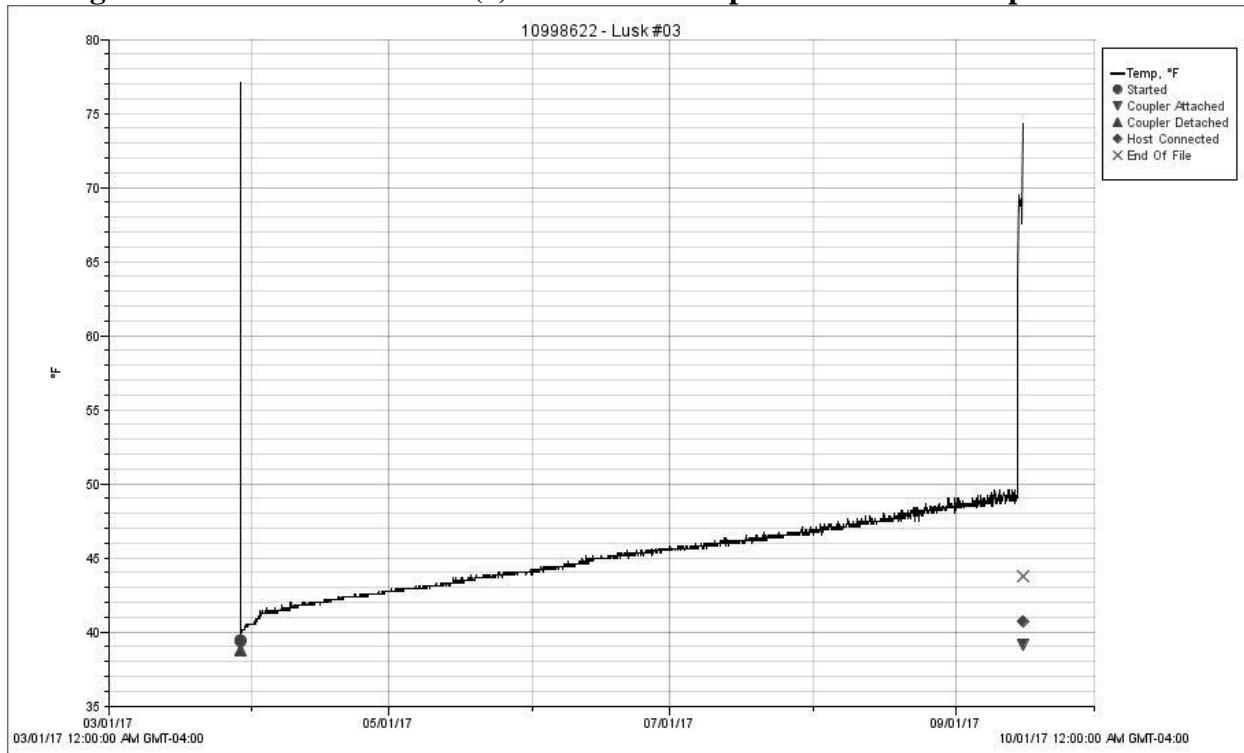
**Figure E4. Highland Brook – Downstream at Area Z1 – 2017 Water Temperature Data**



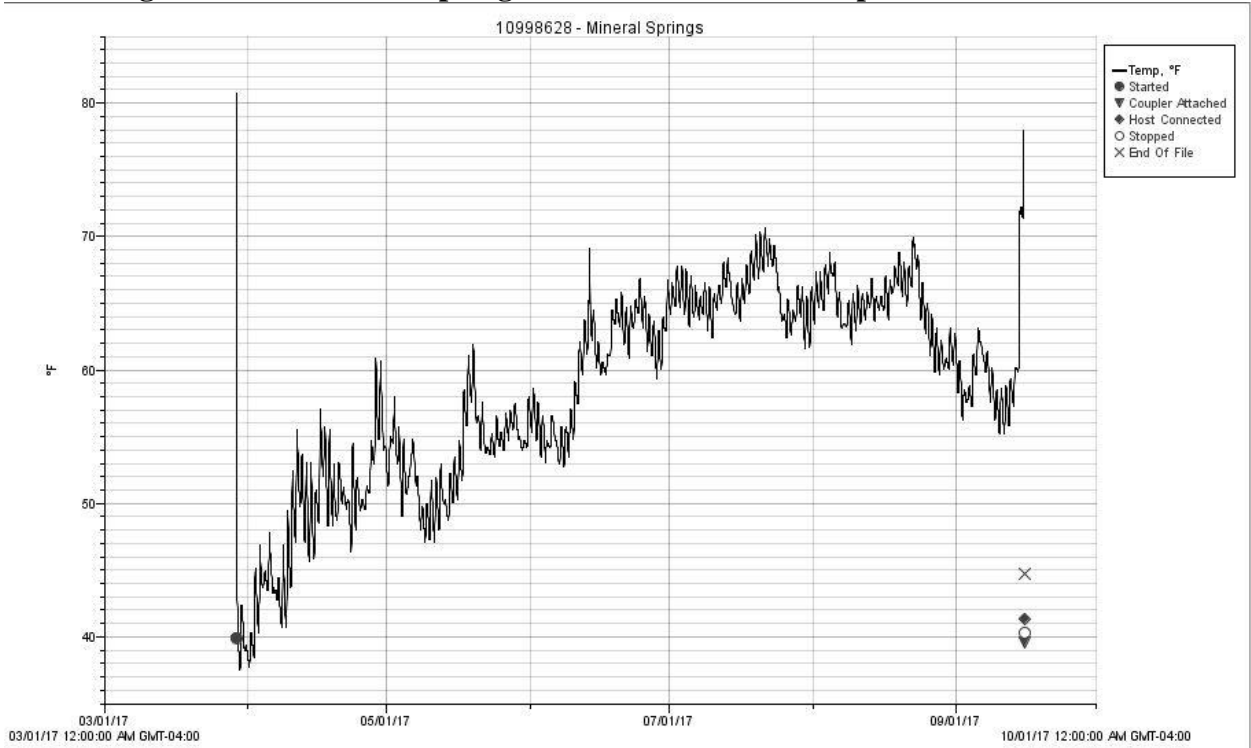
**Figure E5. Lusk Reservoir (2) - at 15 Feet Deep – 2017 Water Temperature Data**



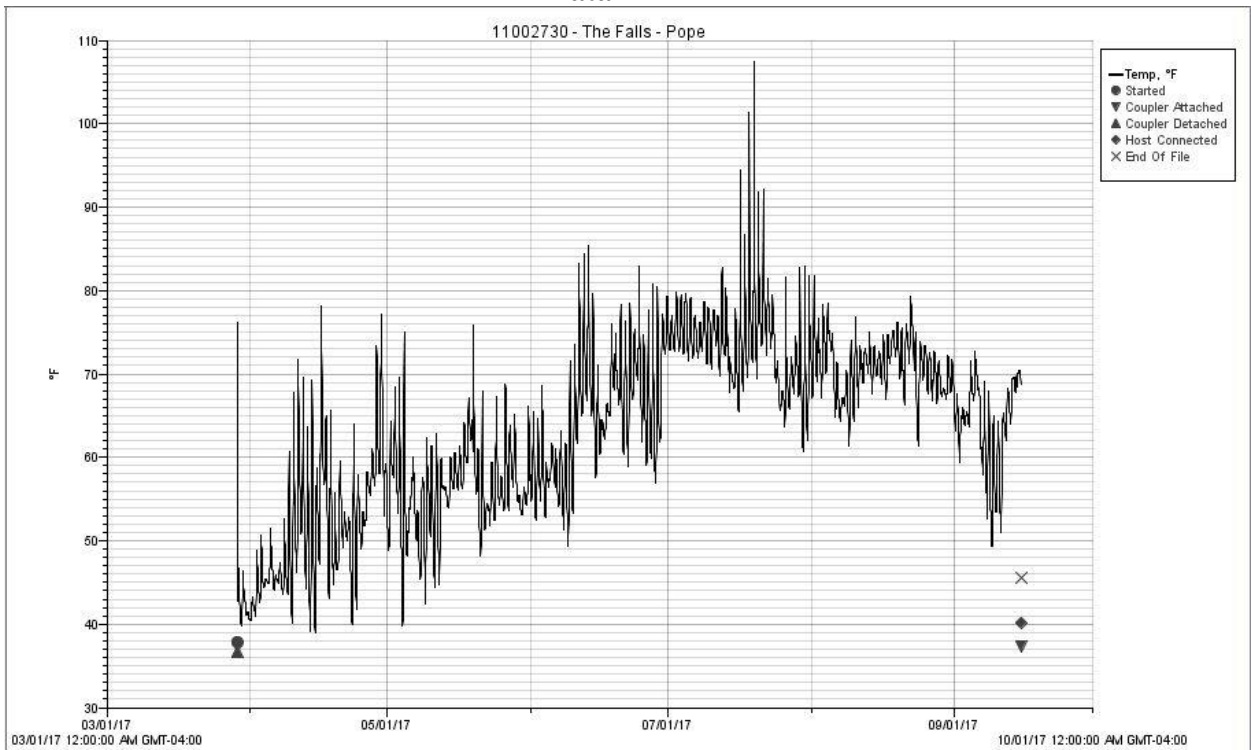
**Figure E6. Lusk Reservoir (3) - at 25 Feet Deep – 2017 Water Temperature Data**



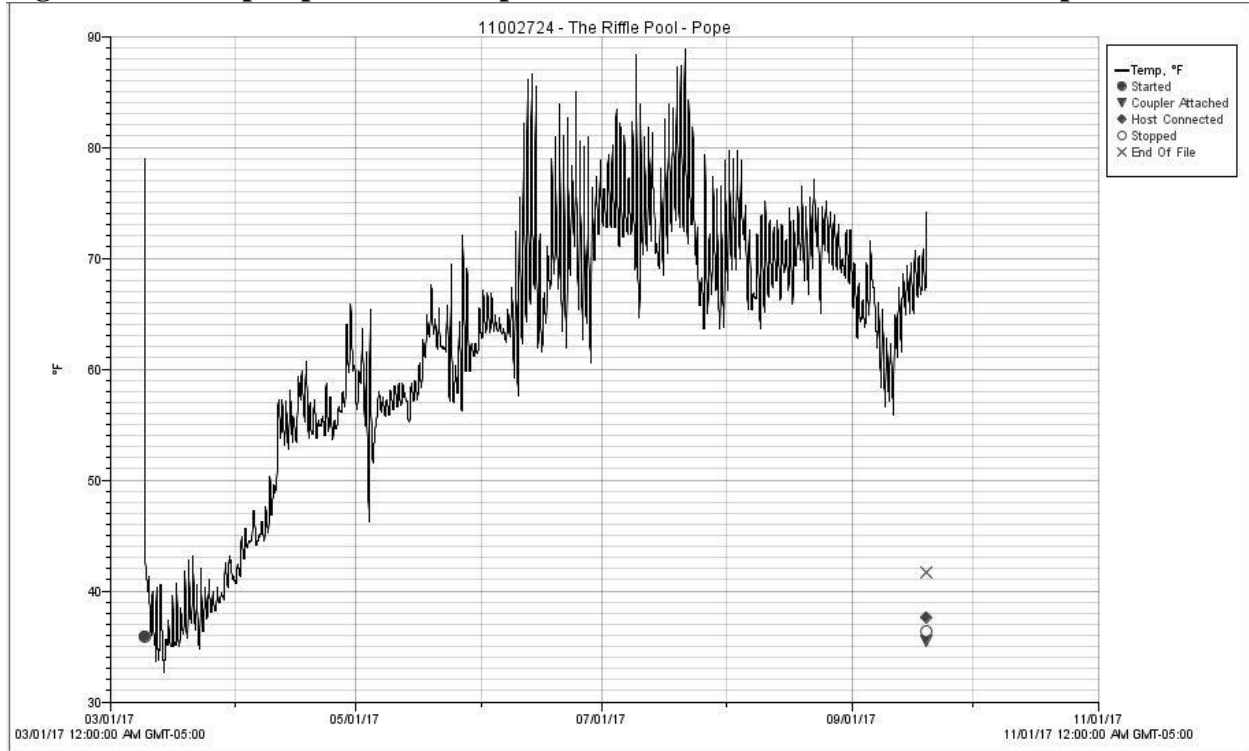
**Figure E7. Mineral Springs Brook 2017 Water Temperature Data**



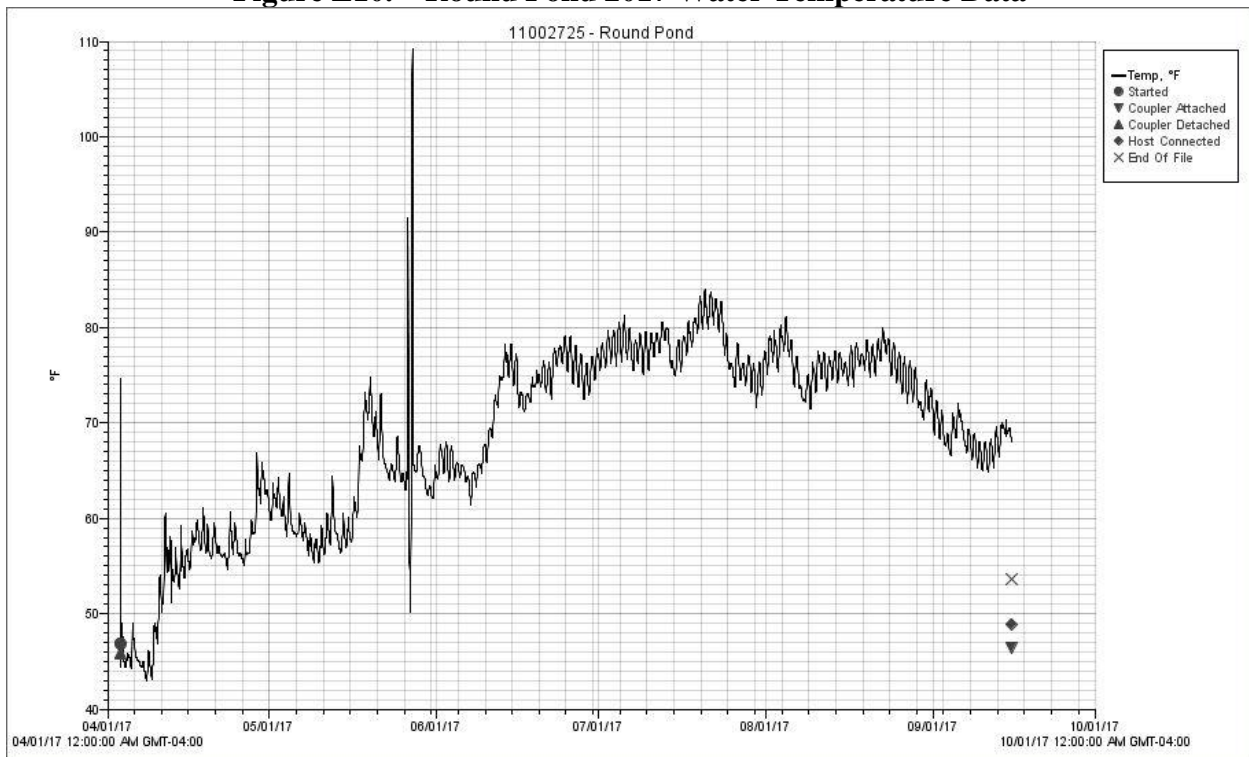
**Figure E8. Popolopen Brook – Downstream at The Falls – 2017 Water Temperature Data**



**Figure E9. Popolopen Brook – Upstream at Riffle Pool – 2017 Water Temperature Data**



**Figure E10. Round Pond 2017 Water Temperature Data**





## **Appendix F**

### **Wetlands at USAG WP**

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**Table G-1. Wetlands and Classifications at USAG WP**

| Wetland | Total Acreage | PFO Acreage | PSS Acreage | PEM Acreage |
|---------|---------------|-------------|-------------|-------------|
| WP-A1   | 3.4           |             | PSS 3.4     |             |
| WP-B1   | 11.4          | PFO 7.2     | PSS 2.3     | PEM 1.9     |
| WP-C1   | 8.22*         | PFO 8.22*   |             |             |
| WP-A2   | 0.4           | PFO 0.4     |             |             |
| WP-A3   | 0.1           | PFO 0.1     |             |             |
| WP-A4   | 0.7           | PFO 0.7     |             |             |
| WP-B4   | 0.9           | PFO 0.9     |             |             |
| WP-C4   | 4.3           | PFO 4.3     |             |             |
| WP-D4   | 1.4           | PFO 1.4     |             |             |
| WP-A5   | 0.7           |             |             | PEM 0.7     |
| WP-B5   | 0.20*         | PFO 0.20*   |             |             |
| WP-A8   | 0.26*         | PFO 2.6*    |             |             |
| WP-B8   | 0.12*         | PFO 0.12*   |             |             |
| WP-C8   | 0.53*         | PFO 0.53*   |             |             |
| WP-A9   | 1.4           | PFO 1.4     |             |             |
| WP-B9   | 0.23*         | PFO 0.23*   |             |             |
| WP-C9   | 0.84*         | PFO 0.84*   |             |             |
| WP-D9   | 0.2*          | PFO 0.2*    |             |             |
| WP-E9   | 0.34*         | PFO 0.34*   |             |             |
| WP-F9   | 0.32*         | PFO 0.32*   |             |             |
| WP-G9   | 0.16*         | PFO 0.16*   |             |             |
| WP-H9   | 1.45*         | PFO 1.45*   |             |             |
| WP-I9   | 0.17*         | PFO 0.17*   |             |             |
| WP-A10  | 18.8          | PFO 18.8    |             |             |
| WP-B10  | 1.4           | PFO 1.4     |             |             |
| WP-C10  | 0.7           | PFO 0.7     |             |             |
| WP-D10  | 0.14*         | PFO 0.14*   |             |             |
| WP-E10  | 0.45*         | PFO 0.45*   |             |             |
| WP-F10  | 0.67*         | PFO 0.67*   |             |             |
| WP-G10  | 0.67*         | PFO 0.67*   |             |             |
| WP-A11  | 9.6           | PFO 9.6     |             |             |
| WP-B11  | 2.1           |             | PSS 2.1     |             |
| WP-C11  | 2.0           | PFO 2.0     |             |             |
| WP-D11  | 0.6           | PFO 0.6     |             |             |
| WP-E11  | 0.9*          | PFO 0.9*    |             |             |
| WP-F11  | 0.48*         | PFO 0.48*   |             |             |
| WP-G11  | 0.14*         | PFO 0.14*   |             |             |
| WP-A14  | 0.7           | PFO 0.7     |             |             |
| WP-B14  | 0.3           | PFO 0.3     |             |             |
| WP-A15  | 29.0          | PFO 12.5    | PSS 5.0     | PEM 11.5    |
| WP-B15  | 4.7           | PFO 4.7     |             |             |
| WP-C15  | 0.49*         | PFO 0.49*   |             |             |
| WP-D15  | 0.3*          | PFO 0.3*    |             |             |
| WP-A16  | 1.8           | PFO 1.8     |             |             |
| WP-B16  | 4.8           | PFO 4.8     |             |             |
| WP-C16  | 0.5           | PFO 0.5     |             |             |
| WP-D16  | 0.52*         | PFO 0.52*   |             |             |
| WP-E16  | 0.16*         | PFO 0.16*   |             |             |
| WP-F16  | 0.11*         | PFO 0.11*   |             |             |
| WP-G16  | 0.21*         | PFO 0.21*   |             |             |

| Wetland | Total Acreage | PFO Acreage | PSS Acreage | PEM Acreage |
|---------|---------------|-------------|-------------|-------------|
| WP-A17  | 3.4           | PFO 3.4     |             |             |
| WP-B17  | 13.1          | PFO 8.2     | PSS 4.9     |             |
| WP-A21  | 7.1           | PFO 4.5     |             | PEM 2.6     |
| WP-B21  | 0.30*         | PFO 0.30*   |             |             |
| WP-C21  | 0.07*         | PFO 0.07*   |             |             |
| WP-A22  | 1.8           | PFO 1.8     |             |             |
| WP-B22  | 1.7           |             | PSS 0.9     | PEM 0.8     |
| WP-A23  | 0.3           | PFO 0.3     |             |             |
| WP-B23  | 4.42*         |             |             | PEM 4.42*   |
| WP-A24  | 10.4          |             |             | PEM 10.4    |
| WP-B24  | 16.6          | PFO 8.0     |             | PEM 8.6     |
| WP-A26  | 21.0          | PFO 21.0    |             |             |
| WP-B26  | 9.19*         | PFO 9.19*   |             |             |
| WP-A28  | 2.4           | PFO 2.4     |             |             |
| WP-B28  | 0.9           | PFO 0.9     |             |             |
| WP-C28  | 0.23*         | PFO 0.23*   |             |             |
| WP-A29  | 1.5           | PFO 1.5     |             |             |
| WP-B29  | 0.7           | PFO 0.7     |             |             |
| WP-A30  | 0.19*         | PFO 0.19*   |             |             |
| WP-A31  | 1.9           | PFO 1.9     |             |             |
| WP-B31  | 0.24*         | PFO 0.24*   |             |             |
| WP-C31  | 0.22*         | PFO 0.22*   |             |             |
| WP-A32  | 15.35*        | PFO 15.35*  |             |             |
| WP-B32  | 7.30*         |             |             | PEM 7.30*   |
| WP-C32  | 27.94*        | PFO 27.94*  |             |             |
| WP-D32  | 1.15*         |             |             | PEM 1.15*   |
| WP-E32  | 0.29*         | PFO 0.29*   |             |             |
| WP-F32  | 0.54*         | PFO 0.54*   |             |             |
| WP-A33  | 3.2           | PFO 3.2     |             |             |
| WP-B33  | 6.2           | PFO 5.7     |             | PEM 0.5     |
| WP-C33  | 0.14*         | PFO 0.14*   |             |             |
| WP-A34  | 37.5          | PFO 7.9     | PSS 9.9     | PEM 19.7    |
| WP-B34  | 6.4           | PFO 6.4     |             |             |
| WP-C34  | 2.0           | PFO 2.0     |             |             |
| WP-D34  | 1.0           | PFO 1.0     |             |             |
| WP-A35  | 16.2          | PFO 6.5     |             | PEM 9.7     |
| WP-B35  | 1.0           | PFO 1.0     |             |             |
| WP-C35  | 3.2           | PFO 2.9     |             | PEM 0.3     |
| WP-D35  | 0.43*         | PFO 0.43*   |             |             |
| WP-A36  | 2.5           |             |             | PEM 2.5     |
| WP-B36  | 1.9           | PFO 1.9     |             |             |
| WP-C36  | 0.2           | PFO 0.2     |             |             |
| WP-D36  | 0.16*         | PFO 0.16*   |             |             |
| WP-A37  | 14.6          | PFO 12.2    | PSS 1.9     | PEM 0.5     |
| WP-B37  | 20.0          | PFO 20.0    |             |             |
| WP-C37  | 0.3           | PFO 0.3     |             |             |
| WP-D37  | 0.4           | PFO 0.4     |             |             |
| WP-E37  | 0.66*         | PFO 0.66*   |             |             |
| WP-F37  | 0.14*         | PFO 0.14*   |             |             |
| WP-F37  | 0.28*         | PFO 0.28*   |             |             |
| WP-A38  | 9.2           | PFO 1.9     |             | PEM 7.3     |

| Wetland | Total Acreage | PFO Acreage | PSS Acreage | PEM Acreage |
|---------|---------------|-------------|-------------|-------------|
| WP-B38  | 1.7           | PFO 1.7     |             |             |
| WP-A40  | 1.92*         |             |             | PEM 1.92*   |
| WP-A41  | 5.9           | PFO 3.9     |             | PEM 2.0     |
| WP-B41  | 0.31*         | PFO 0.31*   |             |             |
| WP-A42  | 0.2           | PFO 0.2     |             |             |
| WP-B42  | 0.2           | PFO 0.2     |             |             |
| WP-C42  | 0.5           | PFO 0.5     |             |             |
| WP-D42  | 0.45*         | PFO 0.45*   |             |             |
| WP-E42  | 0.17*         | PFO 0.17*   |             |             |
| WP-F42  | 1.82*         | PFO 0.03*   | PSS 1.79*   |             |
| WP-G42  | 0.3*          | PFO 0.3*    |             |             |
| WP-A43  | 25.1          | PFO 2.2     | PSS 9.5     | PEM 13.4    |
| WP-B43  | 0.2           | PFO 0.2     |             |             |
| WP-C43  | 0.31*         |             | PSS 0.31*   |             |
| WP-D43  | 0.27*         | PFO 0.27*   |             |             |
| WP-A44  | 0.58*         | PFO 0.58*   |             |             |
| WP-A45  | 10.21*        |             |             | PEM 10.21*  |
| WP-B45  | 0.73*         |             |             | PEM 0.73*   |
| WP-C45  | 5.4*          | PFO 5.4*    |             |             |
| WP-A46  | 2.6           | PFO 2.5     |             | PEM 0.1     |
| WP-B46  | 0.5           | PFO 0.5     |             |             |
| WP-A47  | 9.3           | PFO 5.6     |             | PEM 3.7     |
| WP-B47  | 0.17*         | PFO 0.17*   |             |             |
| WP-C47  | 0.03*         | PFO 0.03*   |             |             |
| WP-D47  | 0.19*         | PFO 0.19*   |             |             |
| WP-E47  | 0.11*         | PFO 0.11*   |             |             |
| WP-A48  | 8.4           | PFO 8.4     |             |             |
| WP-B48  | 2.0           | PFO 2.0     |             |             |
| WP-C48  | 0.52*         | PFO 0.52*   |             |             |
| WP-A49  | 7.5           | PFO 3.3     | PSS 1.6     | PEM 2.6     |
| WP-B49  | 0.4           | PFO 0.4     |             |             |
| WP-C49  | 0.35*         |             |             | PEM 0.35*   |
| WP-D49  | 0.61*         | PFO 0.61*   |             |             |
| WP-E49  | 0.14*         | PFO 0.14*   |             |             |
| WP-F49  | 0.16*         | PFO 0.16*   |             |             |
| WP-G49  | 0.23*         | PFO 0.23*   |             |             |
| WP-A51  | 1.5           | PFO 1.5     |             |             |
| WP-B51  | 0.2*          | PFO 0.2*    |             |             |
| WP-C51  | 0.68*         | PFO 0.68*   |             |             |
| WP-D51  | 0.12*         | PFO 0.12*   |             |             |
| WP-A52  | 1.5           | PFO 1.5     |             |             |
| WP-B52  | 1.5           | PFO 1.5     |             |             |
| WP-C52  | 0.7           | PFO 0.7     |             |             |
| WP-D52  | 0.5           | PFO 0.4     | PSS 0.1     |             |
| WP-A53  | 0.8           | PFO 0.8     |             |             |
| WP-B53  | 1.9           | PFO 1.9     |             |             |
| WP-C53  | 71.6          | PFO 19.5    | PSS 21.4    | PEM 30.7    |
| WP-D53  | 3.64*         | PFO 3.01*   |             | PEM 0.63*   |
| WP-E53  | 0.83*         | PFO 0.83*   |             |             |
| WP-F53  | 1.02*         |             |             | PEM 1.02*   |
| WP-A54  | 0.8           |             |             | PEM 0.8     |

| Wetland | Total Acreage | PFO Acreage | PSS Acreage | PEM Acreage |
|---------|---------------|-------------|-------------|-------------|
| WP-A56  | 0.77*         |             | PSS 0.77*   |             |
| WP-A57  | 47.60*        |             |             | PEM 47.60*  |
| WP-A58  | 1.8           |             | PSS 1.8     |             |
| WP-A59  | 3.0           |             |             | PEM 3.0     |
| WP-B59  | 1.3           |             |             | PEM 1.3     |
| WP-C59  | 2.5           |             | PSS 2.5     |             |
| WP-D59  | 0.6           |             |             | PEM 0.6     |
| WP-E59  | 0.7           |             | PSS 0.7     |             |
| WP-F59  | 5.1           | PSS 4.4     |             | PEM 0.7     |
| WP-G59  | 0.3           |             | PEM/PSS 0.3 |             |
| WP-H59  | 0.44*         | PFO 0.44*   |             |             |
| WP-A60  | 0.5           | PFO 0.5     |             |             |
| WP-B60  | 1.9           | PFO 1.6     |             | PEM 0.3     |
| WP-C60  | 2.3           | PFO 1.5     |             | PEM 0.8     |
| WP-D60  | 1.0           | PFO 1.0     |             |             |
| WP-E60  | 1.9           |             |             | PEM 1.9     |
| WP-F60  | 0.09*         | PFO 0.09*   |             |             |
| WP-A61  | 0.63*         | PFO 0.63*   |             |             |
| WP-A63  | 0.3           | PFO 0.3     |             |             |
| WP-B63  | 0.05*         | PFO 0.05*   |             |             |
| WP-A64  | 0.43*         | PFO 0.43*   |             |             |
|         |               |             |             |             |
| WP-B64  | 0.09*         | PFO 0.09*   |             |             |
| WP-A65  | 1.7           |             |             | PEM 1.7     |
| WP-B65  | 0.39*         | PFO 0.39*   |             |             |
| WP-C65  | 0.58*         |             |             | PEM 0.58*   |
| WP-D65  | 0.4*          |             | PSS 0.4*    |             |
| WP-E65  | 0.06*         | PFO 0.06*   |             |             |
| WP-F65  | 0.44*         | PFO 0.44*   |             |             |
| WP-A66  | 1.14*         |             |             | PEM 1.14*   |
| WP-B66  | 1.25*         |             | PSS 1.25*   |             |
| WP-A67  | 0.29*         | PFO 0.29*   |             |             |
| WP-B67  | 0.15*         | PFO 0.15*   |             |             |
| WP-C67  | 0.13*         | PFO 0.13*   |             |             |
| WP-D67  | 0.48*         | PFO 0.48*   |             |             |
| WP-A68  | 57.76*        |             | PSS 57.76*  |             |
| WP-B68  | 0.69*         | PFO 0.69*   |             |             |
| WP-C68  | 0.41*         | PFO 0.41*   |             |             |
| WP-A69  | 2.15*         |             |             | PEM 2.15*   |
| WP-B69  | 0.5*          | PFO 0.5*    |             |             |
| WP-C69  | 0.58*         |             | PSS 0.58*   |             |
| WP-D69  | 0.16*         |             |             | PEM 0.16*   |
| WP-E69  | 8.21*         | PFO 8.21*   |             |             |
| WP-A70  | 9.2           | PFO 0.7     |             | PEM 8.5     |
| WP-B70  | 0.27*         | PFO 0.27*   |             |             |
| WP-C70  | 0.11*         | PFO 0.11*   |             |             |
| WP-D70  | 0.36*         | PFO 0.36*   |             |             |
| WP-E70  | 6.29*         |             | PSS 6.29*   |             |
| WP-F70  | 0.26*         |             |             | PEM 0.26*   |
| WP-A71  | 7.5           | PFO 3.9     | PSS 2.3     | PEM 1.3     |
| WP-B71  | 0.13*         | PFO 0.13*   |             |             |

| Wetland | Total Acreage | PFO Acreage | PSS Acreage | PEM Acreage |
|---------|---------------|-------------|-------------|-------------|
| WP-D71  | 0.75*         | PFO 0.75*   |             |             |
| WP-E71  | 0.37*         | PFO 0.37*   |             |             |
| WP-A72  | 0.37*         | PFO 0.37*   |             |             |
| WP-B72  | 0.91*         | PFO 0.91*   |             |             |
| WP-A73  | 0.6           |             | PSS 0.6     |             |
| WP-A75  | 0.7           |             | PEM/PSS 0.7 |             |
| WP-B75  | 0.79*         | PFO 0.79*   |             |             |
| WP-A76  | 1.9           | PFO 1.9     |             |             |
| WP-B76  | 20.5          | PFO 16      | PEM/PSS 3.3 | PEM 0.8     |
| WP-A77  | 0.85*         | PFO 0.85*   |             |             |
| WP-A78  | 2.6           | PFO 0.6     |             | PEM 2.0     |
| WP-B78  | 7.47*         |             |             | PEM 7.47*   |
| WP-C78  | 24.79*        |             |             | PEM 24.79*  |
| WP-D78  | 0.55*         | PFO 0.55*   |             |             |
| WP-A79  | 0.52*         | PFO 0.52*   |             |             |
| WP-B79  | 2.57*         | PFO 2.57*   |             |             |
| WP-A80  | 17.9          | PFO 6.      | PSS 1.5     | PEM 9.6     |
| WP-B80  | 0.2*          | PFO 0.2*    |             |             |
| WP-A81  | 0.4           | PFO 0.4     |             |             |
| WP-B81  | 3.0           | PFO 3.0     |             |             |
| WP-C81  | 2.2           | PFO 1.4     |             | PEM 0.8     |
| WP-D81  | 0.72*         | PFO 0.72*   |             |             |
| WP-E81  | 0.27*         | PFO 0.27*   |             |             |
| WP-F81  | 0.71*         | PFO 0.71*   |             |             |
| WP-G81  | 0.59*         | PFO 0.59*   |             |             |
| WP-H81  | 0.27*         |             |             | PEM 0.27*   |
| WP-A82  | 0.4           | PFO 0.4     |             |             |
| WP-B82  | 0.48*         | PFO 0.48*   |             |             |
| WP-C82  | 0.26*         | PFO 0.26*   |             |             |
| WP-A84  | 6.4           | PFO 5.5     | PSS 0.9     |             |
| WP-B84  | 0.7           | PFO 0.7     |             |             |
| WP-C84  | 4.38*         | PFO 4.38*   |             |             |
| WP-D84  | 0.08*         |             |             | PEM 0.08*   |
| WP-E84  | 3.66*         |             | PSS 3.66*   |             |
| WP-F84  | 0.27*         | PFO 0.27*   |             |             |
| WP-G84  | 2.15*         |             | PSS 2.15*   |             |
| WP-A85  | 0.64*         |             | PSS 0.64*   |             |
| WP-A86  | 0.35*         | PFO 0.35*   |             |             |
| WP-A87  | 1.44*         | PFO 1.44*   |             |             |
| WP-A90  | 1.8           | PFO 1.2     |             | PEM 0.6     |
| WP-B90  | 5.3           | PFO 3.2     |             | PEM 2.1     |
| WP-C90  | 0.18*         | PFO 0.18*   |             |             |
| WP-D90  | 0.18*         | PFO 0.18*   |             |             |
| WP-E90  | 0.35*         | PFO 0.35*   |             |             |
| WP-A91  | 2.3           | PFO 1.8     |             |             |
| WP-B91  | 0.1           |             | PEM/PSS 0.1 |             |
| WP-C91  | 0.3           |             | PEM/PSS 0.3 |             |
| WP-D91  | 0.1           | PFO 0.1     |             |             |
| WP-A93  | 0.3           | PFO 0.3     |             |             |
| WP-A94  | 9.8           | PFO 4.2     | PSS 5.6     |             |
| WP-B94  | 1.1           | PFO 1.1     |             |             |

| Wetland   | Total Acreage | PFO Acreage | PSS Acreage | PEM Acreage  |
|-----------|---------------|-------------|-------------|--------------|
| WP-C94    | 0.29*         | PFO 0.29*   |             |              |
| WP-D94    | 0.3*          | PFO 0.3*    |             |              |
| WP-A95    | 3.8           | PFO 3.8     |             |              |
| WP-B95    | 2.4           | PFO 2.4     |             |              |
| WP-C95    | 0.7           |             | PSS 0.5     | PEM 0.       |
| WP-D95    | 1.4           | PFO 1.4     |             |              |
| WP-E95    | 0.16*         | PFO 0.16*   |             |              |
| WP-A96    | 2.0           | PFO 0.5     |             | PEM 1.5      |
| WP-B96    | 6.1           | PFO 3.6     |             | PEM 2.5      |
| WP-A97    | 0.4           | PFO 0.4     |             |              |
| WP-B97    | 1.5           | PFO 1.5     |             |              |
| WP-C97    | 0.5           | PFO 0.5     |             |              |
| WP-D97    | 1.4           | PFO 1.4     |             |              |
| WP-E97    | 0.36*         | PFO 0.36*   |             |              |
| WP-F97    | 0.03*         | PFO 0.03*   |             |              |
| WP-A101   | 0.22*         | PFO 0.22*   |             |              |
| WP-CI-A   | 0.8           | PFO 0.8     |             |              |
| WP-CI-B   | 2.6           | PSS 2.6     |             |              |
| WP-CI-C   | 32.1          | PFO 7.1     | PSS 9.9     | PEM/PSS 15.1 |
| WP-CI-D   | 0.8           | PEM 0.8     |             |              |
| WP-CI-E   | 0.2           | PFO 0.2     |             |              |
| WP-CI-F   | 0.3           | PFO 0.3     |             |              |
| WP-CI-G   | 0.2           | PSS 0.2     |             |              |
| WP-AC-250 | 21.9          | PFO 18.4    |             | PEM 3.5      |
| WP-D-250  | 1.7           | PFO 1.7     |             |              |
| WP-E-250  | 0.2           | PFO 0.2     |             |              |
| WP-F-250  | 2.2           | PEM 1.4     | PSS 0.8     |              |
| WP-G-250  | 32.7          | PFO 21.7    | PSS 1.1     | PEM 9.9      |
| WP-H-250  | 3.8           | PFO 3.1     | PSS 0.7     |              |
| WP-I-250  | 1.1           | PFO 1.1     |             |              |
| WP-J-250  | 3.1           | PFO 1.5     | PSS 1.6     |              |
| WP-K-250  | 2.5           | PFO 2.5     |             |              |
| WP-L-250  | 3.1           | PFO 1.5     | PSS 1.6     |              |
| WP-M-250  | 0.5           | PSS 0.5     |             |              |
| WP-N-250  | 1.5           | PFO 1.5     |             |              |
| WP-O-250  | 0.1*          |             | PSS 0.1*    |              |
| WP-P-250  | 0.14*         |             | PSS 0.14*   |              |
| WP-Q-250  | 0.27*         | PFO 0.27*   |             |              |
| WP-R-250  | 0.81*         | PFO 0.81*   |             |              |
| WP-S-250  | 0.41*         | PFO 0.41*   |             |              |
| WP-T-250  | 0.15*         | PFO 0.15*   |             |              |
| WP-U-250  | 0.1*          | PFO 0.1*    |             |              |
| WP-V-250  | 0.31*         | PFO 0.31*   |             |              |
| WP-W-250  | 0.52*         | PFO 0.52*   |             |              |

\* **Estimated Acreages**<sup>1</sup> PFO=Palustrine Forested Wetland, PEM=Palustrine Emergent Wetland, PSS=Palustrine Scrub Shrub, PEM/PSS=Palustrine Emergent/ Palustrine Scrub Shrub Wetland  
Source: USACE 1993

USACE (United States Army Corps of Engineers). 1993. *West Point Wetland Inventory, Summer 1993*. Prepared for Natural Resources Office, United States Military Academy. Prepared by the United States Army Corps of Engineers, New York District, New York, NY



## **Appendix G**

### **Natural Heritage Vegetative Communities of USAG WP**

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**Table H-1. Natural Heritage Vegetative Communities of USAG WP**

| Plant Community                            | Dominant Species  | Sub-dominant Species   | % cover |
|--|---|--|---------|
| <b>Open Uplands</b>                        |   |  |         |
| Rocky Summit Grassland                     | little bluestem ( <i>Schizachyrium scoparium</i> )<br>big bluestem ( <i>Andropogon gerardii</i> )<br>broomsedge ( <i>Andropogon virginicus</i> )<br>poverty-grass ( <i>Danthonia spicata</i> )<br>Indiangrass ( <i>Sorghastrum nutans</i> )   | lowbush blueberry ( <i>Vaccinium angustifolium</i> )<br>scrub oak ( <i>Quercus ilicifolia</i> )<br>shadbush ( <i>Amelanchier stolonifera</i> )   | <1%     |
| Cliff Community                            | rock polypody ( <i>Polypodium virginianum</i> )<br>common hairgrass ( <i>Deschampsia flexuosa</i> )<br>black chokeberry ( <i>Aronia melanocarpa</i> )<br>mountain laurel ( <i>Kalmia latifolia</i> )  | hemlock ( <i>Tsuga canadensis</i> )  | <1%     |
| Successional Fern Meadow                   | New York fern ( <i>Thelypteris noveboracensis</i> )<br>hay-scented fern ( <i>Dennstaedtia punctilobula</i> )<br>blueberry ( <i>Vaccinium</i> sp.)   |  | <1%     |
| Successional Old Field                     | goldenrods ( <i>Solidago</i> sp.)<br>bluegrasses ( <i>Poa</i> sp.)<br>smooth brome ( <i>Bromus inermis</i> )<br>common chickweed ( <i>Cerastium arvense</i> )<br>New England aster ( <i>Aster novae-angliae</i> )<br>hawkweeds ( <i>Hieracium</i> sp.)  | Some shrubs  | 1%      |
| Successional Shrubland                     | gray dogwood ( <i>Cornus foemina</i> sp. <i>acemosa</i> )<br>multiflora rose ( <i>Rosa multiflora</i> )<br>raspberry ( <i>Rubus</i> sp.)<br>hawthorn ( <i>Crateagus</i> sp.)<br>sumac ( <i>Rhus</i> sp.)<br>Japanese barberry ( <i>Berberis thunbergii</i> )  |  | <1%     |
| <b>Barrens and Woodlands</b>               |   |  |         |
| Burn Barrens-Oak: Hickory Ridgetop Savanna | oak ( <i>Quercus</i> sp.)<br>hickory ( <i>Carya</i> sp.)  | raspberry ( <i>Rubus</i> sp.)<br>black huckleberry ( <i>Gaylussacia baccata</i> )<br>blueberry ( <i>Vaccinium</i> sp.)<br>black birch ( <i>Betula lenta</i> )<br>black cherry ( <i>Prunus serotina</i> )<br>aspen ( <i>Populus</i> sp.)<br>shadbush ( <i>Amelanchier stolonifera</i> ) | 2%      |
| Acidic Talus Slope Woodland                | sugar maple ( <i>Acer saccharum</i> )<br>white ash ( <i>Fraxinus americana</i> )<br>basswood ( <i>Tilia americana</i> )<br>hop hornbeam ( <i>Ostrya virginiana</i> )<br>chestnut oak ( <i>Quercus muehlenbergii</i> )<br>red oak ( <i>Quercus rubra</i> )<br>white oak ( <i>Quercus alba</i> )<br>striped maple ( <i>Acer pensylvanicum</i> )<br>Christmas fern ( <i>Polystichum acrostichoides</i> )<br>rock polypody ( <i>Polypodium virginianum</i> )<br>Virginia creeper ( <i>Parthenocissus vitacea</i> )<br>bloodroot ( <i>Sanguinaria canadensis</i> )<br>baneberry ( <i>Actaea</i> sp.) |  | <1%     |
| Pitch Pine-Oak-Heath Rocky Summit          | pitch pine ( <i>Pinus rigida</i> )<br>chestnut oak ( <i>Quercus montana</i> )<br>scrub oak ( <i>Quercus ilicifolia</i> )<br>blueberry ( <i>Vaccinium</i> sp.)<br>black huckleberry ( <i>Gaylussacia baccata</i> )<br>sweetfern ( <i>Comptonia peregrina</i> )<br>Pennsylvania sedge ( <i>Carex pensylvanica</i> )<br>poverty-grass ( <i>Danthonia spicata</i> )<br>common hairgrass ( <i>Deschampsia flexuosa</i> )<br><i>Cetraria arenaria</i>   |  | <1%     |

| Plant Community                | Dominant Species  | Sub-dominant Species   | % cover |
|--------------------------------|---|--|---------|
|                                | <i>Cladonia</i> sp.   |  |         |
| Rich Rocky Woodland            | white ash ( <i>Fraxinus americana</i> )<br>pignut hickory ( <i>Carya glabra</i> )<br>black cherry ( <i>Prunus serotina</i> )<br>hop hornbeam cress ( <i>Barbarea</i> sp.)<br>dwarf dandelion ( <i>Krigia virginica</i> )<br>common wood sedge ( <i>Carex albicans</i> var. <i>albicans</i> )  | yellow harlequin ( <i>Corydalis flavula</i> )<br>dittany ( <i>Cunila organoides</i> )<br>violet bush-clover ( <i>Lespedeza violacea</i> )<br>slender knotweed ( <i>Polygonum tenue</i> )   | <1%     |
| <b>Forested Uplands</b>        |   |  |         |
| Appalachian Oak-Hickory Forest | northern red oak ( <i>Quercus rubra</i> var. <i>borealis</i> )<br>black oak ( <i>Quercus veluntia</i> )<br>scarlet oak ( <i>Quercus coccinea</i> )<br>Pignut hickory pignut hickory ( <i>Carya glabra</i> )<br>flowering dogwood ( <i>Cornus florida</i> )<br>witch hazel ( <i>Hamamelis virginiana</i> )<br>shadbush ( <i>Amelanchier stolonifera</i> )<br>choke cherry ( <i>Prunus virginiana</i> )<br>black huckleberry ( <i>Gaylussacia baccata</i> )<br>sweetfern ( <i>Comptonia peregrina</i> )<br>wintergreen ( <i>Gaultheria procumbens</i> )<br>sedge <i>Carex albicans</i> var. <i>albicans</i> | hickory ( <i>Carya</i> sp.)<br>red oak ( <i>Quercus rubra</i> )<br>white oak ( <i>Quercus alba</i> )<br>chestnut oak ( <i>Quercus montana</i> )<br>red maple ( <i>Acer rubrum</i> )<br>ebony spleenwort ( <i>Asplenium platyneuron</i> )<br>prickly pear cactus ( <i>Opuntia humifusa</i> )<br>polypody ferns ( <i>Polypodium</i> sp.) | 46%     |
| Chestnut Oak Forest            | chestnut oak ( <i>Quercus montana</i> )<br>red oak ( <i>Quercus rubra</i> )<br>black huckleberry ( <i>Gaylussacia baccata</i> )<br>mountain laurel ( <i>Kalmia latifolia</i> )<br>blueberry ( <i>Vaccinium</i> sp.)<br>sedge <i>Carex albicans</i> var. <i>albicans</i><br>wintergreen ( <i>Gaultheria procumbens</i> )<br>moss <i>Leucobryum glaucum</i>   | white oak ( <i>Quercus alba</i> )<br>black oak ( <i>Quercus velutina</i> )<br>red maple ( <i>Acer rubrum</i> )   | 12%     |
| Appalachian Oak-Pine Forest    | black oak ( <i>Quercus veluntia</i> )<br>chestnut oak ( <i>Quercus montana</i> )<br>red oak ( <i>Quercus rubra</i> )<br>white oak ( <i>Quercus alba</i> )<br>scarlet oak ( <i>Quercus coccinea</i> )<br>white pine ( <i>Pinus strobus</i> )<br>pitch pine ( <i>Pinus rigida</i> )<br>blueberry ( <i>Vaccinium</i> sp.)<br>black huckleberry ( <i>Gaylussacia baccata</i> )  | red maple ( <i>Acer rubrum</i> )<br>hemlock ( <i>Tsuga canadensis</i> )<br>beech ( <i>Fagus</i> sp.)   | <1%     |
| Oak-Tulip Tree Forest          | oaks ( <i>Quercus</i> sp.)<br>tulip tree ( <i>Liriodendron tulipifera</i> )<br>American beech ( <i>Fagus grandifolia</i> )<br>black birch ( <i>Betula lenta</i> )<br>red maple ( <i>Acer rubrum</i> )<br>flowering dogwood ( <i>Cornus florida</i> )<br>witch hazel ( <i>Hamamelis virginiana</i> )<br>sassafras ( <i>Sassafras albidum</i> ) lowbush blueberries ( <i>Vaccinium angustifolium</i> , <i>V. pallidum</i> )<br>New York fern ( <i>Thelypteris novaboracensis</i> )<br>white wood aster ( <i>Eurybia divaricata</i> )<br>Solomon's plume ( <i>Maianthemum racemosum</i> )                    |  | 3%      |
| Pitch Pine Oak Forest          | pitch pine ( <i>Pinus rigida</i> )<br>black oak ( <i>Quercus velutina</i> )<br>red oak ( <i>Quercus rubra</i> )<br>scarlet oak ( <i>Quercus coccinea</i> )<br>white oak ( <i>Quercus alba</i> )   |  | <1%     |

| Plant Community                  | Dominant Species   | Sub-dominant Species  | % cover |
|----------------------------------|--|---|---------|
|                                  | scrub oak ( <i>Quercus ilicifolia</i> )<br>blueberries ( <i>Vaccinium angustifolium</i> , <i>V. pallidum</i> )<br>huckleberries ( <i>Gaylussacia baccata</i> )<br>bracken fern ( <i>Pteridium aquilinum</i> )<br>pennsylvania sedge ( <i>Carex pennsylvanica</i> )<br>wintergreen ( <i>Gaultheria procumbens</i> )   |   |         |
| Beech-Maple Mesic Forest         | sugar maple ( <i>Acer saccharum</i> )<br>beech ( <i>Fagus</i> sp.)   | white ash ( <i>Fraxinus americana</i> )<br>red maple ( <i>Acer rubrum</i> )<br>chestnut oak ( <i>Quercus montana</i> )<br>witch hazel ( <i>Hamamelis virginiana</i> )<br>Christmas fern ( <i>Polystichum acrostichoides</i> ) | 3%      |
| Hemlock-Northern Hardwood Forest | hemlock ( <i>Tsuga canadensis</i> )<br>beech ( <i>Fagus</i> sp.)<br>sugar maple ( <i>Acer saccharum</i> )<br>red maple ( <i>Acer rubrum</i> )<br>chestnut oak ( <i>Quercus montana</i> )<br>white pine ( <i>Pinus strobus</i> )<br>yellow birch ( <i>Betula lutea</i> )<br>black birch ( <i>Betula lenta</i> )<br>red oak ( <i>Quercus rubra</i> )<br>basswood ( <i>Tilia americana</i> )<br>striped maple ( <i>Acer pensylvanicum</i> )<br>partridgeberry ( <i>Mitchella repens</i> )<br>moss <i>Leucobryum glaucum</i><br>Christmas fern ( <i>Polystichum acrostichoides</i> ) |   | 2%      |
| Maple-Basswood Rich Mesic Forest | basswood ( <i>Tilia americana</i> )<br>ash ( <i>Fraxinus</i> )<br>hickory ( <i>Carya</i> sp.)<br>black birch ( <i>Betula lenta</i> )<br>sugar maple ( <i>Acer saccharum</i> )<br>witch hazel ( <i>Hamamelis virginiana</i> )<br>Virginia creeper ( <i>Parthenocissus vitacea</i> )<br>bloodroot ( <i>Sanguinaria canadensis</i> )<br>white baneberry ( <i>Actaea pachypoda</i> )<br>troutlily ( <i>Erythronium</i> sp.)<br>Christmas fern ( <i>Polystichum acrostichoides</i> )<br>mosses  |   | <1%     |
| Successional Hardwoods           | aspen ( <i>Populus</i> sp.)<br>black birch ( <i>Betula lenta</i> )<br>gray birch ( <i>Betula populifolia</i> )<br>cottonwood ( <i>Populus deltoides</i> )<br>sassafras ( <i>Sassafras</i> )<br>red maple ( <i>Acer rubrum</i> )<br>hawthorn ( <i>Crataegus</i> sp.)<br>black cherry ( <i>Prunus serotina</i> )<br>multiflora rose ( <i>Rosa multiflora</i> )<br>Japanese barberry ( <i>Berberis thunbergii</i> )<br>grape ( <i>Vitis</i> sp.)<br>greenbriar ( <i>Smilax</i> sp.)<br>poison ivy ( <i>Rhus radicans</i> )  |   | 5%      |
| Rich Mesophytic Forest           | red oak ( <i>Quercus rubra</i> )<br>beech ( <i>Fagus</i> sp.)<br>sugar maple ( <i>Acer saccharum</i> )<br>yellow poplar ( <i>Liriodendron tulipifera</i> )<br>white oak ( <i>Quercus alba</i> )<br>striped maple ( <i>Acer pensylvanicum</i> )<br>witch hazel ( <i>Hamamelis virginiana</i> )  |   | <1%     |

| Plant Community          | Dominant Species   | Sub-dominant Species  | % cover |
|--------------------------|--|---|---------|
|                          | shadbush ( <i>Amelanchier stolonifera</i> )<br>blueberry ( <i>Vaccinium</i> sp.)<br>interrupted fern ( <i>Osmunda claytoniana</i> )<br>partridgeberry ( <i>Mitchella repens</i> )<br>violets ( <i>Viola</i> sp.)<br>snakeroot ( <i>Polygala senega</i> )<br>wild leek ( <i>Allium tricoccum</i> )<br>asters ( <i>Aster</i> sp.)<br>goldenrods ( <i>Solidago</i> sp.) |   |         |
| <b>Cultural</b>          |  |   |         |
| Mowed Lawn               | Maintained short grass   |   | 7%      |
| Paved Roads and Highways | Asphalt or concrete, with small cracks yielding to some vegetation   |   | 2%      |
| Mowed Roadside           | Dominated by grasses and is maintained by periodic mowing  |   | 2%      |
| Pine Plantation          | white pine ( <i>Pinus strobus</i> )<br>red pine ( <i>Pinus resinosa</i> )  | Interspersed with an occasional deciduous species<br><i>Speedwell</i> ( <i>Veronica officinalis</i> ) | <1%     |
| Brushy Cleared Land      | Grasses, forbs, ferns, and tree suckers flourish a year after clearing, with shrubs, brambles, and saplings appearing after about a decade of the clearing   |   | <1%     |
| Ordnance-Impacted Land   | Scant vegetation including upland grasses, forbs, and shrubs, with an occasional tree persisting along the Impact Area perimeter   |   | 1%      |

Source: Kakenbacker 1995, as updated in 2004.

**Appendix H**  
**Agency Coordination**

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DEPARTMENT OF THE ARMY  
US ARMY INSTALLATION MANAGEMENT COMMAND  
UNITED STATES ARMY GARRISON, WEST POINT  
667A RUGER ROAD  
WEST POINT, NY 10996-1592

Ms. Sandra Doran  
Biologist  
U.S. Fish and Wildlife Service  
New York Field Office  
3817 Luker Road  
Cortland, NY 13045

9 July 2018

**Subject: Review of the Draft Final Integrated Natural Resources Management Plan (INRMP) Revision for U.S. Army Garrison (USAG) West Point, West Point, New York**

Dear Ms. Doran:

The U.S. Army Garrison (USAG) West Point would like to thank the U.S. Fish and Wildlife Service for its involvement and coordination in the revision of the USAG West Point Integrated Natural Resources Management Plan (INRMP). Concurrent to the development of the INRMP, USAG West Point has also prepared an additional environmental analysis and documentation required to comply with the National Environmental Policy Act (NEPA) of 1969. This Environmental Assessment evaluates environmental impacts, both positive and negative, associated with implementing the proposed action, i.e., the INRMP. The INRMP and its associated NEPA documentation are combined into a single report. Lastly, the Revised INRMP also includes Endangered Species Management Plans for the shortnose sturgeon (*Acipenser brevirostrum*), Atlantic sturgeon (*Acipenser oxyrinchus oxyrinchus*), and northern long-eared bat (*Myotis septentrionalis*). For these documents, please see Appendices B2 through B4.

The New York State Department of Environmental Conservation (NYSDEC) and the National Oceanic and Atmospheric Administration National Marine Fisheries Service (NMFS) have also been involved in the development of this document. The federal and state coordination during the development of an INRMP is a requirement of the Sikes Act Improvement Act (SAIA) of 1997. As required by Title 16 U.S.C. §670a(a)(2), the USAG West Point INRMP "shall reflect the mutual agreement of the parties concerning conservation, protection, and management of fish and wildlife resources." USAG West Point is currently in the draft final stage of the INRMP revision process. At this time, we are soliciting U.S. Fish and Wildlife Service comments on the draft final INRMP revision and included Environmental Assessment.

Please review the USAG West Point INRMP update within 30 days of receiving this document. We request that you submit comments using the Comment Response Matrix attached. Comments can be emailed to [Christopher.Pray@usma.edu](mailto:Christopher.Pray@usma.edu) or mailed to:

Christopher Pray  
IMML-PWE-N  
BLDG 144, Ruger Road  
West Point, NY 10996

Should you have any questions concerning this matter please contact me at (845) 938-7122. I will be happy to discuss any issues on the document.

Sincerely,

Christopher Pray  
Natural Resources Manager  
U.S. Army Garrison West Point



DEPARTMENT OF THE ARMY  
US ARMY INSTALLATION MANAGEMENT COMMAND  
UNITED STATES ARMY GARRISON, WEST POINT  
667A RUGER ROAD  
WEST POINT, NY 10996-1592

Mr. William Rudge  
Department of Environmental Conservation Natural Resource Supervisor  
NYSDEC, Region 3 Office  
21 South Putt Corners Road  
New Paltz, NY 12561

9 July 2018

**Subject: Review of the Draft Final Integrated Natural Resources Management Plan (INRMP) Revision for U.S. Army Garrison (USAG) West Point, West Point, New York**

Dear Mr. Rudge:

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Christopher Pray  
IMML-PWE-N  
BLDG 144, Ruger Road  
West Point, NY 10996

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Sincerely,

  
Christopher Pray  
Natural Resources Manager  
U.S. Army Garrison West Point



DEPARTMENT OF THE ARMY  
US ARMY INSTALLATION MANAGEMENT COMMAND  
UNITED STATES ARMY GARRISON, WEST POINT  
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Ms. Ursula Howson  
Marine Habitat Resource Specialist  
National Marine Fisheries Service, Greater Atlantic Regional Fisheries Office  
74 Magruder Rd.  
Highlands, NJ 07732

9 July 2018

**Subject: Review of the Draft Final Integrated Natural Resources Management Plan (INRMP) Revision for U.S. Army Garrison (USAG) West Point, West Point, New York**

Dear Ms. Howson:

The U.S. Army Garrison (USAG) West Point would like to thank the National Oceanic and Atmospheric Administration National Marine Fisheries Service (NMFS) for its involvement and coordination in the revision of the U.S. Army Garrison West Point Integrated Natural Resources Management Plan (INRMP). Concurrent to the development of the INRMP, USAG West Point has also prepared an additional environmental analysis and documentation required to comply with the National Environmental Policy Act (NEPA) of 1969. This Environmental Assessment evaluates environmental impacts, both positive and negative, associated with implementing the proposed action, i.e., the INRMP. The INRMP and its associated NEPA documentation are combined into a single report. Lastly, the Revised INRMP also includes Endangered Species Management Plans for the shortnose sturgeon (*Acipenser brevirostrum*), Atlantic sturgeon (*Acipenser oxyrinchus oxyrinchus*), and northern long-eared bat (*Myotis septentrionalis*). For these documents, please see Appendices B2 through B4.


The U.S. Fish and Wildlife Service (USFWS) and New York State Department of Environmental Conservation (NYSDEC) also been involved in the development of this document. The federal and state coordination during the development of an INRMP is a requirement of the Sikes Act Improvement Act (SAIA) of 1997. As required by Title 16 U.S.C. §670a(a)(2), the USAG West Point INRMP "shall reflect the mutual agreement of the parties concerning conservation, protection, and management of fish and wildlife resources." USAG West Point is currently in the draft final stage of the INRMP revision process. At this time, we are soliciting National Marine Fisheries Service comments on the draft final INRMP revision.

Please review the USAG West Point INRMP update within 30 days of receiving this document. We request that you submit comments using the Comment Response Matrix attached. Comments can be emailed to [Christopher.Pray@usma.edu](mailto:Christopher.Pray@usma.edu) or mailed to:

Christopher Pray  
IMML-PWE-N  
BLDG 144, Ruger Road  
West Point, NY 10996

Should you have any questions concerning this matter please contact me at (845) 938-7122. I will be happy to discuss any issues on the document.

Sincerely,

  
Christopher Pray  
Natural Resources Manager  
U.S. Army Garrison West Point



**DEPARTMENT OF THE ARMY**  
**US ARMY INSTALLATION MANAGEMENT COMMAND**  
**UNITED STATES ARMY GARRISON, WEST POINT**  
**667A RUGER ROAD**  
**WEST POINT, NY 10996-1592**

9 July 2018

**Subject: Review of the Draft Final Integrated Natural Resources Management Plan (INRMP) Revision for U.S. Army Garrison (USAG) West Point, West Point, New York**

To Whom It May Concern:

An Integrated Natural Resources Management Plan (INRMP) and incorporated Environmental Assessment (EA) have been prepared for the U.S. Army Garrison (USAG) West Point. The INRMP provides USAG West Point with a description of the installation and its surrounding environment, presents various management practices to mitigate negative impacts and enhance the positive effects of the installation's mission on regional ecosystems. The INRMP integrates all aspects of natural resource management with the Installation's mission and is the primary tool for managing the Installation's ecosystem while ensuring the successful accomplishments of the military mission at the highest possible levels of efficiency.

You have been included on the USAG West Point distribution list for National Environmental Policy Act (NEPA) documents to receive copies of Environmental Assessments. An electronic version of the INRMP/EA has been included with this letter for your review and comment. The INRMP/EA is also being made available for public review and comment on July 11, 2018.

Comments on the Draft Final INRMP will be accepted until August 10, 2018. We request that you submit comments using the Comment Response Matrix attached. Comments can be emailed to [Christopher.Pray@usma.edu](mailto:Christopher.Pray@usma.edu) or mailed to:

Christopher Pray  
IMML-PWE-N  
BLDG 144, Ruger Road  
West Point, NY 10996

Should you have any questions concerning this matter please contact me at (845) 938-7122. I will be happy to discuss any issues on the document.

Sincerely,

A handwritten signature in black ink, appearing to read "Christopher Pray", is written over a circular stamp or seal.

Christopher Pray  
Natural Resources Manager  
U.S. Army Garrison West Point

## **Distribution for NEPA Documents**

**A list of agencies and persons who will receive copies of the INRMP Revision beyond those provided letters as part of agency correspondence**

| <b>State and County Agencies</b>  |   |
|---|---|
| Mr. Steven M. Neuhaus<br>Orange County Executive<br>40 Matthews St. Suite 104<br>Goshen, NY 10924                                 | Hon. Mary Ellen Odell<br>Putnam County Executive<br>40 Gleneida Ave. 3 <sup>rd</sup> . Floor<br>Carmel, NY 10512              |
| Ms. Lisa Masi, Wildlife Biologist<br>NYS DEC- Region 3<br>Bureau of Wildlife<br>21 South Putt Corners Road<br>New Paltz, NY 12561 | Ms. Kelly Turturro, Regional Director<br>NYS DEC-Region 3<br>21 South Putt Corners Road<br>New Paltz, NY 12561                |
| Mr. Jeffery Zappieri, Supervisor<br>NYS Department of State<br>Division of Coastal Resources<br>41 State St.<br>Albany, NY 12231  | Dr. Eli N. Avila, MD, JD, MPH, FCCM<br>Commissioner<br>Orange County Department of Health<br>124 Main St.<br>Goshen, NY 10924 |

| <b>Federal Agencies</b>   |   |
|---|---|
| Ms. Grace Musumeci, Chief<br>Environmental Review Section<br>USEPA-Region II<br>290 Broadway<br>New York, NY 10007-1866                 | Ms Edith Carson, Fisheries Biologist<br>NOAA Great Atlantic Fisheries Office<br>55 Great Republic Drive<br>Gloucester, MA 01930 |
| Ms. Katherine Renshaw<br>NOAA NEPA Coordinator<br>Office of General Counsel<br>1305 East-West Hwy. Room 6616<br>Silver Spring, MD 20910 |   |

| <b>Tribal</b>   |
|---|
| Ms. Bonney Hartley<br>Tribal Historic Preservation Officer<br>Stockbridge-Munsee Mohican Tribal Historic Preservation<br>New York Office<br>65 1 <sup>st</sup> Street<br>Troy, NY 12180 |

| <b>Interested Parties</b>  |  |
|--|--|
| Mr. Jeff Anzevino, Director of Land Use Advocacy<br>Scenic Hudson Inc.<br>1 Civic Center Plaza, #200<br>Poughkeepsie, NY 12601 | Ms. Michelle Smith, Executive Director<br>Hudson Highlands Land Trust<br>PO Box 226<br>Garrison, NY 10524  |
| Ms. Erin Doran, Staff Attorney<br>Hudson River Keeper<br>E-House<br>78 North Broadway<br>White Plains, NY 10603                | Ms. Rachel Ornstein, Director of Administration<br>Putnam County Historical Society<br>63 Chestnut St.<br>Cold Spring, NY 10516                          |
| Ms. Diane Gocha, Business Manager<br>Bascobel Restoration Inc.<br>1601 Route 9D<br>Garrison, NY 10524                          | Mr. Scott Keller, Executive Director<br>Hudson River Valley Greenway Communities Council<br>625 Broadway, 4 <sup>th</sup> Floor<br>Albany, NY 12207-2995 |
| Mr. Michael Armstrong, President<br>Chapel of Our Lady Restoration Inc.<br>Box 43<br>Cold Spring-on-Hudson, NY 10524           |  |

| <b>Public Venues</b>   |  |
|--|--|
| Ms. Rebecca Shuler, Town Clerk<br>Town of Highlands<br>254 Main Street<br>Highland Falls, NY 10928       | Ms. Regina Taylor, Village Clerk<br>Village of Highland Falls<br>303 Main Street<br>Highland Falls, NY 10928         |
| Highland Falls Public Library<br>298 Main Street<br>Highland Falls, NY 10928                             | Mr. Richard Shea, Supervisor<br>Town of Philipstown<br>238 Main Street<br>Cold Spring, NY 10516                      |
| Ms. Gillian Thorpe<br>Julia L. Butterfield Memorial Library<br>10 Morris Avenue<br>Cold Spring, NY 10516 | Ms. Jen McCreery, Director<br>The Alice Curtis Desmond and Hamilton Fish Library<br>PO Box 265<br>Garrison, NY 10524 |
| Ms. Mary Saari, Town Clerk<br>Town of Cold Spring<br>85 Main Street<br>Cold Spring, NY 10516             |  |



## Comment Response Matrix for Draft Final Integrated Natural Resources Management Plan United States Army Garrison West Point, New York

[July 2018]

| Reviewer Name       | Organization                         | Telephone    | Address                                       | E-Mail                |
|---------------------|--------------------------------------|--------------|---|-----------------------|
| Edith Carson-Supino | NOAA Fisheries – Protected Resources | 978-282-8490 | 55 Great Republic Drive, Gloucester, MA 01930 | edith.carson@noaa.gov |

Thank you for using this form for your comments on the Draft INRMP. Please fill in a row above and then enter the page number, line number, your last name, and your comment in the columns noted. This will allow consolidation and sorting all the comments. When you save this file with your comments, please save it by filling in your last name or some other unique identifier within the parenthesis in the file name. To add rows to the table, go to the bottom right-hand cell and hit <Tab>.

| Comment # | Page # | Section/Paragraph/Sentence # | Comment  | Comment Response  |
|-----------|--------|------------------------------|--|---|
| 1.        | 4-30   | Table 4-4, row 2             | You can add migrating and opportunistically foraging as additional behaviors. It might be beneficial to also include the life stages that are present. Shortnose sturgeon: adult, juvenile, young-of-the-year, post yolk-sac larvae.   | Added text to table noting life states and additional behaviors mentioned in the comment.   |
| 2.        | 4-30   | Table 4-4, row 3             | As described in Appendix B3, the habitat in the area is not suitable for spawning because of salinity and water depth. We agree that adults, subadults, and juveniles may occur in, including passing through, this reach of the Hudson River. In our letter, dated October 12, 2016, to Assistant Secretary Hammack (copied attached), we concluded that this area of the Hudson is used by adult Atlantic sturgeon as passage to and from spawning grounds that occur upriver, for example, near river kilometer 112 and river kilometer 132. Males in spawning condition may also use the area, moving upriver and downriver of spawning sites, while searching for females in spawning condition. Juvenile and subadult Atlantic | Edited to read: Passage to and from spawning habitat by adults, access to foraging and rearing areas by juveniles and subadults, and some foraging by juveniles and subadults. Life stages present include adults, subadults, and juveniles. Added reference to 12 October 2016 letter. |

| Comment # | Page # | Section/Paragraph/Sentence # | Comment   | Comment Response   |
|-----------|--------|------------------------------|---|--|
|           |        |                              | sturgeon are captured in the area of the Hudson River adjacent to West Point during annual fall surveys for the Hudson River Biological Monitoring Program (ESA Permit No. 17095-01). Given the daily and seasonal changes in the position of the salt front, as well as the strong current and rocky substrate characterizing this area, subadult and juvenile Atlantic sturgeon use the area as passage to access foraging and rearing areas (e.g., to and from Newburgh Bay, approximately river kilometers 88 to 100, and Haverstraw Bay, approximately river kilometers 55 to 65). Some juvenile or subadult foraging may also occur in the area depending on prey availability. |  |
| 3.        | 4-36   | Paragraphs 2-3, lines 32-36  | Shortnose sturgeon are not limited by salinity. They have even been known to undergo coastal migrations and use other river systems to a greater extent than previously thought (Kynard 1997; Savoy 2004; Fernandes 2010; Zydlewski et al. 2011; Dionne et al. 2013). Young-of-the-year and post yolk-sac larvae could be in the freshwater portion of this area. Juveniles are salt tolerant and be found throughout the river. Shortnose sturgeon can be found in the USAG WP area year-round.  | Revised the text to make clear that zebra mussels are limited by salinity (not sturgeon). Added in young-of-the-year and post yolk-sac text, and revised section to make clearer that juveniles are salt tolerant. |
| 4.        | 4-36   | Paragraph 4, line 42         | Atlantic sturgeon can reach up to 800 pounds. There has been evidence that there is also Atlantic sturgeon spawning further upstream of RKM 193 (Dewayne Fox, DSU, and Kathy Hattala, NYDEC, personal communication April 2014  | Edited and added text about spawning farther upstream.   |
| 5.        | 4-79   | Table 4-11, row 2            | The scientific name for the Atlantic sturgeon that were listed as five distinct population segments under the Endangered Species Act in 2012 is <i>Acipenser oxyrinchus oxyrinchus</i> . The species <i>Acipenser oxyrinchus</i> , includes both <i>Acipenser oxyrinchus oxyrinchus</i> and <i>Acipenser oxyrinchus desotoi</i> (common name “Gulf sturgeon”).  | Changed name and status in the table to reflect comment.   |
| 6.        | 6-12   | TE 3.1                       | Need to complete consultations for actions that may affect shortnose sturgeon too.  | Added shortnose to goal.   |



| Comment # | Page #        | Section/Paragraph/Sentence # | Comment  | Comment Response   |
|-----------|---------------|------------------------------|--|--|
| 7.        | App. B2, p. 3 | Paragraph 3, line 27-28      | Shortnose sturgeon have been known to spawn from Coxsackie to below the Troy Dam (RKM 190-246; Dovel et al. 1992; Bain 1997).  | Added text.  |
| 8.        | App. B2, p. 5 | Paragraph 1                  | Shortnose sturgeon post yolk-sac larvae and young-of-the-year could be present at West Point when the water is fresh, not saline.  | Added text per comment.  |
| 9.        | App. B3, p. 3 | Paragraph 1, line 6          | Atlantic sturgeon can reach up to 14 feet long and weigh 800 pounds.   | Edited statement to reflect the weight and length stated in the comment. |
| 10.       | App. B3, p. 3 | Paragraph 4                  | Atlantic sturgeon spawning occurs notably around Hyde Park (RKM 129-135, Bain et al. 1998) and Catskill (RKM 182, Van Eenennaam et al. 1996) as well as throughout RKM 113-184 (Bain et al. 1998) evidence strongly suggests that there is also spawning further upstream of RKM 193 (Dewayne Fox, DSU, and Kathy Hattala, NYDEC, personal communication April 2014). Spawning occurs from late April through August (Dovel and Berggren 1983; Dewayne Fox, DSU, and Kathy Hattala, NYDEC, personal communication April 2014). | Added and edited text regarding spawning locations and timing.           |
| 11.       | App. B3, p. 4 | Paragraph 2, line 6          | Juveniles can be found throughout the river. Early life stages (eggs, yolk-sac larvae, post yolk-sac larvae, and young-of-the-year) are only found in the freshwater reaches.  | Revised text to include text provided in comment.                        |
| 12.       | App. B3, p. 5 | Paragraph 1, line 1          | Subadults could be present too.  | Added sentence noting that subadults may also be present.                |
| 13.       | App. B3, p. 5 | Paragraph 2                  | Spawning period is late April through August (see references above). Post yolk-sac larvae and young-of-the-year could be present when the water is fresh.  | Changed time period.   |

***End of Comments***

## Comment Response Matrix for Draft Final Integrated Natural Resources Management Plan United States Army Garrison West Point, New York

[July 2018]

| Reviewer Name | Organization  | Telephone    | Address   | E-Mail                 |
|---------------|---|--------------|---|------------------------|
| Ursula Howson | NOAA/NMFS/HCD   | 732-872-3116 | James J. Howard Marine Laboratory, 74<br>Magruder Rd, Highlands, NJ 07732 | ursula.howson@noaa.gov |
|               | (I work on Essential<br>Fish Habitat and<br>mitigation banking) |              |   |                        |

Thank you for using this form for your comments on the Draft INRMP. Please fill in a row above and then enter the page number, line number, your last name, and your comment in the columns noted. This will allow consolidation and sorting all the comments. When you save this file with your comments, please save it by filling in your last name or some other unique identifier within the parenthesis in the file name. To add rows to the table, go to the bottom right-hand cell and hit <Tab>.

| Comment # | Page # | Section/Paragraph/<br>Sentence # | Comment   | Comment Response |
|-----------|--------|----------------------------------|---|------------------|
| 1.        |        |                                  | Thank you for the opportunity to review the INRMP. We have no specific comments at this time. Please continue to consult with us on any project activities in tidal habitats below the mean high water line, including work in tidal wetlands and tidal wetlands mitigation activities. |                  |

*End of Comments*

## Comment Response Matrix for Draft Final Integrated Natural Resources Management Plan United States Army Garrison West Point, New York

[July 2018]

| Reviewer Name  | Organization                | Telephone    | Address                               | E-Mail   |
|----------------|-----------------------------|--------------|---------------------------------------|--|
| Robyn A. Niver | USFWS New York Field Office | 607-299-0620 | 2817 Luker Road<br>Cortland, NY 13045 | <a href="mailto:Robyn_niver@fws.gov">Robyn_niver@fws.gov</a> |

Thank you for using this form for your comments on the Draft INRMP. Please fill in a row above and then enter the page number, line number, your last name, and your comment in the columns noted. This will allow consolidation and sorting all the comments. When you save this file with your comments, please save it by filling in your last name or some other unique identifier within the parenthesis in the file name. To add rows to the table, go to the bottom right-hand cell and hit <Tab>.

| Comment # | Page # | Section/Paragraph/Sentence # | Comment   | Comment Response   |
|-----------|--------|------------------------------|---|--|
| 1.        |        |                              | Read over the INRMP today and it looks really good. I only had question - the recommendation from USACE 2017 to protect known wood and spotted turtle habitat by limiting training maneuvers in that area didn't appear in the implementation table. Is this something that can be put as a placeholder to continue to discuss options to avoid impacts to these species? | We will seek to limit impacts to spotted and wood turtles by identifying populations and understanding the potential impacts to these populations stemming from training, construction, external pressures, or other installation activities. We will seek to mitigate these impacts by avoiding temporally or spatially turtle presence or activity as practical. We will seek to preserve known habitats for continued turtle presence, and offer mitigations, i.e. protected nesting sites and vegetation management, as resources allow. In the event these species become listed, we will consult with the USFWS to jointly develop appropriate management plans for these species. |

*End of Comments*



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phone: 845.424.3358  
fax: 845.424.3483

info@hhlt.org  
www.hhlt.org

August 6<sup>th</sup>, 2018

Christopher Pray  
Natural Resources Manager  
US Army Garrison West Point  
IMML-PWE-N  
BLDG 144, Ruger Road  
West Point NY 10996

RE: Comments on the Draft Final Integrated Natural Resource  
Management Plan (INRMP) for US Army Garrison West Point

Dear Mr. Pray,

Thank you for the invitation to review the USAG West Point Integrated  
Natural Resources Management Plan, and for your dedication to  
conservation of natural resources in the Hudson Highlands.

I am attaching comments from the Hudson Highlands Land Trust (HHLT)  
in your requested format – the Comment Response Matrix.

We would be very interested in meeting with you to discuss the plan's  
implementation and, more generally, to talk about natural resource  
management in the Hudson Highlands. We will be in touch soon to see if  
that is possible.

Please don't hesitate to contact us with any questions about our attached  
comments.

Sincerely,

Michelle D. Smith  
Executive Director

**Comment Response Matrix for Draft Final Integrated Natural Resources Management Plan  
United States Army Garrison West Point, New York  
August 6, 2018**

| Reviewer Name  | Organization                       | Telephone       | Address                             | E-Mail                  |
|----------------|------------------------------------|-----------------|-------------------------------------|-------------------------|
| Michelle Smith | Hudson Highlands Land Trust (HHLT) | 845-424-3358 x1 | 20 Nazareth Way, Garrison, NY 10524 | michelle.smith@hhlt.org |
| Nicole Wooten  | HHLT                               | 845-424-3358 x5 | 20 Nazareth Way, Garrison, NY 10524 | nicole.wooten@hhlt.org  |

Thank you for using this form for your comments on the Draft INRMP. Please fill in a row above and then enter the page number, line number, your last name, and your comment in the columns noted. This will allow consolidation and sorting all the comments. When you save this file with your comments, please save it by filling in your last name or some other unique identifier within the parenthesis in the file name. To add rows to the table, go to the bottom right-hand cell and hit <Tab>.

| Comment # | Page #    | Section/Paragraph/Sentence # | Comment   | Comment Response   |
|-----------|-----------|------------------------------|---|--|
| 1.        | 4-116     | Section 4.14 / Lines 23 – 37 | Smith/Wooten (HHLT): Opportunities may still exist for ACUB that could meet USAG WP's objectives and conserve significant natural resources. HHLT would be interested in dialog with USAG WP to explore this.   | WP has identified those areas considered prime for the dual purposes of conservation needs and the military requirement to maintain undeveloped buffers near training activities. As the program is implemented there may be need to revisit and revise this list due to funding, availability, and changing priorities. HHLT would be a welcome partner in this conversation. |
| 2.        | 6-8, 6-12 | GWC 1.1 and TE 3.1-2         | Smith/Wooten (HHLT): Consider including "inventorying, monitoring, and analyzing," as well as reducing, any pollutant discharge, including thermal discharge, into the Hudson River. This ties into section 4.7.2., describing the importance of the unique Coastal Zone of which a significant portion of USAG WP is a part. | Added the following statement to Section 4.7.1: "West Point monitors all discharges, resulting from both storm and sanitary treatment process, physically and chemically to the Hudson River through the compliance programs   |

| Comment # | Page # | Section/Paragraph/Sentence #       | Comment   | Comment Response  |
|-----------|--------|------------------------------------|---|---|
|           |        |                                    |   | associated with those utility systems.”   |
| 3.        | 5-1    | Section 5.1 / Lines 12 – 16        | Smith/Wooten (HHLT): Consider including the 7 "Leave No Trace Principles" on the soldier's field card, as basic guidance on individual use and protection of the environment.   | Leave No Trace principles are part of the military training program in that troops afield have a strategic need to leave as little usable intelligence behind as possible. However, full implementation or endorsement of the national program are not practical for military training.                                 |
| 4.        | 3-7    | Section 3-2 / Table 3 – 2 / Line 0 | Smith/Wooten (HHLT): Other interested parties that could be included in the External Stakeholder list are the Orange County Land Trust, Open Space Institute, and Black Rock Forest Consortium.   | Added these parties to the external stakeholders on Table 3-2.  |
| 5.        | 6-8    | GWC 1.3                            | Smith/Wooten (HHLT): An additional item for consideration of pollutant input control are road salts.  | Road salt alternatives have been investigated by the installation Storm Water Program manager. Efforts continue to find and develop usable technologies that meets the needs of safe use of roads and sidewalks, operational cost, and low environmental impact. This is a requirement of the installation MS4 program. |
| 6.        | 6-22   | VEG 1.5-4                          | Smith/Wooten (HHLT): Rather than replace all former hemlock woolly adelgid-infested hemlock stands with native conifers, select trees in the 200+ old hemlock stand at Cat Hollow could be preemptively sprayed to retain these significant specimens until an effective biocontrol is found. | Added the following to the project: “Consider a program to identify and protect specimen trees, if any remain. Consideration of the use of systemic pesticides to protect specimen trees and an evaluation of the persistence of these pesticides would be completed.”  |
| 7.        | 4-43   | Section 4.8.4 / Lines 26 - 30      | Smith/Wooten (HHLT): HHLT commends the responsible and dedicated stewardship of a rich, varied, and biodiverse land.  | Thank you.  |



**DRAFT MEETING MINUTES  
U.S. ARMY GARRISON WEST POINT (USAG WP), NY  
CONTRACT W911SD-17-T-0393  
CHARRETTE MEETING AND SITE VISIT FOR INRMP REVISION**

**Prepared by:** EA Engineering, Science, and Technology, Inc., PBC (EA)  
**Date:** Tuesday, 5 December 2017  
**Time:** 1000 to 1100 hours

**ATTENDEES:**

|                       |   |         |
|-----------------------|---|---------|
| Aaron Barreda         | Department of Military Instruction (DMI)  | Present |
| Edith Carson*         | National Oceanic and Atmospheric Administration (NOAA) Fisheries  | Present |
| Kathryn Cerny-Chipman | EA Engineering, Science, and Technology, Inc., PBC  | Present |
| Thomas Cowan          | Deputy to the Garrison Commander  | Present |
| Ursula Howson*        | Integrated Statistics, Inc./NOAA Affiliate  | Present |
| Chris Killough        | Natural Resources   | Present |
| Enzo Palau            | Environmental Management Division (EMD)/Directorate of Public Works (DPW)                                     | Present |
| Tony Pegg             | Master Planning   | Present |
| Christopher Pray      | Natural Resources   | Present |
| Patrick Raley         | Cultural Resources/DPW  | Present |
| Chris Remillard       | Morale Welfare and Recreation (WMR)   | Present |
| Dan Savercool         | EA Engineering, Science, and Technology, Inc., PBC  | Present |
| Brett Walker          | DPW – Environmental Management  | Present |
| Samuel Whitin         | EA Engineering, Science, and Technology, Inc., PBC  | Present |
| Matthew Winward       | Integrated Training Area Management (ITAM)/Directorate of Plans, Training, Mobilization, and Security (DPTMS) | Present |

\*Attended via teleconference

**DISTRIBUTION: Attendees**

The Charrette regarding the Integrated Natural Resources Management Plan (INRMP) Revision for U.S. Army Garrison West Point (USAG WP) was held at USAG WP to inform attendees of the INRMP revision process, initiate a discussion of issues and projects within the INRMP, and provide attendees a tour of the installation if desired. A slide presentation was provided by Mr. Dan Savercool of EA to facilitate discussions. Notes and action items from the meeting are presented in bulleted format below. **Bold items indicate critical decisions and/or action items.**

- Mr. Pray introduced the general philosophy of the INRMP and preservation of natural resources. There are three signatories for the INRMP: The Garrison Commander, New York State Department of Environmental Conservation (NYSDEC), and the U.S. Fish and Wildlife Service (USFWS). USFWS and NYSDEC were unable to attend the meeting.





- This is the fourth iteration of the INRMP for USAG WP. INRMP has two pieces: 1) what resources are present at USAG WP, and 2) what can be done to manage these resources. The INRMP team is interested in finding out from other stakeholders what projects related to natural resources they would like to see. Some projects can have dual uses for natural resource management and training purposes.
- Mr. Savercool led brief introductions of the INRMP stakeholders present at the Charrette. The Charrette serves as an introductory meeting to get stakeholders and agencies familiar with the types of projects that may be included in the INRMP. Stakeholders will provide assistance, review, and ideas for this INRMP.
- Mr. Savercool led the discussion based on a PowerPoint presentation (attached). He initiated the discussion with a definition of goals, objectives, and projects.
- Mr. Savercool noted that the Sikes Act requires Department of Defense (DoD) installations with significant natural resources requiring conservation and management to have an INRMP. Significant natural resources include wetlands, rare, threatened, and endangered species, and a hunting and fishing program. All three of these are present at USAG WP.
- Activities in the INRMP revision must be analyzed in accordance with the National Environmental Policy Act. The INRMP revision will also include an Environmental Assessment.
- Mr. Palau questioned whether this would cover the entirety of USAG WP and operations. Mr. Savercool noted that this Environmental Assessment will only cover actions found in the revised INRMP, not daily operation activities at USAG WP.
- The Charrette is held as a kickoff for the INRMP revision. The meeting serves an interactive discussion for stakeholders.
- A second meeting will be held after agencies and stakeholders have had a chance to review the draft INRMP revision. This second meeting will be where more specific goals, objectives, and projects are hashed out with the agencies and stakeholders.
- Mr. Savercool then provided a review and discussion of the INMMP management concerns, goals, and objectives.
  - USAG WP is a military installation with a distinct purpose and mission. While managing natural resources, USAG WP cannot deviate from the military mission; however, knowing this ahead of time provides an advantage while managing the natural resources.
  - All INRMPs follow the same format to facilitate agency review. Some resource topics will not pertain to the installation; in the revised document, these will simply have a disclaimer sentence stating that it does not pertain to USAG WP.
- The INRMP team went through the list of management areas that would be included in the INRMP. For each management area, the PowerPoint provided an example of a goal, objective, and project that would be found in the INRMP:
  - Natural Resources Management
    - Natural Resources Management must uphold the military mission as the primary objective. Natural Resources Management cannot conflict with or adversely impact the mission.





- Fish and Wildlife Management
  - This section provides a narrative that will better describe how to do projects for the management of fish and wildlife at USAG WP, a timeline for projects to occur, and the costs associated with these projects.
- Outdoor Recreation and Public Access to Natural Resources
  - West Point has a hunting program. The revised INRMP will include projects to support a sustainable and huntable herd.
- Conservation Law Enforcement
  - The INRMP will include a goal to maintain the Conservation Law Enforcement (CLE) program managed by the Provost Marshals Office, and to implement 215-5.
- Management of Threatened and Endangered Species and Habitats
  - There are known federally- and state-listed species found at USAG WP, including the federally-listed Northern long-eared bat (*Myotis septentrionalis*), and state-listed timber rattlesnake (*Crotalus horridus*).
  - The INMRP covers actions for the management of federally- and state-listed species as well as their habitat. The Sikes Act was negotiated between DoD and regulatory agencies to allow installations manage resources without needing to claim critical habitat on the installation. The Endangered Species Act applies to threatened and endangered species on installations.
- Water Resource Protection
  - This element provides projects that serve to protect water quality of both surficial and groundwater sources at USAG WP. Waterbodies on the installation are protected under Section 401 of the Clean Water Act.
- Wetland Protection
  - Wetlands, including vernal pools, occur at USAG WP. These wetlands are protected under Section 404 of the Clean Water Act.
  - The DoD manages wetlands on installations for no net loss.
- Grounds Maintenance
  - Grounds maintenance is undertaken to minimize erosion and to protect natural resources at USAG WP. Natural resources and the INRMP have an impact on actions performed for grounds maintenance.
- Forest and Grassland Management
  - USAG WP seeks to control invasive species and maintain native forests to maintain the marketability of forest products.
- Wildland Fire Management
  - Fire can be used as a tool for management. There is a wildland fire plan for USAG WP that will link to the INRMP. Prescribed burns are not used at USAG WP currently, but there are burns annually on the installation.



- Mr. Cowan raised a concern about fuel loads and fire danger. A few years ago, Christopher Pray brought in a fire ecologist from The Nature Conservancy to look at fuel loads at USAG WP. He did not think that the fuel load was an issue. The blueberry heaths are the most flammable habitat. This is where a burn would be allowed to happen.
- Controlled burns have largely not been undertaken because the region is an air quality non-attainment zone. This makes prescribed burns difficult to permit. In addition, the nearby communities are supported by volunteer fire departments that don't necessarily have the resources to respond should an issue arise.
- While controlled burns have not been prescribed, fires are allowed to continue in some places when they occur.
- Mr. Pray noted that waste wood is provided as free firewood at USAG WP. Permits are granted through Natural Resources. This is largely to be able to provide education to those who take the firewood on pests. In the future, permits to enter specific areas to clear firewood will be provided using the iSportsman system.
- Mr. Pray would like to do a post-wide survey for fire that is more in-depth, potentially using the USFS TEAMS program. The duff samples collected during the 2008 effort did not show alarming amounts of duff.
- Turkey Mountain burned in 2003 and the area is now aspen. It might be appropriate for burn if there is an ecological need.
- Agricultural Outleasing
  - There are currently no agricultural outleases at USAG WP. There may be an opportunity for timber sales of character wood or sugar bushes. Sugar bushes would have no impact on training and could have some value to the Post. The class of 1985 recently requested to have their pistol handles made with wood from USAG WP; this demonstrates a potential area to develop character wood at USAG WP.
- Integrated Pest Management Program
  - USAG WP does have an Integrated Pest Management (IPM) plan to protect real estate and remove undesirable or nuisance species. This is applicable both in the Cantonment area and the back forty.
- Bird/Aircraft Strike Hazard (BASH)
  - There is not currently a BASH program at USAG WP, and one is not required by policy. However, components of a BASH plan may be relevant to rotary aircraft use on the installation. This would not have to be a formal BASH plan, but components of BASH could be incorporated into actions in the INRMP revision.
  - Mr. Cowan noted that there is value in identifying bird habitat so that pilots know where they might encounter birds. Most USAG WP pilots are aware of areas of concern, but this information could be disseminated to visiting pilots. Could have something for these pilots to read to know where not to go.
  - Bald eagles are the main BASH concern. While they are unlikely to be impacted by flight activities at USAG WP, documenting the presence of a nest will help



- show that the USAG WP is not at fault if there are hypothetical impact to an eaglet.
      - Geese are also potentially a BASH concern near waterbodies.
    - Coastal Zone and Marine Resources
      - Much of the Cantonment area is within the historic coastal zone, and the Coastal Zone Management Act applies in these areas.
    - Cultural Resource Protection
      - There will be no goals, objectives, or projects in the INRMP for cultural resources. Cultural resource protection is addressed through the Integrated Cultural Resources Management Plan (ICRMP). Actions in the INRMP cannot conflict the ICRMP.
      - Mr. Raley noted that the ICRMP just expired and is currently being revised. It is also a 5-year document.
      - One ICRMP initiative is to manage readouts to be more accessible. This could be a forestry action as well in the INRMP. **It was agreed that there would be a future meeting to discuss the intersections of the actions in the ICRMP and the INRMP.**
      - Planning for the USAG WP 250th Anniversary is underway. The readouts should account for the natural resources at USAG WP.
    - Public Outreach
      - Public outreach experiences that do not conflict with mission priorities should be considered. These activities are important to fostering a relationship with the local community and USAG WP neighbors.
    - Geographic Information Systems
      - Resource areas will be mapped to illustrate resources in the GIS system. Mr. Palau questioned how much GIS information would be released to the public, and noted the need to keep sensitive information protected. GIS data needs to be reviewed internally before being released. Concern for release of sensitive information will be a point of focus.
  - A more general discussion ensued regarding natural resources and the INRMP:
    - An ITAM section will be included within the INRMP. ITAM projects have been determined through FY19.
    - Both the ICRMP and the INRMP will be reduced in size to remove unnecessary information and to reference existing documents that cover resource areas. This prevents the INMRP data from becoming outdated when resources plans are updated and increases the readability and usability of the document.
    - Christopher Pray will serve as the USAG WP Point of Contact to Sam Whitin at EA Engineering, Science, and Technology, Inc., PBC.
  - Mr. Barrera noted that there is a need to be able to identify areas to dig and moor for training activities. The current process requires a lot of steps, and it would be easier if locations where no natural or cultural resources were of concern could be easily located. Participants discussed

building this into the forestry plan. This could include surveys before digging and managing after.

- Locations of wetlands and streams are known; these are the major natural resource concerns for digging.
  - Hand digging is not a big concern, the depth and size of the hole and method of digging would determine potential impacts on cultural resources.
  - Digging for training activities could be in INMRP. The methods for digging and a description of management for mitigation
  - **To assist DMI, Natural Resources and Cultural Resources will work on preparing a GIS overlays for training zones that showed areas where digging would not impact natural or cultural resources.**
- The INRMP Schedule was discussed. There will be one public review of the INRMP and Environmental Assessment in April or May. Prior to this the document will be reviewed first by those at USAG WP, including DES to ensure that no sensitive military information is included.
  - Mr. Cowan noted that the Garrison Commander at USAG WP switches in July. Agreement among team members was that it would be best to have the INMRP done by June for signature by the current Commander before a new Commander arrives. **The INMRP team will need to figure out sequence of staffing for signatory agencies.**
  - Once the meeting concluded, attendees had the opportunity to tour the installation. The following meeting attendees took a tour of the installation: Christopher Pray, Chris Killough, Brett Walker, Dan Savercool, Samuel Whitin, and Kathryn Cerny-Chipman. Areas observed included waterbodies and other natural features of interest, training areas where natural resources are present, and hunting and recreation areas.

## PHOTOGRAPHIC RECORD:



View of USAG WP along the Hudson River



Pollinator garden planted near Round Pond



“Pollinator Hotel” to support bees near Round Pond



View of Weyants Pond and surrounding landscape



Recreation area at Lake Fredrick



Open field habitat at hunting area L, adjacent to Mineral Spring



Deer Check Station for USAG WP hunters



USAG – West Point

INRMP Charrette

Meeting Attendees

5 December 2017

|   |   |
|---|---|
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| <p>Name: Thomas Cowan<br/>         Title: Deputy to Garrison Cdr<br/>         Representing: USAG<br/>         Address: 648 Schofield Pl.<br/>         West Point, N.Y 10996<br/>         Phone: 845-938-4268<br/>         e-mail: thomas.cowan@usma.edu</p> | <p>Name: Chris Remillard<br/>         Title: Community Recreation Officer<br/>         Representing: MWR<br/>         Address: 681 Hardee Place<br/>         Room 206<br/>         West Point NY 10996<br/>         Phone: 845 938 8249<br/>         e-mail: christopher.remillard@usma.edu</p> |

USAG – West Point

INRMP Charrette

Meeting Attendees

5 December 2017

|  |  |
|--|--|
| <p>Name: Chris Pray<br/>Title: Nat Res Manager<br/>Representing: USAG WP<br/>Address:<br/><br/>Phone: 845 938 7122<br/>e-mail:</p>   | <p>Name: Chris Killough<br/>Title: fish/wildlife technician<br/>Representing: USAG WP<br/>Address:<br/><br/>Phone: 845 938 2314<br/>e-mail: christopher.killough@usma.edu</p>                          |
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USAG – West Point

INRMP Charrette

Meeting Attendees

5 December 2017

|   |  |
|---|--|
| <p><b>Name:</b> Brett Walker</p> <p><b>Title:</b> Environmental Compliance</p> <p><b>Representing:</b> OPW - Environment Management</p> <p><b>Address:</b> 667A Roger Rd.</p> <p><b>Phone:</b> 845-938-4571</p> <p><b>e-mail:</b> Brett.Walker@usma.edu</p> | <p><b>Name:</b></p> <p><b>Title:</b></p> <p><b>Representing:</b></p> <p><b>Address:</b></p> <p><b>Phone:</b></p> <p><b>e-mail:</b></p> |
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## U.S. ARMY GARRISON WEST POINT

### 2018 Integrated Natural Resources Management Plan Revision (INRMP)

## Charrette Agenda

- Introductions
- Authority
- Purpose of INRMP Charrette
- Review and Discussion of INRMP Management Concerns, Goals, and Objectives
- Agency Comments
- Conclusion

## Goals, Objectives, and Projects

- **Goals** are broad guiding principles for the natural resources program.
- **Objectives** are measurable targets for achieving these goals.
- **Projects** are tasks or actions within the objectives that are prioritized to best achieve the objective.

## Authority

- The INRMP Revision for USAG West Point is being revised and consolidated into a new INRMP template in accordance with the provisions of the Sikes Act (16 U.S.C. 670a et seq.); DODI 4715.03, *Natural Resources Conservation Program*; and DODM 4715.03, *Integrated Natural Resources Management Plan Implementation Manual* for operations and effect. In addition, the effects of the implementation of the INRMP activities will be analyzed in accordance with the National Environmental Policy Act, and will be included in the INRMP Revision document.
- An INRMP is required for installations having significant natural resources requiring conservation and management as determined by the installations Natural Resources Program Manager in consultation with US Fish and Wildlife Service (USFWS) and the New York Department of Environmental Conservation.

## USAG West Point - Location Map



## Purpose of INRMP Charrette

- Discuss land management and natural resource topics affecting internal stakeholders.
- Identify any initial projects that should be incorporated into the INRMP.
- Meet with external stakeholders to obtain their input on issues identified by the internal stakeholders.

A second charrette will be held once the INRMP has been reviewed by Agency stakeholder to discuss the “nuts and bolts” of the INRMP.

### Overview

The 2011 USAG WP INRMP Revision will meet the requirements of DODM 4715.03, *Integrated Natural Resources Management Plan Implementation Manual* and DODI 4715.03, *Natural Resources Conservation Program*.

- Review and Discussion of Current and Future INRMP Management Goals and Objectives:
  - Natural Resources Program Management
  - Fish and Wildlife Management
  - Outdoor Recreation and Public Access to Natural Resources
  - Conservation Law Enforcement
  - Management of Threatened and Endangered Species and Habitats
  - Water Resource Protection
  - Wetland Protection
  - Grounds Maintenance
  - Forest and Grassland Management
  - Wildland Fire Management
  - Agricultural Outleasing
  - Integrated Pest Management Program
  - Bird/Wildlife Aircraft Strike Hazard
  - Coastal Zone and Marine Resource Management
  - Cultural Resource Protection
  - Public Outreach
  - Geospatial Information Systems (GIS)

### Natural Resources Program Management

Manage natural resources in a manner that is compatible with and supports the military mission while complying with federal, state, and US Army regulations and policies.

- **Goal:** Manage Natural Resources at USAG WP in a manner that supports the mission
  - **Objective:** Continue to apply modern technology and integrated techniques to enhance natural resources management at USAG WP
    - **Project:** Develop a missionscape concept
    - **Project:** Continue to implement the Environmental Awareness program through ITAM, including updating outreach and training materials (e.g., posters, handbooks, presentations, Environmental Awareness video, USMA Soldier Card, and Leader Handbook)

### Fish and Wildlife Management

Restore/maintain native wildlife diversity so that they are not in direct conflict with the military mission.

- **Goal:** Provide benefits to wildlife species and maintain or improve overall biodiversity
  - **Objective:** Maintain and Improve Unique Trees and Forest Stands
    - **Project:** Provide high-quality grouse habitat by promoting aspen root sucker growth and sprouting in cut- and burned-over areas.
    - **Project:** Prune and fence wild fruit trees to prevent excessive deer browsing. Monitor activities to determine level of success.
    - **Project:** Create new clearings and plant appropriately.

### Outdoor Recreation and Public Access to Natural Resources

Some outdoor recreation opportunities are limited because of danger associated with the military mission.

- **Goal:** Provide high quality hunting and fishing opportunities for USAG WP hunters, as well as the general public
  - **Objective:** Maintain a population of white-tailed deer that does not damage native and ornamental vegetation or cause conflict with humans
    - **Project:** Adjust the annual harvest rate to reflect the average of the last 5 years of data and changes in hunting availability
    - **Project:** Develop a human dimensions survey

### Conservation Law Enforcement

USAG West Point currently maintains a conservation law enforcement program managed by the Provost Marshal's Office (PMO).

- **Goal:** Continue to maintain a conservation law enforcement program
  - **Objective:** Maintain the current conservation law enforcement program managed by PMO and implement USMA 215-5
    - **Project:** Assist PMO with conservation law enforcement, as needed
    - **Project:** Review USMA 215-5 every three years

### Management of Threatened and Endangered Species and Habitats

The USAG WP takes a regional ecosystem-based approach to manage endangered species and their associated ecosystems, while protecting the operational functionality of the mission at the Installation.

- **Goal:** Identify and preserve endangered, threatened, and rare species in accordance with applicable laws, regulations, and policies
  - **Objective:** Identify and preserve populations of federally threatened and endangered species
    - **Project:** Monitor and protect existing populations and important habitat features
    - **Project:** Evaluate all plans for impacts on T&E and species of conservation concern. Suggest mitigation measures, such as physical barriers, work site monitoring, and training

## Water Resource Protection

USAG WP aims to maintain, protect, and improve the water quality within the installation.

- **Goal:** Protect the water bodies on the installation
- **Objective:** Identify and restore degraded aquatic habitats, protect aquatic and riparian habitats, and prevent degradation of water quality
  - **Project:** Inventory and monitor waterbodies
  - **Project:** Maintain forested watersheds to extent possible given recent and planned development
  - **Project:** Address aquatic invasive species

## Wetland Protection

Minimize the impact that the USAG WP missions have on wetlands and floodplains.

- **Goal:** Continue to implement a policy of wetland management that maintains no net loss of wetland/vernal pool habitat or function
- **Objective:** Manage wetlands to prevent a net loss of wetland/vernal pool habitat or function
  - **Project:** Maintain 100-foot buffers around selected wetlands
  - **Project:** Plan for dam removal by developing basins for moist soil management
  - **Project:** Identify and target specific problem populations of invasive species to protect ecological, training, and recreational resources

## Grounds Maintenance

The USAG WP takes a sustainable landscape management approach which minimizes impact on the environment and maximizes the values received for the dollars expended.

- **Goal:** Maintain USAG WP grounds to minimize soil erosion and to protect natural resources
- **Objective:** Identify eroded soils, protect soil resources, and prevent soil erosion and its potential impacts on water quality, habitat, and the mission
  - **Project:** Implement erosion and sediment controls where appropriate and maintain vegetative covers over all compatible areas, especially steep slopes
  - **Project:** Develop a list of beneficial and commercially available wildflowers for use as construction mitigation to support pollinators

## Forest and Grassland Management

The USAG WP Aims to Maintain Native Forested Habitat and Control Invasive Species.

- **Goal:** Maintain ecosystem viability while ensuring sustained production of commercially valuable forest products, and continuous forest cover
- **Objective:** Maintain and update forest inventories
  - **Project:** Process, analyze, and evaluate individual stand examination cruises completed in 2008.
  - **Project:** Continue to collect and integrate data with other inventories, such as burned area location, timber harvest areas, riparian and wetland areas, ecological communities, etc.

## Wildland Fire Management

Currently, USAG West Point maintains an Integrated Wildland Fire Management Plan (2011). The primary goal of the Plan is to protect life as the highest priority while safeguarding the West Point garrison and personal property.

- **Goal:** Prevent unacceptable damage to natural resources and prevent interference with training; minimize complaints of smoke
- Objective:** Prevent damage and interference to resources and the training mission
  - **Project:** Report all fires as soon as they are observed
  - **Project:** Restrict the use of pyrotechnics according to the fire matrix index
  - **Project:** Carefully control prescribed burns set for natural resource management purposes

## Agricultural Outleasing

There are currently no agricultural outleases at USAG WP. However, USAG WP manages productive timber lots that also benefit fish and wildlife.

- **Goal:** Investigate alternative sources of revenue that have benefit to the Installation and the public.
- **Objective:** Identify market and related agricultural products which can be further developed within USAG WP.
  - **Project:** Investigate potential leases for sugar bushes
  - **Project:** Develop a market for character wood

### **Integrated Pest Management**

Protection of real estate, control of potential disease vectors, control of undesirable or nuisance plants, and prevent damage to natural resources.

- **Goal:** Protect real estate from depreciation; control potential disease vectors or animals of other medical importance; control undesirable or nuisance plants and animals; and prevent damage to natural resources
- **Objective:** Control undesirable or nuisance plants and animals
  - **Project:** Capture individual small/medium animals (i.e. woodchucks, skunks) for relocation
  - **Project:** Properly fertilize turf to encourage the growth and strength of desirable plants and reduce the growth of weeds

### **Bird/Wildlife Aircraft Strike Hazard (BASH)**

USAG – WP does not currently have a BASH Plan to reduce the potential for bird strikes to occur with rotary-engine aircraft.

- **Goal:** Develop and implement an educational tool to inform pilots of local sensitive bird resources
- **Objective:** For pilots to be aware of the unique conditions relative to USAG WP avian impacts
  - **Project:** Determine populations of hazard bird and wildlife species, including resident populations and seasonal influxes of migratory species
  - **Project:** Once a year inform pilots of local bald eagle concentrations and sensitive areas.

### **Coastal Zone and Marine Resources Management**

USAG WP is located along the Hudson River and within New York’s coastal zone.

- **Goal:** Protect shoreline resources at USAG WP
- **Objective:** Continue to ensure that the identified coastal zone at USAG WP is maintained to protect the installation’s natural resources.
  - **Project:** Maintain the integrity of shoreline features and coordinate any activities that impact the shoreline with the Environmental Office to ensure compliance with the CZMA

### **Cultural Resource Protection**

An Integrated Cultural Resource Management Plan (ICRMP) has been prepared for USAG – WP. Cultural resource protection will be addressed through the Cultural Resources Management Program.

### **Public Outreach**

Successful community relations are vital to the continued good positive image that USAG WP has with the public.

- **Goal:** Provide a positive contribution to the community by offering informative and educational instruction and opportunities.
- **Objective:** Continue to perform outreach activities and instruction
  - **Project:** Integrate natural resource awareness into construction and maintenance activities
  - **Project:** Continue to implement outdoor educational activities with West Point Elementary and Middle School and the Eagle Scouts

### **Geospatial Information System (GIS)**

Having a complete, usable, and up to date GIS dataset and access to software is essential for natural resource management.

- **Goal:** Continue the use of GIS for natural resource management
- **Objective:** Continue to collect and update natural resource data in a GIS database
  - **Project:** Use GPS to map and inventory natural resources at USAG WP
  - **Project:** Update GIS coverages for all natural resource areas as necessary

## INRMP Tentative Schedule

| Activity/Milestone   | Date                   |
|--|------------------------|
| Contract Award   | 9/8/2017               |
| Project Management Plan Completed  | 10/26/2017             |
| Installation Kickoff Meeting Held  | 12/5/17                |
| Data Deficiencies Identified and Data Deficiencies Assessment Prepared                                   | 12/11/2017             |
| Government Provides Answers and Guidance to Respond to Data Deficiencies Assessment                      | 12/18/2017             |
| Draft INRMP Submitted to Government  | 1/5/2018               |
| Government Provides Comments on Revised Draft INRMP  | 2/6/2018               |
| Revised Draft Final INRMP for coordination with Federal, State, and local agencies                       | 3/7/2018               |
| Government, State and Local Agencies and interested public provide comments on Revised Draft Final INRMP | 3/7/2018 to 4/23/2018  |
| Revised Final INRMP Completed  | 4/24/2018 to 5/21/2018 |
| Installation obtains approval of FWS and State Game and Fish Agency                                      | 5/24/2018              |

## Questions?





**September 2018**