DRAFT ENVIRONMENTAL ASSESSMENT

FOR THE

REMOVAL OF ATKISSON DAM AND VAN BIBBER WEIR AT U.S. ARMY GARRISON ABERDEEN PROVING GROUND

U.S. Army Garrison Aberdeen Proving Ground
Directorate of Public Works—Environmental Division

September 2022

Environmental Assessment
Removal of Atkisson Dam and Van Bibber Weir at U.S. Army Garrison Aberdeen Proving Ground

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REMOVAL OF ATKISSON DAM AND VAN BIBBER WEIR AT U.S. ARMY GARRISON ABERDEEN PROVING GROUND

***Draft* Environmental Assessment**

U.S. Army Garrison Aberdeen Proving Ground
Directorate of Public Works, Environmental Division

September 2022

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DRAFT FINDING OF NO SIGNIFICANT IMPACT

ENVIRONMENTAL ASSESSMENT FOR THE REMOVAL OF ATKISSON DAM AND VAN BIBBER WEIR AT U.S. ARMY GARRISON ABERDEEN PROVIDING GROUND

This Environmental Assessment (EA) has been prepared to analyze the potential environmental, cultural, and socioeconomic effects associated with the removal of Atkisson Dam and Van Bibber Weir at Aberdeen Proving Ground (APG), Maryland.

The EA was prepared pursuant to the National Environmental Policy Act (NEPA) of 1969 (42 United States Code [USC] Section 4321 et seq.); the Council on Environmental Quality (CEQ) regulations that implement NEPA (Title 40 Code of Federal Regulations [CFR], Parts 1500 to 1508); and 32 CFR 651, *Environmental Analysis of Army Actions*.

1 Purpose of and Need for the Proposed Action

The purpose of the Proposed Action is to fully or partially remove Atkisson Dam and Van Bibber Weir for safety concerns and potential hazards associated with dam failure so that the Army may divest itself of these properties. While both the dam and weir were originally built to provide water to APG, they are no longer needed for this purpose. In addition, the restoration of free-flowing streams and rivers through dam removal can provide significant improvements to water quality as well as providing ecological benefits (USEPA, 2016). The Proposed Action is needed to eliminate the hazard to life and property that could accompany dam failure and to rectify the issue of sediment buildup that has started to degrade aquatic habitat in the impounded sections of Winters Run. It would also bring the Army into compliance with Army Regulation (AR) 420-1, *Army Facilities Management*, dated February 12, 2008 (hereafter referred to as AR 420-1), paragraph 7-58 Dam disposal, which states: "Actions will be taken to dispose of dams and appurtenances for which there is no foreseeable need IAW [in accordance with] AR 405-90."

2 Description of the Proposed Action and Alternatives

Chapter 2 of the EA presents a detailed description of the Proposed Action and alternatives considered within this EA.

Under the Proposed Action, the Army would fully or partially remove both Atkisson Dam and Van Bibber Weir (including the fish ladder) so that the Army may later divest itself of these properties. As part of the Proposed Action, APG evaluated three (3) courses of action (COAs), which represent different processes for removal of the dam and weir. COA 3 is the Preferred Alternative. Descriptions of each COA are as follows:

- *COA 1 – Quick Drawdown*: This COA includes draining the reservoir, excavating the sediment behind the dam, and removing the entire Atkisson Dam and Van Bibber Weir. Low level control of the outlet works of the structure would be re-established to help regulate flows after drawdown. This COA includes restoration of riverine channel and slopes. A complete removal would be phased to gradually drain the reservoir; subsequently the remainder of the structure would be removed. Even with a complete dam removal, a portion of the foundation sill may be left in place as a channel elevation control to prevent excessive incising of the channel or as part of other mitigation measures, such as wetland mitigation and enhancement.

- *COA 2 – Slow Drawdown and Leave Accumulated Sediments in Place*: This COA includes draining the reservoir incrementally by systematically removing portions of the dam, maximizing sediment retention and stabilization, and removing the majority of Atkisson Dam and Van Bibber Weir. During drawdown, the old blow-off conduit could be re-established. This alternative would also include replanting along stream banks in order to stabilize the banks but would not include measures to retain and protect the existing wetlands.

- *COA 3 – Slow Drawdown, Leave Accumulated Sediments in Place, and Retain Wetlands*: This COA (the Preferred Alternative) includes draining the reservoir incrementally by systematically removing portions of the dam, maximizing sediment retention and stabilization, and removing the majority of Atkisson Dam and Van Bibber Weir. The new system would utilize a weir box structure, cofferdam system and continued assessment for controlling the water flow. During drawdown, the old blow-off conduit could be re-established. This alternative would also include replanting and incorporating protective measures to stabilize sediment and stream banks and retain existing wetlands to the extent practicable.

A No Action Alternative was also analyzed in the EA. The No Action Alternative serves as the baseline against which the impacts of implementing the Proposed Action are measured. Under the No Action Alternative, Atkisson Dam and Van Bibber Weir would remain intact, and they would both remain the property of APG. They both would continue to accumulate sediment upstream, further endangering the structures. This alternative would continue to degrade the existing aquatic habitat, and the associated liability and hazard to property and human health would also continue. The No Action Alternative would not satisfy the purpose of or need for the Proposed Action.

3 Alternatives Eliminated from Further Consideration

As part of the NEPA process, potential alternatives to the Proposed Action must be evaluated. For alternatives to be considered reasonable and warrant further detailed analysis, they must meet the purpose of and need for the action; exceed threshold screening criteria; and be affordable and implementable.

Two alternatives to the Proposed Action were considered, but not further analyzed in this EA: (1) repair or replace the dam and weir, and (2) quick drawdown and passive release of accumulated sediment. The repair or replacement of the dam and weir was considered, but ultimately not carried forward for analysis because repair or replacement would be expensive and logistically difficult, and the Army determined it would likely not be able to divest itself of the properties with the repaired or replaced dam and weir still on the properties. The quick drawdown with passive release of accumulated sediment was also considered, but not carried forward for analysis because passive release of sediments would affect the water quality and riparian habitat downstream of the dam and into the Chesapeake Bay through sediment transport and deposition. This could have impacts to various resources including water quality, biological receptors, and wetland resources.

4 Environmental Analysis

Chapter 4 of the EA discusses the affected environment. Chapter 5 discusses potential environmental consequences associated with implementing the Proposed Action or the No Action Alternative.

The EA finds that no significant adverse impact on human health or the environment is anticipated from the Preferred Alternative. Under the Preferred Alternative, any impacts to resource areas would be negligible to minor and would be reduced to the extent practicable through the use of best management practices (BMPs).

The No Action Alternative would maintain the existing conditions of Atkisson Dam and Van Bibber Weir and, therefore, would have no significant adverse impact on the environmental resources analyzed herein. However, sedimentation behind the dam would continue to have minor adverse impacts on water resources and biological resources, and human health and safety risks associated with public trespassing at the dam would remain.

Based on the evaluation of environmental effects described in the EA, the Preferred Alternative (COA 3) would not result in a significant adverse impact to the environment. Under the Preferred Alternative, the following resources have a reasonable likelihood to have minor, but not significant adverse impacts: Noise; Soils and Topography, Air Quality; Water Resources; Biological Resources; and Hazardous, Toxic, and Radioactive Substances. This COA would have expected beneficial impacts to Visual Aesthetics and Human Health and Safety, along with some beneficial impacts to Biological Resources.

5 Public Review and Comment

Public participation opportunities with respect to this EA and decision making on the Proposed Action are guided by 32 CFR Part 651, *Environmental Analysis of Army Actions*. The EA was made available to the public and regulatory agencies for a 30-day review and comment period. APG considered all comments during the decision-making process.

6 Finding of No Significant Impact

After careful review of the EA, which is attached hereto and incorporated by reference in its entirety into this Finding of No Significant Impact (FNSI), the evaluation of concerns expressed during the review period, and the Army's intent to follow prescribed regulations, acquire required permits, and implement the mitigation measures identified, I have concluded that implementation of the Preferred Alternative will not generate significant controversy or have a significant direct or indirect impact on the quality of the human or natural environment. This analysis fulfills the requirements of Section 102(2)(c) of NEPA and the CEQ Regulations. An Environmental Impact Statement (EIS) is not required and will not be prepared, and APG is issuing this FNSI.

Johnny M. Casiano Colonel, U.S. Army Commander, U.S. Army Garrison Aberdeen Proving Ground, Maryland	Date

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1.0 PURPOSE OF AND NEED FOR THE PROPOSED ACTION

1.1 INTRODUCTION

The National Environmental Policy Act of 1969 (NEPA) requires that all Federal agencies consider the impacts of their proposed actions on the environment in compliance with the Council on Environmental Quality's (CEQ) regulations for implementing NEPA (40 Code of Federal Regulations [CFR] Parts 1500 to 1508, *Regulations for Implementing NEPA*, dated 14 September 2020 [hereafter referred to as 40 CFR 1500-1508]). This Environmental Assessment (EA) analyzes the potential environmental, cultural, and socioeconomic impacts associated with the full or partial removal of Atkisson Dam and Van Bibber Weir on Aberdeen Proving Ground (APG). The Proposed Action will address safety and aquatic habitat degradation concerns and will ultimately allow the Army to divest itself of the property on which Atkisson Dam and Van Bibber Weir are currently located. This EA was prepared in accordance with NEPA and 32 CFR Part 651, *Environmental Analysis of Army Actions*, dated 29 March 2002 (hereafter referred to as 32 CFR 651).

The APG installation is located primarily in Harford County, Maryland, with two small sections on the western edge of the installation located in Baltimore County, a research facility in Montgomery County, and a test facility in Prince George's County. The City of Baltimore is the closest major city, which is located approximately 34 miles southwest of the installation's Aberdeen Area (APG-AA). In its entirety, APG occupies approximately 72,500 acres of land and water. The Bush River divides the installation into two non-contiguous areas, commonly referred to as the APG-AA, which encompasses 27,600 acres, and the Edgewood Area (APG-EA), which encompasses 9,850 acres. Contiguous waters of APG account for an additional 33,000 acres (Figure 1-1). Other off-site areas of APG not attached to the main installation account for the remaining acreage. These include the Churchville Test Area, Van Bibber Weir and Water Treatment Plant, Atkisson Reservoir and Dam, and Poole's Island in Harford County; Graces Quarters and Carroll Island Areas in Baltimore County; Eastern Shore Towers in Kent County; Adelphi Laboratory Center (ALC) in Montgomery and Prince George's Counties; and Blossom Point Research Facility (BPRF) in Charles County, Maryland (U.S. Army Garrison Aberdeen Proving Ground [APG], 2014).

The Proposed Action for this project would be located at Atkisson Dam and Van Bibber Weir. Atkisson Dam and Reservoir are located along Winters Run near the Emmorton community in Harford County, Maryland. The dam is approximately 6.25 miles north of APG-EA and is bordered to the east by Harford Glen, which is the property of the Harford County Department of Education. The Army has retained the property immediately surrounding the reservoir up to the 130-foot contour line. Van Bibber Weir is located just north of Maryland Route 40, about 2.3 miles north of APG-EA, also along Winters Run (Figure 1-2). Winters Run is a tributary of Otter Point Creek, which flows to the Bush River, a tributary of the Chesapeake Bay.

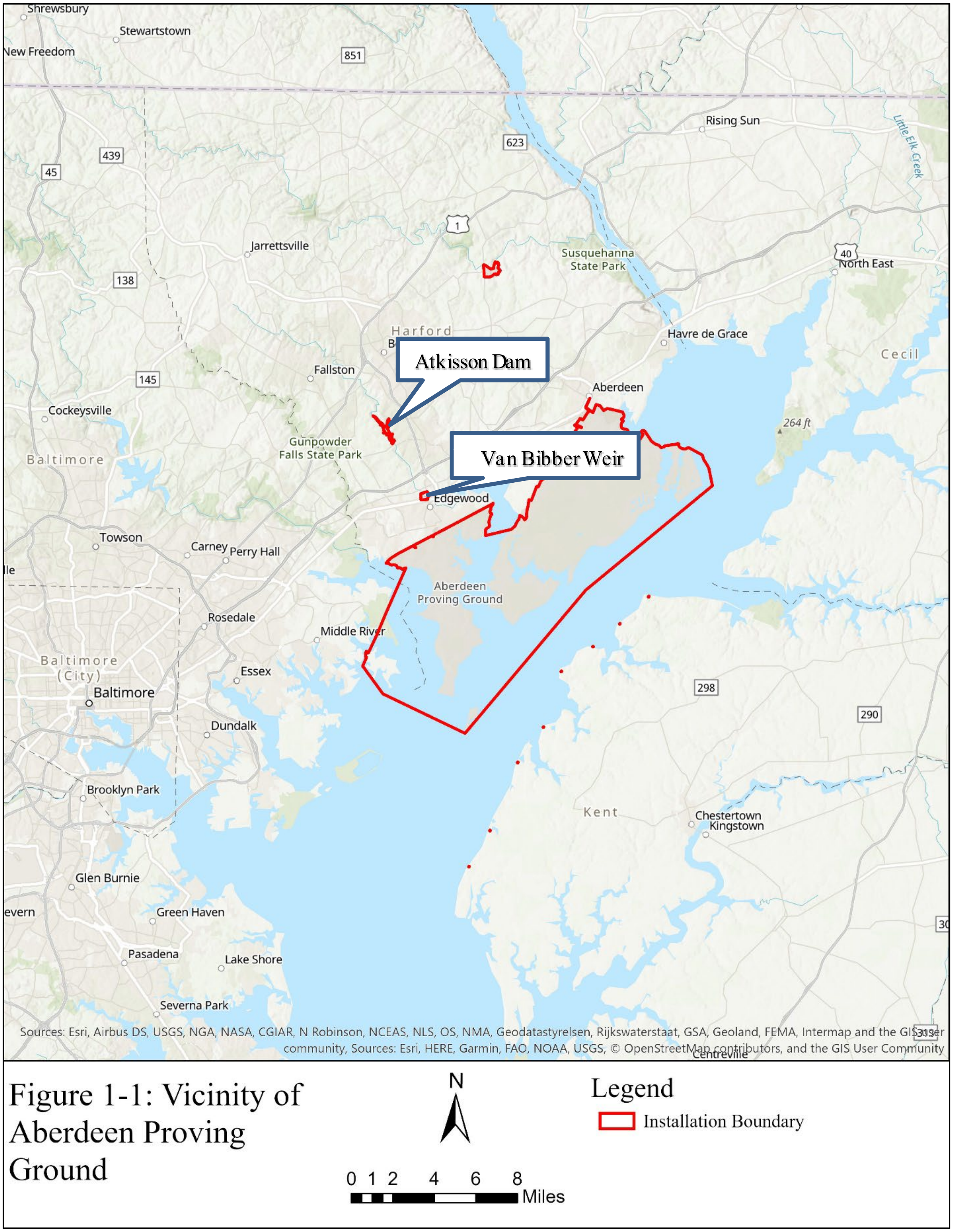

Figure 1-1: Vicinity of Aberdeen Proving Ground

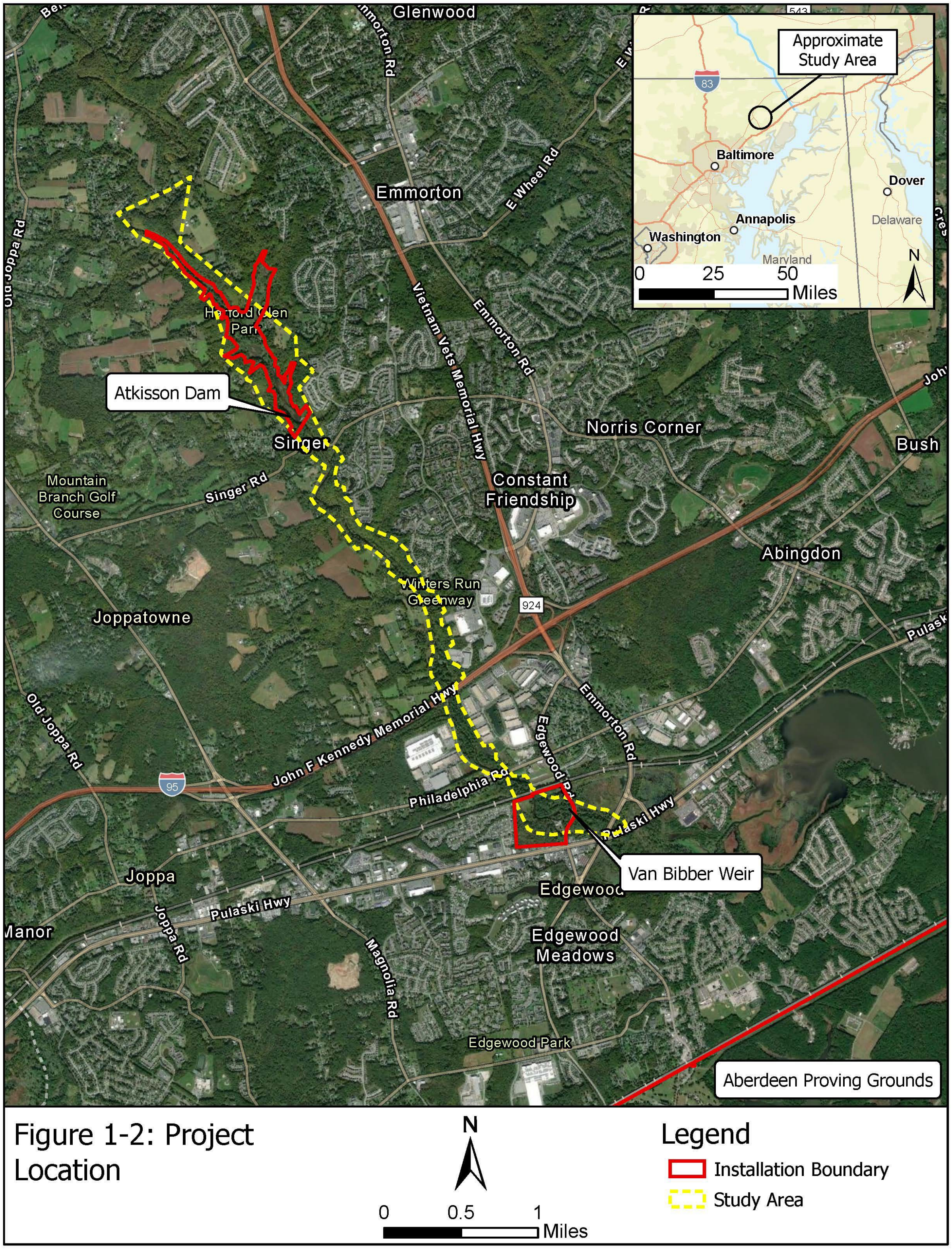

Figure 1-2: Project Location

1.2 PURPOSE AND NEED

The purpose of the Proposed Action is to fully or partially remove Atkisson Dam and Van Bibber Weir so that the Army may divest itself of these properties. The Atkisson Dam was originally constructed in 1942 to impound water for Edgewood Arsenal operations; however, by the 1970s it was no longer needed for this purpose, and at that time, the property was deemed excess to the needs of APG. The dam is a concrete gravity structure approximately 60 feet high at the abutments and 46 ft high at the spillway. It is approximately 468 ft in length which includes the center spillway. The 210-foot-wide spillway is an uncontrolled ogee-type weir located in the center of the dam. There are structures on both sides of the banks. The width of the dam is approximately 8.5 ft. The Van Bibber Weir, which is 410' x 1' x 14', was constructed in 1942 to provide water to APG-EA; however, water for APG-EA is now provided by Harford County via a water purchase agreement between APG and the county. As Harford County is already providing water to APG-EA, Van Bibber Weir and the associated water treatment plant have been determined unnecessary as well (APG, 2017). APG will follow Army Regulation (AR) 405-90, *Real Estate: Disposal of Real Property,* dated 8 June 2020, in the divestment of these properties.

The Proposed Action is needed to eliminate the hazards to life and property that could accompany dam failure and to rectify the issue of sediment buildup that has started to degrade aquatic habitat in the impounded sections of Winters Run. The Army's ability to transfer the dam and weir in their current states to another owner is unlikely, as there are several risks and uncertainties associated with these structures. Removal of the Atkisson Dam and Van Bibber Weir and divestment of the property is needed as they:

- do not provide benefit or contribute to the missions of the Army;
- are located off-post and security at the sites is difficult to manage, posing a risk to public safety; and
- require maintenance costs that are not justified by value provided to the Army.

Additionally, the Proposed Action would bring the Army into compliance with AR 420-1, *Army Facilities Management*, dated February 12, 2008 (hereafter referred to as AR 420-1), paragraph 7-58 Dam disposal, which states: "Actions will be taken to dispose of dams and appurtenances for which there is no foreseeable need IAW [in accordance with] AR 405-90."

The task of maintaining Atkisson Dam, Van Bibber Weir, and the associated property includes addressing immediate safety concerns and performing recommended safety analyses, as well as APG's annual and periodic costs for inspecting, monitoring, securing, and managing these assets. AR 420-1 requires that maintenance and repair alternatives be analyzed, and that project selection should be based on the "lowest life cycle costs and overall safety factors". The maintenance costs described above exceed the value the property provides to the Army. Additionally, the risk of dam failure would only increase over time.

In a 1998 Feasibility Study report (APG, 1998), the U.S. Army Corps of Engineers (USACE) compared the impacts of:

- dam failure;

- probable maximum flood (PMF) (the flood that may be expected from the most severe combination of critical meteorological and hydrologic conditions that are reasonably possible in a particular large drainage area); and
- PMF and dam failure. (Dam failure is more likely during a PMF event.)

Based on the modeling developed during the study, the inundation area of dam failure included approximately seven structures and 1.9 miles of county roads.

During a PMF event, the inundation area would include approximately 150 residences and associated structures, and approximately 40 commercial structures, and flood waters would overtop the Singer Road overpass, Winters Run Road/Fashion Way, the Interstate-95 (I-95) overpass, and the Route 7 overpass. Depending on the force of the waters and other factors, the I-95 and Route 7 overpasses could be destroyed. USACE estimated that it would take approximately three hours from the time the dam is initially overtopped for the flood waters to reach the maximum elevation at the I-95 and Route 7 overpasses.

The inundation area for PMF and dam failure is slightly larger than for PMF alone, and it would include a few additional structures. Flood waters would take only 30 minutes to reach the I-95 and Route 7 overpasses during a dam failure during a PMF event, thus reducing the amount of time for road closure and evacuation to occur. Thus, the potential severity of the situation in terms of loss of life and property is far greater when a PMF is combined with dam failure than for a PMF alone, even though the inundation area is only slightly larger.

1.3 SCOPE OF THE ENVIRONMENTAL ASSESSMENT

This EA has been prepared to address the potential environmental, cultural, and socioeconomic impacts of the full or partial removal of Atkisson Dam and Van Bibber Weir, in accordance with NEPA, 40 CFR 1500-1508, and 32 CFR 651. For the purposes of this EA, the study area evaluated for potential impacts to human and natural resources includes the dam and weir, adjacent areas that would be disturbed during construction, and adjacent habitats that would be permanently changed. The study area runs along Winters Run from approximately 2.25 miles upstream of Atkisson Dam to the dam, from the dam to Van Bibber Weir, and from the weir to approximately 0.5 miles downstream of the weir. The study area includes a buffer on either side of the dam, weir, and Winters Run ranging from as little as 30 feet from the stream banks in some areas to as much as 1,000 feet from the stream banks in others. This buffer area was included to capture any potential impacts to the surrounding areas that could arise from the removal of the dam and weir. The study area also includes adjacent areas that could be temporarily impacted physically by construction vehicles, debris, or tree removals, as well as areas within hearing range of the proposed construction work.

1.4 ENVIRONMENTAL LAWS AND REGULATIONS

Regulations that may apply to dam removal, bank stabilization, and/or wetland retention could include the Clean Air Act (CAA) of 1970, as amended; Clean Water Act (CWA) of 1972, as amended; Noise Control Act (NCA) of 1972; Endangered Species Act (ESA) of 1973, as amended; Coastal Zone Management Act (CZMA) of 1972, as amended; Resource Conservation and Recovery Act (RCRA) of 1976; Toxic Substances Control Act (TSCA) of 1976, as amended;

National Historic Preservation Act (NHPA) of 1966; Archaeological Resources Protection Act (ARPA) of 1979; Executive Order (EO) 11593, *Protection and Enhancement of the Cultural Environment*, dated 13 May 1971; EO 11988, *Floodplain* Management, dated 24 May 1977; EO 11990, *Protection of Wetlands*, dated 24 May 1977; EO 12088, *Federal Compliance with Pollution Control Standards*, dated 13 October 1978; EO 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*, dated 11 February 1994; EO 13045, *Protection of Children from Environmental Health Risks and Safety Risks*, dated 21 April 1997; EO 13751, *Safeguarding the Nation from the Impacts of Invasive Species*, dated 5 December 2016; and EO 13508, *Chesapeake Bay Protection and Restoration*, dated 12 May 2009. Note that this list is not all-inclusive and other Federal, state, and local regulations may apply.

1.5 PUBLIC INVOLVEMENT

Coordination with Federal and state agencies including the U.S. Fish and Wildlife Service (USFWS), U.S. Environmental Protection Agency (USEPA), Maryland Department of Environment (MDE), Maryland Department of Natural Resources (MD DNR), Maryland Historical Trust (MHT), and interested Tribal governments was initiated for the Proposed Action via letters and/or Public Notice in local newspapers. Copies of coordination letters and agency responses are located in Appendix A: Agency Coordination.

Public participation opportunities with respect to this EA and decision making on the Proposed Action are guided by 32 CFR 651. The EA was made available to the public for 30 days in order to receive public comments. The Notice of Availability (NOA) was advertised in the Baltimore Sun and the Harford County Aegis. The EA was also sent to Federal, state, and local agencies for comment and agency responses are located in Appendix A: Agency Coordination.

1.6 PREVIOUS NEPA DOCUMENTS

Various NEPA documents have been previously prepared for management and construction activities on APG lands and waters. Several of these documents provide detailed information that was used in preparation of this EA. In accordance with CEQ implementing regulations for NEPA and with the intent of reducing the size of this document, the following materials relevant to the Proposed Action are incorporated by reference as listed below.

U.S. Army Garrison Aberdeen Proving Ground, *Real Property Master Plan, Programmatic Environmental Assessment, Aberdeen Proving Ground, Maryland*, dated October 2014.

U.S. Army Garrison Aberdeen Proving Ground. *Final Water Supply and Treatment for Aberdeen Proving Ground – Aberdeen Area, Maryland*, dated September 2017.

U.S. Army Garrison Aberdeen Proving Ground, *Integrated Natural Resources Management Plan*, updated March 2019.

2.0 DESCRIPTION OF THE PROPOSED ACTION

The Proposed Action is the full or partial removal of the Atkisson Dam and Van Bibber Weir and divestment of the associated property. Several courses of action to accomplish the Proposed Action are described below and will be evaluated in this EA. The COAs and the No Action Alternative were evaluated based on environmental, cultural, and socioeconomic impacts, as well as cost and compliance with regulatory and mission requirements. The preferred alternative was selected by USAG APG after evaluating all aspects outlined in this EA.

2.1 COURSE OF ACTION 1 – QUICK DRAWDOWN

This option would include draining the reservoir, excavating the sediment behind the dam, and removing the entire Atkisson Dam and Van Bibber Weir. The new channel and valley cross section would be in equilibrium with the current hydrology. During dewatering, current riverine flows would bypass the reservoir area. Low level control of the outlet works of the structure would be re-established to help regulate flows after drawdown. This alternative includes restoration of riverine channel and slopes. A containment area for transportation and dewatering the dredged material may be required.

A complete removal would be phased to gradually drain the reservoir; subsequently the remainder of the structure would be removed consistent with a detailed deconstruction plan. Even with a complete dam removal, it is possible that a portion of the foundation sill would be left in place as a channel elevation control to prevent excessive incising of the channel or as part of other mitigation measures, such as wetland mitigation and enhancement. Similar to a partial removal, sediment management, restoration and water quality protection and monitoring plans would all be required.

2.2 COURSE OF ACTION 2 – SLOW DRAWDOWN AND LEAVE ACCUMULATED SEDIMENTS IN PLACE

This option would include draining the reservoir incrementally by systematically removing portions of the dam, maximizing sediment retention and stabilization, and removing the majority of Atkisson Dam and Van Bibber Weir. The new channel and valley cross section would be in equilibrium with the current hydrology. During drawdown the old blow-off conduit, a pipe which is part of the dam allowing the impoundment to be drained annually and prevent sediment build-up, could be re-established. A plan for protection and monitoring of downstream water quality during breaching and restoration would likely be a requirement of any permits and CWA Section 401 certification issued for this project. A partial dam breach that retains at least a portion of the existing structure could also maintain historic features, which could minimize any adverse effect to historic properties.

This alternative would also include replanting along stream banks in order to stabilize the banks but would not include measures to retain and protect the existing wetlands.

2.3 COURSE OF ACTION 3 – SLOW DRAWDOWN, LEAVE ACCUMULATED SEDIMENTS IN PLACE, AND RETAIN WETLANDS

This option would include draining the reservoir incrementally by systematically removing portions of the dam, allowing the sediment to compact in order to maximize sediment retention and stabilization. This course of action (COA) would also include removing the majority of Atkisson Dam and Van Bibber Weir. The new channel and valley cross section would be in equilibrium with the current hydrology. The new system would utilize a weir box structure, cofferdam system and continued assessment for controlling the water flow. During drawdown, the old blow-off conduit could be re-established. A plan for protection and monitoring of downstream water quality during breaching and restoration would likely be a requirement of any permits and CWA Section 401 certification issued for this project. A partial dam breach that retains at least a portion of the existing structure could also maintain historic features as an historic resource.

This alternative would also include replanting and incorporating protective measures to stabilize sediment and stream banks, and retain existing wetlands to the extent practicable. However, there is the potential for wetland loss or conversion due to changes in hydrology.

3.0 ALTERNATIVES CONSIDERED

3.1 PREFERRED ALTERNATIVE

The Preferred Alternative is the Proposed Action's COA 3.

3.2 NO ACTION ALTERNATIVE

Under the No Action Alternative, APG would leave the Atkisson Dam and Van Bibber Weir in place as they are and both would continue to accumulate sediment upstream, further endangering the structures. This alternative would continue to degrade the existing aquatic habitat. The associated liability and hazard to property and human health would also continue. This condition would limit the ability of the Army to excess the property and find a new owner. As the Army would retain ownership of the Atkisson Dam and Van Bibber Weir under the No Action Alternative, an Emergency Action Plan (EAP) would need to be developed, in accordance with AR 420-1. While the No Action Alternative would not satisfy the purpose of or need for the Proposed Action, the CEQ requires the analysis of the No Action Alternative even if the agency is under legislative command to act. Analysis of the No Action Alternative provides a benchmark for enabling decision-makers to compare the magnitude of environmental effects of the other action alternatives.

3.3 ALTERNATIVES ELIMINATED FROM FURTHER STUDY

As required by NEPA, potential alternatives to the Proposed Action must be considered. Alternatives to be evaluated must be economically feasible, able to be implemented, and meet the purpose of and need for the Proposed Action. There were two alternatives considered, but ultimately screened from further consideration.

3.3.1 Alternative 1 – Repair or Replace Dam

This alternative would consider performing the necessary repairs to bring Atkisson Dam up to adequate engineering and safety standards. If repairs are infeasible, it may be possible to replace the dam with a structure immediately downstream; this involves additional engineering and logistical challenges. The Army does not believe it could accomplish the proposed purpose to excess and transfer the property to another entity with a repaired or replaced dam, as it is unlikely that an entity could be identified that would be willing to assume the associated liability and cost for ongoing maintenance of the dam. For this reason, it was eliminated from further consideration.

If an interested entity with adequate resources stepped forward, this alternative could be carried forward. This would involve an updated engineering evaluation to identify measures and cost for upgrading and maintaining or replacing the Atkisson Dam to reduce the risk and hazard rating of the dam. This evaluation would also examine alternatives for management of accumulated sediment upstream of the dam. A plan and schedule for ongoing future inspection and maintenance and associated costs would be developed.

3.3.2 *Alternative 2 – Quick Drawdown and Passive Release of Accumulated Sediments*

This option is similar to the Proposed Action's COA 1, but it includes passively releasing the accumulated sediment. Passive release of the accumulated sediments behind the dam would affect the water quality and riparian habitat downstream of the dam and into the Chesapeake Bay through sediment transport and deposition. This could have impacts to various resources including water quality, biological receptors, and wetland resources. Based on these potential impacts, this alternative was eliminated from further consideration; however, this alternative has been utilized for other dam breach/removal projects in the United States, so it could be considered if other alternatives were deemed infeasible.

3.4 LEVEL OF ENVIRONMENTAL ANALYSIS

In compliance with NEPA and CEQ regulations, the description of the affected environment in this EA focuses on the resources and conditions the Proposed Action could potentially affect. In an effort to comply with CEQ regulations encouraging NEPA analyses to be as concise and focused as possible (40 CFR Part 1500.1(b) and 1500.4(b)), Table 3-1 presents each valued environmental component (VEC) and its corresponding area of interest (AOI) and threshold of significance. A qualified APG subject matter expert (SME) reviewed the potential effects of the Proposed Action and the No Action Alternative relative to each VEC and analyzed the existing conditions of each VEC within the Proposed Action's AOI. The SME determined that, for the airspace and utilities VECs, the effects of the Proposed Action would be non-existent; therefore, these resources will not be discussed within this report. Language supporting this determination can be found in Section 5.0.

Table 3-1: Preliminary Analysis of Valued Environmental Components

Valued Environmental Component	Area of Interest	Thresholds of Significance	Dismissed from Further Assessment	Rationale for Level of Assessment
Land Use	Areas within and adjacent to the project	Significant impacts would occur if the land use were incompatible with existing military land uses and designations (including recreation). These impacts may conflict with Army land use plans, policies, or regulations, or conflict with land use off-post. Significant impacts would occur if certain natural land cover types (wetlands and forests of particular interest) were to be converted to other land cover (such as the built environment).	No	The landscape will be returned to its more natural state and result in environmental benefits. There will be short-term minor impacts during demolition, but they would cease once construction is complete. Therefore, this topic was retained for further assessment

Valued Environmental Component	Area of Interest	Thresholds of Significance	Dismissed from Further Assessment	Rationale for Level of Assessment
Visual Aesthetics	Areas within and adjacent to the project	The Proposed Action would be considered to have a significant effect to visual impacts if: long-term alteration of the viewshed would occur that would require mitigation; negative alterations to the viewshed of a historical resource would be expected; and it was not compliant with the overall viewshed of adjacent areas.	No	Removal of Atkisson Dam and Van Bibber Weir will alter the viewshed returning it to its more natural conditions. It may allow for wetland enhancement upstream post-construction. Therefore, this topic was retained for further assessment.
Noise	Areas within and adjacent to the project	Impacts would be considered significant if noise from Army actions were to cause harm or injury to on- or off-post communities, or exceed applicable environmental noise limit guidelines.	No	Deconstruction would occur at the dam and weir, possibly near potential sensitive receptors. Noise levels would be typical of construction equipment and would result in short-term, minor impacts. Therefore, this topic was retained for further assessment.
Geology, Soils, and Topography	Soils within the project area	Impacts on geology, topography, and soils would be considered significant if: the landscape would not be sustained for military testing and training; excessive soil loss were to impair plant growth; or Federal, state, or local laws pertaining to this resource were violated.	No	Geology, soil and/or Topography impacts could occur. Soils behind dam may lose hydric properties and erosion may occur when sediments exposed to new conditions causing minor impacts to soils. Minor impacts to topography may occur with shifting contours. Leaving sediments in place would allow some existing conditions to remain upstream. Therefore, these

Valued Environmental Component	Area of Interest	Thresholds of Significance	Dismissed from Further Assessment	Rationale for Level of Assessment
				topics were retained for further assessment.
Air Quality and Greenhouse Gases (GHG)	Metropolitan Baltimore Intrastate Air Quality Control Region (MBIAQCR) and Installation Boundary	An impact to air quality would be considered significant if it were to affect the achievement or maintenance of National Ambient Air Quality Standards (NAAQS)	No	There will be short-term minor impacts to air quality and GHGs during construction. There will be short-term minor increases to greenhouse gasses as sediments containing carbon become oxidized. Long-term there should be beneficial impacts to GHGs, but this may be negated if wetland losses. Therefore, this topic was retained for further assessment.
Water Resources	Watersheds, state designated stream segments associated with the project area; groundwater aquifers below the project area; U.S. Army Corps of Engineers (USACE) jurisdictional WOUS and wetland resources within the project area	Impacts to water resources would be considered significant if Army actions: exceed applicable Federal and state regulatory limits for surface water quality or result in unpermitted direct impacts to waters of the U.S. (WOUS); or substantially affect surface water drainage or stormwater runoff; substantially affect groundwater quantity or quality. Impacts to wetlands would be considered significant if the Proposed Action does not comply with policies, regulations, and permits related to wetlands conservation and protection.	No	Because the project occurs along Winters Run, there is potential for the Proposed Action to impact surface water and groundwater. The project has the potential to cause flooding downstream, causing potential long-term, minor adverse impacts. While the Proposed Action is directed to retain wetlands, it could result in changes to wetland boundaries. The Van Bibber weir is located in the Critical Area and minor impacts are anticipated as accumulated

Valued Environmental Component	Area of Interest	Thresholds of Significance	Dismissed from Further Assessment	Rationale for Level of Assessment
				sediments and water behind dam could impact wetlands along the shoreline.
Biological Resources	Biological resources within the project area and associated habitat	Impacts to biological resources would be considered significant if Army actions were to result in: long-term loss, degradation, or loss of diversity within unique or high-quality plant communities; unpermitted 'take' of federally listed species; local extirpation of rare or sensitive species not currently listed under the Endangered Species Act (ESA) of 1973; unacceptable loss of critical habitat as determined by the USFWS or; violation of the Migratory Bird Treaty Act (MBTA) (1918) or Bald and Golden Eagle Protection Act (BGEPA) (1940, as amended)	No	The Proposed Action may result in impacts in vegetation especially wetland vegetation with changing hydrologic properties and may impact submerged aquatic vegetation (SAV) in Otter Point Creek through increased sedimentation. Wildlife species may experience impacts during deconstruction and there may be impacts to migratory birds with habitat alteration. Fish may be impacted because of the work being done within Winters Run but may experience long-term benefits with improvements to fish passage.
Cultural Resources	Cultural Resources within the project area	Impacts to cultural resources would be considered significant if Army actions were to diminish the integrity of a historic property or archaeological site such that it would no longer be eligible for listing in the National Register of Historic Places (NRHP).	No	Because the Proposed Action would require surface and water disturbance and ground disturbance, this topic was carried forward.
Hazardous Materials and Hazardous Waste	APG lands, including the alternative	Impacts to solid waste hazardous materials, or hazardous waste, would be considered significant if the	No	Construction vehicles and machinery using fuel would be used for

Valued Environmental Component	Area of Interest	Thresholds of Significance	Dismissed from Further Assessment	Rationale for Level of Assessment
	specific project areas	Proposed Action were to: create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials or wastes from reasonably foreseeable accident events; require remediation of unexploded ordinance (UXO) contamination; impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan.		deconstruction of the dam and weir. In addition, some sediments behind the dam and weir accumulated prior to environmental regulations and could contain toxic substances. Therefore, the topic was retained for further assessment.
Traffic and Transportation	Public roadways and key access points within and near the installation; roadways within APG installation boundaries	Significant impacts would generally occur when a reduction by more than two levels of service (LOS) at roads and intersections within the ROI.	No	Many roadways intersect the study area or cross over Winters Run. Therefore, the topic was carried forward.
Socioeconomics	Socioeconomic and Environmental Justice factors with APG, and immediate surrounding communities and counties	Impacts to socioeconomics and environmental justice would be considered significant if they were to cause substantial change to the sales volume, income, employment, or population of the surrounding Region of Influence (ROI).	No	The Proposed Action impacts not only the natural environment, but also the communities near the Atkisson Dam and Van Bibber Weir. Therefore, the topic was retained for further assessment.

4.0 EXISTING CONDITIONS

This section of the EA describes the existing conditions of natural and socioeconomic resources that could be impacted by the Proposed Action. The study area for this proposed project includes Atkisson Dam and Reservoir and Van Bibber Weir and areas upstream and downstream of both structures. A map is shown in Figure 1-2.

4.1 LAND USE

Land use within the Atkisson Dam and Van Bibber Weir study area consists of forests, wetlands, agriculture, institutional, and very low- to medium-density residential housing according to the Maryland Department of Planning (Maryland Department of Planning [MDP], 2021). Additionally, Harford Glen Park is located upstream of Atkisson Dam and is owned by the Harford County Board of Education. Harford Glen Park is considered locally protected land and is a MD DNR Targeted Ecological Area (TEA). TEAs are lands and watersheds of high ecological value that have been identified as conservation priorities by MD DNR for natural resource protection (Maryland Department of Natural Resources [MD DNR], 2018).

4.2 VISUAL AESTHETICS

Visual resources can be defined as the natural and man-made features that constitute the aesthetic qualities of an area. Natural visual resources occur in the landscape, typically without human assistance, and include native or mostly undisturbed landforms, water bodies, vegetation, and animals, both wild and domesticated. The study area contains an abundance of natural landscapes that range from open water features, wetlands, and upland forests, as well as walking trails, boardwalks, and bridges. Harford Glen Park is an educational center that promotes natural areas and attracts local schools and residents for environmental education. The Winters Run Conservation Area follows portions of the study area along Winters Run. The conservation area contains a 2.5-mile-long hiking trail that follows the waterway.

4.3 NOISE

Noise is defined as unwanted sound that is disruptive and diminishes the quality of the surrounding environment. It is emitted from many sources including airplanes, factories, railroads, power generation plants, and highway vehicles. The magnitude of noise is described by its sound pressure. A logarithmic scale is used to relate sound pressure to a common reference level, as the range of sound pressure varies greatly. This is called the decibel (dB). A weighted decibel scale is often used in environmental noise measurements (weighted-A decibel scale or dBA). This scale emphasizes the frequency range to which the human ear is most susceptible. The threshold of human hearing is 0 dBA. A 70-dBA sound level can be moderately loud (similar to an indoor vacuum cleaner) with values above 85-90 dBA considered loud and potentially harmful to hearing depending on length of exposure. A 120 dBA can be uncomfortably loud, as in a military jet takeoff at 50 ft, and a 40-dBA sound level can be very quiet and is the lowest limit of urban ambient sound. To ensure a suitable living environment, the Department of Housing and Urban Development has developed a noise abatement and control policy, as seen in 24 CFR Part 51 – *Environmental Criteria and Standards*. According to this policy, noise not exceeding 65 dBA is considered acceptable. Noise above 65 dBA but not exceeding 75 dBA is normally acceptable, but noise above 75 dBA is unacceptable. Normal freeway traffic noise levels range from 70 to 90 dBA.

Atkisson Dam is surrounded by forests and medium-density housing, and the Van Bibber Weir is adjacent to commercial areas, medium-density housing, and US-40 (Pulaski Highway). Harford County Zoning defines medium density residential use as "Land zoned for density of more than 1 dwelling unit per 5 acres, and less than or equal to 1 dwelling unit per acre, including both existing and planned development and their associated infrastructure" (Harford County Department of Planning and Zoning, 2022). The nearest housing is approximately 450 feet from the dam and approximately 0.25 miles from the weir. Background noise levels for residents might typically be 40 dBA with occasional acute noise sources such as a lawnmower, which will generate 65 to 95 dBA at 50 ft or a leaf blower (110 dBA at 50 ft). Noises associated with heavy car or air traffic can range between 70 dBA to 150 dBA.

Many wildlife species use noise to communicate, navigate, breed, and locate sources of food. The sensitivity varies among species, location, and season (e.g., breeding, migration, and roosting). Underwater noise influences fish and other marine animal behavior, resulting in changes in their hearing sensitivity and behavioral patterns. Sound is important when hunting for prey, avoiding predators, or engaging in social interaction. Fish can also suffer from acoustically induced stress in their own habitat. Changes in vocalization behavior, breathing and diving patterns, and active avoidance of noise sources by marine life have all been observed in response to anthropogenic noise (Earth Island Institute, 2002).

4.4 GEOLOGY, SOILS, AND TOPOGRAPHY

4.4.1 Geology

The Atkisson Dam is located within the Piedmont Plateau Province, Piedmont Upland Section of the Harford Plateaus and Gorges Region. The dam rests within a few miles of the Fall Zone, which separates the Piedmont Plateau Province from the Atlantic Coastal Plain Province. The Piedmont Plateau is primarily composed of hard igneous and metamorphic rocks. Bedrock found within the eastern portions of the Plateau consist primarily of schist, gneiss, gabbro, and other sedimentary and igneous rocks. Conversely, the Van Bibber Weir is located within the Atlantic Coastal Plain Province, Embayed Section of the Western Shore Uplands Region. This area of the Atlantic Coastal Plain Province is primarily underlain by unconsolidated sediments including gravel, sand, silt, and clay (MD DNR, 2021).

4.4.2 Soils

Numerous soil complexes exist within the study area boundaries but consist primarily of loamy soils. Low lying areas adjacent to the dam and weir include soils such as Hatboro silt loam and Hatboro-Codorus complex, which are typical soils to be found in gently sloping and frequently flooded areas. Atkisson Dam and the Van Bibber Weir were originally constructed in uplands where soils tend to change drastically throughout much of the landscape due to the rocky and hilly nature of the areas. Other prominent soil map units within the area of interest include Codorous silt loam, Comus silt loam, Hatboro silt loam, Hatboro-Codorus complex, Legore silt loam, and Manor soils. A total of 50 soil map units are in the study area. Table 1 within the *Atkisson & Van*

Bibber Final Wetland Delineation- August 2021 (Appendix B), lists the soil names, map symbol, drainage class, hydric classification, and location of each soil type.

4.4.3 Topography

The study area is located in the USEPA's Ecoregions Piedmont Uplands and Chesapeake Rolling Coastal Plain. The Piedmont Uplands consist of rolling hills, low ridges, and narrow valleys. The narrow valleys typically have elevations that range from 450 feet to 1,000 feet with local reliefs ranging from 130 feet to 330 feet. The Piedmont ecoregion consists of generally high gradient streams and exposed bedrock (U.S. Environmental Protection Agency [USEPA], 2021b).

4.5 AIR QUALITY

4.5.1 NAAQS and Attainment Status

The Clean Air Act of 1970 requires the USEPA to set National Ambient Air Quality Standards (NAAQS) for six common air pollutants including ground-level ozone, particulate matter (PM), carbon monoxide, lead, sulfur dioxide, and nitrogen dioxide. The USEPA calls these "criteria air pollutants" because their levels in outdoor air need to be limited based on health criteria. These pollutants are found all over the United States and may cause health problems, harm the environment, and cause property damage (USEPA, 2014). As of September 30, 2021, Harford County is in nonattainment for the 8-hour Ozone pollutant, based on the 2015 standard. Nonattainment means that an area is not meeting or is above a given safe standard set by the USEPA for the particular criteria pollutant (USEPA, 2021c). Harford County is a "maintenance" area for $PM_{2.5}$ (EPA, 2021c) which means that it was previously designated as "non-attainment," but redesignated to "attainment" for a probationary period through implementation of maintenance plans.

4.5.2 Regulatory Requirements for Hazardous Air Pollutants (HAPs)

The National Emission Standards regulate 188 HAPs based on available control technologies. The majority of, but not all, HAPs are volatile organic compounds (VOCs) (USEPA, 2014). Sources of HAP emissions within the study area are typically limited to vehicle emissions and emissions from local commercial or industrial facilities. Two industrial facilities exist adjacent to but not within the study area – Upper Chesapeake Medical Center and Alcore. According to the USEPA's 2014 National Air Toxics Assessment, both facilities display low risks for carcinogenic air toxins (USEPA, 2014).

4.5.3 Clean Air Act Conformity

State agencies develop air quality plans, which are also referred to as State Implementation Plans (SIPs), designed to attain and maintain the NAAQS and to prevent significant deterioration of air quality in areas that demonstrate air that exceeds NAAQS. Maryland has individual SIPs for various pollutants, including nitrogen dioxide (NO_2), particulate matter ($PM_{2.5}$), 8-hour ozone (O_3), regional haze, lead, etc. Federal agencies must ensure that their actions conform to the SIP in a nonattainment area, and do not contribute to new violations of ambient air quality standards, or an increase in the frequency or severity of existing violations, or a delay in timely state and/or regional attainment standards.

The purpose of the General Conformity Rule (GCR) is to:

- Ensure Federal activities do not interfere with the budgets in the SIPs
- Ensure the attainment and maintenance of NAAQS
- Ensure actions do not cause or contribute to new violations of NAAQS

USEPA has developed two distinctive sets of conformity regulations: one for transportation projects and one for non-transportation projects. Non-transportation projects are governed by general conformity regulations (40 CFR Part 93, Determining Conformity of Federal Actions to State or Federal Implementation Plans, dated November 24, 1993, hereinafter referred to as 40 CFR 93). The Proposed Action is a non-transportation project within a nonattainment area. Therefore, in accordance with the GCR, a Record of Non-Applicability (RONA) has been prepared for this project. The RONA and associated calculations and assumptions can be found in Appendix E.

4.5.4 Greenhouse Gas Emissions

Greenhouse gases (GHGs) are compounds that contribute to the greenhouse effect. The greenhouse effect is a natural phenomenon where gases trap heat within the surface-troposphere (lowest portion of Earth's atmosphere) system, causing heating at the Earth's surface. The primary long-lived GHGs directly emitted by human activities are carbon dioxide (CO2), methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride. The heating effect from these gases is considered the probable cause of the global warming observed over the last 50 years (USEPA, 2009). Global warming and climate change can affect many aspects of the environment. In the past, the USEPA has recognized potential risks to public health or welfare and signed an endangerment finding regarding GHGs under Section 202(a) of the CAA (74 Federal Register 66496, December 15, 2009), which found that the current and projected concentrations of the six key well-mixed GHGs in the atmosphere threaten the public health and welfare of current and future generations. EO 13990, signed January 20, 2021, reinstated the final guidance 1 issued on August 5, 2016 by the CEQ that required federal agencies to consider GHG emissions and the effects of climate change in NEPA reviews. DoD has committed to reduce GHG emissions from non-combat activities 42 percent by 2025 (DoD, 2016).

4.6 WATER RESOURCES

4.6.1 Surface Water

Atkisson Dam lays within the MDE 8-digit Atkisson Reservoir watershed (MDE# 02130703) and Federal 12-digit Lower Winters Run watershed (HUC# 020600030102). The Van Bibber Weir study area lays within the MDE 8-digit Lower Winters Run watershed (MDE# 02130702) and Federal 12-digit Bush River watershed (HUC# 020600030105). Winters Run is a Use I waterway (water for recreation, fish, other aquatic life, and wildlife) and flows into the Atkisson Reservoir. Tributaries upstream of the reservoir serve as Use IV waters (recreational trout waters). Winters Run continues south toward I-95 and US-40 and terminates at Van Bibber Weir, at which point it becomes Otter Point Creek, another Use I waterway (MDE, 2018; MDE, 2019). Otter Point Creek eventually discharges into the Bush River, a traditional navigable water (TNW). Atkisson

Reservoir, Lower Winters Run, and Otter Point Creek are considered impaired waterways due to above average levels of mercury being found within fish tissue (USEPA, 2021e).

The study area is within the Maryland Tier II Otter Point Catchment. According to MDE, "Tier II waters are those that have existing water quality that is significantly better than the minimum requirements, as specified in the water quality standards" (MDE, 2020). Special protection is required by Federal and State regulations to protect these high-quality waters from degradation. Federal antidegradation regulations (40 CFR 131.12) require states to develop and adopt a statewide antidegradation policy that protect all Waters of the U.S. (WOTUS) from degradation. These regulations also require states to maintain the condition of high quality (i.e., Tier II) waters that have water quality that is better than the minimum standard necessary to meet designated uses. The Maryland antidegradation implementation procedures are found in the Code of Maryland Regulations (COMAR) 26.08.02.04-1). Tier II streams are identified through:

- Maryland Biological Stream Survey (MBSS) data;
- MBSS data must show that the stream "water quality is within 20 percent of the maximum attainable value of the index of biological integrity" (IBI); and
- MBSS IBI scores must be greater than or equal to 4.00 for both benthic macroinvertebrate and fish data (MDE, 2020).

Surface water sampling was conducting in March 2021 by USACE Baltimore District biologists, with support from Arcadis U.S., Inc. Several parameters were measured along various reaches of Winters Run and include depth, flow, conductivity, oxidation-reduction potential, temperature, dissolved oxygen, pH, and turbidity. Additionally, analyses of various nitrogen levels were identified and measured, as well as total phosphorus and total suspended solids. A total breakdown of the methodology and results can be found in Appendix C.

4.6.2 Groundwater

The Atkisson Dam and Van Bibber Weir rest relatively close to the geographic Fall Line between the Piedmont Province and Coastal Plain. Groundwater aquifers within the coastal plain contain mostly sand and gravel that tend to yield more than 500 gallons per minute (gal/min) in many areas across the County because of the high transmissivity and storage capacity of those aquifers. Wells located in the Piedmont aquifers are governed by more varied geologic structures such as joints, faults, and foliation. Due to these variations, well yields tend to be lower in Piedmont, ranging from 0 to >50 gal/min. Groundwater in Harford County generally experiences high concentrations of iron and low pH (Nutter, 1977).

The Atkisson Reservoir has a definite effect on the existing hydrology of Winters Run. The reservoir provides a body of impounded water, which raises the groundwater in its aquifer to form a "dome" beneath the reservoir. The reservoir also slows the velocity of water traveling down Winters Run to the Bush River. The dam's current spillway crest elevation is 120 feet, and the dam base elevation is approximately 78 feet. The USACE classifies the existing Atkisson Dam as a high hazard, due to the dam's height and its proximity to residences and other economic development. According to the USACE's criteria, the spillway for a dam with a high hazard classification must be able to pass the full PMF with 3 feet of minimum freeboard. Minimum freeboard is the amount of height the non-spillway portion of the dam has above water during a flood event. While posing no immediate risk to public safety, the dam does not meet the USACE's safety criteria, and the dam would not pass the full PMF. Existing spillway capacity with 3 feet of minimum freeboard is 23 percent of the full PMF. Consequently, the dam could fail during a major flood event, especially a flood event that exceeded spillway capacity (APG, 1998).

4.6.3 Floodplains

EO 11988 directs Federal agencies to evaluate the potential effects of proposed actions on floodplains. Such actions should not be undertaken that directly or indirectly induce growth in the floodplain unless there is no practicable alternative. Several Federal Emergency Management Agency (FEMA) Flood Insurance Rate Maps (FIRM) exists within the study area; FEMA FIRM #24025C0251E, 24025C0252E, 24025C0254E, and 24025C0258E. Atkisson Dam is no longer regulated or operational and does not serve as a flood control dam.

4.6.4 Wetlands

A wetland delineation was performed by USACE, Baltimore District biologists between March and July 2020 in accordance with the 1987 *Corps of Engineers Wetland Delineation Manual and the 2010 Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Atlantic and Gulf Coastal Plain Region.* During the delineation, three wetland systems were delineated within the proposed study area, accounting for approximately 20.04 acres. Appendix B contains further details of the delineation and findings including data sheets, figures, and photo documentation.

Wetlands are defined by the presence of three parameters: hydrophytic vegetation, hydric soils, and wetland hydrology. Wetlands contain areas of inundation or saturation by surface or groundwater at a frequency and duration sufficient enough to support hydric soils and hydrophytic vegetation. Wetlands are classified into five systems based on the Cowardin Classification for wetlands and deepwater habitats. The systems include marine, estuarine, riverine, lacustrine, and palustrine. Then, systems are further separated into subsystems based on water inundation and vegetative classes (Cowardin, et. al., 1979). Wetlands provide a wide range of functions and values including flood flow alteration, sediment and nutrient trapping, wildlife habitat, educational and scientific value, and visual aesthetics. Several open water, forested, scrub-shrub, and emergent wetlands exist within the vicinity of Atkisson Dam and Van Bibber Weir (U.S. Fish and Wildlife Service [USFWS], 2021).

4.6.5 Stormwater

Several programs exist to manage, treat, and regulate stormwater runoff to reduce nutrient and sediment loads into the Chesapeake Bay and its surrounding tributaries. APG's current Municipal Separate Storm Sewer Systems (MS4) permit requires that Best Management Practices (BMPs) be properly constructed and maintained in accordance with the 2015 Maryland Stormwater Management and Erosion and Sediment Control Guidelines for State and Federal projects (APG 2019). Additionally, Maryland's Total Maximum Daily Load (TMDL) program is designed to reduce the three major pollutants impairing the waters of the Chesapeake Bay: nitrogen, phosphorous, and sediment. An additional support system that branches from the TMDL program are Watershed Implementation Plans (WIPs). A WIP addresses ecological restoration and sustainability, while allowing for greater transparency and accountability for improved performance. WIP documents include how jurisdictions within the Bay can partner with Federal and local governments to achieve and maintain water quality standards (APG, 2019).

4.6.6 Coastal Zone

The Coastal Zone Management Program (CZMP) includes goals to protect coastal land and water habitat. The program is a partnership among local, regional, and State agencies to ensure proposed Federal activities are consistent with Maryland's resource goals and policies. Sediment discharge from Winters Run may influence coastal/tidal areas downstream within the Chesapeake Bay coastal areas. A CZMA Federal Consistency Determination was prepared for this project and can be found in Appendix G.

4.6.6.1 Federal Consistency

According to the National Oceanic and Atmospheric Administration (NOAA) Office for Coastal Management, Section 307 of the "Coastal Zone Management Act of 1972", called the "federal consistency" provision, gives states an opportunity to coordinate with Federal agencies within the decision making processes for activities that may affect a state's coastal uses or resources. The Federal consistency provision is a major incentive for states to join the National Coastal Zone Management Program and is a tool that state programs use to manage coastal activities and resources, as well as facilitate cooperation and coordination with Federal agencies.

The Federal consistency requires that any Federal actions, within and outside the coastal zone, that may have future effects on any coastal use (land or water), or natural resource of the coastal zone be consistent with the enforceable policies of a state's federally approved coastal management program. NOAA states, "Federal actions include federal agency activities, federal license or permit activities, and federal financial assistance activities. Federal agency activities must be consistent to the maximum extent practicable with the enforceable policies of a state coastal management program, and license and permit and financial assistance activities must be fully consistent" (National Oceanic and Atmospheric Administration [NOAA], 2021).

4.6.6.2 Chesapeake Bay Critical Area

In 1984, the Maryland General Assembly enacted the Critical Area Act to address the increasing pressures placed on Chesapeake Bay resources from an expanding population. The Act defines a critical area as "all land within 1,000 ft of the MHW [mean high water] Line of tidal waters or the landward edge of tidal wetlands and all waters of and lands under the Chesapeake Bay and its tributaries". Due to the Van Bibber Weir's location along the Chesapeake Bay and the surrounding natural resources, this study area falls within the definition of a critical area (MD DNR, 2004). Atkisson Dam, however, does not fall within the critical area.

The Critical Area Law mandates that local governments preserve "Habitat Protection Areas", which include nontidal wetlands and a surrounding 25-foot buffer; a 100-foot vegetated buffer zone on the landward edge of tidal waters, wetlands, or tributary streams; threatened and endangered species and their habitat; significant plant and wildlife habitat; and anadromous fish spawning areas. Significant plant and wildlife habitat is defined as colonial water bird nesting areas, historic waterfowl concentration areas, riparian forests, undisturbed forest tracts (100 acres or more) containing breeding populations of forest interior-dwelling birds, areas that contain the "best examples" of plant and animal communities, and other areas determined to have local significance. The Critical Area Law also categorizes land as Intensely Developed Areas, Limited Development Areas, or Resource Conservation Areas, and regulates development that can occur in each. The Van Bibber Weir study area is designated as a Resource Conservation Area under the Critical Area Law. Habitat utilized by rare, threatened, or endangered species can be protected under critical area regulations (MD DNR, 2004).

4.7 BIOLOGICAL RESOURCES

4.7.1 Vegetation

A forest stand delineation was performed by USACE, Baltimore District biologists between March and July 2020, in accordance with the Maryland Forest Conservation Technical Manual (MD DNR, 1997). During the delineation, seven forest stands were delineated within the vicinity of Atkisson Reservoir. Various cover types of the forest stands include oak/hickory (*Quercus* sp./*Carya* sp.), silver maple (*Acer saccharinum*), and tulip poplar (*Liriodendron tulipifera*). Forest stands are assigned a Priority (1-3) based on sensitive environmental resources adjacent to or within the stands. Of the seven forest stands, four were designated as a Priority 1, two designated as Priority 2, and one forest stand designated as Priority 3.

- Priority 1 – wetlands, specimen trees, streams, steep slopes, and/or other sensitive areas and are typically late or mature successional stages with little invasive cover.
- Priority 2 – stands can have one of the characteristics of Priority 1 stands, but no more and often have higher invasive species percentages.
- Priority 3 – stands have the least sensitive features to qualify for preservation. In some cases, a stand can have a sensitive area within its boundaries but be of low quality based upon quality of vegetation, presence of invasive species or other values. These are noted in the stand descriptions.

No forest stands were delineated within the vicinity of Van Bibber Weir due to significant invasive bamboo (*Bambusoideae* spp.). Biologists reported the bamboo species was so dense that it was prohibitive to conducting an accurate forest stand delineation. Some individuals of American sycamore (*Platanus occidentalis*), black cherry (*Prunus serotina*), and silver maple were identified, but in low numbers. For detailed descriptions of the forest stands, with data sheets and photo documentation, refer to Appendix D.

4.7.2 Submerged Aquatic Vegetation

Submerged aquatic vegetation (SAV) is found in the Otter Point Creek National Estuarine Research Reserve (NERR) which is downstream of Van Bibber Weir. Otter Point Creek NERR is part of the Chesapeake Bay-Maryland NERR, funded through NOAA, and is the only freshwater tidal marsh in the NERR system. Otter Point Creek has seen increases in SAV while there have been declines in SAV in the Chesapeake Bay. It is not located in the project study area but was evaluated for the project as the removal of Van Bibber Weir will most likely impact SAV found in Otter Point Creek NERR.

The predominant SAV species found in Otter Point Creek is Hydrilla (*Hydrilla verticillate*), but wild celery (*Vallisneria americana*), coontail (*Ceratophyllum demersum*), and Eurasian watermilfoil (*Myriophyllum spicatum*) are also found in Otter Point Creek with smaller amounts of spiny naiad (*Najas minor*), southern naiad (*Najas guadalupensis*), curly pondweed (Potamogeton crispus), and slender pondweed (*Potamogeton pusillus*). Although Hydrilla is non-native and the predominant species found, it still has the ecological function of many native species.

4.7.3 Fish and Wildlife Resources

The Fish and Wildlife Coordination Act (FWCA) requires Federal agencies to consult with the USFWS, National Marine Fisheries Service (NMFS), and the fish and wildlife agencies of states where the "waters of any stream or other body of water are proposed or authorized, permitted or licensed to be impounded, diverted or otherwise controlled or modified" by any agency under a Federal permit or license. Consultation is to be undertaken for the purpose of "preventing loss of and damage to wildlife resources." The intent is to give fish and wildlife conservation equal consideration with other purposes of water resources development projects.

Approximately 250 species of birds occur at APG throughout the year, including 108 species of non-migratory or waterfowl bird species. While some of these species may not all be found at Atkisson Dam or Van Bibber Weir due to the varied habitats at APG, there is potential for migratory species occurring in these areas as APG is located on the Atlantic Flyway, which is a major migratory bird route (APG, 2019). Migratory birds are protected under the Migratory Bird Treaty Act (MBTA) of 1918 which prohibits the take (including killing, capturing, selling, trading, and transport) of protected migratory bird species without prior authorization by the USFWS.

As noted, the Atkisson Dam and Van Bibber Weir are located on Winters Run which flows into Otter Point Creek, a tributary of the Bush River which ultimately drains into the northern Chesapeake Bay. The northern Chesapeake Bay is one of several concentration areas for bald eagles (APG 2019). Although the bald eagle was delisted from the ESA in 2007, it remains a federally protected species under the Bald and Golden Eagle Protection Act (BGEPA) and the MBTA. The BGEPA prohibits any disturbing activities that cause nest abandonment or decrease an eagle’s productivity by substantially interfering with normal breeding, feeding, or sheltering behavior. There is a bald eagle nest located within the project area. This nest is located just upstream from the Atkisson Dam on the west shore of the reservoir. This nest is located on APG property, within the 130-foot contour around the Atkisson reservoir, and APG monitors this nest every year for productivity. APG has a USFWS-issued programmatic permit for incidental take of bald eagles which includes an authorization for incidental nest disturbance. The results of the annual nest surveys are reported to the USFWS as required by the programmatic permit.

To support and protect fish and wildlife species, USACE, Baltimore District performed fish community surveys in the summer of 2020, and fish community surveys and macroinvertebrate community surveys in the spring of 2021 to document existing conditions and species within the study area. The results of the fish community surveys indicated a healthy fish community with several hundred fish collected at each sampling location in both stream and impounded locations. Diversity of fish species ranged from a high of 29 species at the most downstream sampling location to a low of 19 species at the most upstream location. The impounded sampling locations generally had less fish species diversity than the free-flowing sampling locations. Fish species diversity was similar above and below the weir but was more diverse below Atkisson Dam than above the dam. This may be due to the fish ladder at the weir and may indicate that the dam is a barrier to fish passage. Stream temperatures were collected upstream and downstream of the dam and weir. Temperatures were lower (47-49 F) below Atkisson Dam and above and below Van Bibber Weir. The reservoir temperature was 56 F and upstream of the reservoir was 51 F. Temperature differences may have contributed to the fish diversity differences.

The Nature Conservancy in coordination with the Chesapeake Bay Program's Fish Passage Workgroup, made up of Federal, state and local partners, developed a geographic information system (GIS) model to help identify barriers to fish passage (Chesapeake Bay Program, 2015). The Freshwater Network of the Chesapeake Bay Region GIS model ranks barrier data from Tier 1-20. Tier 1 indicates the "highest priority-most potential from a passage restoration project" (Nature Conservancy, 2019). Four species of diadromous fish were found downstream of Atkisson Dam. Atkisson Dam is given a Baywide Anadromous Tier 3 indicating the prioritization of potential for anadromous fish with the dam removal (Nature Conservancy, 2022).

The macroinvertebrate surveys showed an overall healthy benthic community at all sampling locations, with results ranging from 36 to 28 taxa at each location. This level of invertebrate diversity is similar to, or better than, similar MBSS locations in nearby waterbodies. For more information, the stream assessment report can be found in Appendix C.

Several herpetiles, birds, and mammals were also incidentally observed during the course of the stream assessment and forest stand delineation. Some of those species included: northern two-lined salamanders (*Eurycea bislineata*), green frogs (*Lithobates clamitans melanota*), bull frogs (*Lithobates catesbeianus*), wood duck (*Aix sponsa*), mallard (*Anas platyrhynchos*), Canada geese (*Branta canadensis*), belted kingfisher (*Megaceryle alcyon*), osprey (*Pandion haliaetus*), beaver (*Castor canadensis*), muskrat (*Ondatra zibethicus*), whitetail deer (*Odocoileus virginianus*) American toad (*Anaxyrus americanus*), downy woodpecker (*Picoides pubescens*), Carolina wren (*Thryothorus ludovicianus*), eastern chipmunk (*Tamias striatus*), eastern gray squirrel *(Sciurus carolinensis*), and eastern cottontail (*Sylvilagus floridanus*).

4.7.4 Rare, Threatened, and Endangered Species

Under the ESA, an "endangered species" is defined as any species in danger of extinction throughout all or a significant portion of its range. A "threatened species" is defined as any species likely to become an endangered species in the foreseeable future. The ESA also provides for recovery plans to be developed describing the steps needed to restore a species population. Critical habitat for federally listed species includes "geographic areas on which are found those physical or biological features essential to the conservation of the species and which may require special management considerations or protection." Critical habitat can include areas not occupied by the species at the time of the listing but are essential to the conservation of the species.

USACE Baltimore District submitted an online request in November 2021, through the USFWS Information for Planning and Consultation (IPaC) online web service for the potential of impacting protected resources and species. This IPaC resource list can be found in Appendix F. As reported through the USFWS Resource List, there are no critical habitats, fish hatcheries or National Wildlife Refuge (NWR) lands within the study area. Several other resources and species do have the probability of existing within the study area, and they include national wetland inventory (NWI) wetlands, migratory birds, the threatened Northern Long-Eared Bat (NLEB) (*Myotis septentrionalis*), and Monarch Butterfly (*Danaus plexippus*), which is a candidate species. In compliance with the ESA, Section 7(a) 4(d), a determination key was submitted through USFWS IPaC. Although NLEB may exist within the study area, this project will not have tree clearing greater than 15 acres.

A desktop investigation was performed through MD DNR's Maryland Environmental Resources and Land Information Network (MERLIN) online service in November 2021. The investigation revealed that the Atkisson Dam/Reservoir and Van Bibber Weir rests within a TEA, as mentioned in Section 4.1 above. Additionally, both areas contain sensitive species project review areas as well as forest interior dwelling bird species (FIDS). On August 12, 2022, MD DNR coordinated with the USACE Baltimore District and identified eight state-listed rare, threatened and endangered species that are documented in close proximity to either Atkisson dam or Van Bibber weir (Appendix A). Five rare, threatened and endangered state-listed species are documented as existing in close proximity to the Atkisson Dam. These species include the Tennessee bladder fern (*Cystopteris tennesseensis*), ostrich fern (*Matteuccia struthiopteris),* butternut (*Juglans cinerea*), primrose-willow (*Ludwigia decurrens*), and starflower Solomon's plume (*Maianthemum stellatum*). The state status for the Tennessee bladder fern is highly rare. It is found in the cracks and ledges of cliffs and often found on calcareous substrates or associated with man-made habitats such as rock walls or bridge abutments (Flora of North America Association, 2020). The state status for the ostrich fern is rare. It is found in robust wooded areas, stream banks, floodplains, swamps and habitat with wet or damp soils (Cobb et al., 1956/1984/2005). The state status for butternut is rare. It is a small to medium size tree found on well-drained soils of hillsides and streambanks in mixed hardwood forests (USDA Forest Service, 2022). The state status for the primrose-willow is rare. It is found in moist or swampy habitats, muddy stream banks, marshy shores of lakes and ponds, ditches, and swamps (Flora of North America Association, 2022). The state status of starflower Solomon's plume is endangered. It is found in moist woods, gravelly or alluvial shores, thickets, meadows, and savannas (University of Texas at Austin, 2022).

MD DNR identified three species: Chesapeake logperch (*Percina bimaculate*), white catfish (*Ameiurus catus*) and creeper (*Strophitus undulatus*) that are documented immediately downstream of Van Bibber weir in Otter Point Creek. The state status for the Chesapeake logperch is threatened. This bottom-dwelling fish is found in gravel runs and riffles of clear, small to medium rivers, near the mouth of tributaries that drain into large rivers and often associated with areas that contain large rocks and boulders (NatureServe Explorer, 2022). The state status for the white catfish is uncertain although it is thought to possibly be rare in Maryland. White catfish inhabit fresh and brackish water bodies with habitats that include sluggish, mud-bottomed pools, open channels and backwaters of small to large rivers (MD DNR, 2022). The state status for the creeper is In Need of Conservation. The creeper is a freshwater bivalve that is found in most rivers and large streams and the headwaters of some watersheds (Bogan and Ashton, 2016). In addition, MD DNR confirmed that the forested area near the Atkisson Dam and Van Bibber Weir contains FIDS.

Although not in the Study Area, spongy arrowhead (*Sagittaria spatulata*) is a state rare emergent plant that occurs on the eastern side of Otter Point Creek NERR and could be impacted by the removal of Van Bibber weir.

4.8 CULTURAL RESOURCES

Cultural resources can include prehistoric and historic sites, structures, districts, or any other physical evidence of human activity considered important to a culture, a subculture, or a community for scientific, traditional, religious, or any other reason. Depending on their condition and use, these resources can provide insight into the living conditions of previous existing civilizations, or retain cultural and religious significance to modern groups, referred to as Traditional Cultural Properties (TCPs).

Archaeological resources are locations where prehistoric or historic activity measurably altered the earth or produced deposits of physical remains. Architectural resources include standing buildings, districts, bridges, dams, and other structures of historic significance. TCPs include locations of historic occupations and events, historic and contemporary sacred and ceremonial areas, prominent topographical areas that have cultural significance, traditional hunting and gathering areas, and other resources that Native Americans or other groups consider essential for the persistence of their traditional culture.

Several Federal laws and regulations have been established to manage cultural resources. Cultural resources are "historic properties" as defined by the NHPA of 1966, "cultural items" as defined by the Native American Graves Protection and Repatriation Act of 1979 (NAGPRA), "archaeological resources" as defined by the ARPA, "sacred sites" as defined by EO 13007 to which access is afforded under the American Indian Religious Freedom Act of 1987 (AIRFA), and collections and associated records as defined in 36 CFR 79. In order for a cultural resource to be considered significant, it must meet one or more of the following criteria for inclusion on the National Register of Historic Places (the National Register).

The quality of significance in American history, architecture, archaeology, engineering, and culture is present in districts, sites, buildings, structures, and objects that possess integrity of location, design, setting, materials, workmanship, feeling, and association and: 1) that are associated with events that have made a significant contribution to the broad patterns of our history; 2) that are associated with the lives or persons significant in our past; 3) that embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; or 4) that have yielded, or may be likely to yield, information important in prehistory or history.

The NHPA, as amended, as well as Federal legislation, and Department of Defense regulations (particularly AR 200-1, *Environmental Protection and Enhancement*), requires the Army and other Federal agencies to locate, identify, evaluate, and treat cultural resources under their ownership, administration, and control in a manner that fosters the preservation of the resources. The most recent Integrated Cultural Resources Management Plan (ICRMP) for APG was finalized in June 2019 as an update to the existing 2014 ICRMP. The new ICRMP covers the period from 2019 through 2024 and provides guidelines and procedures to enable APG to meet its legal responsibilities related to historic preservation and cultural resources management at APG.

Properties that are listed, or eligible for listing, on the National Register are protected under the NHPA. In accordance with Sections 106 and 110 of the NHPA, APG consulted with MHT, Maryland's State Historic Preservation Office (SHPO), regarding the Proposed Action. MHT concurred that Atkisson Dam and Van Bibber Weir are not eligible for listing on the National Register. MHT further determined the Proposed Action will have No Adverse Effect on historic properties eligible for listing on the National Register.

4.8.1 Archaeological Resources

In accordance with the *Standards and Guidelines for Archeological Investigations in Maryland* (Shaffer & Cole, 1994) and on behalf of APG, Marstel-Day conducted an archaeological survey in July 2020 in the vicinities of Atkisson Dam and Van Bibber Weir. The goal of the survey was to identify any archaeological sites within the dam and weir areas, and the areas downstream. No archaeological sites were documented or recorded as a result of the survey. In a letter dated February 2021, MHT concurred that the Proposed Action will have No Adverse Effect on archaeological sites eligible for listing on the National Register.

4.8.2 Architectural Resources

In accordance with the *Standards and Guidelines for Architectural and Historical Investigations in Maryland* (MHT, 2019), in August 2021, APG completed Determination of Eligibility (DOE) forms for Atkisson Dam and Van Bibber Weir. In a letter dated October 2021, MHT concurred that, based on the completed DOE forms, the dam and weir are not eligible for listing on the National Register under Criteria A, B, C, or D. In the same letter, MHT concurred that the Proposed Action will have No Adverse Effect on architectural resources eligible for listing on the National Register.

4.8.3 Native American Resources

The following Native American Tribes have been identified as having an interest in the land that became APG: Absentee Shawnee Tribe of Oklahoma; Eastern Shawnee Tribe of Oklahoma; Delaware Nation; Delaware Tribe of Indians, Oklahoma; Oneida Indian Nation; Oneida Nation of Wisconsin; Onondaga Nation; Saint Regis Mohawk Tribe; Seneca Nation of Indians; Seneca-Cayuga Tribe of Oklahoma; Shawnee Tribe of Oklahoma; Stockbridge-Munsee Community Band of Mohican Indians; Tonawanda Seneca Nation; and Tuscarora Nation. To date, no Native American Tribes have identified sacred places or traditional cultural properties on APG.

Pursuant to Section 106 of the NHPA, APG sent invitations to 14 Native American Tribes to invite them to consult regarding the Proposed Action; APG received responses from two Tribes (see Appendix A). The 14 Tribes are federally recognized (i.e., recognized as having a Government-to-Government relationship with the United States) or may attach religious and cultural significance to historic properties at APG.

In a letter dated September 2021, the Eastern Shawnee Tribe of Oklahoma determined that the Proposed Action would have No Adverse Effect to known sites that are of interest to the Tribe.

Additionally, in a letter dated September 2021, the Stockbridge-Munsee Community Band of Mohican Indians responded that they would defer comment on the Proposed Action as the project takes place outside of the Tribe's area of interest. APG has not received additional responses from any of the other Tribes.

4.9 HAZARDOUS, TOXIC, AND RADIOACTIVE SUBSTANCES (HTRS)

A hazardous material is defined by the USEPA as any substance that is: 1) listed in Section 101(14) of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA); 2) designated as a biologic agent and other disease causing agent which after release into the environment and upon exposure, ingestion, inhalation, or assimilation into any person, either directly from the environment or indirectly by ingestion through food chains, will or may reasonably be anticipated to cause death, disease, behavioral abnormalities, cancer, genetic mutation, physiological malfunctions (including malfunctions in reproduction) or physical deformations in such persons or their offspring; 3) listed by the U.S. Department of Transportation as hazardous materials under 49 CFR 172.101 and appendices; or 4) defined as a hazardous waste per 40 CFR 261.3 or 49 CFR 171. Hazardous materials are federally regulated by the USEPA in accordance with the Federal Water Pollution Control Act; CWA; TSCA; RCRA; CERCLA; and CAA.

4.10 TRAFFIC AND TRANSPORTATION

Four main roadways traveling west to east intersect the study area – Singer Road, I-95, Philadelphia Road (MD-7), and US-40. All four roadways cross over the Winters Run waterway. Additionally, Edgewood Road (MD-755) crosses the study area and runs north to south. Singer Road and MD-7 are heavily used residential roadways that connect Mountain Road (MD-152) to Emmorton Road (MD-24) and are vital roadways for getting to and from I-95, schools, and local businesses. In May 2017, the Harford County Government performed a 24-hour traffic count for an area on Singer Road, adjacent to the intersection of MD-24. The total for the traffic count was 11,515 vehicles.

4.11 SOCIOECONOMICS

Socioeconomics describes a community by examining its social and economic characteristics. Demographic variables such as population size, level of employment, and income range assist in analyzing the fiscal condition of a community and its government, school system, public services, healthcare facilities and other amenities. The Region of Influence (ROI) for socioeconomic impacts includes the eight census block groups immediately surrounding the study area, including Atkisson Dam and Van Bibber Weir. This ROI was selected because it represents the areas that could be impacted by the Proposed Action. Block groups included in this ROI include: 240253012012, 240253012021, 240253012024, 240253012041, 240253013011, 240253017031, 240253034002, and 240253035011.

4.11.1 Demographics

The total population and population breakdown by ethnicity based on data form the 2020 American Community Survey (ACS) are shown on Table 4-1 for the ROI and compared with Harford County, the State of Maryland, and the United States (U.S. Census Bureau [USCB], 2020). The population in the ROI is estimated to be 29,650. Of all of the ethnicities listed below, 5.7% of people within the ROI identify as Hispanic or Latino, compared to 4.7% of Harford County, 10.3% of the State of Maryland, and 18.2% of the United States (USCB, 2020).

Table 4-1: Demographic Data, 2020 ACS 5-Year Estimates

Geographic Area	Population	Ethnicity						
		White	Black	American Indian	Asian	Pacific Islander	Other	Two or More
ROI	29,650	23,719 80%	2,817 9.5%	108 0.4%	1,421 4.8%	0 0%	424 1.4%	1,161 3.9%
Harford County	253,736	197,023 77.6%	35,208 13.9%	380 0.1%	6,877 2.7%	53 <0.1%	4,165 1.6%	10,030 4%
Maryland	6,037,624	3,275,048 54.2%	1,803,128 29.9%	15,860 0.3%	384,429 6.4%	2,650 <0.1%	285,370 4.7%	271,139 4.5%
United States	326,569,308	229,960,813 70.4%	41,227,384 12.6%	2,688,614 0.8%	18,421,637 5.6%	611,404 0.2%	16,783,914 5.1%	16,875,542 5.2%

Source: USCB, 2020.

Table 4-2 below presents data on educational attainment for the ROI, Harford County, the State of Maryland, and the United States based on the 2019 ACS 5-year estimates.

Table 4-2: Educational Attainment, 2019 ACS 5-Year Estimates

Geographic Area	Education Level (%) of Population ≥18 Years Old			
	Less Than High School	High School Graduate	Some College or Associate's Degree	Bachelor's Degree or Higher
ROI	1,648 7.5%	6,059 27.2%	6,212 27.9%	8,322 37.4%
Harford County	14,989 7.6%	53,007 27.1%	61,188 31.3%	66,470 34%
Maryland	465,461 10%	1,181,240 25.2%	1,290,948 27.6%	1,739,517 37.2%
United States	30,337,897 12.1%	69,104,614 27.5%	77,476,666 30.8%	74,349,226 29.6%

Source: USCB, 2019b.

Table 4-3: Population Breakdown by Age Groups

Area	Under 5 Years of Age (%)	Over 64 Years of Age (%)
ROI	4.8	16.8

Area	Under 5 Years of Age (%)	Over 64 Years of Age (%)
Harford County	5.6	16.2
Maryland	6	15.4
United States	6	16

Source: USCB, 2020.

4.11.2 Employment and Economy

The primary industries in Harford County, Maryland are defense & technology, health & medical services, manufacturing, E-commerce, distribution, and financial services. APG is Harford County's largest employer, drawing over 110 defense contractor firms to the area, making it a national research and development center (Maryland Department of Business & Economic Development, 2015). APG is a major driver of the Harford County economy, employing 21,000 military and civilian workers (Harford County, n.d.).

Table 4-3 below provides labor force statistics for the ROI, Harford County, the State of Maryland, and the United States.

Table 4-4: Labor Statistics, 2019 ACS 5-Year Estimates

Area	Labor Force (≥16 Years Old)	Employed (%)	Unemployed (%)
ROI	23,152	68.6	3.5
Harford County	202,955	67.9	2.8
Maryland	4,827,204	67.7	3.4
United States	259,662,880	63.4	3.4

Source: USCB, 2019a.

The median household income in the ROI is $91,541 and in Harford County, MD is $89,147 (USCB, 2019a).

4.11.3 Environmental Justice

EO 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*, was signed in 1994, declaring that each Federal agency make environmental justice part of its mission. The USEPA defines environmental justice as the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation and enforcement of environmental laws, regulations, and policies. Analysis of environmental justice is initiated by determining the presence and proximity of racial and ethnic minorities and/or low-income populations relative to the specific locations that could experience adverse impacts to the environment.

The percentage of people whose income level was below the poverty line within the past 12 months (at the time of the survey) was 5.3% within the ROI, 7.2% in Harford County, 9.2% in the State of Maryland, and 13.4% in the United States (USCB, 2019a).

Table 4-4 below presents the percentage of the population under 5 years for age and percentage of the population over 64 years of age for the ROI, Harford County, the State of Maryland, and the United States (USCB, 2020).

The percentage of racial and/or ethnic minorities was 20% within the ROI, 22.4% within Harford County, 45.8% within the State of Maryland, and 29.6% within the United States (USCB, 2020).

4.11.4 Protection of Children

EO 13045, Protection of Children from Environmental Health Risks and Safety Risks, requires Federal agencies to identify, assess, and address disproportionate environmental health and safety risks to children from Federal actions and to ensure that policies, programs, activities, and standards address these risks.

Recreation areas in the vicinity of the Atkisson Dam include the Harford Glen Park, which houses the Harford Glen Environmental Education Center. Both the park and Harford Glen Environmental Education Center provide recreational and educational opportunities to the Harford County Public School System and to the public. The Atkisson Dam is not visible from the main campus of the Harford Glen Environmental Education Center. Harford Glen utilizes the dam and Winters Run for educational purposes by taking students on hikes to the dam to see the impacts of sedimentation. In addition, they take students on bird hikes and complete wildlife tracking lessons along Winters Run about one mile upstream from the dam.

The closest facilities to Atkisson Dam that host children are Abingdon Elementary School, which is about 0.7 miles east of the dam, and the Harford Glen Education Center, which is about 0.7 miles north of the dam. The closest facilities to Van Bibber Weir that host children are two daycares located about 0.9 miles and 1.1 miles east of the weir, and Edgewood Elementary School, which is located about 1.15 miles southeast of the weir.

4.12 HUMAN HEALTH AND SAFETY

As part of APG, the military police are responsible for law enforcement patrol at Atkisson Dam and Van Bibber Weir; however, they may report issues to local law enforcement, and in some instances local law enforcement may be called directly by members of the public for incidents at these locations. There have been several instances of health and safety incidents in recent years that have resulted from members of the public trespassing onto Atkisson Dam property. In these instances, local law enforcement and emergency personnel responded to assist those in need.

The Harford County Sheriff's Office is located approximately 1.5 miles to southwest of Van Bibber Weir and about 3 miles south of Atkisson Dam, and the Maryland State Police's Bel Air Barrack D is located approximately 3 miles northwest of Atkisson Dam and about 6 miles northwest of Van Bibber Weir. There are four fire departments within a 5-mile radius of both Atkisson Dam and Van Bibber Weir that could be contacted in case of an emergency during deconstruction. The Joppa-Magnolia Volunteer Fire Company, House 3, is approximately 1.15 miles to the southwest of Van Bibber Weir and about 4 miles southeast of Atkisson Dam; the Abingdon Fire Company, House 3, is about 2.1 miles southeast of Van Bibber Weir and about 4.8 miles southeast of Atkisson Dam; the Abingdon Fire Company, House 2, is about 3 miles northeast of Van Bibber Weir and about 4.7 miles southeast of Atkisson Dam; and the Bel Air Volunteer Fire Company is approximately 2 miles northeast Atkisson Dam and about 4.5 miles north of Van Bibber Weir.

There are several medical facilities in the vicinity of Atkisson Dam and Van Bibber Weir, including a MedState Health urgent care to the east in Belcamp and Kirk Army Medical Center on APG-AA. The closest hospitals are University of Maryland Upper Chesapeake Medical Center, which is approximately 2.7 miles north of Atkisson Dam and about 5.7 miles northwest of Van Bibber Weir, and MedStar Franklin Square Medical Center, which is approximately 11.2 miles southwest of Van Bibber Weir and about 11.7 miles southwest of Atkisson Dam.

5.0 ENVIRONMENTAL IMPACTS

5.1 LAND USE

Land use impacts are based on the level of land use sensitivity in areas affected by a Proposed Action and compatibility of Proposed Actions with existing conditions. Factors considered in evaluating land use impacts include the potential for the Proposed Action to be incompatible with surrounding land uses, or be inconsistent with the environmental goals, objectives, or guidelines of a community or county comprehensive plan for the affected area. Significant impacts could occur if the land use were incompatible with existing military land uses and designations (including recreation). Additional impacts could occur if certain natural land cover types (wetlands and forests of particular interest) were to be converted to other land cover (such as built environment). Some land within the Atkisson Dam part of the study area is owned by the Harford County Board of Education; however, the Army continues to retain ownership of the dam, reservoir and the land immediately surrounding the reservoir up to the 130-foot contour. Land within the Van Bibber Weir portion of the study area is owned by the Army. Once the project is completed and the dam and weir are removed, the Army would look to transfer the remaining parcels to prospective buyers.

5.1.1 Course of Action 1 – Quick Drawdown

This COA may result in minor, physical land use changes within the study area with the conversion of freshwater wetlands to drier, upland vegetation. The freshwater wetlands only exist behind the dam because of the accumulated sediments that have been trapped over the past several decades. Land use surrounding the study area will likely not change with this Proposed Action as most of the area is forested with upland vegetation. Any minor, short-term, adverse impacts to land uses as associated with the demolition of the existing dam and the presence of construction equipment within the study area would cease once the construction phase has concluded.

5.1.2 Course of Action 2 – Slow Drawdown and Leave Accumulated Sediments in Place

This COA could have negligible impacts to land use within the study area and its surrounding areas. Leaving the accumulated sediments in place would allow for the freshwater wetlands to be retained to a degree and although the hydraulic regime may change slightly, it is not expected to greatly affect the overall land use behind the dam. Any minor, short-term, adverse impacts to land uses as associated with the demolition of the existing dam and the presence of construction equipment within the study area would cease once the construction phase has concluded.

5.1.3 Course of Action 3 – Slow Drawdown, Leave Accumulated Sediments in Place, and Retain Wetlands (Preferred Alternative)

Like COA 2, this COA is expected to contain the most environmental benefits. Land use changes are expected to be minor or improve with this alternative. Improvement to the land use could consist of re-establishing wetland habitats and matching the current hydrologic regime during and after deconstruction. Any minor, short-term, adverse impacts to land uses as associated with the demolition of the existing dam and the presence of construction equipment within the study area would cease once the construction phase has concluded.

5.1.4 No Action Alternative

Leaving the Atkisson Dam and Van Bibber Weir in place would have no adverse impacts on land use.

5.2 VISUAL AESTHETICS

Impacts that enhance the existing quality of a viewshed or landscape are beneficial. Beneficial impacts could occur if a Proposed Action improved the visual character of an existing visual resource, increased the opportunity for viewers to see desirable resources, or decreased views of objectionable visual resources. Significant impacts would be associated with long-term alteration of the viewshed that required mitigation; negative alterations to the viewshed of a historical resource; and/or alterations were not cohesive with the overall viewshed of adjacent areas.

5.2.1 Course of Action 1 – Quick Drawdown

This COA could diminish the viewshed upstream of the dam and weir, causing a minor adverse impact, depending on the perspective of the viewer. Removing the dam and weir, and accumulated sediment behind them will decrease the amount of freshwater wetland habitat upstream of the structures. These areas provide essential habitat for a variety of wildlife that can be seen from nearby trails, roadways, or parks. Additionally, some viewers may enjoy the structural, architectural, and historical footprint of Atkisson Dam and may consider its removal a negative visual impact. However, this COA would also return the area closer to its original aesthetics, which could be considered a beneficial impact to some people who prefer a more natural setting.

5.2.2 Course of Action 2 – Slow Drawdown and Leave Accumulated Sediments in Place

This COA could have a minor impact of the viewshed upstream of both the dam and weir, depending on the perspective of the viewer. Removing the dam eliminates most of the reservoir that allows wetland habitat to exist. These areas provide essential habitat for a variety of wildlife that can be seen from nearby trails, roadways, or parks; however, if the hydrologic aspect is removed while keeping the sediment in place, most wetland habitat will likely decline. Conversely, this COA would return the area to a state closer to its pre-1942 aesthetics, which could be considered a beneficial impact to some people who prefer a more natural setting.

5.2.3 Course of Action 3 – Slow Drawdown, Leave Accumulated Sediments in Place, and Retain Wetlands (Preferred Alternative)

COA 3 may likely keep the viewshed consistent to its existing conditions, with exception to the dam and weir. This alternative allows the dam and weir to be removed while keeping the sediments and wetlands in place as much as possible. The alternative also allows for wetland enhancement practices to occur post-construction to increase the aesthetic value of the area.

5.2.4 No Action Alternative

Leaving the Atkisson Dam and Van Bibber Weir in place would have no adverse impacts on visual aesthetics.

5.3 NOISE

Noise impacts may occur if the Proposed Action creates appreciable long-term noise increases in areas of incompatible land use. Additionally, continuous construction noises above 60 dBA may be considered to have a significant adverse effect if audible at residential properties or other sensitive receptors during daytime hours, or results in excessive ground-borne vibration to persons or property.

5.3.1 Course of Action 1 – Quick Drawdown

Short-term, minor noise disturbances from construction equipment are expected to occur for COA 1. Construction equipment is expected to include gas and/or diesel-powered equipment such as dump trucks (approximately 87-102 dBA), excavators (approximately 87 dBA), backhoes (approximately 79-89 dBA), and devices used in concrete and dam removal. Other equipment that may create short-term noise disturbances includes in-stream equipment such as pumps (approximately and dewatering devices, as well as erosion and sediment control devices. Due to its proximity to residential neighborhoods and Harford Glen Park, noise reducing techniques may be used to minimize disturbance. Such techniques include equipping construction equipment with sound-muffling devices available from the equipment manufacturer and limiting engine idling time. To ensure operational maintenance noises do not become a nuisance, equipment would be maintained in good working order and would only be operated during daylight working hours. Additionally, construction noise may temporarily displace terrestrial and aquatic species during deconstruction.

5.3.2 Course of Action 2 – Slow Drawdown and Leave Accumulated Sediments in Place

Impacts for COA 2 are expected to be the same as those described in Section 5.3.1 above.

5.3.3 Course of Action 3 – Slow Drawdown, Leave Accumulated Sediments in Place, and Retain Wetlands (Preferred Alternative)

Impacts for COA 3 are expected to be the same as those described in Section 5.3.1 above.

5.3.4 No Action Alternative

Leaving the Atkisson Dam and Van Bibber Weir in place would have no adverse impacts on noise.

5.4 GEOLOGY, SOILS, AND TOPOGRAPHY

Impacts to geology may be considered significant if the Proposed Action removes or alters bedrock in such a way as to cause structural instability to surrounding buildings or infrastructure. Impacts to topography could be considered significant if the altered topography from the Proposed Action does not comply with the overall topography of adjacent land. Impacts to soils may be considered significant if the Proposed Action could cause substantial soil erosion or loss of topsoil, which would result in damage to waterways, ground instability, or impact to animal or human habitats.

APG would obtain all necessary state and local permits to perform construction. Specifically, because construction would disturb more than 5,000 SF or more than 100 CY of soil, APG would need to submit an Erosion Sediment Control Plan (ESC Plan). The ESC Plan would be designed in accordance with MDE regulations as published in the "2011 Standards and Specifications for Soil Erosion and Sediment Control" (MDE, 2011). Standard erosion and sediment control techniques include using vegetative and structural protective covers (e.g., permanent seeding, groundcover), sediment barriers (e.g., straw bales, silt fence, brush), constructing water conveyances (e.g., slope drains, check dam inlet, and outlet protection), and repairing and stabilizing bare and slightly eroded areas quickly. Maryland's "2010 Stormwater Management Guidelines for State and Federal Projects" would be followed to minimize adverse stormwater impacts from any work (MDE, 2010). APG would abide by state and local construction site permit requirements. Construction site plans would include measures to minimize the total area of land disturbed, prevent soil erosion and sediment runoff on the site, and re-stabilize the site with vegetation following construction.

5.4.1 Geology

5.4.1.1 Course of Action 1 – Quick Drawdown

COA 1 would have no impacts on geology as existing conditions would remain the same.

5.4.1.2 Course of Action 2 – Slow Drawdown and Leave Accumulated Sediments in Place

COA 2 impacts are expected to be the same as those described in Section 5.4.1.1 above.

5.4.1.3 Course of Action 3 – Slow Drawdown, Leave Accumulated Sediments in Place, and Retain Wetlands (Preferred Alternative)

COA 3 impacts are expected to be the same as those described in Section 5.4.1.1 above.

5.4.1.4 No Action Alternative

The No Action Alternative would have no impacts on geology as existing conditions would remain the same.

5.4.2 Soils

5.4.2.1 Course of Action 1 – Quick Drawdown

The quick drawdown and full or partial removal of the Atkisson Dam and Van Bibber Weir as described in COA 1 may have a moderate impact on soils within the study area. Although the impacts may occur over a several year period, the soils behind the dam and weir may lose their hydric characteristics, or ability to retain water for long periods of time; thus, becoming unable to support wetland vegetation growth. This, in turn, may incur the potential to introduce invasive species. Excavating the sediment behind Atkisson Dam may also introduce the possibility of erosive conditions along the banks of the existing reservoir if not properly stabilized or maintained. Benthic organisms living within the soil may be impacted as well with this COA. Benthic organisms are a vital component of the food web as they convert energy stored in organic matter into a food source for fish and other vertebrates. Removing sediment from behind the dam and weir also introduces the possibility to release hazardous toxins. Although a containment area is expected to be installed to store the dredged material in this COA, the reservoir has been holding decades worth of potentially contaminated soil, which has the possibility of including substances that weren't regulated by the CWA before the 1970s.

5.4.2.2 Course of Action 2 – Slow Drawdown and Leave Accumulated Sediments in Place

COA 2 may result in minor impacts to soils. No excavation would occur behind the dam as the sediments would be left in place. However, areas behind the dam and weir may lose their current hydrologic status and that may impact the hydric soil properties. Upland vegetation and the potential for invasive species would likely begin to propagate the area due to the change in hydrology. Erosive properties may occur when exposing sediment to new conditions, but the accumulated sediment may help to maintain a stable environment behind the dam after the dam is removed.

5.4.2.3 Course of Action 3 – Slow Drawdown, Leave Accumulated Sediments in Place, and Retain Wetlands (Preferred Alternative)

COA 3 carries similar impacts to soils as COA 2; however, this option includes establishing new wetlands and retaining existing ones to mitigate changes in hydrology and potential loss of wetlands during deconstruction.

5.4.2.4 No Action Alternative

Leaving the Atkisson Dam and Van Bibber Weir in place would have no adverse impacts on soils.

5.4.3 Topography

5.4.3.1 Course of Action 1 – Quick Drawdown

Local topographic relief would change with COA 1. Construction of a new riverine channel may shift the existing geomorphic position of the channel behind both the dam and weir. Minor impacts may occur as a result from the shifting contours and could include erosive stream bank activities, downed trees causing debris jams, and new sediment transport loads developing in areas downstream of deconstruction, potentially changing the flow regimes throughout Winters Run.

5.4.3.2 Course of Action 2 – Slow Drawdown and Leave Accumulated Sediments in Place

COA 2 impacts to topography are expected to be similar as those described in Section 5.4.3.1 above. Leaving the sediments in place would allow some of the existing conditions to remain upstream of the dam and weir.

5.4.3.3 Course of Action 3 –Slow Drawdown, Leave Accumulated Sediments in Place, and Retain Wetlands (Preferred Alternative)

COA 3 impacts to topography are expected to be similar as those described in Section 5.4.3.1 above. Leaving the sediments in place would allow some of the existing conditions to remain upstream of the dam and weir.

5.4.3.4 No Action Alternative

Leaving the Atkisson Dam and Van Bibber Weir in place would have no adverse impacts to topography.

5.5 AIR QUALITY

Impacts to air quality would be significant if: the proposed project does not conform to the SIP in a nonattainment area; the proposed project contributes to new violations of ambient air quality standards, or an increase in the frequency or severity of existing violations; or the proposed project causes a delay in timely state and/or regional attainment standards. In accordance with the GCR, a RONA has been prepared to analyze the potential air quality impacts for this project.

5.5.1 Course of Action 1 – Quick Drawdown

COA 1 would be expected to have short-term, minor impacts to air quality. Potential air quality impacts from construction activities would occur from: 1) combustion emissions due to the use of fossil-fuel-powered equipment and vehicles, and 2) particulate emissions from fugitive dust generated during ground-disturbing activities. Based on the calculations in the RONA, the total construction emissions for all criteria pollutants would be well below the GCR de minimis thresholds, and therefore, adverse impacts to air quality would be minor.

Localized greenhouse gas emissions are expected to experience a short-term, minor increase within the study area due to proposed deconstruction activity that involves some heavy machinery. With the quick drawdown method, there may be a short-term minor increase in GHG as sediments containing carbon become oxidized. Long-term impacts to GHG should be beneficial as dam removal should result in increased riparian zones and an increase in carbon storage in the soil organic matter. However, these beneficial impacts may be negated with wetland loss upstream of Atkisson dam that result from the removal.

5.5.2 Course of Action 2 – Slow Drawdown and Leave Accumulated Sediments in Place

COA 2 impacts are expected to be the same as those described in Section 5.5.1 above.

5.5.3 Course of Action 3 – Slow Drawdown, Leave Accumulated Sediments in Place, and Retain Wetlands (Preferred Alternative)

COA 3 impacts are expected to be the same as those described in Section 5.5.1 above. However, there should be more long-term minor beneficial impacts to greenhouse gases as riparian zones downstream of the dam should increase and the wetlands upstream of Atkisson dam will be retained.

5.5.4 No Action Alternative

The No Action Alternative would have no impacts to air quality as conditions would remain the same.

5.6 WATER RESOURCES

Water resources within the study area are a vital component to the study and deconstruction of both the dam and weir. Impacts to water resources would be considered significant if impacts: (1) substantially deplete groundwater supplies or interfere with groundwater recharge, (2) result in a violation of Federal and/or State water quality standards, (3) cause an unpermitted direct impact on WOTUS, or (4) alter existing drainage patterns. Surface water is expected to have a short-term, minor adverse impact during the deconstruction, most notably turbidity levels would be expected to temporarily increase. Wetlands are expected to receive the most impacts with removal of the dam and weir as the existing conditions and hydrology are expected to change upstream of the structures; thus, removing one of the parameters that supports characteristics of wetland habitats.

5.6.1 Surface Water

5.6.1.1 Course of Action 1 – Quick Drawdown

COA 1 has the potential to cause short-term, moderate adverse impacts to surface water due to an increase in sediment loads and turbidity downstream affecting Winters Run, Bush River and eventually the Chesapeake Bay. Increases in turbidity associated with the Proposed Action may cause changes to stream channel geomorphology and may include short-term or long-term channel incision or aggradation. Quick drawdown also has the potential to increase lateral erosion and downcutting downstream. Contaminants and nutrients bound to sediments that have collected behind the dam may become resuspended and transported downstream. It is the policy of the MDE that decommissioning (removal) of dams is appropriate and preferred when the dam no longer provides value to the owner or users (USEPA, 2016). Based on the background information provided in Section 1.2, Atkisson Dam and Van Bibber Weir are no longer needed for their intended purposes, and would, therefore, fit MDE's guidance for decommissioning. MDE's Dam Safety Division should be consulted during the planning/design phase of the project and a Dam Safety Permit should be obtained. Pollutants associated with construction equipment (oils, fuel, etc.) must be controlled to minimize the potential for release of these contaminants to surface waters.

5.6.1.2 Course of Action 2 – Slow Drawdown and Leave Accumulated Sediments in Place

COA 2 has the potential to avoid or minimize the anticipated impacts from COA 1, and would be expected to have short-term, minor adverse impacts to surface water. The rate of drawdown should consider the size of the dam and the volume of accumulated sediments to avoid landslides, downstream floods, and river aggradation. A slow drawdown could have the potential to release contaminants/pollutants downstream that may have accumulated, even with maximized sediment retention. Pollutants associated with construction equipment (oils, fuel, etc.) must be controlled to minimize the potential for release of these contaminants to surface waters. Contaminants and nutrients bound to sediments that have collected behind the dam may become resuspended and transported downstream.

5.6.1.3 Course of Action 3 – Slow Drawdown, Leave Accumulated Sediments in Place, and Retain Wetlands (Preferred Alternative)

COA 3 impacts are expected to be the same as COA 2 impacts described in Section 5.6.1.2 above. Contaminants and nutrients bound to sediments that have collected behind the dam may become resuspended and transported downstream.

5.6.1.4 No Action Alternative

Leaving the Atkisson Dam and Van Bibber Weir in place may cause a continuation of upstream sediment accumulation, which could lead to adverse impacts, liabilities, and hazards including a dam breach or failure.

5.6.2 Groundwater

5.6.2.1 Course of Action 1 – Quick Drawdown

COA 1 would be expected to have short-term, minor adverse impacts to ground water. This COA has the potential to modify adjacent groundwater system conditions, which could result in a rise or fall in the underlying water table upstream, downstream, and adjacent to the removal area. The Proposed Action is primarily located in the Patuxent water-bearing formation, which is monitored by 300 non-potable groundwater sampling wells at various environmental investigation/remediation sites (APG, 2017). Since the Atkisson Reservoir is not currently being used for local water supplies, there will be minimal negative impacts associated with the adjacent groundwater, but considerations should be made to minimize impacts to downstream wells, spring, and groundwater contamination during deconstruction activities.

5.6.2.2 Course of Action 2 (Slow Drawdown and Leave Accumulated Sediments in Place)

COA 2 impacts to groundwater are expected to be the same as COA 1 impacts described in Section 5.6.2.1 above.

5.6.2.3 Course of Action 3 – Slow Drawdown, Leave Accumulated Sediments in Place, and Retain Wetlands (Preferred Alternative)

COA 3 impacts to groundwater are expected to be the same as COA 1 impacts described in Section 5.6.2.1 above.

5.6.2.4 No Action Alternative

Leaving the Atkisson Dam and Van Bibber Weir in place would have no impact on groundwater resources unless a dam breach or failure/deficiency occurred.

5.6.3 Floodplains

5.6.3.1 Course of Action 1 – Quick Drawdown

COA 1 has the potential to result in more frequent/severe downstream flooding, which would be considered long-term, moderate adverse impacts. This may necessitate the need for enlargement of downstream structures including bridges, culverts, and easements prior to a quick drawdown. For the alteration of any floodplain in Maryland, a Federal/State Joint Permit Application (JPA) is required. A Dam Safety Permit through MDE demonstrating that the removal will not adversely affect downstream flooding during the 2-, 10-, and 100-year storms, or that necessary permissions/easements have been obtained, may be required (USEPA, 2016). Hydrology and hydraulic modeling may be required to support a dam safety permit.

5.6.3.2 Course of Action 2 – Slow Drawdown and Leave Accumulated Sediments in Place

COA 2 has the potential to result in more frequent/severe downstream flooding, with less severity than COA 1. These potential impacts would be expected to be long-term, minor adverse impacts. Over time, enlargement of downstream structures including bridges, culverts, and easements should be considered. For the alteration of any floodplain in Maryland, a Federal/State JPA is required. A Dam Safety Permit through MDE demonstrating that the removal will not adversely affect downstream flooding during the 2-, 10-, and 100-year storms, or that necessary permissions/easements have been obtained may be required (USEPA, 2016). Hydrology and hydraulic modeling may be required to support a dam safety permit.

5.6.3.3 Course of Action 3 – Slow Drawdown, Leave Accumulated Sediments in Place, and Retain Wetlands (Preferred Alternative)

COA 3 impacts to floodplains are expected to be the same as COA 2 impacts described in Section 5.6.3.2 above.

5.6.3.4 No Action Alternative

Leaving the Atkisson Dam and Van Bibber Weir in place would have no adverse impacts on current floodplains unless a dam breach or failure/deficiency occurred. However, it should be noted that the natural upstream and downstream floodplains were impacted by the original implementation of the dam and weir.

5.6.4 Wetlands

5.6.4.1 Course of Action 1 – Quick Drawdown

COA 1 has the potential to change the boundary of the existing 20 acres of wetlands at Atkisson Dam and additional wetlands along the shoreline of the weir. Because of this, COA 1 would be expected to have long-term, potentially significant adverse impacts to wetlands. Some of the wetlands upstream of the dam and weir were not present prior to the construction of the dam and weir and should not be considered pre-dam natural conditions. Without any wetland restoration considerations, COA 1 has the potential to effectively alter approximately 15 acres of emergent wetlands and 4 acres of forested wetlands upstream of the dam. Requirements to mitigate for loss of wetlands upstream of the dam caused by its removal will depend on the permitting mechanism, policies, and guidelines of the USACE, review by other State and Federal regulatory and resource agencies, and the nature of the specific dam removal project for wetlands that were created by the dam (USEPA, 2016). For the alteration of any wetland in Maryland, a Federal/State JPA is required. A Finding of No Practical Alternative (FONPA) has been prepared for all practicable alternatives, including COA 1, and is located in Appendix H.

5.6.4.2 Course of Action 2 – Slow Drawdown and Leave Accumulated Sediments in Place

COA 2 has the potential to change the boundary of the existing 20 acres of wetlands in the study area. Some of the wetlands upstream of the dam and weir were not present prior to the construction of the dam and weir and should not be considered pre-dam natural conditions. The COA 2 slow drawdown has the potential to mitigate some of the adverse wetland impacts described in COA 1. Because of this, COA 2 would be expected to have long-term, moderate impacts to wetlands. Requirements to mitigate for loss of wetlands upstream of the dam caused by its removal will depend on the permitting mechanism, policies, and guidelines of the applicable USACE district, review by other State and Federal regulatory and resource agencies, and the nature of the specific dam removal project for wetlands that were created by the dam (USEPA, 2016). For the alteration of any wetland in Maryland, a Federal/State JPA is required. A FONPA has also been prepared for all practicable alternatives, including COA 2, and is located in Appendix H. Although wetlands surrounding the reservoir may be drained under the Proposed Action, it is possible that new wetlands will be created in the newly restored channel reaches upstream and downstream of the former dam and weir sites.

5.6.4.3 Course of Action 3 – Slow Drawdown, Leave Accumulated Sediments in Place, and Retain Wetlands (Preferred Alternative)

COA 3 has the potential to change the boundary of the existing 20 acres of wetlands in the study area. Some of the wetlands upstream of the dam and weir were not present prior to the construction of the dam and weir and should not be considered pre-dam natural conditions. COA 3, which includes wetland preservation considerations, has the potential to retain some existing wetland hydrology, although upstream wetland loss may still be expected. Based on this, COA 3 is expected to have long-term, minor adverse impacts to wetlands. Approximately 20 acres of existing wetlands may be impacted by the implementation of COA 3, but the impact would allow existing wetlands to remain within the study area. EO 11990 directs Federal agencies to avoid undertaking or assisting in new construction located in wetlands unless no practicable alternative is available. A FONPA has been prepared for all practicable alternatives, including COA 3, and is located in Appendix H. Requirements to mitigate for loss of wetlands upstream of the dam caused by its removal will depend on the permitting mechanism, policies, and guidelines of the applicable USACE district, review by other state and Federal regulatory and resource agencies, and the nature of the specific dam removal project for wetlands that were created by the dam (USEPA, 2016). For the alteration of any wetland in Maryland, a Federal/State JPA is required. Although wetlands surrounding the reservoir may be drained under the Proposed Action, it is possible that new wetlands would be created in the newly restored channel reaches upstream and downstream of the former dam and weir sites.

5.6.4.4 No Action Alternative

Leaving the Atkisson Dam and Van Bibber Weir in place would have no adverse impacts on existing wetlands unless a dam breach or failure/deficiency occurred. However, it should be noted that the natural upstream and downstream wetlands were impacted by the original implementation of the dam and weir.

5.6.5 Stormwater

5.6.5.1 Course of Action 1 – Quick Drawdown

COA 1 is not expected to have any adverse impacts to stormwater. APG maintains a current MS4 permit that meets TMDL goals and National Pollutant Discharge Elimination System (NPDES) plans. Whenever construction (or deconstruction) activity is occurring, regulations provide that discharges of stormwater from construction (or deconstruction) projects that encompass one or more acres of soil disturbance are prohibited unless the discharge is in compliance with a NPDES (Section 402) permit to reduce the potential for accelerated erosion and for contact of construction pollutants with stormwater (USEPA, 2016). APG will adhere to its MS4 permit and will incorporate Best Management Practices (BMPs) into the Action to reduce potential adverse environmental effects.

5.6.5.2 Course of Action 2 – Slow Drawdown and Leave Accumulated Sediments in Place

COA 2 stormwater impacts are expected to be the same as COA 1 impacts described in Section 5.6.5.1 above.

5.6.5.3 Course of Action 3 – Slow Drawdown, Leave Accumulated Sediments in Place, and Retain Wetlands (Preferred Alternative)

COA 3 stormwater impacts are expected to be the same as COA 1 impacts described in Section 5.6.5.1 above.

5.6.5.4 No Action Alternative

Leaving the Atkisson Dam and Van Bibber Weir in place would have no adverse impacts on existing stormwater unless a dam breach or failure/deficiency occurred.

5.6.6 Coastal Zone

5.6.6.1 Course of Action 1 – Quick Drawdown

COA 1 has the potential to influence coastal/tidal areas. Potential impacts include increased sediment loads and pollutant discharge, debris, and pollutants associated with construction equipment, but the potential adverse impacts to the coastal zone are considered to be minor. Consideration will be taken to mitigate downstream impacts such as following time of year restrictions (March 1-June 15 of any year), adhering to sediment and erosion control plans and conducting increased inspections to protect the Chesapeake Bay in accordance with Maryland's

CZMP enforceable policies 2020. A CZMA Federal Consistency Determination was prepared for this project and is located in Appendix G.

5.6.6.2 Course of Action 2 – Slow Drawdown and Leave Accumulated Sediments in Place

COA 2 impacts to the coastal zone are expected to be the same as COA 1 impacts described in Section 5.6.6.1 above.

5.6.6.3 Course of Action 3 – Slow Drawdown, Leave Accumulated Sediments in Place, and Retain Wetlands (Preferred Alternative)

COA 3 impacts to the coastal zone are expected to be the same as COA 1 impacts described in Section 5.6.6.1 above.

5.6.6.4 No Action Alternative

Leaving the Atkisson Dam and Van Bibber Weir in place would have no adverse impacts on the coastal zone unless a dam breach or failure/ deficiency occurred.

5.6.7 Chesapeake Bay Critical Area

5.6.7.1 Course of Action 1 – Quick Drawdown

COA 1 has the potential to influence the Chesapeake Bay Critical Area as a portion of this project – Van Bibber Weir – falls within the definition of a critical area, but minor impacts are anticipated. Removing the weir is expected to drain the accumulated sediments and water behind the weir and would also have expected impacts to the wetlands along the shoreline. This project must be completed in compliance with the Critical Area Law, and local critical area management programs.

5.6.7.2 Course of Action 2 – Slow Drawdown and Leave Accumulated Sediments in Place

COA 2 impacts to the Chesapeake Bay Critical Area are expected to be the same as COA 1 impacts described in Section 5.6.7.1, above.

5.6.7.3 Course of Action 3 – Slow Drawdown, Leave Accumulated Sediments in Place, and Retain Wetlands (Preferred Alternative)

COA 3 impacts to the Chesapeake Bay Critical Area are expected to be the same as COA 1 impacts described in Section 5.6.7.1, above.

5.6.7.4 No Action Alternative

Leaving the Atkisson Dam and Van Bibber Weir in place would have no adverse impacts on the Chesapeake Bay Critical Area unless a dam breach or failure/deficiency occurred.

5.7 BIOLOGICAL RESOURCES

Impacts are expected to vary with each biological resource based on the Proposed Action. Most impacts are expected to be moderate in terms of vegetation within the study area. Fish and wildlife resources are expected to vacate the area temporarily due to construction activity and noise; although, most wildlife is expected to return to the area post-construction. Some permanent impacts may be incurred to benthic macroinvertebrates as they are slow moving species. In addition, there is a possibility that a new ecological risk could be created from potentially contaminated sediments being left in place and creating new food web exposures and effects to plants and subsequently wildlife. This could occur as sediments are disturbed and become suspended sediments which could settle out and become consolidated wetland sediments supporting new plant and wildlife receptors. Sediment surveys should be conducted prior to any work to determine the amount of sediment and analyses conducted to identify and quantify any contaminants associated with the sediments. Coordination through the designated State and Federal agencies will continue throughout the course of the project to ensure any rare, threatened, or endangered species, and their habitat are left intact.

5.7.1 Vegetation

5.7.1.1 Course of Action 1 – Quick Drawdown

COA 1 is expected to have a long-term, moderate adverse impact on wetland vegetation within the study area – upland vegetation is expected to remain the same. Changing the hydrologic properties of the area will inadvertently affect the type of vegetation that will be re-established. By removing the structures and sediment behind them, the opportunity for pioneer species such as sweetgum (*Liquidambar styraciflua*) increases, potentially creating a monoculture of the species. In addition, the propagation of invasive species and monocultures would also increase.

5.7.1.2 Course of Action 2 – Slow Drawdown and Leave Accumulated Sediments in Place

COA 2 impacts are expected to be similar as those described in Section 5.7.1.1 above. Although the sediment could remain in place, the hydrologic regime could change and, thus, could affect the type of vegetation being grown within the extents of the reservoirs. Like COA 1, there is no plan to protect or retain existing wetlands with this COA, which may allow unwanted vegetation to populate the area. Therefore, long-term, moderate adverse impacts to wetland vegetation would be expected.

5.7.1.3 Course of Action 3 – Slow Drawdown, Leave Accumulated Sediments in Place, and Retain Wetlands (Preferred Alternative)

COA 3 impacts are expected to be similar to those described in Section 5.7.1.1 above. However, part of this COA includes retaining and re-establishing wetlands to ensure the area retains its intrinsic value. Leaving accumulated sediments in place will allow the area to re-establish itself after the dam and weir are removed. APG will install gates upstream from the dam to help divert flow and mitigate impacts to wetlands. Post-construction monitoring and restoration would ensure that unwanted volunteers, invasive species, and monocultures are eradicated to allow native vegetation to thrive, which is in line with the guidance contained in EO 13751, *Safeguarding the Nation from the Impacts of Invasive* Species. Therefore, impacts for this COA would be expected to be short-term, minor adverse impacts.

5.7.1.4 No Action Alternative

The No Action Alternative may pose minor impacts to the existing conditions as sediment continues to build up behind the dam and weir, potentially changing the hydrologic regime and consequently, the type of vegetation that inhabits the area.

5.7.2 SAV

5.7.2.1 Course of Action 1 – Quick Drawdown

COA 1 is expected to have long-term, moderate adverse impacts on SAV within Otter Point Creek NERR. Increased sedimentation could decrease light availability and reduce water quality which could detrimentally impact SAV. In addition, the increased water flow may scour and uproot SAV found in the Otter Point Creek NERR.

5.7.2.2 Course of Action 2 – Slow Drawdown and Leave Accumulated Sediments in Place

COA 2 has the potential to avoid or minimize the anticipated impacts from COA 1, as leaving the sediments in place would reduce impacts associated with sedimentation. Short-term minor adverse impacts to SAV may occur with increased flow, but the slow drawdown should help mitigate those impacts. Removing Van Bibber weir should result in long-term beneficial impacts as water quality will improve over time.

5.7.2.3 Course of Action 3 – Slow Drawdown, Leave Accumulated Sediments in Place, and Retain Wetlands (Preferred Alternative)

Impacts for COA 3 are expected to be the same as those described in Section 5.7.2.3 above.

5.7.3 Fish and Wildlife Resources

5.7.3.1 Course of Action 1 – Quick Drawdown

COA 1 would be expected to have short-term, minor adverse impacts to terrestrial wildlife resources, as these species would be expected to vacate the areas of the dam and weir during deconstruction; however, they would be expected to return to the areas after deconstruction activities were complete. There is potential for minor adverse impacts to migratory birds because of permanent habitat alteration from the shrinkage/disappearance of impounded water, wetland loss or tree impacts. There may be impacts to the bald eagle with this COA because it is likely to disturb the bald eagle nest which is currently located on APG property just above the Atkisson dam. The project activity could impact the breeding pair during the breeding season to the point that they abandon the nest and any eggs or eaglets within the nest. The action could result in indirect disturbance to the nest from habitat alteration during the non-breeding season to the point that the breeding pair does not return to the nest next season. There is little if any mitigation possible to avoid impacting and disturbing the nesting eagles, because all of the COAs will permanently alter the habitat immediately surrounding the eagle nest, and the project is unlikely to be initiated and completed fully outside of eagle breeding season. APG's eagle take permit includes an authorization to disturb a limited number of nests incidental to mission operations. The nest disturbance will be considered a "take" under APG's permit. Depending on the number of "takes" incurred for the reporting year, the nest disturbance ("take") might result in APG exceeding its nest disturbance authorization. APG will need to communicate this potential exceedance in advance with the USFWS. Additionally, the nest disturbance could potentially be counted as multiple "takes", because the nest would very likely be permanently impacted due to habitat alteration; that is, the nest disturbance is considered a loss of a nesting territory and equates to loss of multiple generations of eagles. Further consultation with the USFWS will be required in advance of initiating the proposed action.

Fish species will not be able to vacate the reservoir as easily with draw down which may result in short-term, adverse impacts as water recedes resulting in reduced dissolved oxygen, increased suspended sediments, and decreased habitat to support predator/prey ratios. Increased sediment flow in the stream will potentially decrease water quality for fish in the short-term. Benthic invertebrate communities may be impacted by increased stream flow and potential scouring from draw down, increased sediment load from deconstruction and temporary or permanent changes in stream substrate. The changes in the stream substrate could occur with siltation affecting species makeup of the benthic population shifting it from more sensitive species to less sensitive species that reflect the decreased habitat quality.

This COA could also be expected to have long-term beneficial impacts on fish species, as the 2021 Stream Assessment report showed higher fish species diversity in free-flowing areas of Winters Run, and removal of the dam and weir would remove the impounded areas of the stream. The removal of the dam and weir would make it easier for anadromous and catadromous fish species to utilize the waters above the dam and weir. In addition to increased fish passage, removal of the dam and weir would also promote long-term increased water quality, restore the natural stream flow and prevent sediment buildup. The benefits of removing the dam and weir far outweigh any potential adverse impacts to fish and wildlife resources.

5.7.3.2 Course of Action 2 - Slow Drawdown and Leave Accumulated Sediments in Place

Impacts for COA 2 are expected to be the same as those described in Section 5.7.2.1 above.

5.7.3.3 Course of Action 3 – Slow Drawdown, Leave Accumulated Sediments in Place, and Retain Wetlands (Preferred Alternative)

Impacts for COA 3 are expected to be the same as those described in Section 5.7.2.1 above.

5.7.3.4 No Action Alternative

Under the No Action Alternative, there would be no impacts to fish and wildlife resources, as the conditions at the dam and weir would remain the same.

5.7.4 Rare, Threatened, and Endangered Species

5.7.4.1 Course of Action 1 – Quick Drawdown

COA 1 would be expected to have negligible impacts to rare, threatened, and endangered species, based on consultation with USFWS. Through this IPaC consultation, it was determined that while the project “may affect” the threatened NLEB, the action is covered under the Programmatic

Biological Opinion (PBO) for the species. Additionally, as any tree removal associated with the project would be minimal, it is not expected that any NLEB would be disrupted or displaced. Any potential disruption or displacement of the monarch butterfly would be temporary during deconstruction. Potential disruptions could be minimized by avoiding construction activities or staging in any areas containing milkweed (*Asclepias* sp.) and other wildflowers during the spring and summer months.

COA 1 may result in negligible impacts to State listed species identified by the MD DNR. The Army will make every effort to avoid and/or minimize impacts to those species and will mitigate impacts as required if they are found as part of the analysis. Federal and State rare, threatened, and endangered species lists will need to be re-examined as project planning progresses, because several species that inhabit APG and Harford County are being evaluated for potential Federal and/or State listing.

5.7.4.2 Course of Action 2 – Slow Drawdown and Leave Accumulated Sediments in Place

Impacts for COA 2 are expected to be the same as those described in Section 5.7.3.1 above.

5.7.4.3 Course of Action 3 – Slow Drawdown, Leave Accumulated Sediments in Place, and Retain Wetlands (Preferred Alternative)

Impacts for COA 3 are expected to be the same as those described in Section 5.7.3.1 above.

5.7.4.4 No Action Alternative

Under the No Action Alternative, there would be no impacts to rare, threatened, and endangered species, as the conditions at the dam and weir would remain the same.

5.8 CULTURAL RESOURCES

Through coordination and confirmation with MHT, no National Register eligible cultural, archaeological, or historic resources will be impacted by the Proposed Action. Additionally, no impacts will occur to Native American interests or land as confirmed through coordination with federally recognized Native American Tribes. Adherence to Federal, state, and local laws will continue throughout the course of the project in the unlikely event that a historic, cultural, or archaeological resource is discovered during deconstruction.

5.8.1 Archaeological Resources

5.8.1.1 Course of Action 1 – Quick Drawdown

This Proposed Action will have no impact on archaeological resources within the study area.

5.8.1.2 Course of Action 2 – Slow Drawdown and Leave Accumulated Sediments in Place

Impacts for COA 2 are expected to be the same as those described in Section 5.8.1.1 above.

5.8.1.3 Course of Action 3 – Slow Drawdown, Leave Accumulated Sediments in Place, and Retain Wetlands (Preferred Alternative)

Impacts for COA 3 are expected to be the same as those described in Section 5.8.1.1 above.

5.8.1.4 No Action Alternative

No archaeological resources are expected to be impacted by the No Action Alternative.

5.8.2 Architectural Resources

5.8.2.1 Course of Action 1– Quick Drawdown

COA 1 will have no impact on architectural resources within the study area.

5.8.2.2 Course of Action 2 – Slow Drawdown and Leave Accumulated Sediments in Place

Impacts for COA 2 are expected to be the same as those described in Section 5.8.2.1 above.

5.8.2.3 Course of Action 3 – Slow Drawdown, Leave Accumulated Sediments in Place, and Retain Wetlands (Preferred Alternative)

Impacts for COA 3 are expected to be the same as those described in Section 5.8.2.1 above.

5.8.2.4 No Action Alternative

No architectural resources are expected to be impacted by the No Action Alternative.

5.8.3 Native American Resources

5.8.3.1 Course of Action 1 – Quick Drawdown

COA 1 will have no impact on Native American resources within the study area.

5.8.3.2 Course of Action 2 – Slow Drawdown and Leave Accumulated Sediments in Place

Impacts for COA 2 are expected to be the same as those described in Section 5.8.3.1 above.

5.8.3.3 Course of Action 3 – Slow Drawdown, Leave Accumulated Sediments in Place, and Retain Wetlands (Preferred Alternative)

Impacts for COA 3 are expected to be the same as those described in Section 5.8.3.1 above.

5.8.3.4 No Action Alternative

No Native American resources are expected to be impacted by the No Action Alternative.

5.9 HAZARDOUS, TOXIC, AND RADIOACTIVE SUBSTANCES (HTRS)

In an effort to minimize the potential for a release of petroleum-based fluids (i.e., diesel fuel, hydraulic fluid) from construction equipment to the environment, all construction equipment would be maintained in good working order by the contractor daily. In the event that an accidental release of a hazardous material occurs, construction equipment would be equipped with an emergency spill kit and workers would be trained on how to properly deploy the equipment to respond to a release. Additionally, all construction equipment would be refueled in a designated impervious area and away from pervious grounds. Any solid waste, including excess vegetation or sediment debris, would be properly composted, reused, or disposed of at a permitted facility. Furthermore, all contractors involved in the deconstruction of the dam and the weir would be responsible for adhering to state and Federal regulations for storage, handling, and disposal of hazardous wastes.

As part of the 1997 feasibility study, sediments were sampled at Atkisson Dam. The results showed that most metals were at safe levels according to U.S. Geological Survey (USGS) background levels. However, five metals had concentrations that appeared above normal background levels: mercury, cadmium, manganese, lead, and antimony (APG, 1998). Additional surveys and testing will be performed as the design and study progresses.

5.9.1 Course of Action 1 – Quick Drawdown

COA 1 has the potential to release trapped HTRS within the sediment behind the dam and weir. As such, impacts from this COA would be expected to be short-term, minor adverse impacts. Atkisson Dam was constructed before CWA laws and regulations were enacted, and accumulated sediments have the potential to contain toxic substances. Although this alternative has a designated containment area to store sediment, there is still a potential risk for unintended displacement of soil and dredged material. During a quick drawdown, any uncontained sediments and containments will likely flow downstream and outside of the study area, potentially disrupting habitats and water quality for fish and wildlife species.

5.9.2 Course of Action 2 – Slow Drawdown and Leave Accumulated Sediments in Place

COA 2 is expected to have minor impacts to HTRS. Some contaminated sediment may be lost downstream during slow drawdown, but most accumulated sediment at the bottom of the reservoir at Atkisson Dam would be left it place, and thus, any potential hazardous materials would likely remain in place.

5.9.3 Course of Action 3 – Slow Drawdown, Leave Accumulated Sediments in Place, and Retain Wetlands (Preferred Alternative)

Impacts for COA 3 are expected to be the same as those described in Section 5.9.2 above.

5.9.4 No Action Alternative

The No Action Alternative poses risks for dam and weir failure and creates the opportunity for potentially contaminated sediment and soils to flow uncontrolled downstream and outside of the study area. This would result in environmental impacts to wildlife habitat, water quality, and potentially human health and safety.

5.10 TRAFFIC AND TRANSPORTATION

Atkisson Dam is classified as a high hazard dam (APG, 1998). It is estimated that in a potential major flood event, the floodwaters would overtop the Singer Road overpass, Winters Run Road, the I-95 overpass, and the Route 7 overpass. Depending on the force of the water and other debris and blockages, it is possible that the I-95 and Route 7 overpass could be destroyed. It is estimated that waters would reach maximum elevation at the I-95 and Route 7 overpass within three hours from the time water initially overtops the dam. Three hours' notice would likely give authorities enough time to close down the major roadways and evacuate adjacent properties and businesses (APG, 1998).

5.10.1 Course of Action 1 – Quick Drawdown

This COA would be expected to have short-term, minor impacts on local traffic and roadways. Some temporary lanes or road closures may occur in order to mobilize construction equipment. These traffic and roadway impacts could also be minimized by keeping the construction equipment on or near the project site during deconstruction.

5.10.2 Course of Action 2 – Slow Drawdown and Leave Accumulated Sediments in Place

Impacts for COA 2 are expected to be the same as those described in Section 5.10.1 above.

5.10.3 Course of Action 3 – Slow Drawdown, Leave Accumulated Sediments in Place, and Retain Wetlands (Preferred Alternative)

Impacts for COA 3 are expected to be the same as those described in Section 5.10.1 above.

5.10.4 No Action Alternative

This proposed action will have no impact on traffic or transportation within the study area. However, if the structures are not deconstructed and eventually fail, specifically Atkisson Dam, several major roadways will be impacted by floodwaters, sediment, and debris. Dam failure is an unlikely scenario, but the possibility does exist.

5.11 SOCIOECONOMICS

Significant impacts to socioeconomics would only occur if the Proposed Action were to cause substantial change to the sales volume, income, employment, or population of the surrounding ROI. Impacts would also be significant if low income, minority, or child populations would be disproportionately impacted by this action.

5.11.1 Course of Action 1 – Quick Drawdown

COA 1 is expected to have short term and negligible impacts to socioeconomics within the study area. The Harford Glen Environmental Education Center would experience some short-term negligible impacts during the dam removal process as they would be unable to utilize the dam and stream area during deconstruction. The removal of the dam would potentially modify their current lesson plans as the dam would no longer be in place. Positive impacts may result from students gaining more insight into the benefits of dam removal on aquatic resources and the opportunity to see the landscape in its natural state.

5.11.2 Course of Action 2 – Slow Drawdown and Leave Accumulated Sediments in Place

COA 2 is expected to have the same impacts to socioeconomics within the study area as COA 1.

5.11.3 Course of Action 3 – Slow Drawdown, Leave Accumulated Sediments in Place, and Retain Wetlands (Preferred Alternative)

COA 3 is expected to have the same impacts to socioeconomics within the study area as COA 1.

5.11.4 No Action Alternative

The No Action Alternative may cause impacts to socioeconomics if the dam and weir are not deconstructed, and an unexpected breach or failure occurs. If a breach or failure occurs to Atkisson Dam, several housing communities and businesses could be displaced due to floodwaters and debris, incurring costs due to damaged property. As previously stated in Section 5.10, floodwaters and debris have the potential to damage several major roadway overpasses, causing significant transportation impacts. Repairing any damage caused by a potential breach or failure would require the government, insurance agencies, and property owners to expend funds for repairs.

5.12 HUMAN HEALTH AND SAFETY

The analysis of potential health and safety impacts includes public and occupational health and safety considerations, including the risks associated with the deconstruction and removal of the dam and weir, the location of hazardous operations and activities with respect to sensitive receptors and the general public, and the adequacy of safety related planning and procedures in place. A significant impact would occur if the Proposed Action were to substantially increase health and safety risks for personnel and the general public.

5.12.1 Course of Action 1 – Quick Drawdown

COA 1 is expected to have negligible adverse impacts to human health and safety, as there are no sensitive receptors in the immediate vicinity of either project site, and no members of the public would have access to the sites during deconstruction. These sites are both currently fenced off from the public, and these fences would remain in place during deconstruction. Additionally, contract specifications would be implemented to protect those working on-site during deconstruction. All construction contractors would be required to strictly adhere to safety procedures, including complying with Department of Defense (DoD) safety regulations and Occupational Safety and Health Administration regulations and conducting construction activities in a manner that poses no undue risk to workers or other personnel.

There is also a potential long-term, beneficial impact from removal of the dam and weir, as there have been several health and safety incidents at Atkisson Dam in recent years as a result of members of the public trespassing and climbing onto the dam. Without the dam and weir, risk of future incidents like these would be removed.

5.12.2 Course of Action 2 – Slow Drawdown and Leave Accumulated Sediments in Place

Impacts from COA 2 are expected to be the same as those described in Section 5.12.1 above.

5.12.3 Course of Action 3 – Slow Drawdown, Leave Accumulated Sediments in Place, and Retain Wetlands (Preferred Alternative)

Impacts from COA 3 are expected to be the same as those described in Section 5.12.1 above.

5.12.4 No Action Alternative

Under the No Action Alternative, there is the potential for minor adverse impacts due to the risk of health and safety incidents associated with members of the public trespassing onto Atkisson Dam.

5.13 CUMULATIVE IMPACTS

In accordance with the Final Phase 1 Rule for CEQ's NEPA implementing regulations, dated 20 April 2022, this section analyzes potential cumulative impacts that could arise when the Proposed Action's effects are added to other past, present, and reasonably foreseeable future actions.

The study area for this cumulative impacts analysis includes the study area described in Section 1.3, Scope of the Environmental Assessment, plus a 0.5-mile buffer on all sides to fully account for nearby past, present, and reasonably foreseeable future actions.

This cumulative impacts analysis focuses on other projects/actions that may affect the same resources as the Proposed Action, potentially contributing to cumulative effects. These actions include commercial, residential, mixed use, transportation, infrastructure, recreation, and institutional developments. These actions were identified by researching publicly available information sources, such as local master plans, news articles, and Federal, state, and local agencies' databases. Table 5-1 below provides a summary of past, present, and reasonably foreseeable future actions considered in this analysis. Please note that the list of projects in this table is not meant to be exhaustive but rather is meant to showcase a variety of projects that could interact with the Proposed Action's effects resulting in cumulative impacts.

Table 5-1: Past, Present, and Reasonably Foreseeable Future Actions

No.	Project Name	Project Proponent	Status	Project Description
1	Abingdon Business Park	BTC III I-95 Logistics Center, LLC, registered in Colorado	Proposed in 2019	Construct a business park to house 2 million SF (square feet) of warehouse facilities on a 326-acre wooded property (i.e., Abingdon Woods) near the Route 24 and I-95 interchange. Removal of trees from more than 200 acres of the 326-acre property is expected. The property contains part of the Haha Branch stream, which drains into the Bush River and ultimately into the Chesapeake Bay. Source: (Fontelieu, 2022; Chesapeake Bay Foundation [CBF], 2020)
2	Mitchell Property	Chesapeake Real Estate Group	Proposed	This is a proposed industrial development on 711 acres of the Mitchell Farm in Perryman, MD to include five freight distribution buildings totaling 5.2 million SF, 2 thousand SF of retail/service, and an additional approx. 5 million SF of roadway and parking (1,860 tractor trailer and 3,111 car spaces). Source: (Protect Perryman Peninsula [3P], 2022; Harford County Department of Planning and Zoning, 2022a)
3	Heavenly Waters Park Stream Restoration	Collaborative project between Harford Streams and Harford County Parks and Recreation	Construction Start: Summer 2021; Expected Completion: Spring 2022	This project involves removing a portion of the existing pond and recreating the stream channel, streamside wetland, and habitat. The project is intended to improve stream health and aesthetics. Source: (Harford County, n.d.a.)
4	Avanti Luxury Apartments	Peak Management LLC of Timonium, MD	Completed in 2016	Avanti Luxury Apartments in the Bel Air South area was completed in 2016. The apartment complex has 198 units and is built upon 17.54 acres. The complex is bounded by Route 24 at the East, Plumtree Road at the north, and the Bel Air South Professional Center at the south. Source: (Anderson, 2013a)

No.	Project Name	Project Proponent	Status	Project Description
5	I-95 Express Toll Lanes (ETLs) Northbound Extension Project	Maryland Transportation Authority (MDTA)	Under Construction	The Northbound Extension will add additional ETLs to I-95 from the northern limit of the existing lanes at the MD 43 interchange in Baltimore County to MD 7 in Harford County. The project includes additional construction work to replace or reconstruct bridges and overpasses, reconfigure interchanges at MD 152 and MD 24, construct new noise walls, widening MD 24 from two to three lanes from MD 924 to north of Singer Road, widening the I-95 northbound bridges over the Big and Little Gunpowder Falls and Winters Run, and various additional works for items like drainage. The extension is expected to be open to traffic by the end of 2024 to MD 152, with the full extension to north of MD 24 open to traffic by the end of 2027. Source: (Maryland Transportation Authority [MDTA], n.d.; Baltimore Regional Transportation Board [BRTB], 2021)
6	MedStar Health	Bel Air Property Development LLC of Minneapolis	Completed- Opened to the public in fall of 2014.	MedStar Health is a 130,000 SF complex built on a 16.27-acre site at the east end of Plumtree Road/corner of Route 924 (Emmorton Road) south of Bel Air. Source: (Anderson, 2013b)
7	Woodbridge Center Shopping Center	MacKenzie Commercial Real Estate	Phase I complete; Phase 2 is proposed.	Woodbridge Center is a 110,000 SF shopping center on Pulaski Highway (Rt. 40) in Harford County's Edgewood, MD. Source: (MacKenzie Commercial Real Estate, 2022)
8	US 1: Bridge Replacement at Tollgate Road and Winters Run	Maryland Department of Transportation State Highway Administration (MDOT SHA)	Engineering ongoing, with 30% design complete.	This is a bridge replacement project. The existing bridges, built in 1963, are in poor condition. This project will replace Bridge No. 12066 over Tollgate Road and Bridge No. 12065 over Winters Run along US 1 in Bel Air. Source: (BRTB, 2021)

No.	Project Name	Project Proponent	Status	Project Description
9	I-95 Southbound Part-Time Shoulder Usage	MDTA	Proposed	This is a roadway widening project. The project will allow for the part-time use of the 12-foot left shoulder along the I-95 southbound between the Maryland House Travel Plaza and MD 24. This project is an interim phase of implementation of I-95 Section 200 and is the first phase of the I-95 ETL Southbound Extension project. Source: (BRTB, 2021)
10	Boulevard at Box Hill	Greenberg Gibbons Commercial	First tenants opened in 2011; still expanding.	The 29-acre Boulevard at Box Hill retail/restaurant complex in Abingdon, MD is preparing to expand. Currently, the complex is 350,000 SF, and it is estimated to grow by 54,000 SF. Source: (Simmons, 2019)
11	The Enclave at Box Hill	Bavar Properties group, LLC and Murn Development	Phase 1 was complete in 2016; Phase II was complete in 2018.	The Enclave at Box Hill is a nearly 40-acre luxury apartment complex in Abingdon, Maryland. It features around 400 units, ranging in size from one-bedroom apartments to three-bedroom townhomes. Source: (Lorax Partnerships, 2022)
12	The District at Emmorton	Bel Air Village, LLC	Under Construction	Construction of “The District at Emmorton” will include senior living; a 205-unit multifamily complex and retail; and entertainment and office spaces on the southwest corner of Plumtree at Route 924/Emmorton Road. Site clearing has begun and approx. 33 acres were clearcut around May/June 2022. Source: (Janney, 2020)
13	Deconstruction of the Water Treatment Plan at Van Bibber Weir	APG Directorate of Public Works	Under Deconstruction	As Harford County is already providing water to APG-EA, the water treatment plant at Van Bibber Weir has been determined to be unnecessary and is subsequently currently being deconstructed. Source: (APG, 2017)

5.13.1 Anticipated Impacts

This section will discuss in a holistic manner any anticipated reasonably foreseeable cumulative impacts resulting from this Proposed Action. As previously stated, cumulative impacts are the effects on the environment that result from the incremental effects of the action when added to the effects of other past, present, and reasonably foreseeable actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions. Cumulative effects can result from individually minor but collectively significant actions taking place over a period of time (40 CFR Part 1508.1(g)(3)). Resulting cumulative effects can be detrimental or beneficial to the environment.

The following main resource areas were described in this EA: land use; visual aesthetics; noise; geology, soils, and topography; air quality; water resources; biological resources; cultural resources; HTRS; traffic and transportation; socioeconomics; and human health and safety.

All COAs as well as the No Action Alternative were considered within the context of past, present, and reasonably foreseeable future actions such as the ones presented in Table 5-1 above. In order to focus this discussion on areas where potentially significant cumulative impacts could occur with this Proposed Action, the following resource areas will not be discussed in depth as no significant cumulative effects are predicted for these resource areas: land use; visual aesthetics; noise; geology, soils, and topography; air quality; cultural resources; HTRS; traffic and transportation; socioeconomics; and human health and safety.

This leaves the following two resources areas to analyze for cumulative impacts: water resources and biological resources.

Water Resources

Looking at the various projects listed in Table 5-1 above, the majority of the projects are creating impervious surface area after a development is put in place in an area that once was forested and/or contained pervious natural ground. This change in land use causes an increase in stormwater runoff containing sediment. The sediment is carried by rain or seeps into other streams that eventually, in this case, make their way to the Chesapeake Bay. Likewise, other projects in Table 5-1 are transportation projects that also disturb sediments via construction activities. If sediments (especially contaminated sediments) are released by any of the COAs for this project, then incrementally when added with sediment releasing from the other projects, a potential for significant cumulative impacts to water resources could occur. For example, two of transportation-related projects listed above (e.g., one of the US 1 bridge replacements and I-95 ETLs Northbound Extension Project) cross over Winters Run. Both the Atkisson Reservoir/Dam and the Van Bibber Weir are located along Winters Run. As stated in the beginning of this EA, Winters Run is a tributary of Otter Point Creek, which flows to the Bush River, a tributary of the Chesapeake Bay. Therefore, any sediments released from any of these projects could eventually find themselves in one of these three main water bodies downstream of Winters Run—Otter Point Creek, the Bush River, or the Chesapeake Bay.

Another project listed in Table 5-1 that is particularly of concern to area residents is the proposed Abingdon Business Park development. This project involves the proposed development of a large warehouse complex in an area that is known as Abingdon Woods. The replacement of the existing forest with impervious surface will likely impact water quality to the sensitive Otter Point Creek. This is because the property contains part of the Haha Branch, which drains into Otter Point Creek, then Bush River, and ultimately the Chesapeake Bay. The Bush River is already classified as impaired due to high levels of sediment from stormwater runoff, so opponents of the project fear that removing this large of a forest stand in the Bush River watershed and replacing it with impervious surface may further exacerbate sediment pollution in the Bush River (CBF, 2020). In addition, Otter Point Creek is a component of the NERR, where SAV is intensively studied and monitored (MD DNR, 2008). Sediment is of great concern for SAV due to its ability to block out sunlight.

On the other hand, at least one project in Table 5-1—the Heavenly Waters Park Stream Restoration—could potentially be a benefit to offset any cumulative impacts stemming from the Proposed Action.

Biological Resources

Based on the various projects listed in Table 5-1 above, habitat loss from clear cutting for development is a cumulative impact concern regarding terrestrial wildlife species. Sediments in water bodies from stormwater runoff due to construction are also a cumulative impact concern for fish species. For example, because several COAs in this project will have long-term adverse impacts to bald eagles, these impacts could add incrementally to the effects of other projects on wildlife to create cumulative impacts. As stated in Chapter 5, removing the dam and weir could result in long-term beneficial impacts on fish species due to the resulting easing of fish passage. This, along with the beneficial effects of other restoration projects such as the Heavenly Waters Park Stream Restoration, could outweigh any negative cumulative impacts to biological resources that arise.

6.0 CONCLUSION

As described in Section 5.0 of this EA, the deconstruction and implementation of the Preferred Alternative (COA 3 – Slow Drawdown, Leave Accumulated Sediments in Place, and Retain Wetlands), are not expected to generate significant adverse impacts. The Preferred Alternative is expected to maintain existing conditions to the greatest extent possible, while replanting and incorporating protective measures to stabilize sediment and stream banks and retain existing wetlands. Therefore, an Environmental Impact Statement is not warranted.

As detailed in this EA, no permanent significant adverse impacts would result from deconstruction activities associated with the Preferred Alternative. Biological resources such as waterways, wetlands, and vegetation are expected to experience short-term impacts, but the Preferred Alternative includes plans to preserve wetlands, restore stream channels, and monitor the vegetation growth post construction. The Preferred Alternative would result in short term negligible impacts to socioeconomic resources associated with the Harford Glen Environmental Education Center as lessons and hikes may be impacted during construction and current lessons may need to be altered with the dam removal. Long-term, beneficial impacts associated with the Preferred Alternative would be realized through the removal of the dam, as the Atkisson Dam has been classified as a high-risk dam. Deconstruction of the structure will greatly reduce the likelihood of negative socioeconomic or environmental consequences due to an unexpected breach or failure.

Table 6-3: Summary of Impacts

Resource	COA 1	COA 2	COA 3	No Action
Land Use	Minor adverse impact	Short-term, negligible impact	Short-term, negligible impact	No impact
Visual Aesthetics	Minor adverse impact, potential beneficial impact	Minor adverse impact, potential beneficial impact	Negligible adverse impact, potential beneficial impact	No impact
Noise	Short-term, minor adverse impact	Short-term, minor adverse impact	Short-term, minor adverse impact	No impact
Geology, Soils, and Topography	No impact to geology; Moderate impacts to soils; Minor impacts to topography	No impact to geology; Minor adverse impacts to soils and topography	No impact to geology; Minor adverse impacts to soils and topography	No impact
Air Quality	Short-term, minor adverse impact	Short-term, minor adverse impact	Short-term, minor adverse impact	No impact
Water Resources	Short-term, moderate adverse impacts to surface water; Short-term, minor impacts to	Short-term, minor adverse impacts to surface water and groundwater;	Short-term, minor adverse impacts to surface water and groundwater;	Minor adverse impacts to surface water associated with sediment

Resource	COA 1	COA 2	COA 3	No Action
	groundwater; Long-term, moderate impacts to floodplains; Long-term, potentially significant adverse impacts to wetlands; No impacts to stormwater; Long-term, minor adverse impacts to coastal zone and critical area	Long-term, moderate adverse impacts to floodplains and wetlands; No impacts to stormwater; Long-term, minor adverse impacts to coastal zone and critical area	Long-term, minor adverse impacts to floodplains, wetlands, coastal zone, and critical area; No impacts to stormwater	accumulation; No impacts to groundwater, floodplains, wetlands, stormwater, coastal zone, or critical area unless breach/failure occurs
Biological Resources	Long-term, moderate adverse impacts to vegetation; Short-term minor impacts to terrestrial wildlife species; Short-term adverse impacts to fish species; Negligible impacts to rare, threatened, and endangered species	Long-term, moderate adverse impacts to vegetation; Short-term minor impacts to terrestrial wildlife species; Long-term adverse impacts to bald eagles; Short-term adverse impacts to fish species; Negligible impacts to rare, threatened, and endangered species	Short-term, minor adverse impacts to vegetation and terrestrial wildlife species; Long-term adverse impacts to bald eagles; Short-term adverse impacts to fish species; Negligible impacts to rare, threatened, and endangered species	Minor adverse impacts to vegetation due to potential hydrologic changes due to sedimentation; Long-term adverse impacts to bald eagles; No impacts to fish and wildlife or rare, threatened, and endangered species
Cultural Resources	No impact	No impact	No impact	No impact
Hazardous, Toxic and Radioactive Substances	Short-term, minor impacts	Short-term, minor impacts	Short-term, minor impacts	No Impact, unless breach/failure occurs
Traffic and Transportation	Short-term, negligible impact	Short-term, negligible impact	Short-term, negligible impact	No Impact, unless breach/failure occurs
Socioeconomics	Short-term, negligible impact	Short-term, negligible impact	Short-term, negligible impact	No impact, unless breach/ failure occurs

Resource	COA 1	COA 2	COA 3	No Action
Human Health and Safety	Short-term, negligible adverse impact; Long-term beneficial impact	Short-term, negligible adverse impact; Long-term beneficial impact	Short-term, negligible adverse impact; Long-term beneficial impact	Minor adverse impact

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8.0 ACRONYMS AND ABBREVIATIONS

ACS	American Community Survey
AIRFA	American Indian Religious Freedom Act
ALC	Adelphi Laboratory Center
AOI	Area of Influence
APG	Aberdeen Proving Ground
APG-AA	Aberdeen Proving Ground – Aberdeen Area
APG-EA	Aberdeen Proving Ground – Edgewood Area
AR	Army Regulation
ARPA	Archaeological Resources Protection Act
BGEPA	Bald and Golden Eagle Protection Act
BMP	Best Management Practice
BO	Biological Opinion
BPRF	Blossom Point Research Facility
BRTB	Baltimore Regional Transportation Board
CAA	Clean Air Act
CBF	Chesapeake Bay Foundation
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
CFS	Cubic feet per second
COA	Course of Action
COMAR	Code of Maryland Regulations
CWA	Clean Water Act
CZMA	Coastal Zone Management Act
CZMP	Coastal Zone Management Plan
dB	decibel
dBA	A-weighted decibel
DoD	Department of Defense
DOE	Determination of Eligibility
EA	Environmental Assessment
EAP	Emergency Action Plan
EO	Executive Order
ESA	Endangered Species Act
ETL	express toll lane
FEMA	Federal Emergency Management Agency
FIDS	Forest Interior Dwelling Species
FIRM	Flood Insurance Rate Map
FWCA	Fish and Wildlife Coordination Act
GCR	General Conformity Rule
GGRA	Greenhouse Gas Emissions Reduction Act
GIS	Geographic Information System
HAP	Hazardous Air Pollutant
HTRS	Hazardous, Toxic, and Radioactive Substances
I-95	Interstate-95

IAW	in accordance with
IBI	Index of Biological Integrity
ICRMP	Integrated Cultural Resources Management Plan
IPaC	Information for Planning and Consultation
JPA	Joint Permit Application
MBSS	Maryland Biological Stream Survey
MBTA	Migratory Bird Treaty Act
MD DNR	Maryland Department of Natural Resources
MDE	Maryland Department of the Environment
MDP	Maryland Department of Planning
MDTA	Maryland Transportation Authority
MERLIN	Maryland Environmental Resources and Land Information Network
MHT	Maryland Historical Trust
MHW	Mean High Water
MS4	Municipal Separate Storm Sewer System
NAAQS	National Ambient Air Quality Standards
NAGPRA	Native American Graves Protection and Repatriation Act
NCA	Noise Control Act
NEPA	National Environmental Policy Act
NERR	National Estuarine Research Reserve
NHPA	National Historic Preservation Act
NLEB	Northern Long-Eared Bat
NMFS	National Marine Fisheries Service
NOAA	National Oceanic and Atmospheric Administration
NPDES	National Pollutant Discharge Elimination System
NO_2	Nitrogen Oxide
NOA	Notice of Availability
NOAA	National Oceanic and Atmospheric Administration
NWI	National Wetland Inventory
NWR	National Wildlife Refuge
O_3	Ozone
PBO	Programmatic Biological Opinion
PMF	Probable Maximum Flood
$PM_{2.5}$	Particulate Matter (Fine)
RCRA	Resource Conservation and Recovery Act
ROI	Region of Influence
RONA	Record of Non-Applicability
SAV	Submerged Aquatic Vegetation
SHPO	State Historic Preservation Office
SIP	State Implementation Plan
SME	Subject Matter Expert
TCP	Traditional Cultural Property
TEA	Targeted Ecological Area
TMDL	Total Maximum Daily Load
TNW	Traditional Navigable Water
TSCA	Toxic Substances Control Act

USACE	U.S. Army Corps of Engineers
USEPA	U.S. Environmental Protection Agency
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
VEC	Valued Environmental Component
VOC	Volatile Organic Compound
WIP	Watershed Implementation Plan
WOUS	Waters of the U.S.

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Appendix A: Coordination

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Public Notice

Environmental Assessment for the Removal of Atkisson Dam and Van Bibber Weir at U.S. Army Garrison Aberdeen Proving Ground

All Interested Parties: The U.S. Army Garrison, Aberdeen Proving Ground (APG) is requesting comments on possible issues related to an Environmental Assessment (EA) for the removal of Atkisson Dam and Van Bibber Weir near Emmorton, Maryland.

The EA is being prepared pursuant to the National Environmental Policy Act of 1969 (42 United States Code Section 4321 *et seq.*), herein known as NEPA; the Council of Environmental Quality (CEQ) regulations that implement NEPA (40 Code of Federal Regulations [CFR], 1500 to 1508); and Army Regulation (AR) 200-1, *Environmental Protection and Enhancement*, as promulgated in 32 CFR 651, *Environmental Analysis of Army Actions*. This EA will analyze the potential impacts to the natural and human environment that could result from the full or partial removal of Atkisson Dam and Van Bibber Weir. The dam and weir are located along Winters Run north of APG-Edgewood Area near Emmorton, Maryland (Encl 1).

The Proposed Action is to fully or partially remove Atkisson Dam and Van Bibber Weir. The Proposed Action is needed to eliminate the hazard to life and property that could accompany dam failure and to rectify the issue of sediment buildup that has started to degrade aquatic habitat in Winters Run. Additionally, the Proposed Action would bring the Army into compliance with AR 420-1, *Army Facilities Management*, by disposing of dams which are deemed excess to the needs of the Army. There are several courses of action being considered as part of the Proposed Action, including a quick draw down, a slow draw down that leaves accumulated sediments in place, and a slow draw down that leaves accumulated sediments in place and retains existing wetlands to the extent practicable. Other alternatives considered but not analyzed for their impracticability include repair or replacement of the dam and weir, and quick draw down with the passive release of accumulated sediments. The CEQ requires the analysis of the No Action Alternative. This alternative would not satisfy the purpose of or need for the Proposed Action as the dam and weir would continue to be excess to the needs of the Army, pose threats to life and property, and contribute to a degraded aquatic habitat in Winters Run.

In accordance with 40 CFR 1500-1508, the Army invites you to provide early input on the Proposed Action. This input will be considered and incorporated into the preparation of the EA. Due to the current COVID-19 telework climate, this notice is being provided to organizations and individuals that are known to have an interest in this project via email instead of a mailed letter (Encl 2). Please bring this matter to the attention of any others who may have an interest. Your attention to this matter is appreciated, as well as the request of your review and comments within 30 days of receipt of this notice to: USAGAPG/Department of the Army, AMIM-APP-E c/o Arnold O'Sullivan, Building 4304, 6504 Rodman Road, 3rd Floor Suite B, APG Maryland 21005-5001; or E-mail: arnold.v.osullivan.civ@mail.mil.

Once the Draft EA is completed, it will be published for a 30-day review period. A Notice of Availability will be sent to the organizations and published in local newspapers and the APG website to inform the public of the start of the review period. All materials will be provided online on the APG website under Environmental Public Notices, and if possible, printed copies of the draft EA will also be provided to local libraries.

Enclosure 1: Figure 1 – Project Location

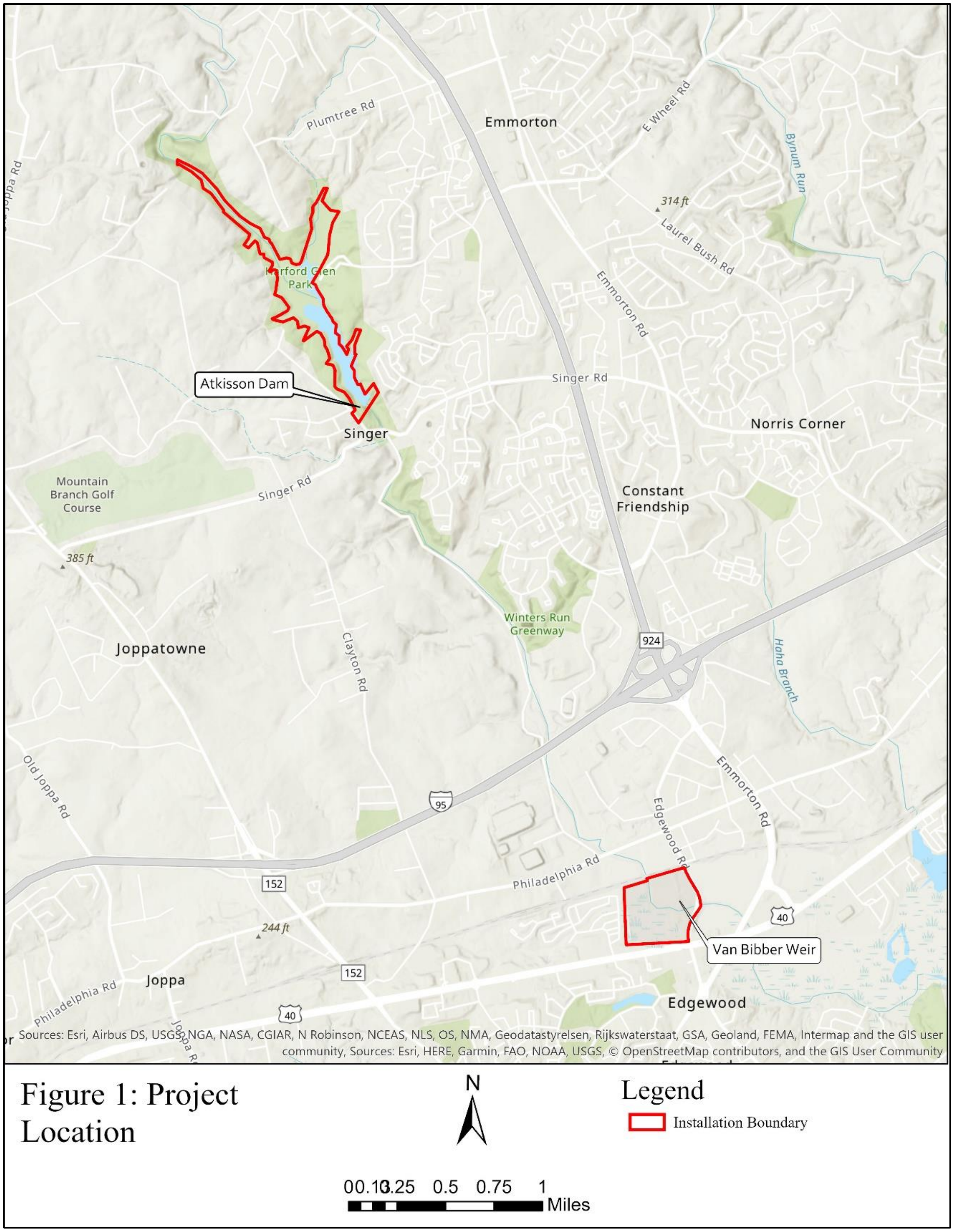

Figure 1: Project Location

DEPARTMENT OF THE ARMY
U.S. ARMY INSTALLATION MANAGEMENT COMMAND
U.S. ARMY GARRISON ABERDEEN PROVING GROUND
BUILDING 4510, 6429 BOOTHBY HILL AVENUE
ABERDEEN PROVING GROUND MARYLAND 21005-5001

Ms. Elizabeth J. Cole, Administrator
Maryland Historic Trust
Office of Preservation Services, Review and Compliance
100 Community Place
Crownsville, MD 21032

Dear Ms. Cole:

The U.S. Army Garrison Aberdeen Proving Ground would like to initiate consultation with your office for a new proposed undertaking, the removal of Atkisson Dam and Van Bibber Weir near Emmorton, MD, per Section 106 of the National Historic Preservation Act. Aberdeen Proving Ground is also preparing an Environmental Assessment for the proposed action and would appreciate receiving your organization's early input to help identify issues for consideration regarding the proposed action.

The environmental assessment is being prepared pursuant to the National Environmental Policy Act of 1969 (42 United States Code, Section 4321 et seq.); the Council of Environmental Quality regulations that implement National Environmental Policy Act (40 Code of Federal Regulations 1500 to 1508); and Army Regulation 200-1, *Environmental Protection and Enhancement*, as promulgated in 32 Code of Federal Regulations 651, *Environmental Analysis of Army Actions*. This environmental assessment will analyze the potential impacts to the natural and human environment that could result from the full or partial removal of Atkisson Dam and Van Bibber Weir. The dam and weir are located along Winters Run, north of the Edgewood Area of Aberdeen Proving Ground, near Emmorton, MD (Figure 1). The area of potential effect for the undertaking will be those areas downstream and upstream that will be directly affected by the undertaking and those areas from which the undertaking will be visible.

The proposed action is to fully or partially remove Atkisson Dam and Van Bibber Weir. The proposed action is needed to eliminate the hazards to life and property that could accompany dam failure and to rectify the issue of sediment buildup that has started to degrade aquatic habitat in Winters Run. Additionally, the proposed action would bring the Army into compliance with Army Regulation 420-1, *Army Facilities Management*, by disposing of dams which are deemed excess to the needs of the Army. There are several courses of action being considered as part of the proposed action, including a quick draw down, a slow draw down that leaves accumulated sediments in place, and a slow draw down that leaves accumulated sediments in place and retains existing wetlands to the extent practicable.

Aberdeen Proving Ground has started to identify historic properties within the area of potential effect. The environmental assessment will consider potential impacts to cultural resources and historic properties from implementing the proposed action based on information compiled in the Aberdeen Proving Ground Final Integrated Cultural Resources Management Plan, July 2020; the Archaeological Survey of the Atkisson Dam and Van Bibber Weir Areas along Winters Run, February 2021; and a Determination of Eligibility for the Dam, Weir, and Water Treatment Plant, 5 March 2021.

Based on the Integrated Cultural Resources Management Plan, a total of 68 archaeological sites at Aberdeen Proving Ground have been assigned Maryland Archaeological Site Survey inventory numbers. None of these sites are expected to be impacted by the removal of Atkisson Dam and Van Bibber Weir, and no additional archaeological sites were identified during the February 2021 survey. The determination of eligibility for Atkisson Dam, Van Bibber Weir, and Water Treatment Plant (Inventory No. HA-2265) recommends that these facilities are not eligible for listing on the National Register of Historic Places. This determination of eligibility was submitted to the Maryland Historical Trust on November 9, 2020 and is currently under review. Pending concurrence by the Maryland Historical Trust with the determination of eligibility, no historic properties are expected to be impacted by this proposed action.

In the event that there is a discovery of any unreported archaeological resources or historic property (16 United States Code § 470aa et seq.), Native American sacred site and/or traditional cultural property, Aberdeen Proving Ground would implement its "accidental discovery" plan described in the Integrated Cultural Resources Management Plan to comply with the National Historic Preservation Act, Archaeological Resources Protection Act of 1979, Native American Graves Protection and Repatriation Act, American Indian Religious Freedom Act, 36 Code of Federal Regulations Part 79, and Executive Order 13007, *Indian Sacred Sites*. Under this plan, if prehistoric or historic artifacts that could be associated with Native American, early European, or American settlement are encountered at any time during activities in the proposed action, Aberdeen Proving Ground would cease all activities involving subsurface disturbance in the vicinity of the discovery until the APG Cultural Resources Manager, Maryland State Historic Preservation Officer, and selected Native American Tribes are contacted to properly identify and appropriately treat discovered items in accordance with applicable state and Federal law(s). Implementation of these measures would ensure that the proposed action would have "no adverse effect" on historic properties or cultural resources.

Aberdeen Proving Ground would appreciate your written response within 30 days of receipt of this letter. Please respond to: Commander, U.S. Army Garrison Aberdeen Proving Ground, Building 4510, 6429 Boothby Hill Avenue, AMIM-APP-E/Mr. O'Sullivan, Aberdeen Proving Ground, MD 21005-5001 or arnold.v.osullivan.civ@mail.mil.

Sincerely,

for

Vance G. Hobbs
Chief, Environmental Division
Directorate of Public Works

Enclosure

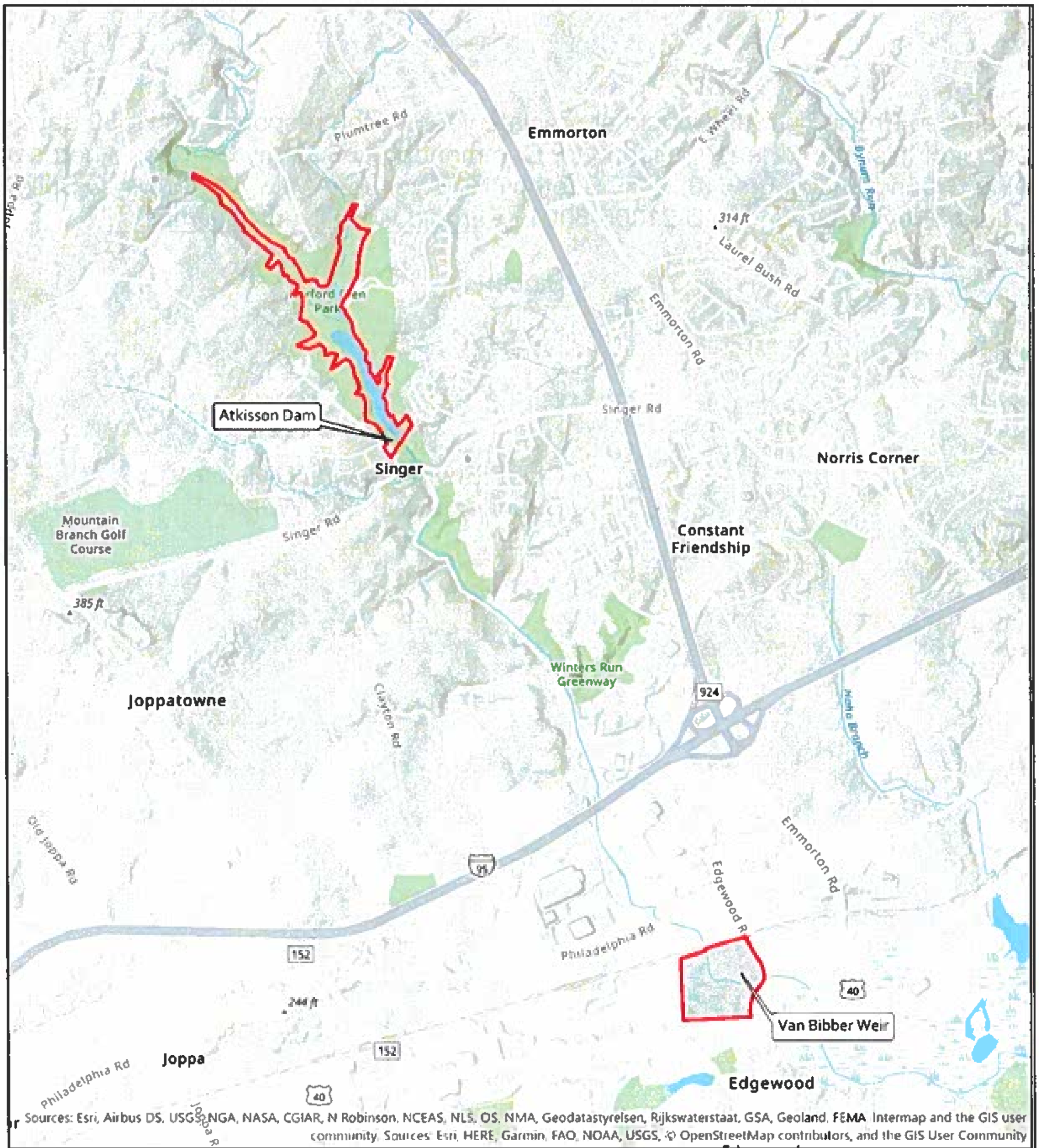

Figure 1: Project Location

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Legend

Installation Boundary

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Miles

Enclosure

DEPARTMENT OF THE ARMY
U.S. ARMY INSTALLATION MANAGEMENT COMMAND
U.S. ARMY GARRISON ABERDEEN PROVING GROUND
BUILDING 4510, 6429 BOOTHBY HILL AVENUE
ABERDEEN PROVING GROUND MARYLAND 21005-5001

Ms. Edwina Butler-Wolf, Governor
Absentee Shawnee Tribe of Oklahoma
Office of the Governor Building
2025 South Gordon Cooper Drive
Shawnee, OK 74801-9005

Dear Ms. Butler-Wolf:

The U.S. Army Garrison Aberdeen Proving Ground would like to initiate coordination with your Tribe for a new proposed undertaking, the removal of Atkisson Dam and Van Bibber Weir near Emmorton, MD, per Section 106 of the National Historic Preservation Act. Aberdeen Proving Ground is also preparing an Environmental Assessment for the proposed action, and would appreciate receiving your Tribe's early input to help identify issues for consideration regarding the proposed action.

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Sincerely,

for

Vance G. Hobbs
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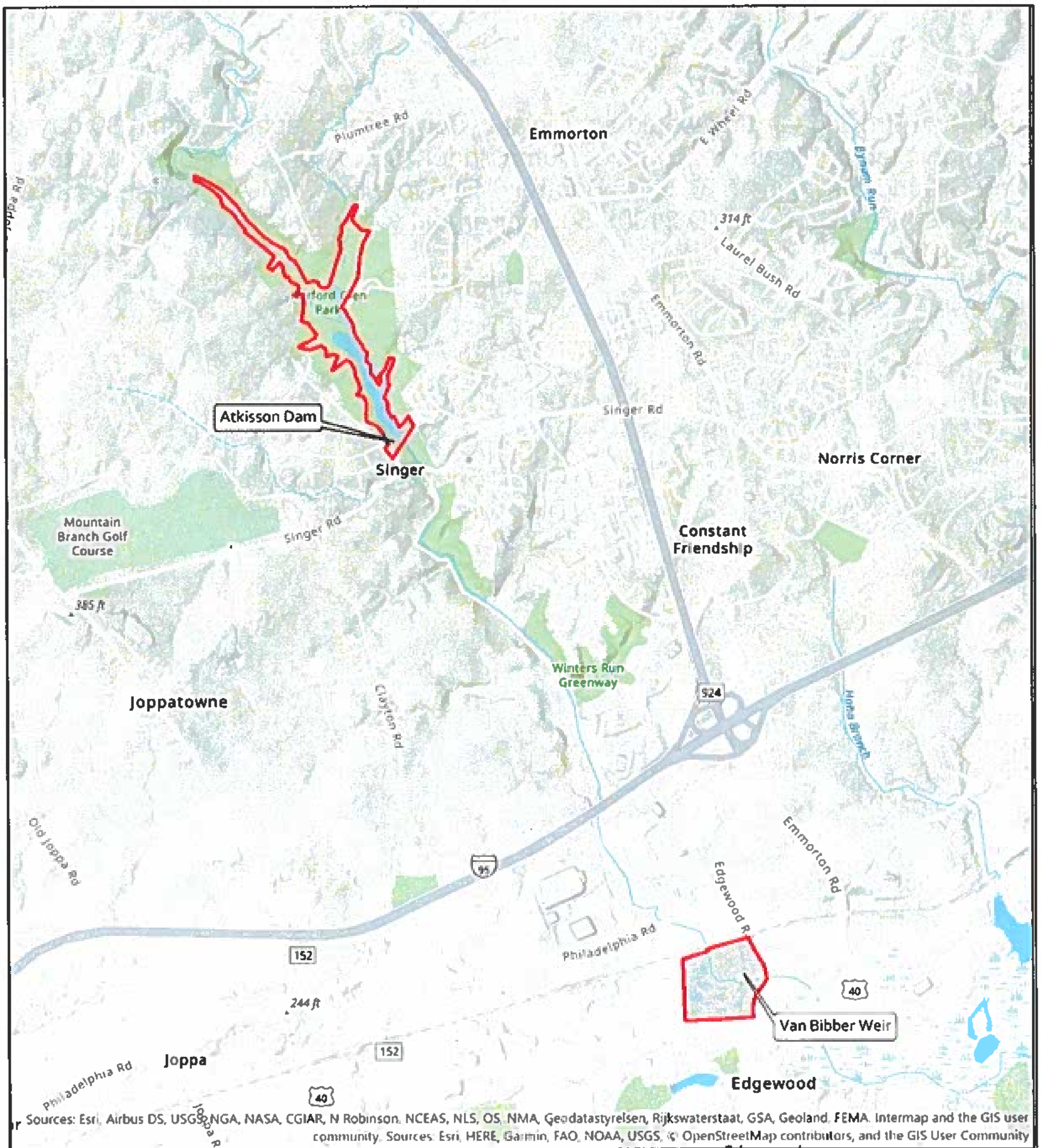

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0 0.125 0.25 0.5 0.75 1 Miles

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U.S. ARMY GARRISON ABERDEEN PROVING GROUND
BUILDING 4510, 6429 BOOTHBY HILL AVENUE
ABERDEEN PROVING GROUND MARYLAND 21005-5001

Mr. Darrin Ahshapanek
EPA Director
Delaware Nation
31064 State Highway 281
Anadarko, OK 73005-0825

Dear Mr. Ahshapanek:

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Sincerely,

for

Vance G. Hobbs
Chief, Environmental Division
Directorate of Public Works

Enclosure

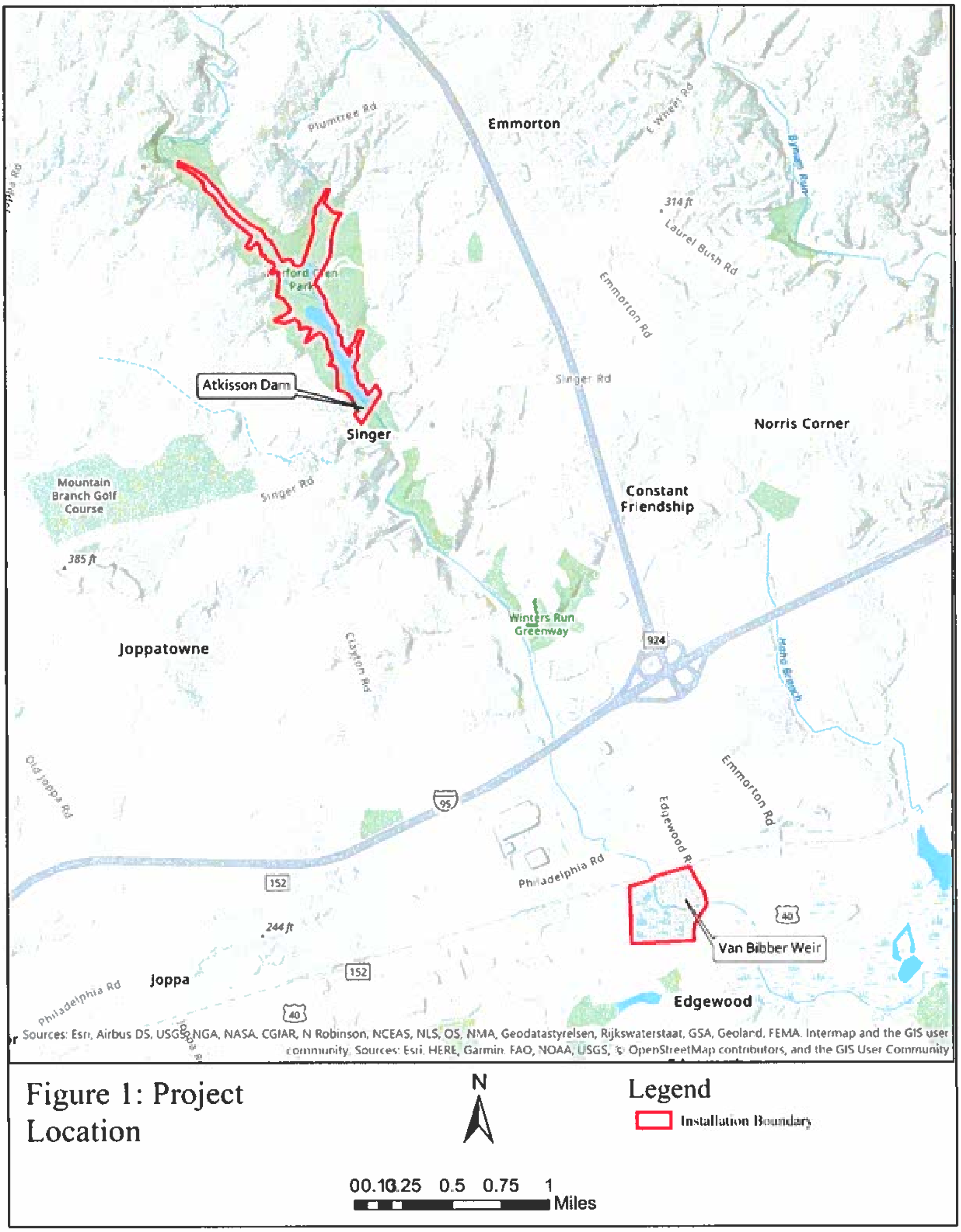

Figure 1: Project Location

Enclosure

DEPARTMENT OF THE ARMY
U.S. ARMY INSTALLATION MANAGEMENT COMMAND
U.S. ARMY GARRISON ABERDEEN PROVING GROUND
BUILDING 4510, 6429 BOOTHBY HILL AVENUE
ABERDEEN PROVING GROUND MARYLAND 21005-5001

Mr. Kerry Holton
Tribal President
Delaware Nation
PO Box 825
Anadarko, OK 73005-0825

Dear Mr. Holton:

The U.S. Army Garrison Aberdeen Proving Ground would like to initiate coordination with your Tribe for a new proposed undertaking, the removal of Atkisson Dam and Van Bibber Weir near Emmorton, MD, per Section 106 of the National Historic Preservation Act. Aberdeen Proving Ground is also preparing an Environmental Assessment for the proposed action, and would appreciate receiving your Tribe's early input to help identify issues for consideration regarding the proposed action.

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Sincerely,

for Rusk A. Lada

Vance G. Hobbs
Chief, Environmental Division
Directorate of Public Works

Enclosure

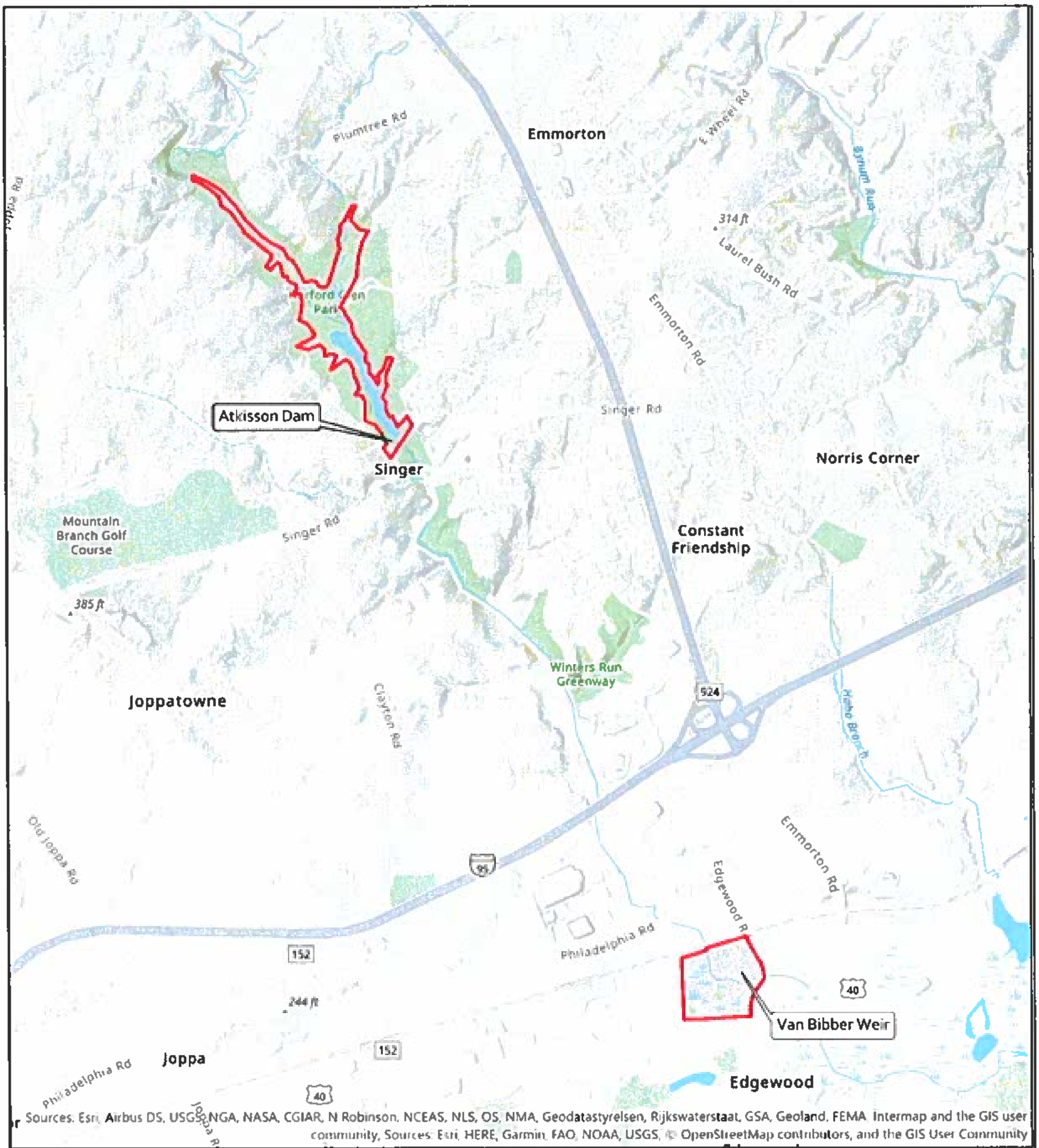

Figure 1: Project Location

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Miles

Legend

Installation Boundary

Enclosure

DEPARTMENT OF THE ARMY
U.S. ARMY INSTALLATION MANAGEMENT COMMAND
U.S. ARMY GARRISON ABERDEEN PROVING GROUND
BUILDING 4510, 6429 BOOTHBY HILL AVENUE
ABERDEEN PROVING GROUND MARYLAND 21005-5001

Ms. Erin Paden
Director of Historic Preservation and Section 106
Delaware Nation of Oklahoma
P.O. Box 826
Anadarko, OK 73006

Dear Ms. Paden:

The U.S. Army Garrison Aberdeen Proving Ground would like to initiate coordination with your Tribe for a new proposed undertaking, the removal of Atkisson Dam and Van Bibber Weir near Emmorton, MD, per Section 106 of the National Historic Preservation Act. Aberdeen Proving Ground is also preparing an Environmental Assessment for the proposed action, and would appreciate receiving your Tribe's early input to help identify issues for consideration regarding the proposed action.

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Sincerely,

for Rurt A [illegible]

Vance G. Hobbs
Chief, Environmental Division
Directorate of Public Works

Enclosure

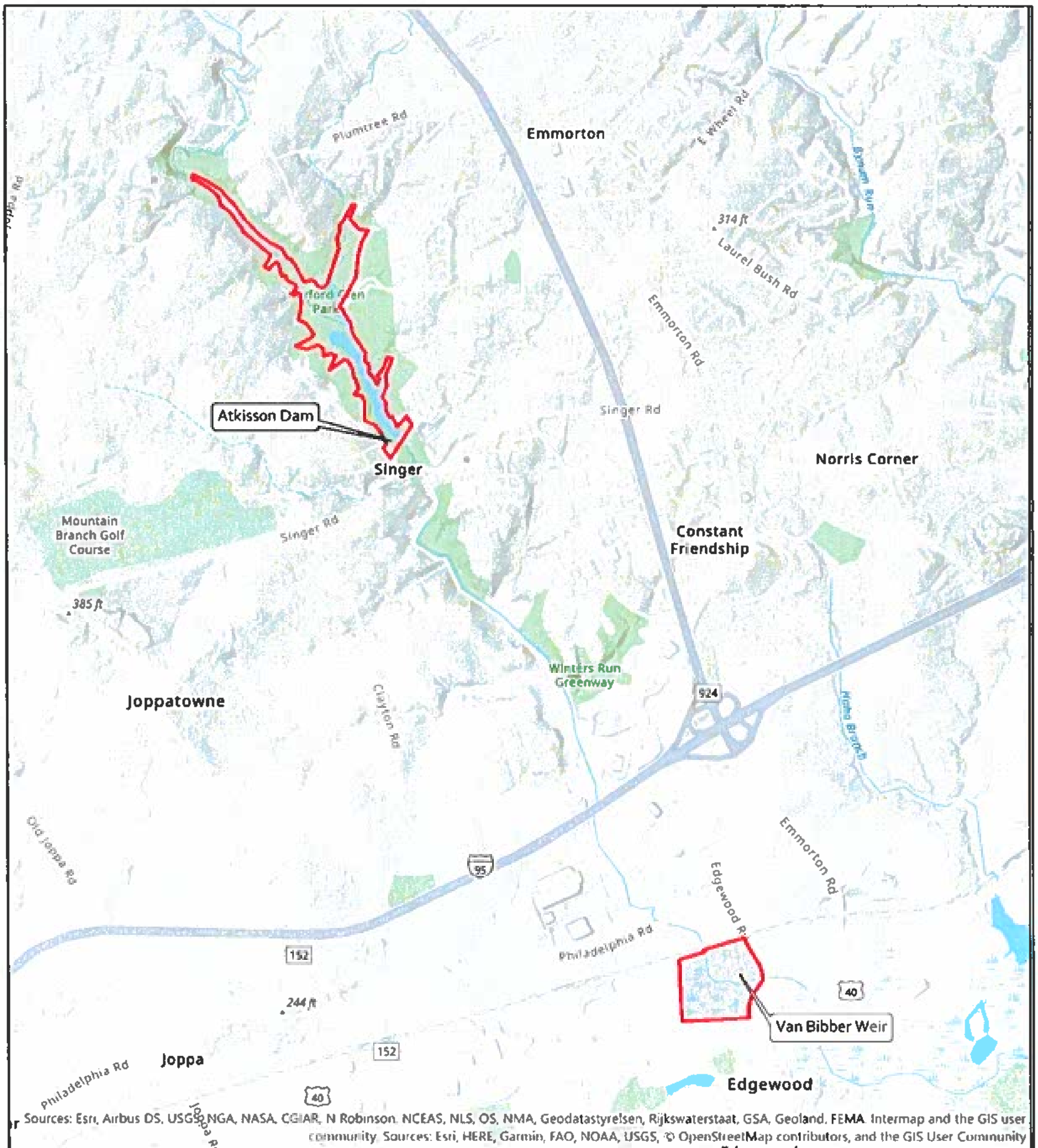

Figure 1: Project Location

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Legend

Installation Boundary

Enclosure

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U.S. ARMY INSTALLATION MANAGEMENT COMMAND
U.S. ARMY GARRISON ABERDEEN PROVING GROUND
BUILDING 4510, 6429 BOOTHBY HILL AVENUE
ABERDEEN PROVING GROUND MARYLAND 21005-5001

Mr. Jason Ross
Delaware Nation
31064 State Highway 281
Anadarko, OK 73005-0825

Dear Mr. Ross:

The U.S. Army Garrison Aberdeen Proving Ground would like to initiate coordination with your Tribe for a new proposed undertaking, the removal of Atkisson Dam and Van Bibber Weir near Emmorton, MD, per Section 106 of the National Historic Preservation Act. Aberdeen Proving Ground is also preparing an Environmental Assessment for the proposed action, and would appreciate receiving your Tribe's early input to help identify issues for consideration regarding the proposed action.

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Sincerely,

for

Vance G. Hobbs
Chief, Environmental Division
Directorate of Public Works

Enclosure

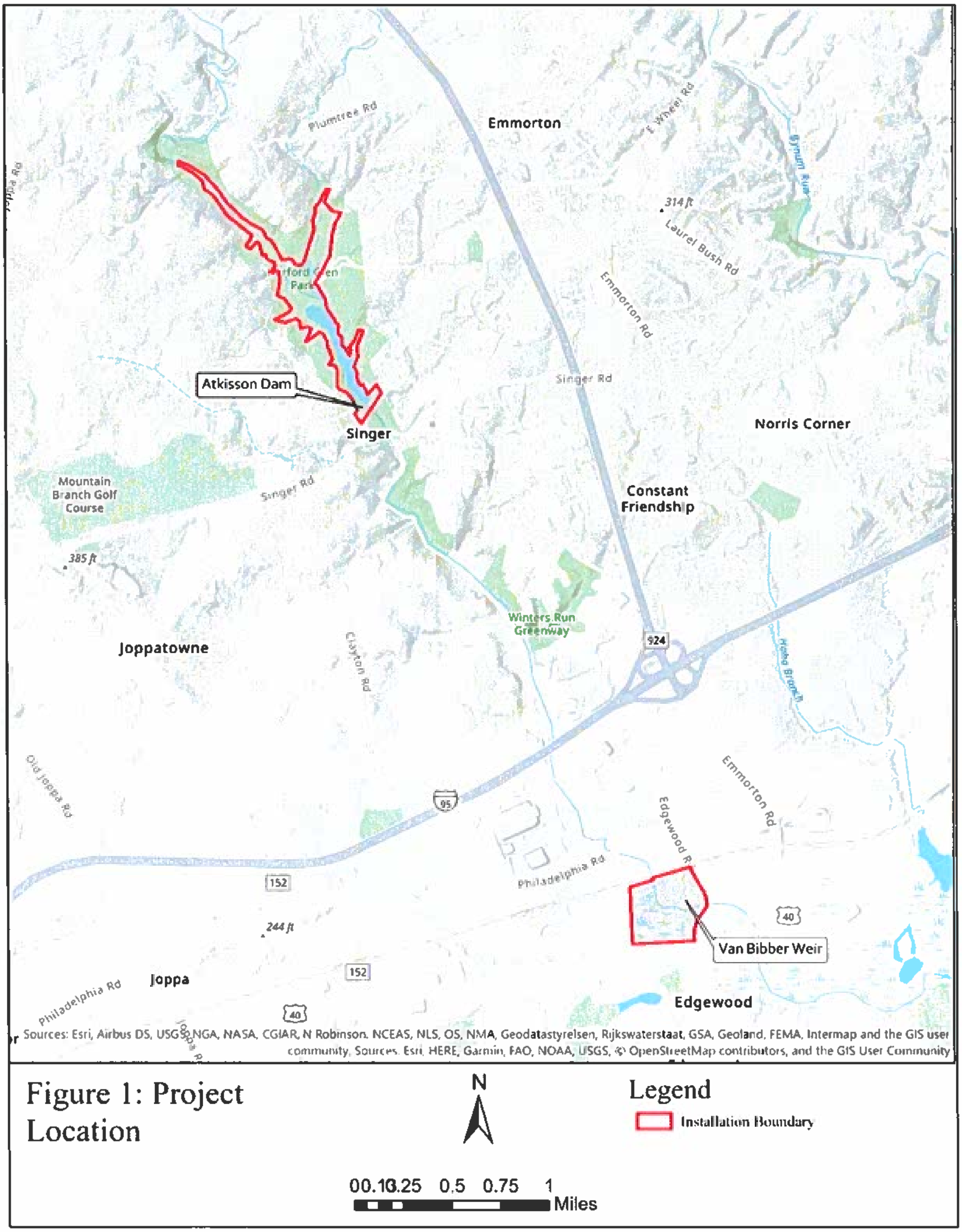

Figure 1: Project Location

Enclosure

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U.S. ARMY GARRISON ABERDEEN PROVING GROUND
BUILDING 4510, 6429 BOOTHBY HILL AVENUE
ABERDEEN PROVING GROUND MARYLAND 21005-5001

Ms. Susan Bachor
Historic Preservation Representative
Delaware Tribe of Indians
PO Box 64
Pocono Lake, PA 18347-0064

Dear Ms. Bachor:

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Sincerely,

for

Vance G. Hobbs
Chief, Environmental Division
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Enclosure

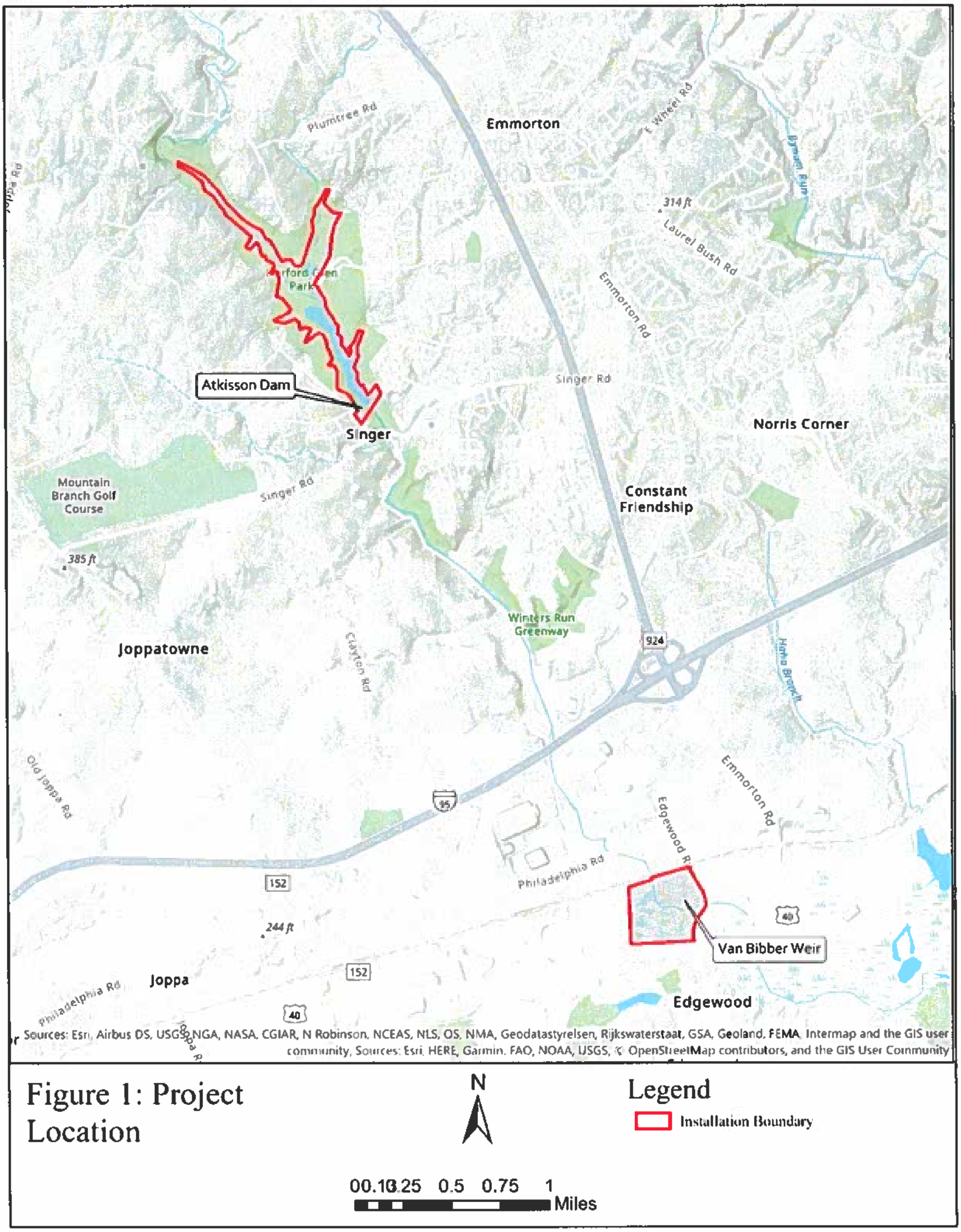

Figure 1: Project Location

Legend

Installation Boundary

Enclosure

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U.S. ARMY INSTALLATION MANAGEMENT COMMAND
U.S. ARMY GARRISON ABERDEEN PROVING GROUND
BUILDING 4510, 6429 BOOTHBY HILL AVENUE
ABERDEEN PROVING GROUND MARYLAND 21005-5001

Mr. Chet Brooks, Chief
Delaware Tribe of Indians
5100 Tuxedo Boulevard
Bartlesville, OK 74006-2838

Dear Mr. Brooks:

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for Sincerely,

Ruth A Jacobs

Vance G. Hobbs
Chief, Environmental Division
Directorate of Public Works

Enclosure

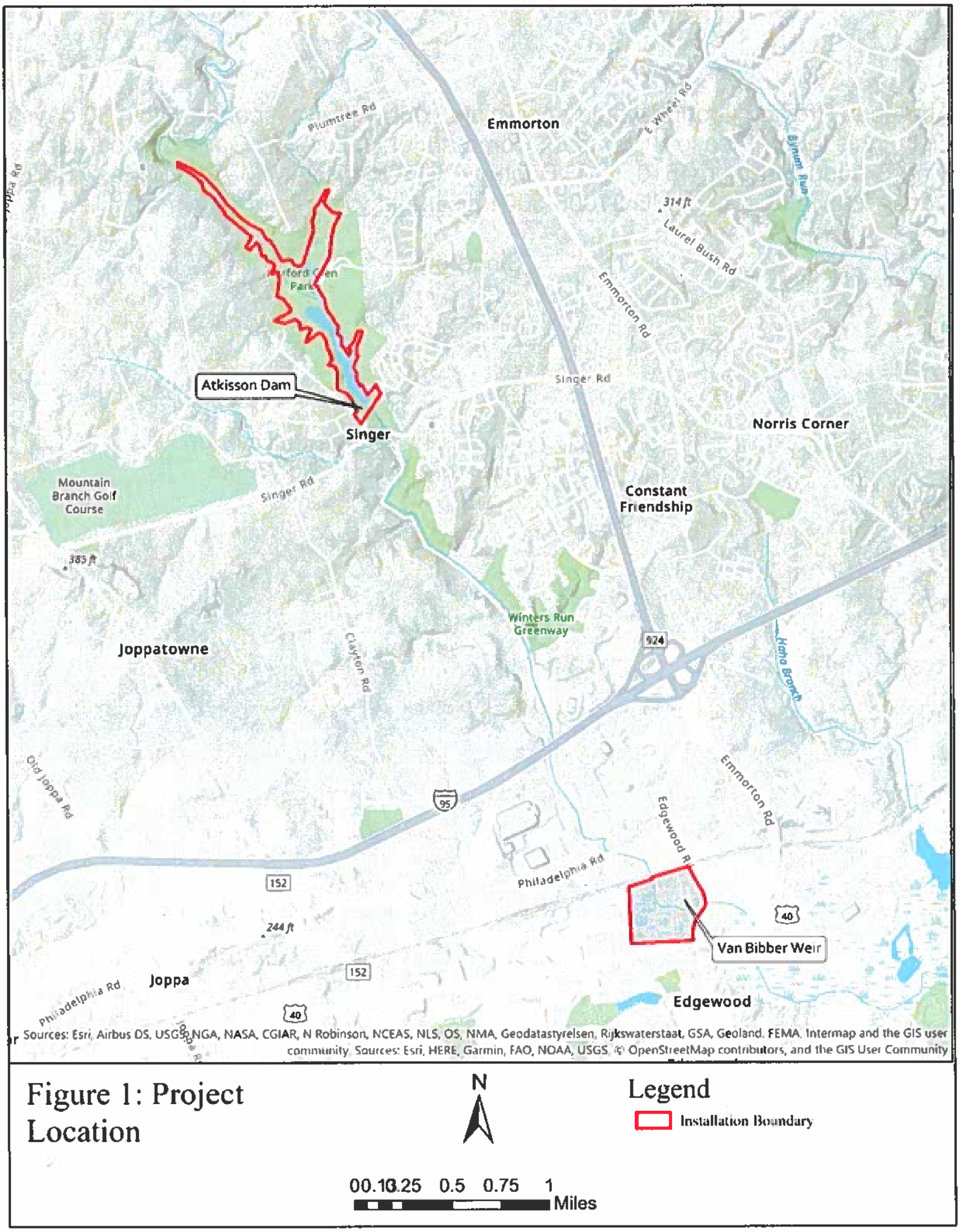

Figure 1: Project Location

Enclosure

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U.S. ARMY INSTALLATION MANAGEMENT COMMAND
U.S. ARMY GARRISON ABERDEEN PROVING GROUND
BUILDING 4510, 6429 BOOTHBY HILL AVENUE
ABERDEEN PROVING GROUND MARYLAND 21005-5001

Ms. Blair Fink
Historic Preservation Representative
Delaware Tribe of Indians
Temple University
115 West Polett Walk
Philadelphia, PA 19122

Dear Ms. Fink:

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Sincerely,

for

Vance G. Hobbs
Chief, Environmental Division
Directorate of Public Works

Enclosure

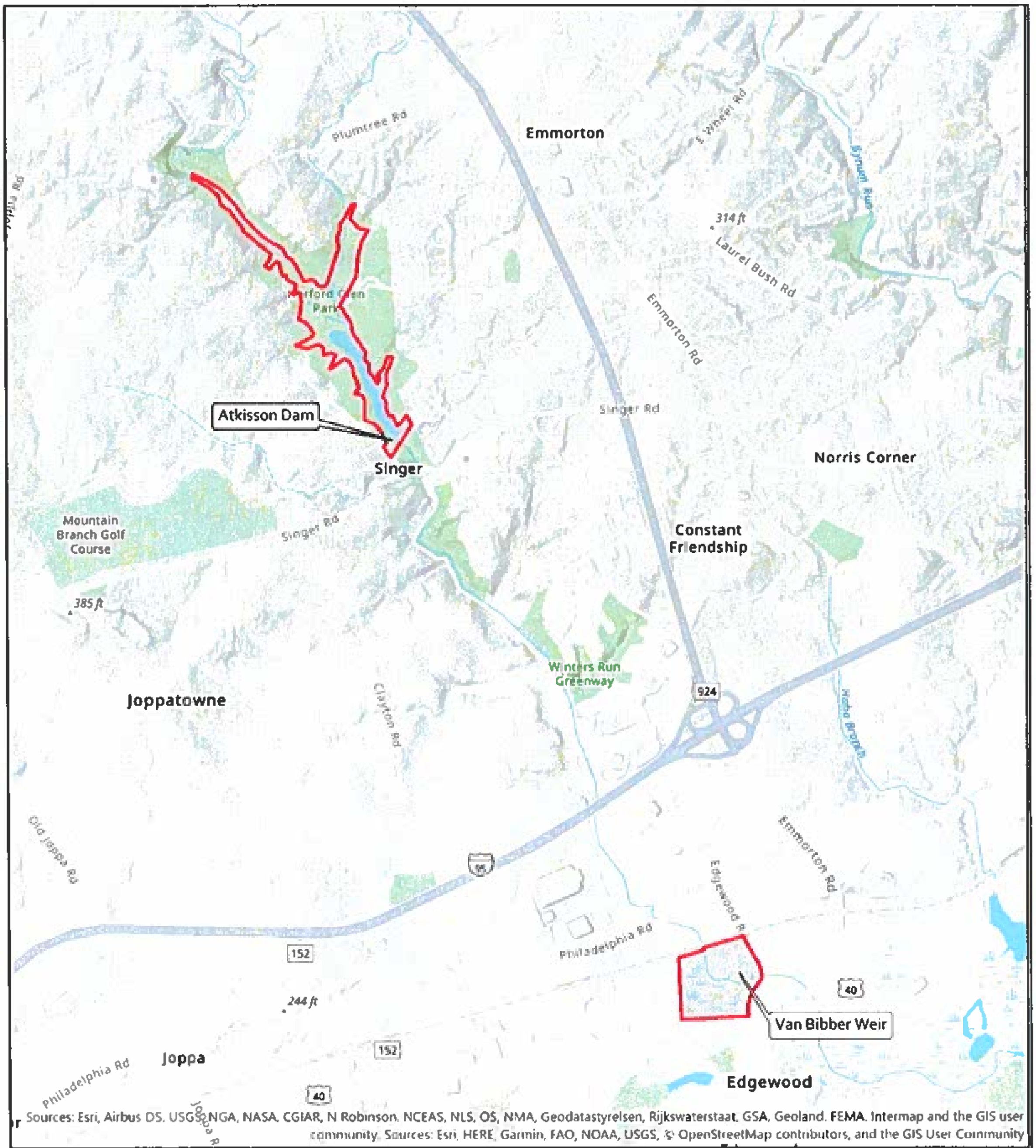

Figure 1: Project Location

N

Legend

Installation Boundary

0 0.125 0.25 0.5 0.75 1 Miles

Enclosure

DEPARTMENT OF THE ARMY
U.S. ARMY INSTALLATION MANAGEMENT COMMAND
U.S. ARMY GARRISON ABERDEEN PROVING GROUND
BUILDING 4510, 6429 BOOTHBY HILL AVENUE
ABERDEEN PROVING GROUND MARYLAND 21005-5001

Dr. Brice Obermeyer
Delaware Tribe of Indians
1 Kellogg Circle
Emporia, KS 66801-5415

Dear Dr. Obermeyer:

The U.S. Army Garrison Aberdeen Proving Ground would like to initiate coordination with your Tribe for a new proposed undertaking, the removal of Atkisson Dam and Van Bibber Weir near Emmorton, MD, per Section 106 of the National Historic Preservation Act. Aberdeen Proving Ground is also preparing an Environmental Assessment for the proposed action, and would appreciate receiving your Tribe's early input to help identify issues for consideration regarding the proposed action.

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Sincerely,

for Rurik A Loder

Vance G. Hobbs
Chief, Environmental Division
Directorate of Public Works

Enclosure

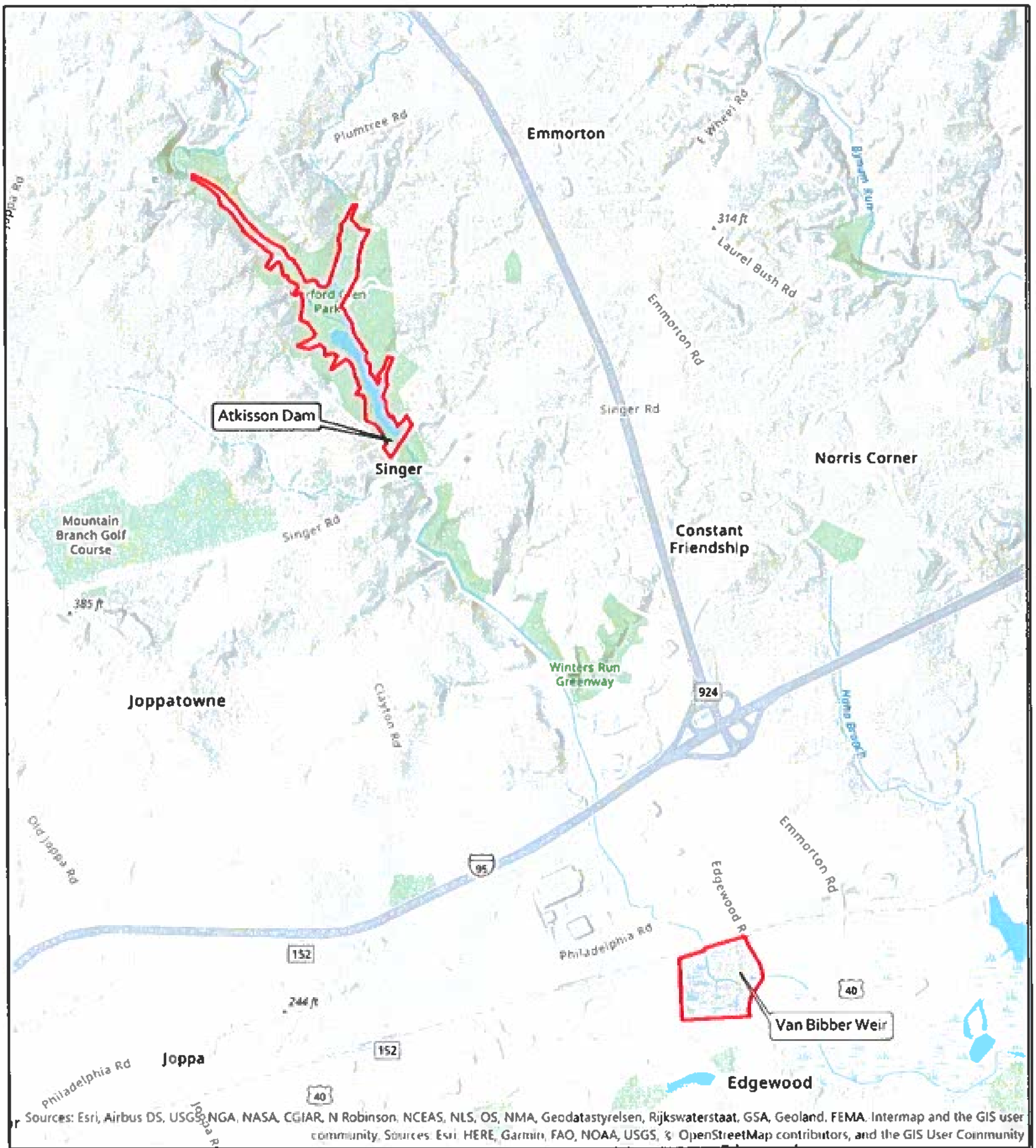

Figure 1: Project Location

N

Legend

Installation Boundary

00.10.25 0.5 0.75 1
Miles

Enclosure

DEPARTMENT OF THE ARMY
U.S. ARMY INSTALLATION MANAGEMENT COMMAND
U.S. ARMY GARRISON ABERDEEN PROVING GROUND
BUILDING 4510, 6429 BOOTHBY HILL AVENUE
ABERDEEN PROVING GROUND MARYLAND 21005-5001

Mr. Curtis Zunigha
Cultural Director
Delaware Tribe of Indians
5100 Tuxedo Boulevard
Bartlesville, OK 74006-2838

Dear Mr. Zunigha:

The U.S. Army Garrison Aberdeen Proving Ground would like to initiate coordination with your Tribe for a new proposed undertaking, the removal of Atkisson Dam and Van Bibber Weir near Emmorton, MD, per Section 106 of the National Historic Preservation Act. Aberdeen Proving Ground is also preparing an Environmental Assessment for the proposed action, and would appreciate receiving your Tribe's early input to help identify issues for consideration regarding the proposed action.

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Sincerely,

for Richard A Loder

Vance G. Hobbs
Chief, Environmental Division
Directorate of Public Works

Enclosure

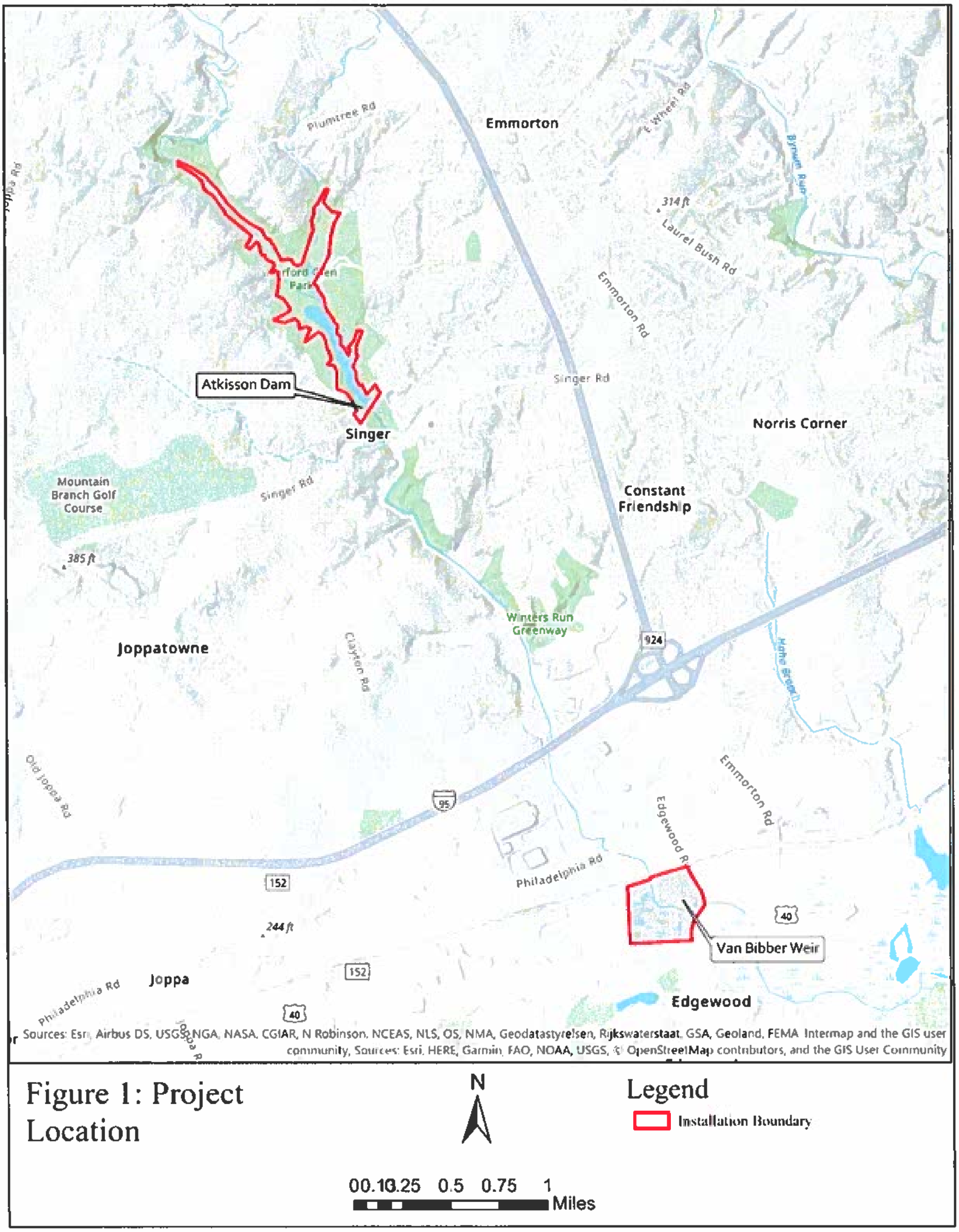

Figure 1: Project Location

Enclosure

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U.S. ARMY GARRISON ABERDEEN PROVING GROUND
BUILDING 4510, 6429 BOOTHBY HILL AVENUE
ABERDEEN PROVING GROUND MARYLAND 21005-5001

Ms. Robin Dushane
Tribal Historic Preservation Officer
Eastern Shawnee Tribe of Oklahoma
70500 East 128th Road
Wyandotte, OK 74370-9562

Dear Ms. Dushane:

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Sincerely,

Vance G. Hobbs
Chief, Environmental Division
Directorate of Public Works

Enclosure

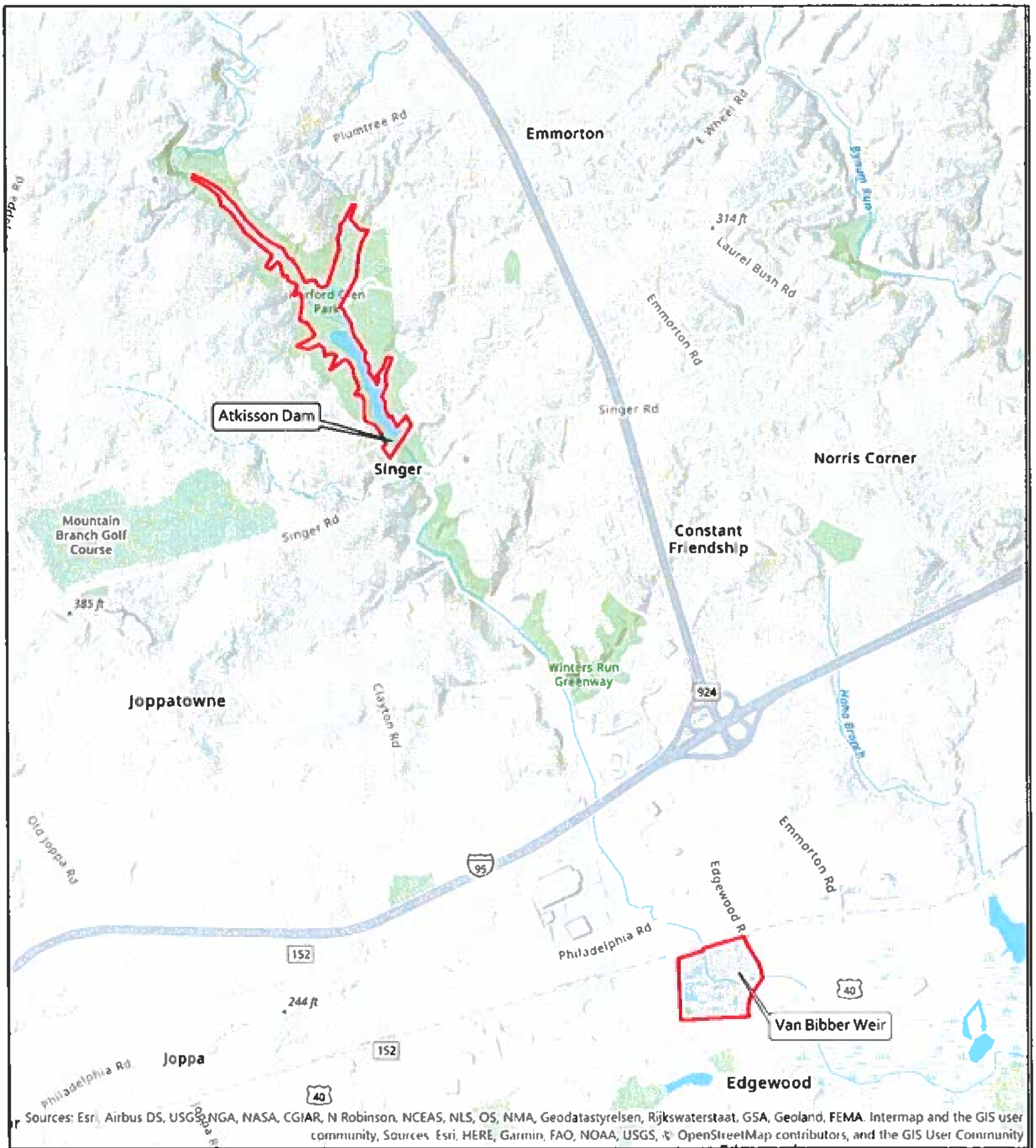

Figure 1: Project Location

N

Legend

Installation Boundary

00.10.25 0.5 0.75 1 Miles

Enclosure

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U.S. ARMY INSTALLATION MANAGEMENT COMMAND
U.S. ARMY GARRISON ABERDEEN PROVING GROUND
BUILDING 4510, 6429 BOOTHBY HILL AVENUE
ABERDEEN PROVING GROUND MARYLAND 21005-5001

Ms. Glenna Wallace, Chief
Eastern Shawnee Tribe of Oklahoma
Bluejacket Complex (West Seneca)
12755 South 705 Road
Wyandotte, OK 74370-3148

Dear Ms. Wallace:

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Sincerely,

for Rich A Lader

Vance G. Hobbs
Chief, Environmental Division
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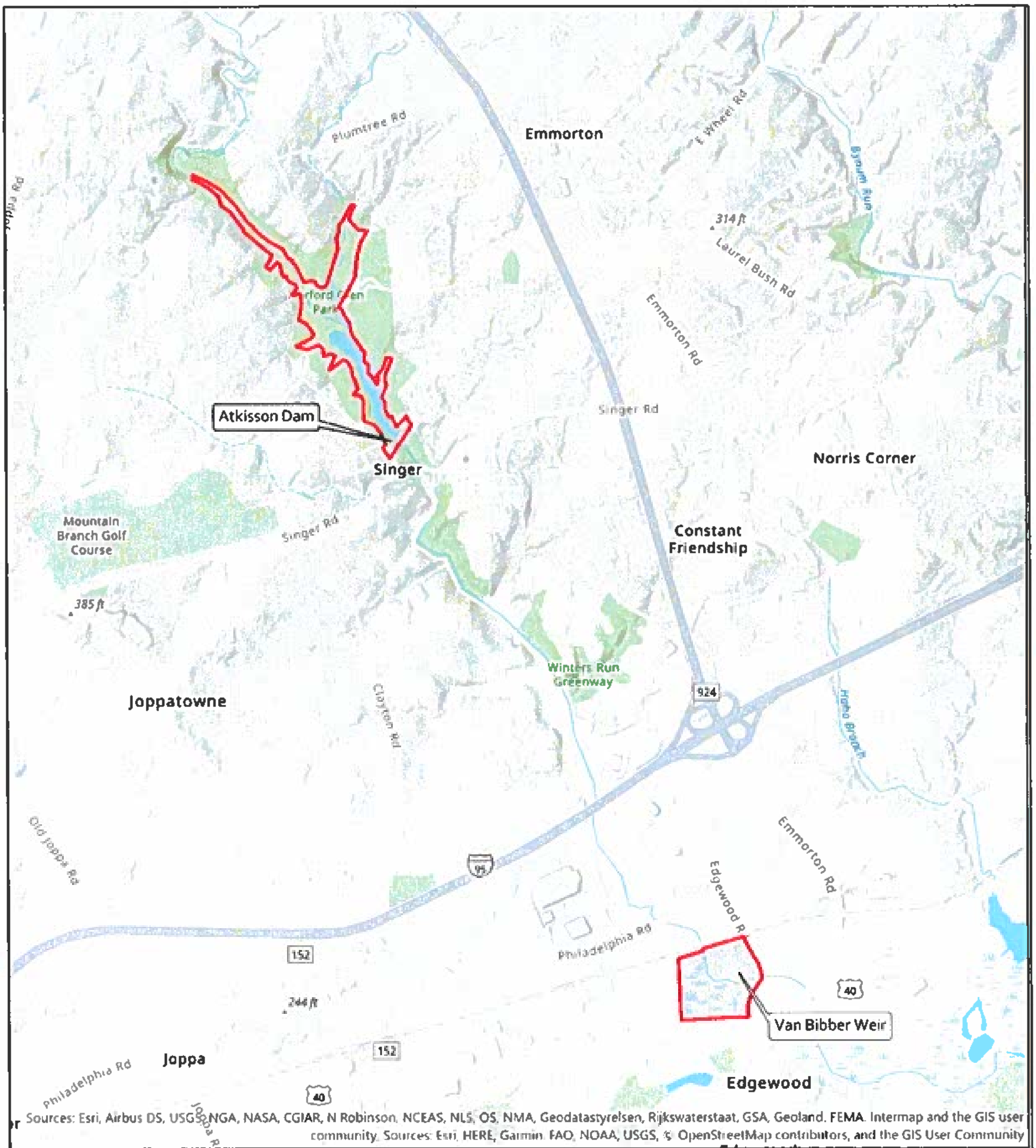

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Legend

Installation Boundary

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Enclosure

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U.S. ARMY INSTALLATION MANAGEMENT COMMAND
U.S. ARMY GARRISON ABERDEEN PROVING GROUND
BUILDING 4510, 6429 BOOTHBY HILL AVENUE
ABERDEEN PROVING GROUND MARYLAND 21005-5001

Ms. Roxanne Weldon
EPA Director
Eastern Shawnee Tribe of Oklahoma
PO Box 350
Seneca, MO 64865-0350

Dear Ms. Weldon:

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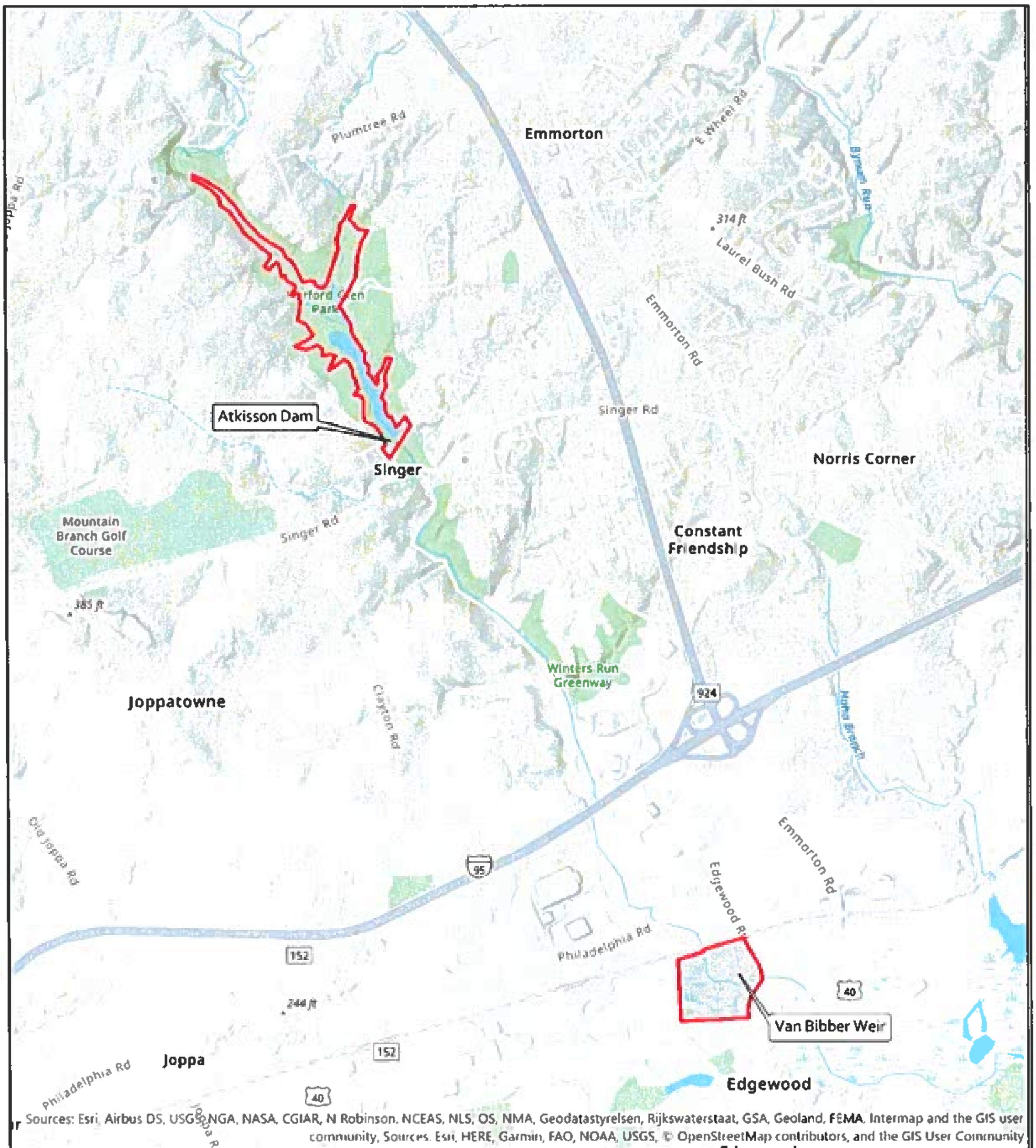
Sincerely,

for

Vance G. Hobbs
Chief, Environmental Division
Directorate of Public Works

Enclosure



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Miles

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U.S. ARMY GARRISON ABERDEEN PROVING GROUND
BUILDING 4510, 6429 BOOTHBY HILL AVENUE
ABERDEEN PROVING GROUND MARYLAND 21005-5001

Mr. Jesse Bergevin, Historian
Oneida Indian Nation
1256 Union Street
Oneida, NY 13421-0662

Dear Mr. Bergevin:

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Sincerely,

for

Vance G. Hobbs
Chief, Environmental Division
Directorate of Public Works

Enclosure

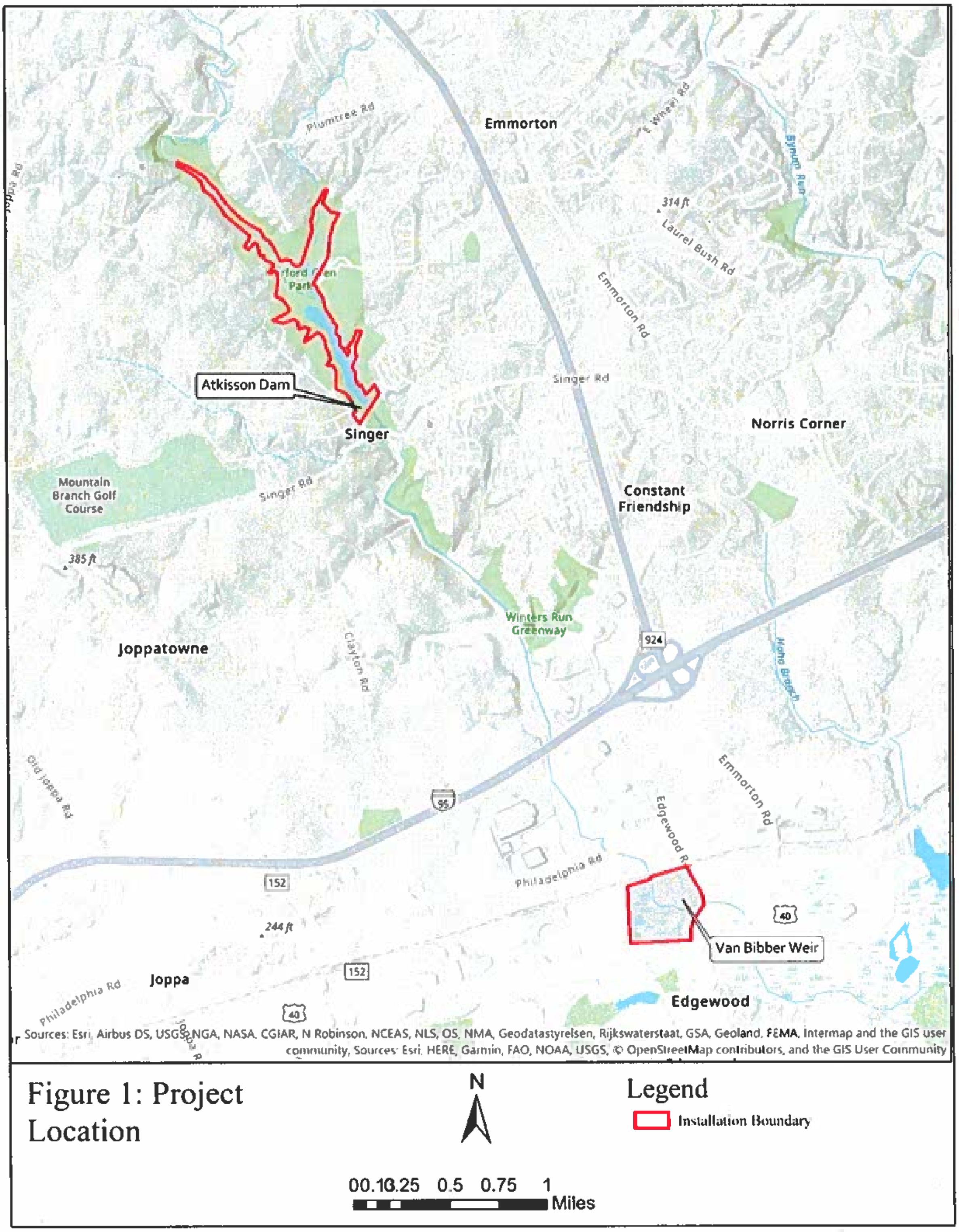

Figure 1: Project Location

Enclosure

DEPARTMENT OF THE ARMY
U.S. ARMY INSTALLATION MANAGEMENT COMMAND
U.S. ARMY GARRISON ABERDEEN PROVING GROUND
BUILDING 4510, 6429 BOOTHBY HILL AVENUE
ABERDEEN PROVING GROUND MARYLAND 21005-5001

Mr. Ray Halbritter
Nation Representative
Oneida Indian Nation
5218 Patrick Road
Verona, NY 13478-0312

Dear Mr. Halbritter:

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Sincerely,

for Rusk A Zeolar

Vance G. Hobbs
Chief, Environmental Division
Directorate of Public Works

Enclosure

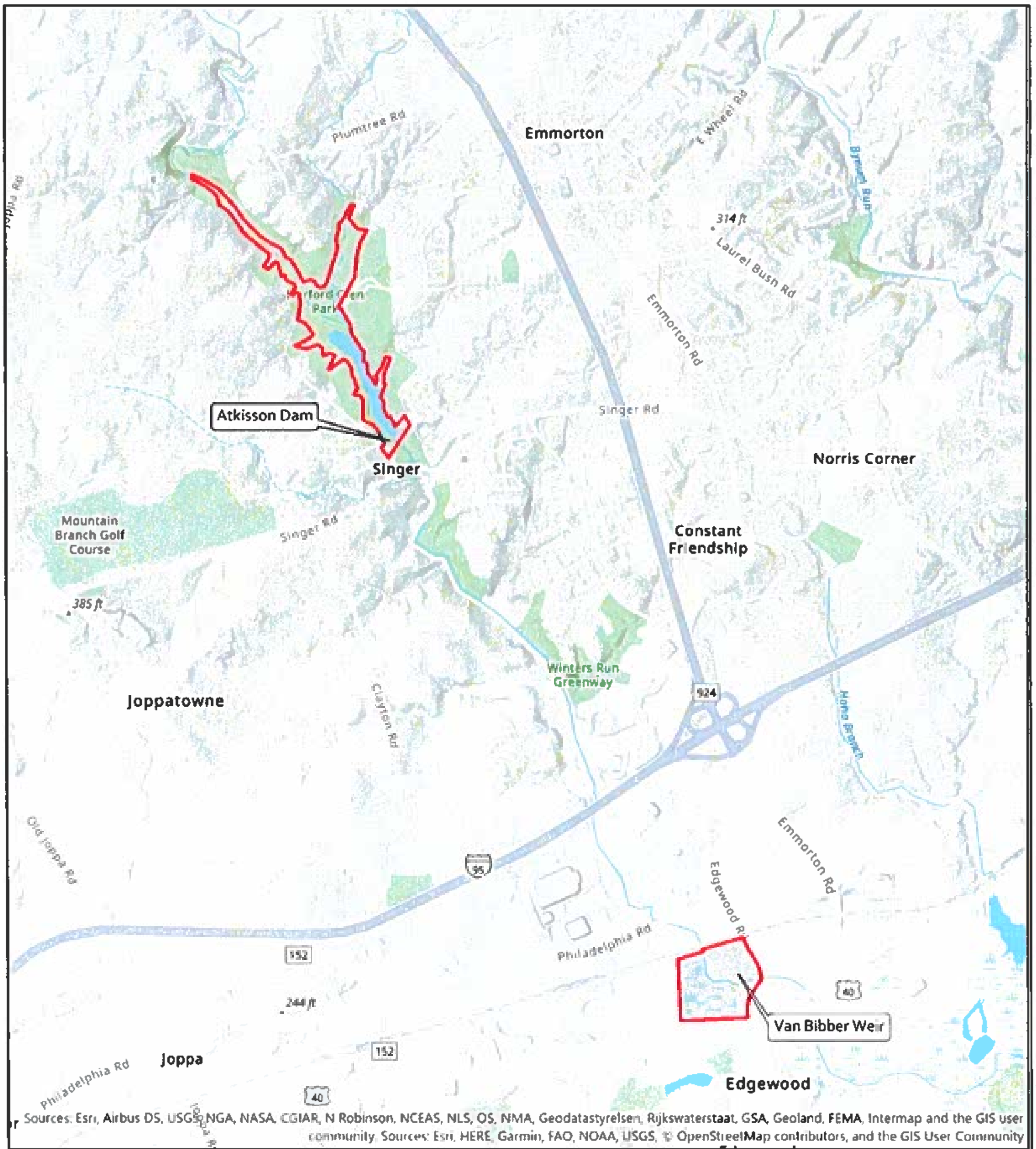

Figure 1: Project Location

N

Legend

Installation Boundary

0 0.1 0.25 0.5 0.75 1 Miles

Enclosure

DEPARTMENT OF THE ARMY
U.S. ARMY INSTALLATION MANAGEMENT COMMAND
U.S. ARMY GARRISON ABERDEEN PROVING GROUND
BUILDING 4510, 6429 BOOTHBY HILL AVENUE
ABERDEEN PROVING GROUND MARYLAND 21005-5001

Ms. Laura Misita
Land Administrator
Oneida Indian Nation
5218 Patrick Road
Verona, NY 13478-0312

Dear Ms. Misita:

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Sincerely,

for

Vance G. Hobbs
Chief, Environmental Division
Directorate of Public Works

Enclosure

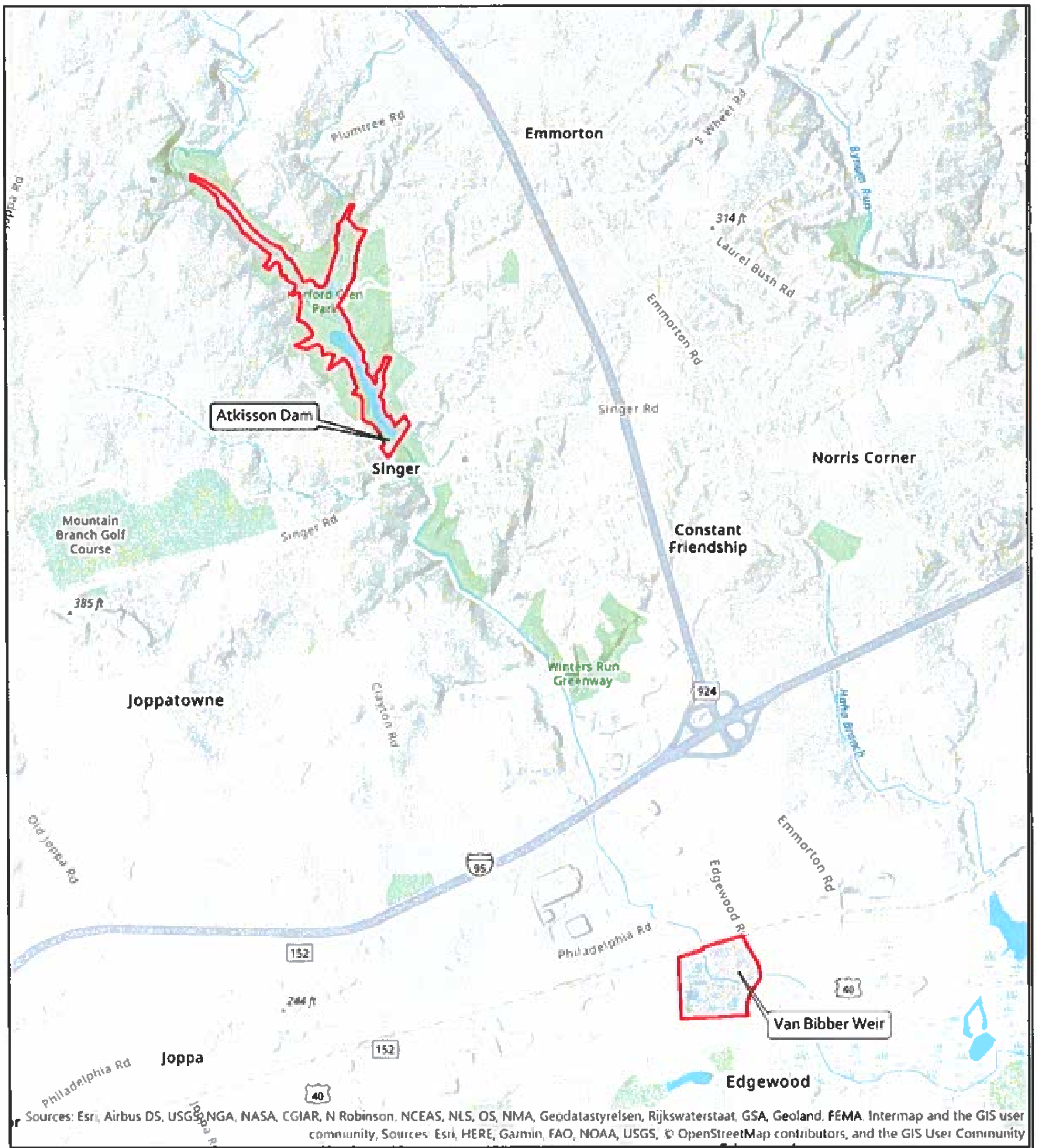

Figure 1: Project Location

N

Legend

Installation Boundary

00.10.25 0.5 0.75 1
Miles

Enclosure

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BUILDING 4510, 6429 BOOTHBY HILL AVENUE
ABERDEEN PROVING GROUND MARYLAND 21005-5001

Mr. Stephen J. Selden, Esq.
Oneida Indian Nation
General Council
5218 Patrick Road
Verona, NY 13478-3012

Dear Mr. Selden:

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Sincerely,

for Ruth A Losler

Vance G. Hobbs
Chief, Environmental Division
Directorate of Public Works

Enclosure

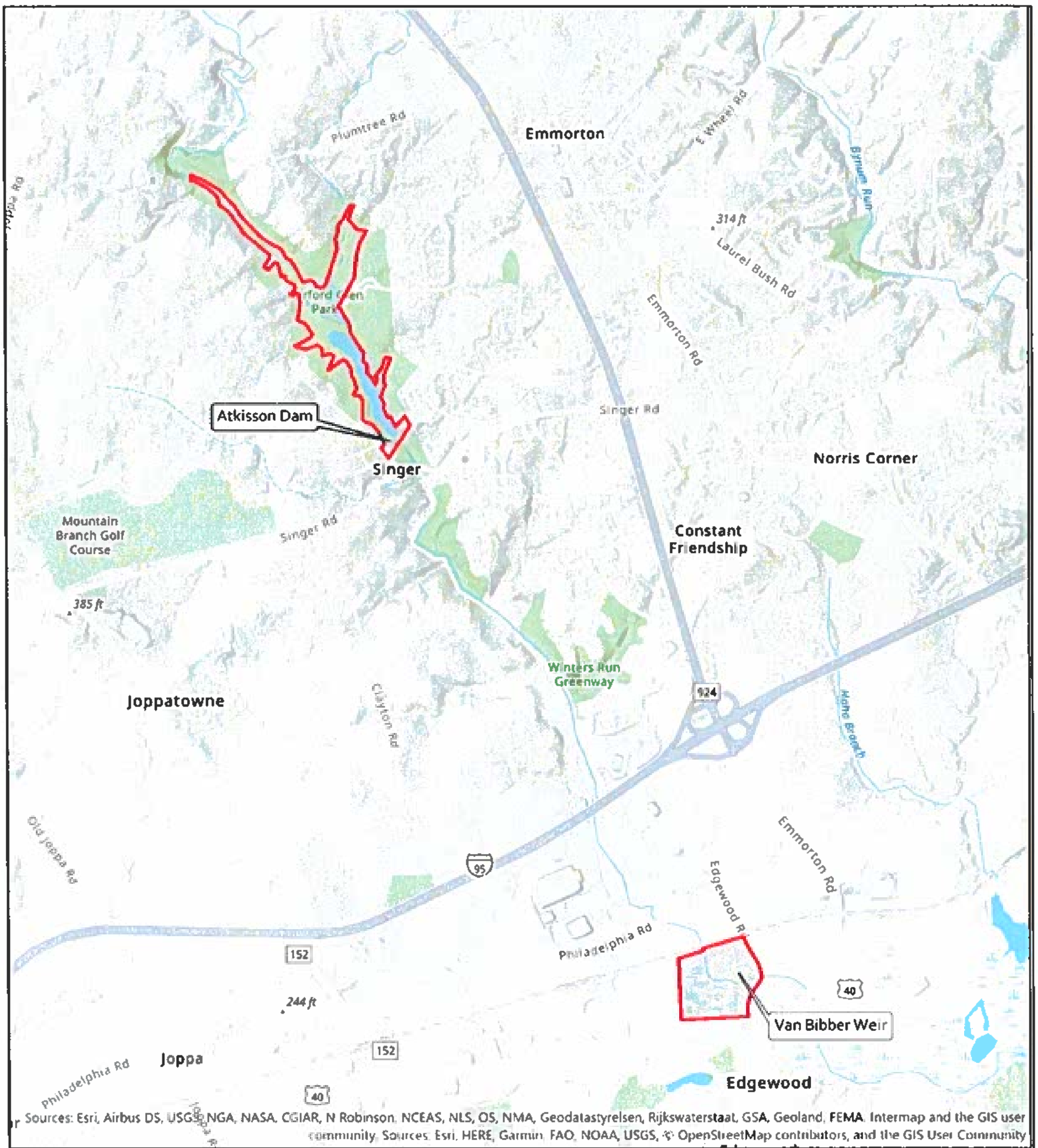

Figure 1: Project Location

N

Legend
Installation Boundary

0 0.1 0.25 0.5 0.75 1 Miles

Enclosure

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U.S. ARMY GARRISON ABERDEEN PROVING GROUND
BUILDING 4510, 6429 BOOTHBY HILL AVENUE
ABERDEEN PROVING GROUND MARYLAND 21005-5001

Ms. Christina Danforth, Chairwoman
Oneida Nation of Wisconsin
PO Box 365
Oneida, WI 54155-0365

Dear Ms. Danforth:

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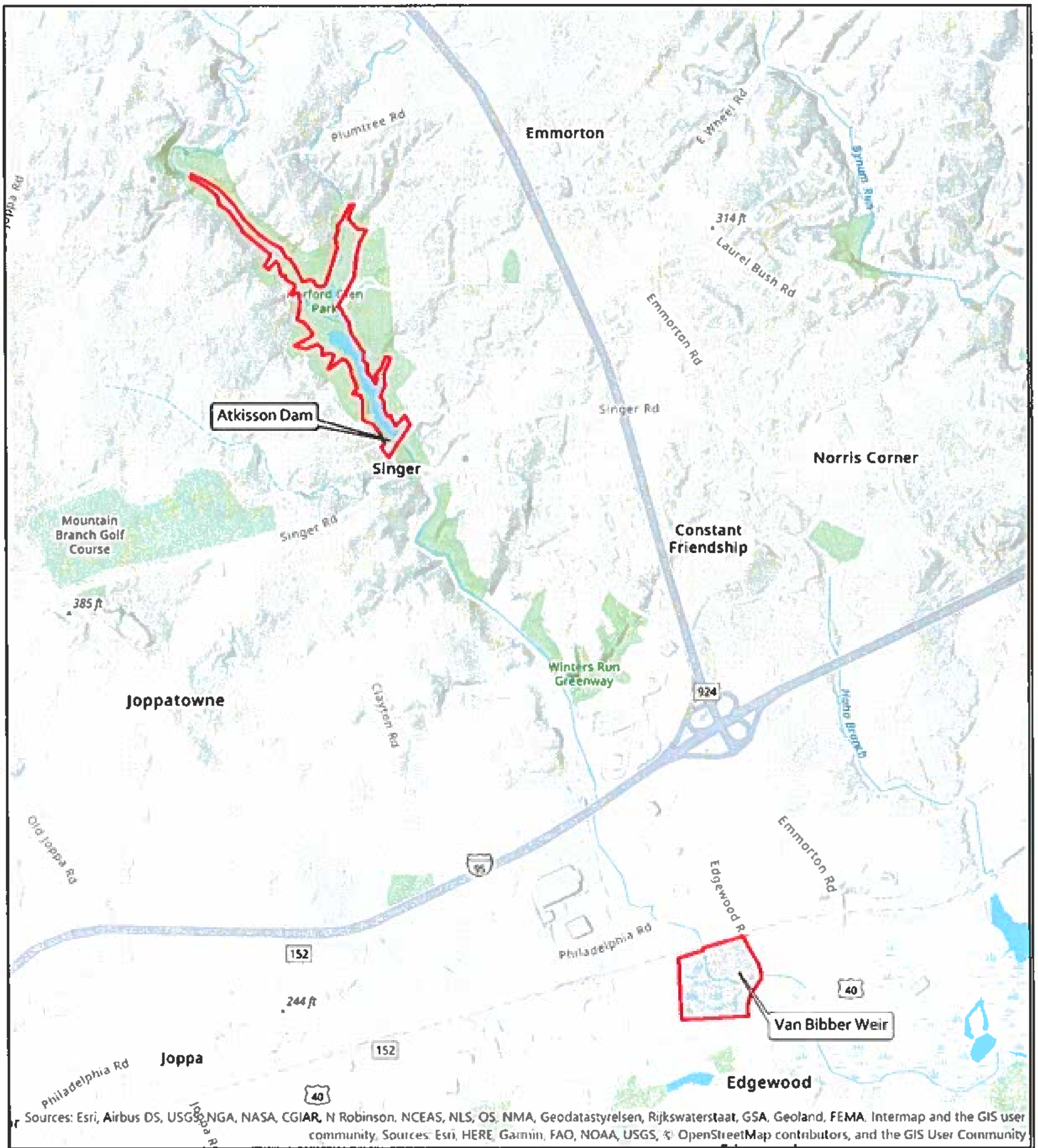
Sincerely,

for Randal A. Loder

Vance G. Hobbs
Chief, Environmental Division
Directorate of Public Works

Enclosure



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Installation Boundary

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Enclosure

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U.S. ARMY INSTALLATION MANAGEMENT COMMAND
U.S. ARMY GARRISON ABERDEEN PROVING GROUND
BUILDING 4510, 6429 BOOTHBY HILL AVENUE
ABERDEEN PROVING GROUND MARYLAND 21005-5001

Ms. Corina Williams
Tribal Historic Preservation Officer
Oneida Nation of Wisconsin
PO Box 365
Oneida, WI 54155-0365

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Sincerely,

for

Vance G. Hobbs
Chief, Environmental Division
Directorate of Public Works

Enclosure

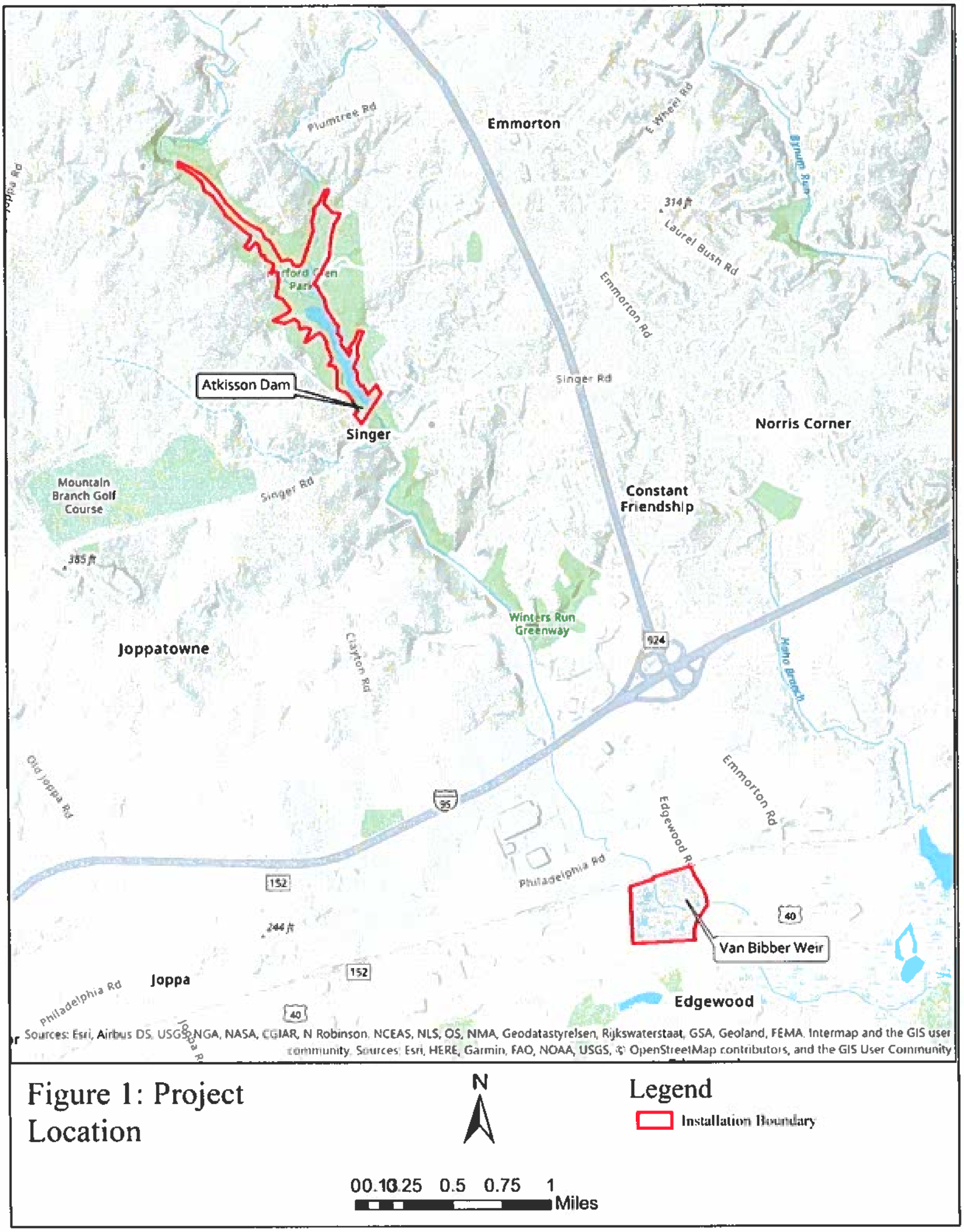

Figure 1: Project Location

Enclosure

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U.S. ARMY INSTALLATION MANAGEMENT COMMAND
U.S. ARMY GARRISON ABERDEEN PROVING GROUND
BUILDING 4510, 6429 BOOTHBY HILL AVENUE
ABERDEEN PROVING GROUND MARYLAND 21005-5001

Mr. Tony Gonyea
Faithkeeper for the Onondaga Nation
PO Box 245
Via Nedrow, NY 13120-0245

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Sincerely,

for Rick A Loden

Vance G. Hobbs
Chief, Environmental Division
Directorate of Public Works

Enclosure

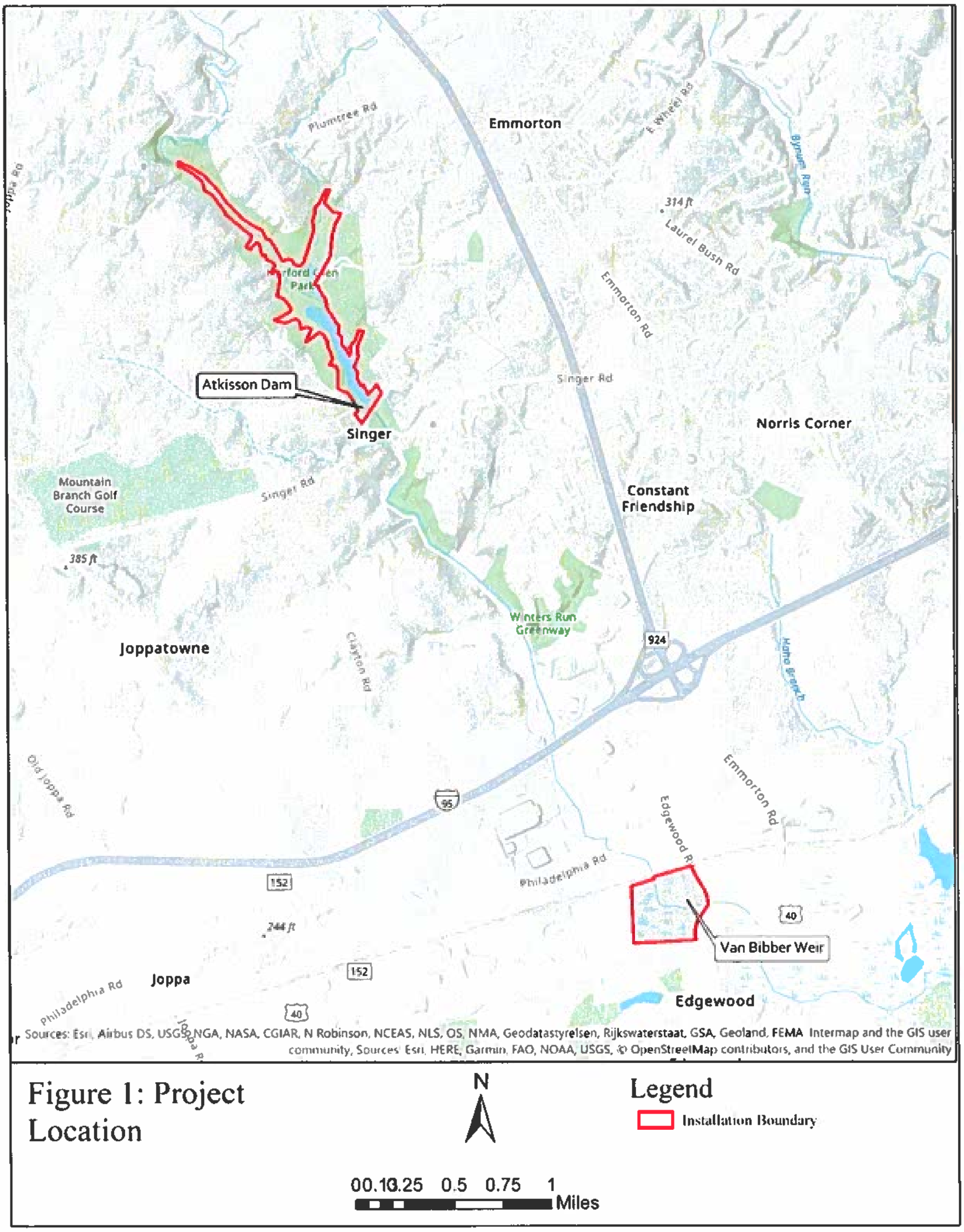

Figure 1: Project Location

Enclosure

DEPARTMENT OF THE ARMY
U.S. ARMY INSTALLATION MANAGEMENT COMMAND
U.S. ARMY GARRISON ABERDEEN PROVING GROUND
BUILDING 4510, 6429 BOOTHBY HILL AVENUE
ABERDEEN PROVING GROUND MARYLAND 21005-5001

Mr. Micco Emarthla
Tribal Historic Preservation Officer
Seneca-Cayuga Tribe of Oklahoma
23701 South 655 Road
Grove, OK 74344-6317

Dear Mr. Emarthla:

The U.S. Army Garrison Aberdeen Proving Ground would like to initiate coordination with your Tribe for a new proposed undertaking, the removal of Atkisson Dam and Van Bibber Weir near Emmorton, MD, per Section 106 of the National Historic Preservation Act. Aberdeen Proving Ground is also preparing an Environmental Assessment for the proposed action, and would appreciate receiving your Tribe's early input to help identify issues for consideration regarding the proposed action.

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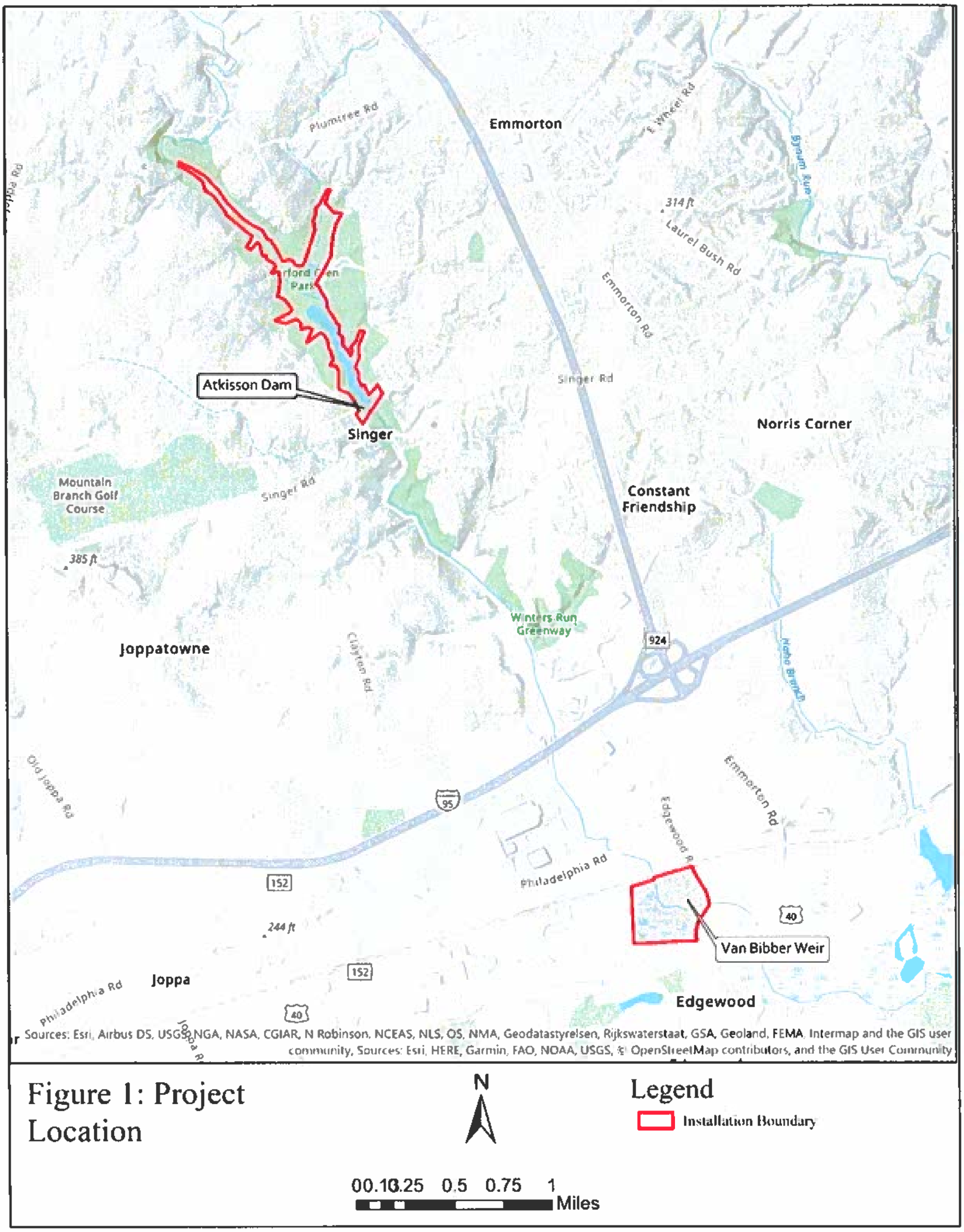
Sincerely,

for Ronald A Lodan

Vance G. Hobbs
Chief, Environmental Division
Directorate of Public Works

Enclosure



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U.S. ARMY GARRISON ABERDEEN PROVING GROUND
BUILDING 4510, 6429 BOOTHBY HILL AVENUE
ABERDEEN PROVING GROUND MARYLAND 21005-5001

Mr. William L. Fisher, Chief
Seneca-Cayuga Tribe of Oklahoma
PO Box 45322
Grove, OK 74345

Dear Mr. Fisher:

The U.S. Army Garrison Aberdeen Proving Ground would like to initiate coordination with your Tribe for a new proposed undertaking, the removal of Atkisson Dam and Van Bibber Weir near Emmorton, MD, per Section 106 of the National Historic Preservation Act. Aberdeen Proving Ground is also preparing an Environmental Assessment for the proposed action, and would appreciate receiving your Tribe's early input to help identify issues for consideration regarding the proposed action.

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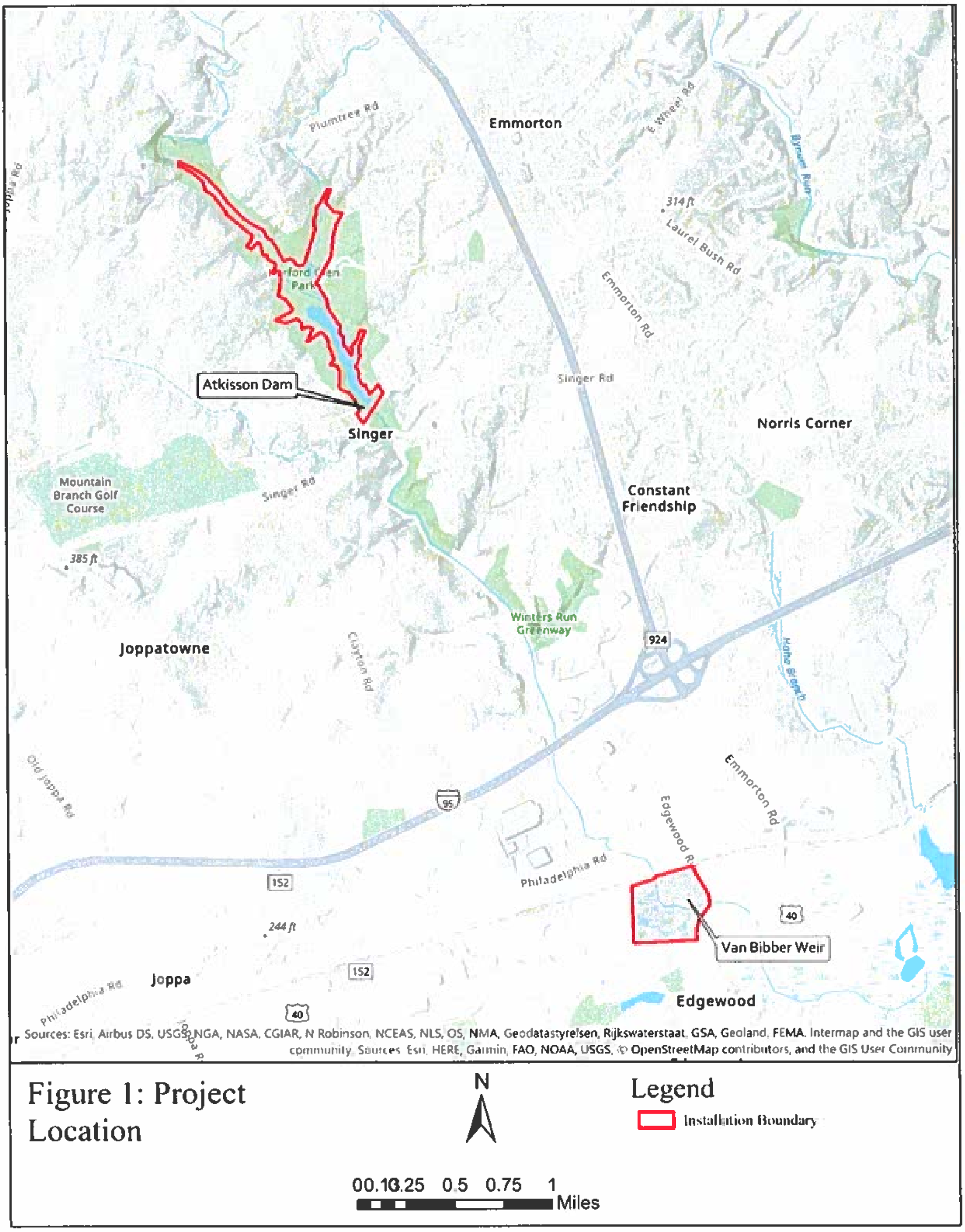
Sincerely,

for Rich. H Lede

Vance G. Hobbs
Chief, Environmental Division
Directorate of Public Works

Enclosure



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BUILDING 4510, 6429 BOOTHBY HILL AVENUE
ABERDEEN PROVING GROUND MARYLAND 21005-5001

Mr. Maurice A John, Sr., President
Seneca Nation of Indians
PO Box 231
Salamanca, NY 14779-0231

Dear Mr. John:

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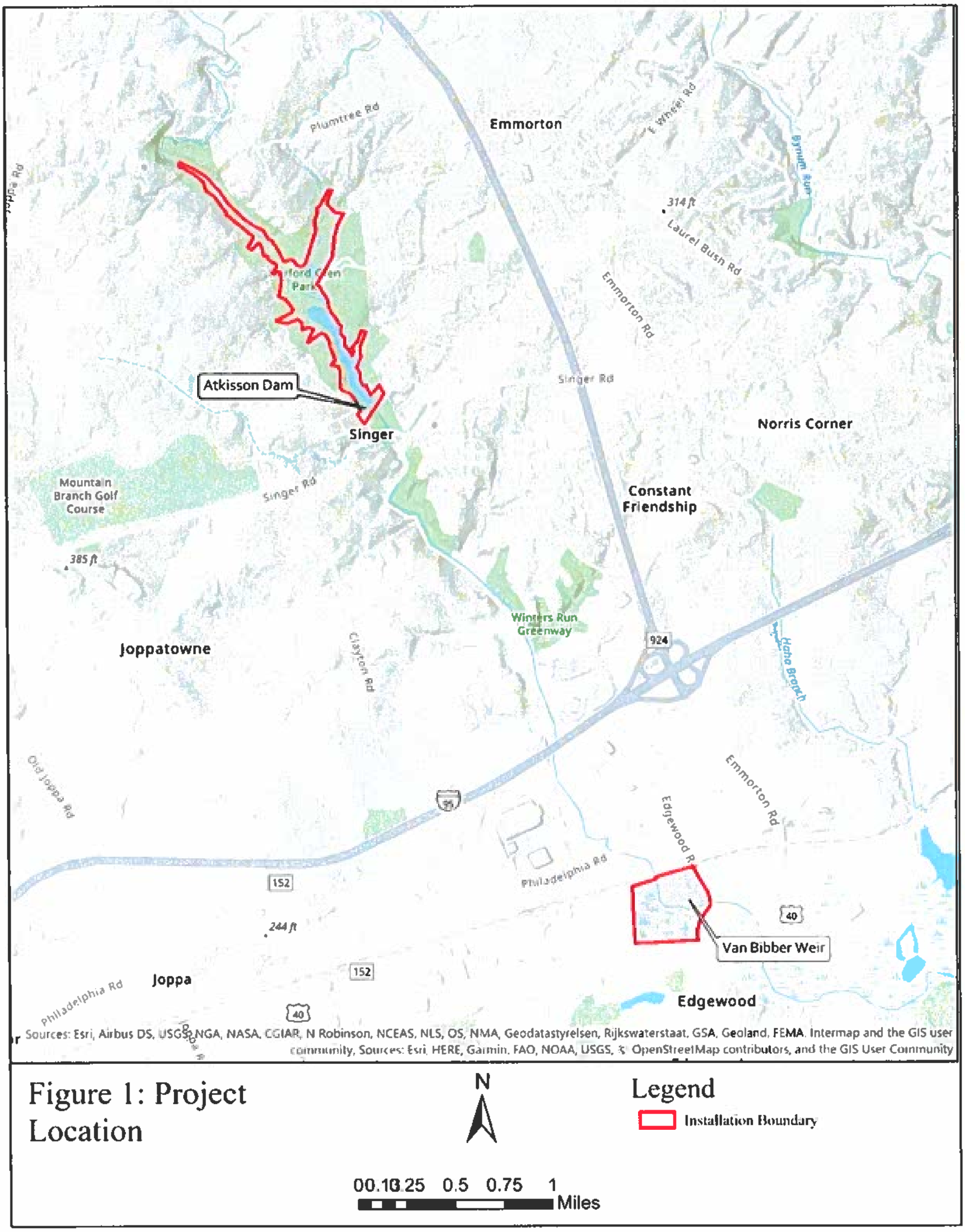
Sincerely,

for Rick A Licht

Vance G. Hobbs
Chief, Environmental Division
Directorate of Public Works

Enclosure



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BUILDING 4510, 6429 BOOTHBY HILL AVENUE
ABERDEEN PROVING GROUND MARYLAND 21005-5001

Mr. Jay Toth
Tribal Historic Preservation Officer
Seneca Nation of Indians
90 Ohi Yoho Way
Salamanca, NY 14779-0231

Dear Mr. Toth:

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Sincerely,

for Rich A Larkin

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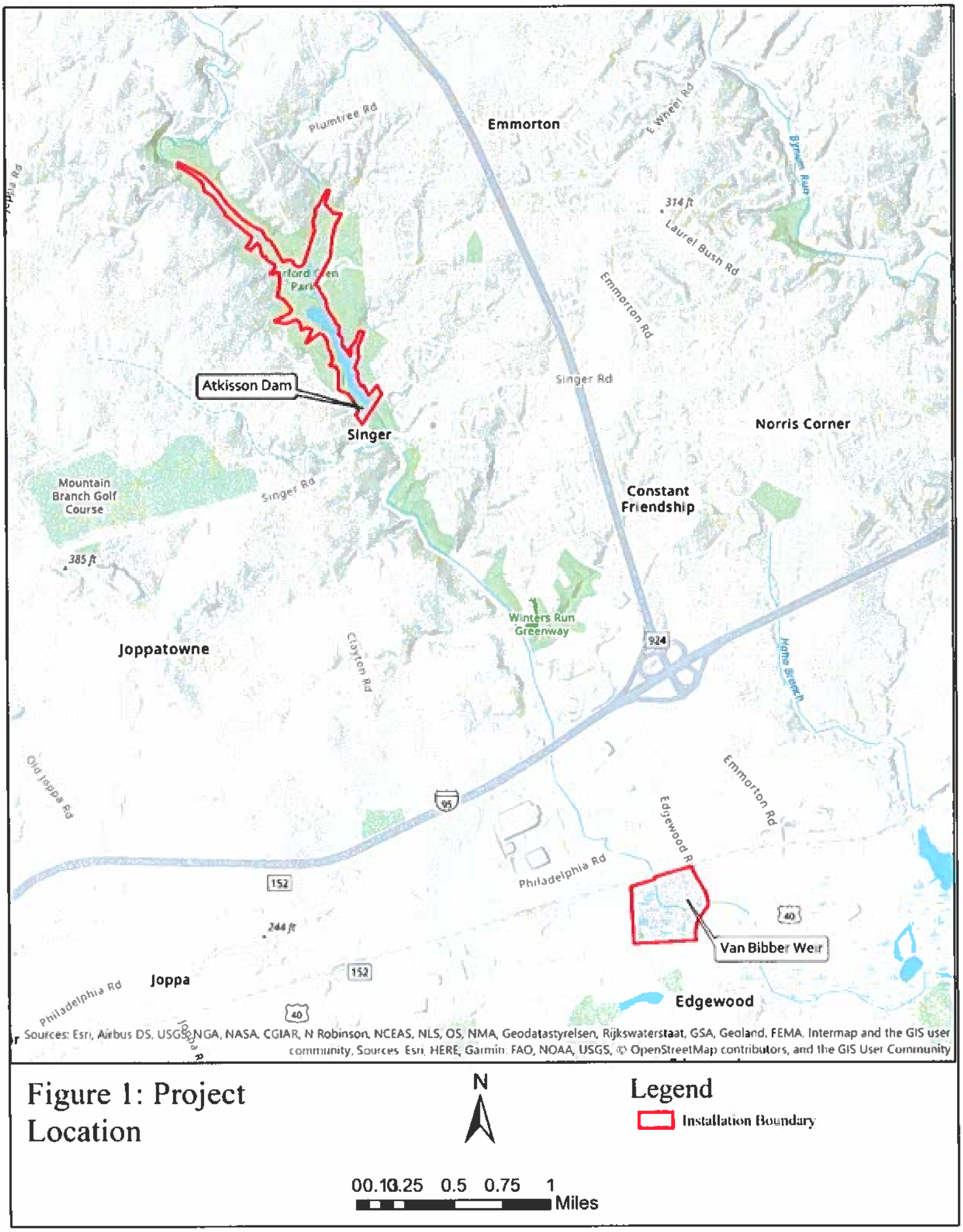

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U.S. ARMY GARRISON ABERDEEN PROVING GROUND
BUILDING 4510, 6429 BOOTHBY HILL AVENUE
ABERDEEN PROVING GROUND MARYLAND 21005-5001

Ms. Lana Watt
Tribal Historic Preservation Officer
Seneca Nation of New York
PO Box 329
Victor, NY 14564

Dear Ms. Watt:

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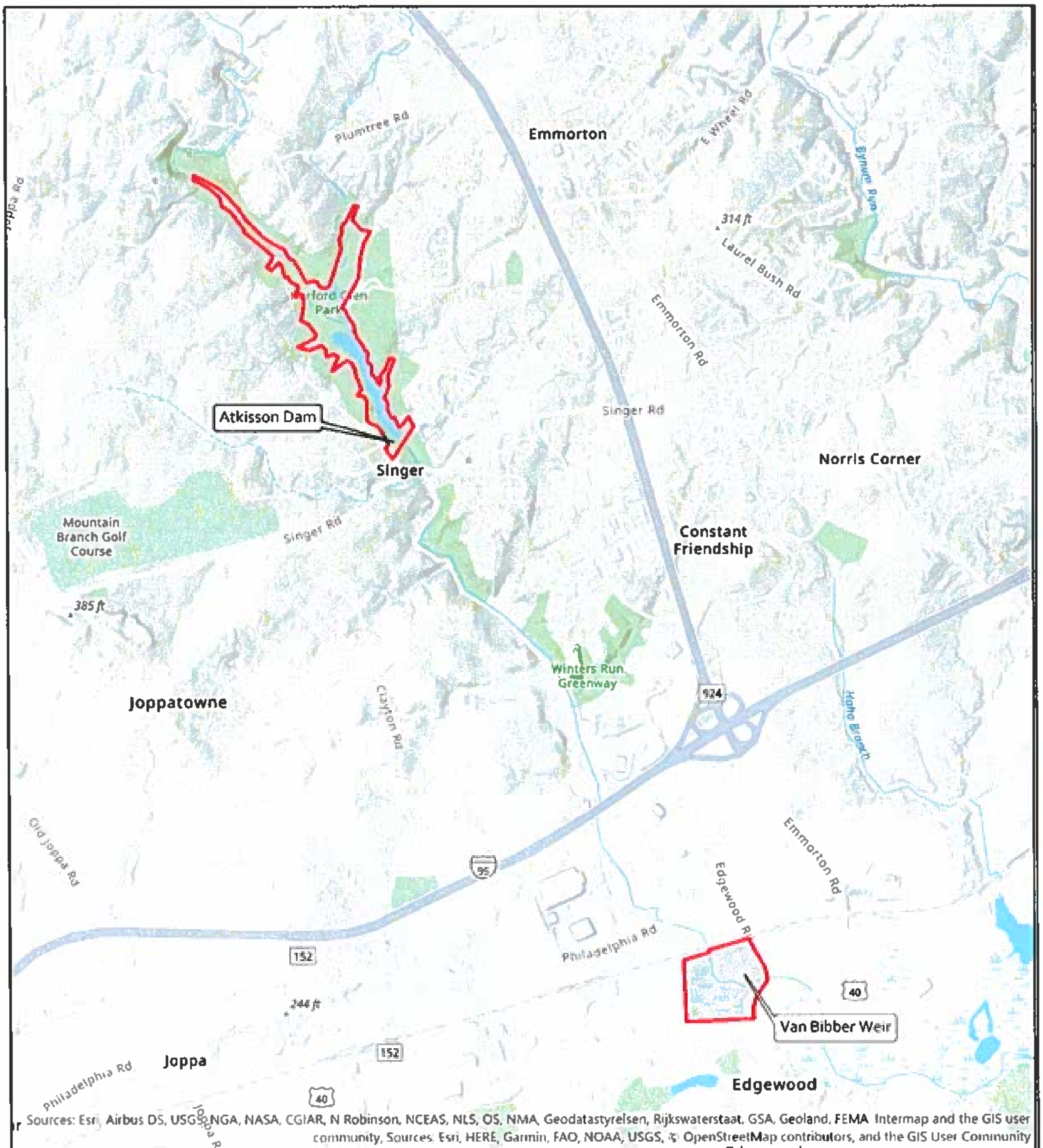

Figure 1: Project Location

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Legend

Installation Boundary

0 0.1 0.25 0.5 0.75 1 Miles

Enclosure

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U.S. ARMY INSTALLATION MANAGEMENT COMMAND
U.S. ARMY GARRISON ABERDEEN PROVING GROUND
BUILDING 4510, 6429 BOOTHBY HILL AVENUE
ABERDEEN PROVING GROUND MARYLAND 21005-5001

Mr. Joseph Blanchard
Shawnee Tribe of Oklahoma
2025 South Gordon Copper Drive
Shawnee, OK 74801-9005

Dear Mr. Blanchard:

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Sincerely,

Vance G. Hobbs
Chief, Environmental Division
Directorate of Public Works

Enclosure

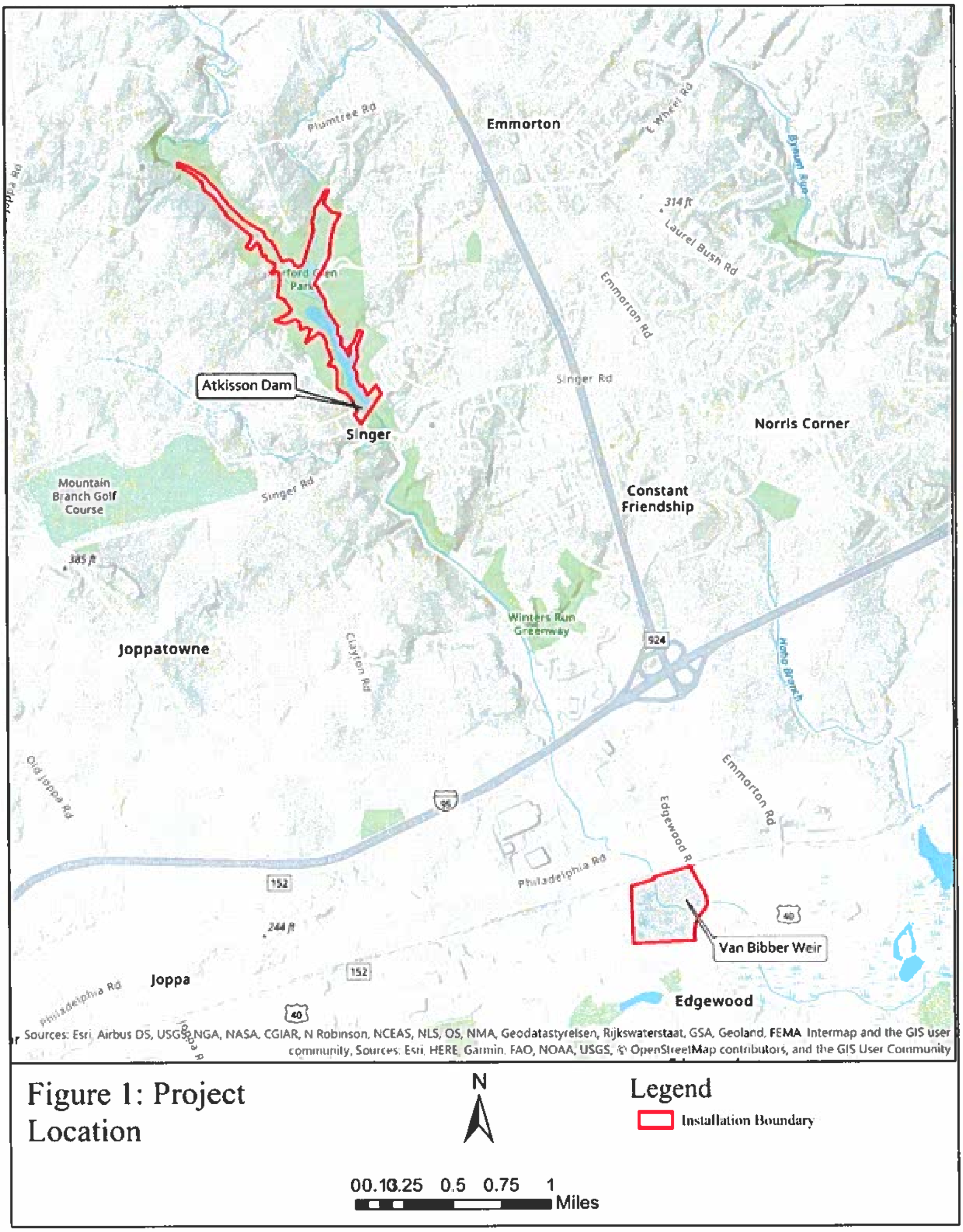

Figure 1: Project Location

Enclosure

DEPARTMENT OF THE ARMY
U.S. ARMY INSTALLATION MANAGEMENT COMMAND
U.S. ARMY GARRISON ABERDEEN PROVING GROUND
BUILDING 4510, 6429 BOOTHBY HILL AVENUE
ABERDEEN PROVING GROUND MARYLAND 21005-5001

Ms. Kim Jumper
Tribal Historic Preservation Officer
Shawnee Tribe of Oklahoma
29 South 69A Highway
Miami, OK 74354

Dear Ms. Jumper:

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Sincerely,

for Rick A Leder

Vance G. Hobbs
Chief, Environmental Division
Directorate of Public Works

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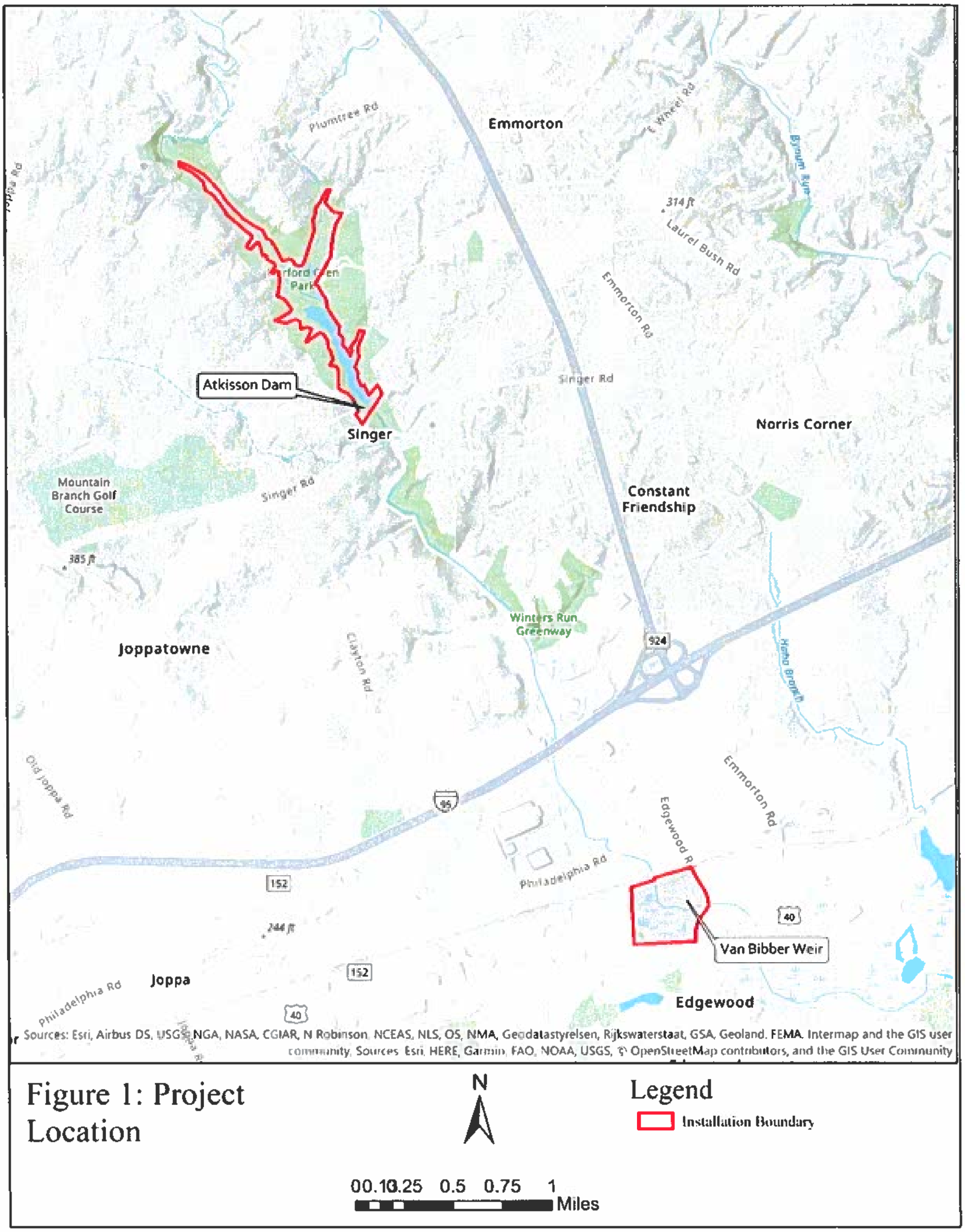

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U.S. ARMY GARRISON ABERDEEN PROVING GROUND
BUILDING 4510, 6429 BOOTHBY HILL AVENUE
ABERDEEN PROVING GROUND MARYLAND 21005-5001

Mr. Ron Sparkman, Chairman
Shawnee Tribe of Oklahoma
29 South 69A Highway
Miami, OK 74354

Dear Mr. Sparkman:

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Sincerely,

for

Vance G. Hobbs
Chief, Environmental Division
Directorate of Public Works

Enclosure

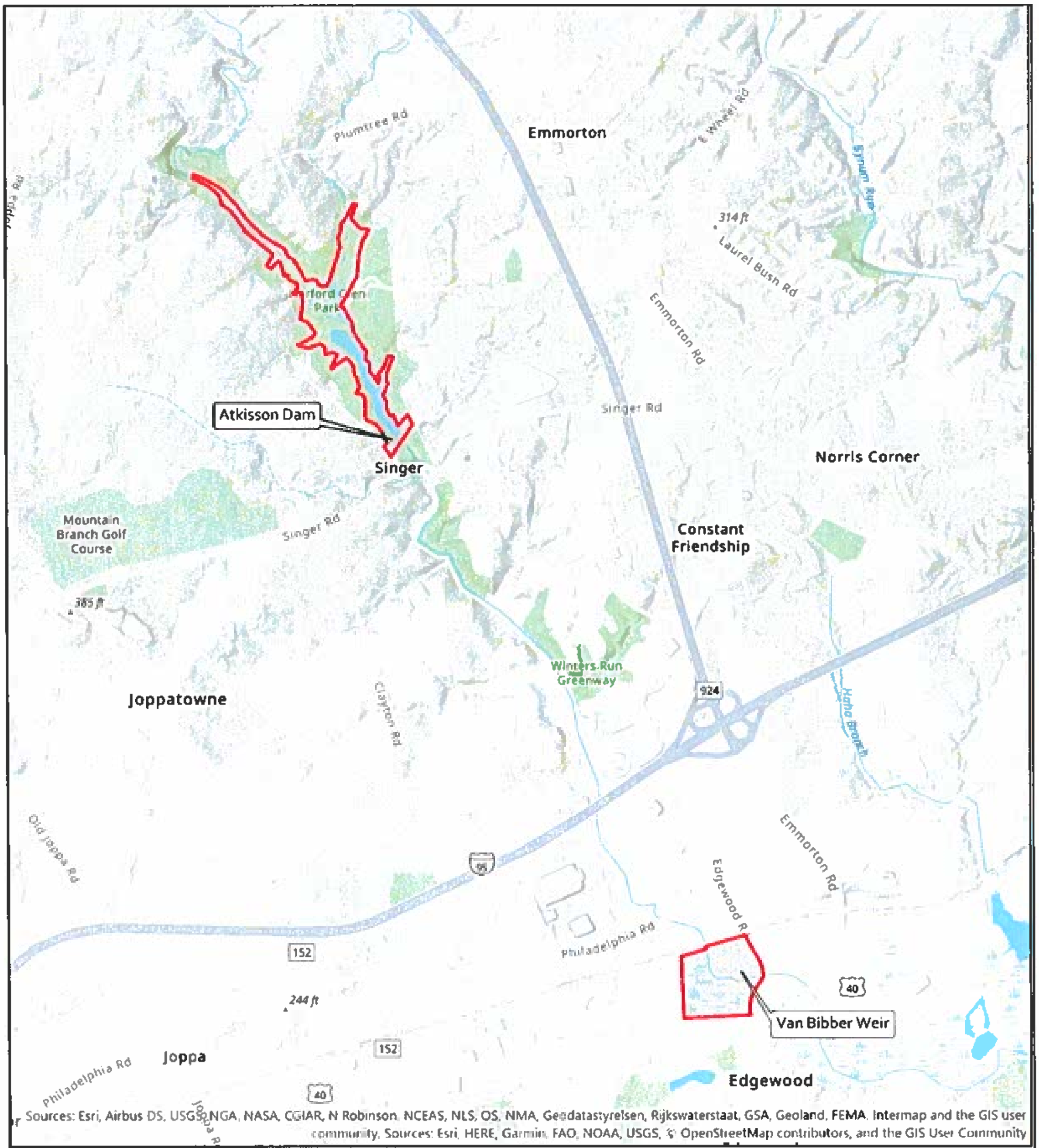

Figure 1: Project Location

N

Legend

Installation Boundary

0 0.1 0.25 0.5 0.75 1 Miles

Enclosure

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U.S. ARMY INSTALLATION MANAGEMENT COMMAND
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BUILDING 4510, 6429 BOOTHBY HILL AVENUE
ABERDEEN PROVING GROUND MARYLAND 21005-5001

Ms. Beverly Cook, Chief
St. Regis Mohawk Tribe
412 State Route 37
Hogansburg, NY 13655-3109

Dear Ms. Cook:

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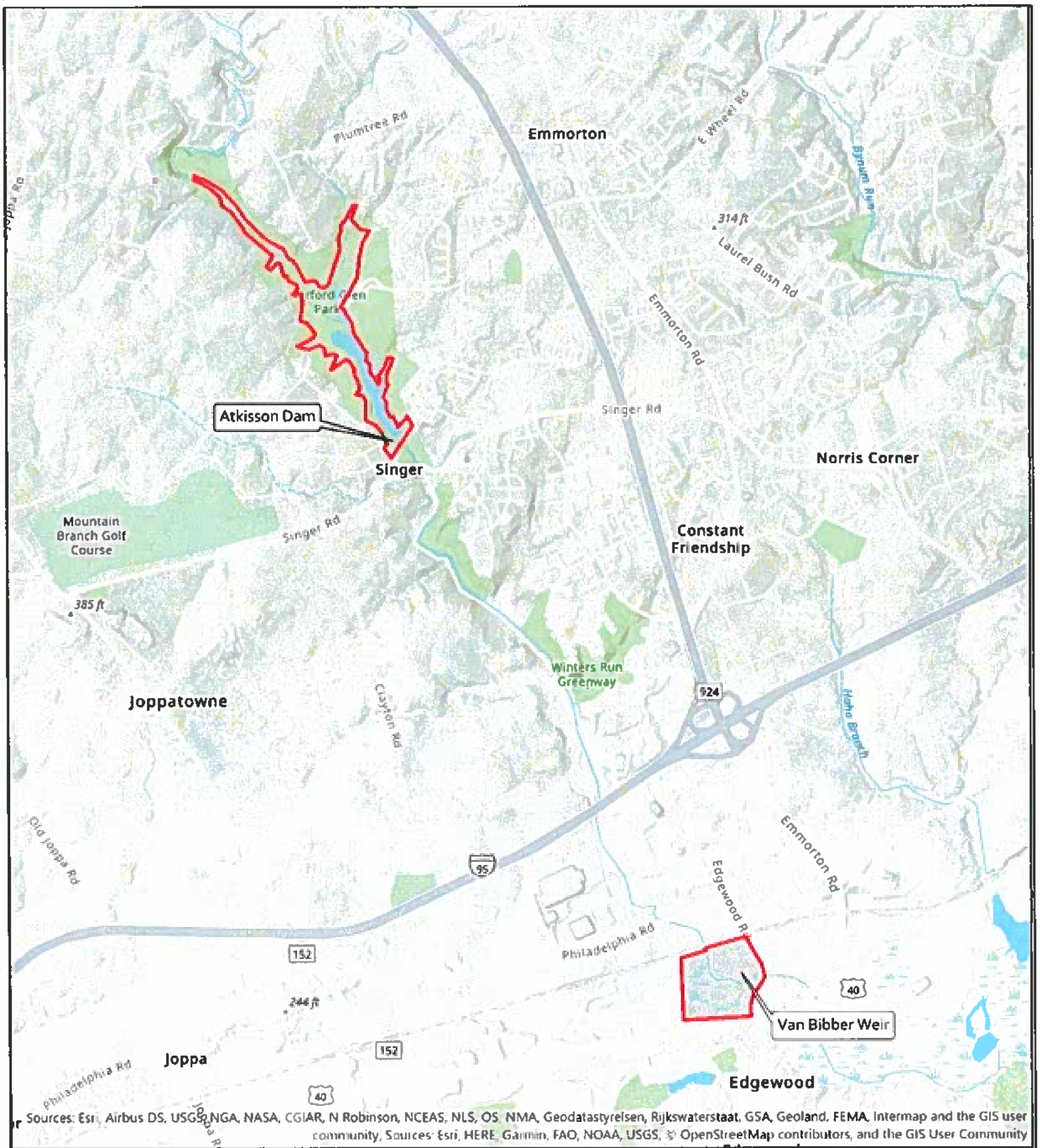
Sincerely,

for

Vance G. Hobbs
Chief, Environmental Division
Directorate of Public Works

Enclosure



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N

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Enclosure

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U.S. ARMY INSTALLATION MANAGEMENT COMMAND
U.S. ARMY GARRISON ABERDEEN PROVING GROUND
BUILDING 4510, 6429 BOOTHBY HILL AVENUE
ABERDEEN PROVING GROUND MARYLAND 21005-5001

Mr. Ken Jocks
Director of Environmental Division
St. Regis Mohawk Tribe
RR#1, Box 8A
Hogansburg, NY 13655-3109

Dear Mr. Jocks:

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Chief, Environmental Division
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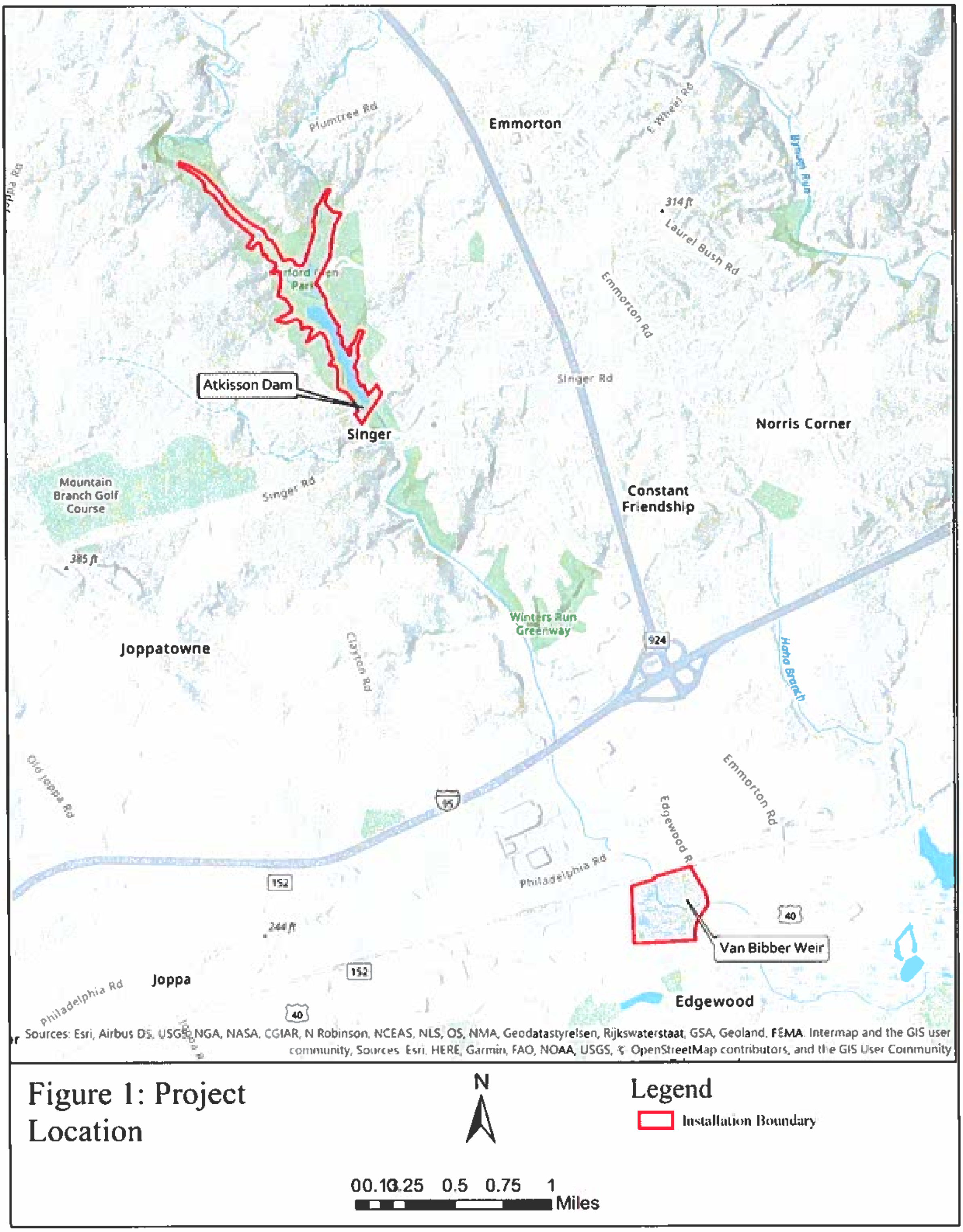

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Enclosure

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U.S. ARMY GARRISON ABERDEEN PROVING GROUND
BUILDING 4510, 6429 BOOTHBY HILL AVENUE
ABERDEEN PROVING GROUND MARYLAND 21005-5001

Mr. Arnold Printup
Historic Preservation Officer
St. Regis Mohawk Tribe
412 State Route 37
Hogansburg, NY 13655-3109

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Chief, Environmental Division
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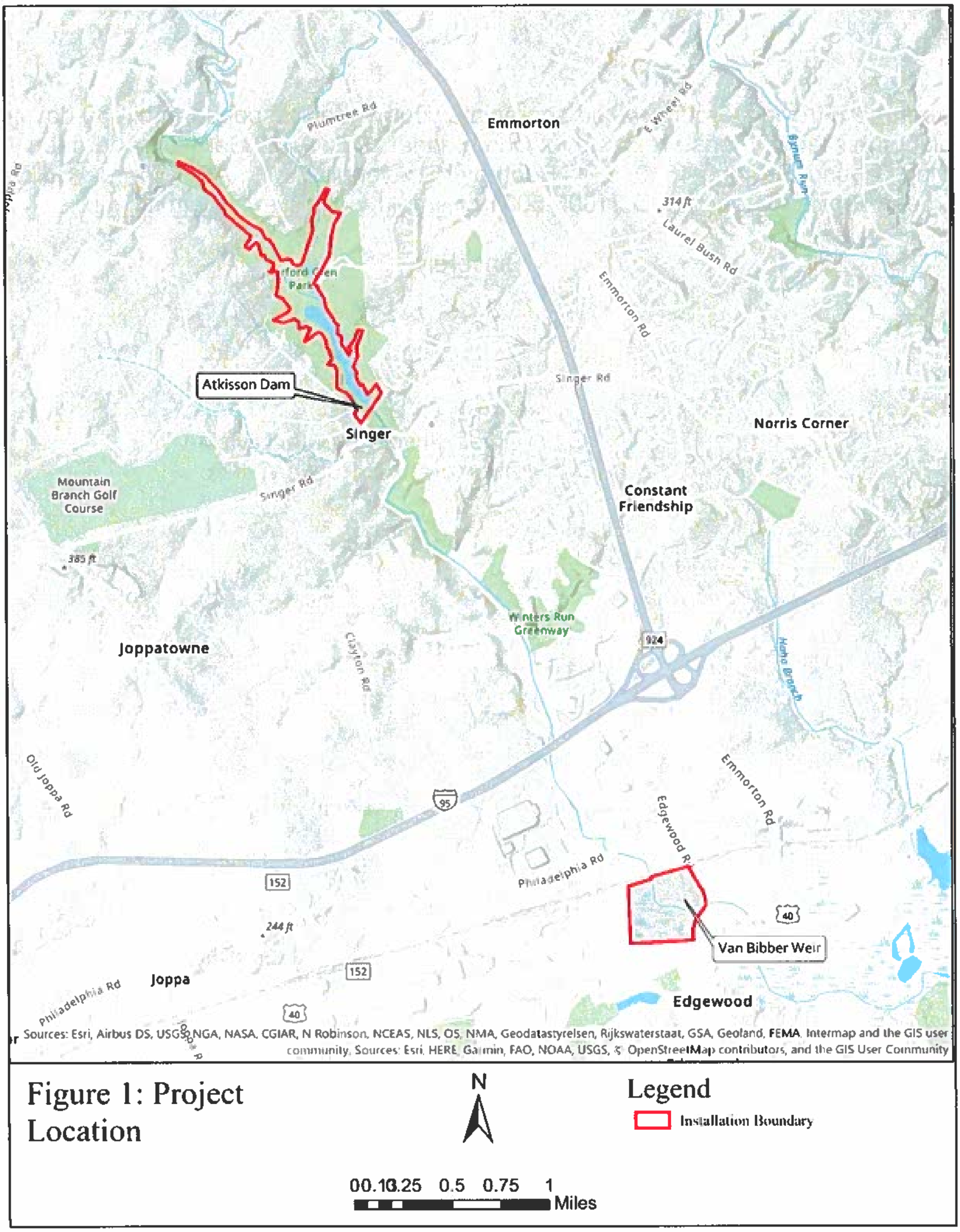

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U.S. ARMY GARRISON ABERDEEN PROVING GROUND
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ABERDEEN PROVING GROUND MARYLAND 21005-5001

Mr. Greg Bunker
Environmental Manager
Stockbridge-Munsee Community Band of Mohican Indians
N7689 Koan Tuk Drive
Bowler, WI 54416

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Sincerely,

for Rich A Lawton

Vance G. Hobbs
Chief, Environmental Division
Directorate of Public Works

Enclosure

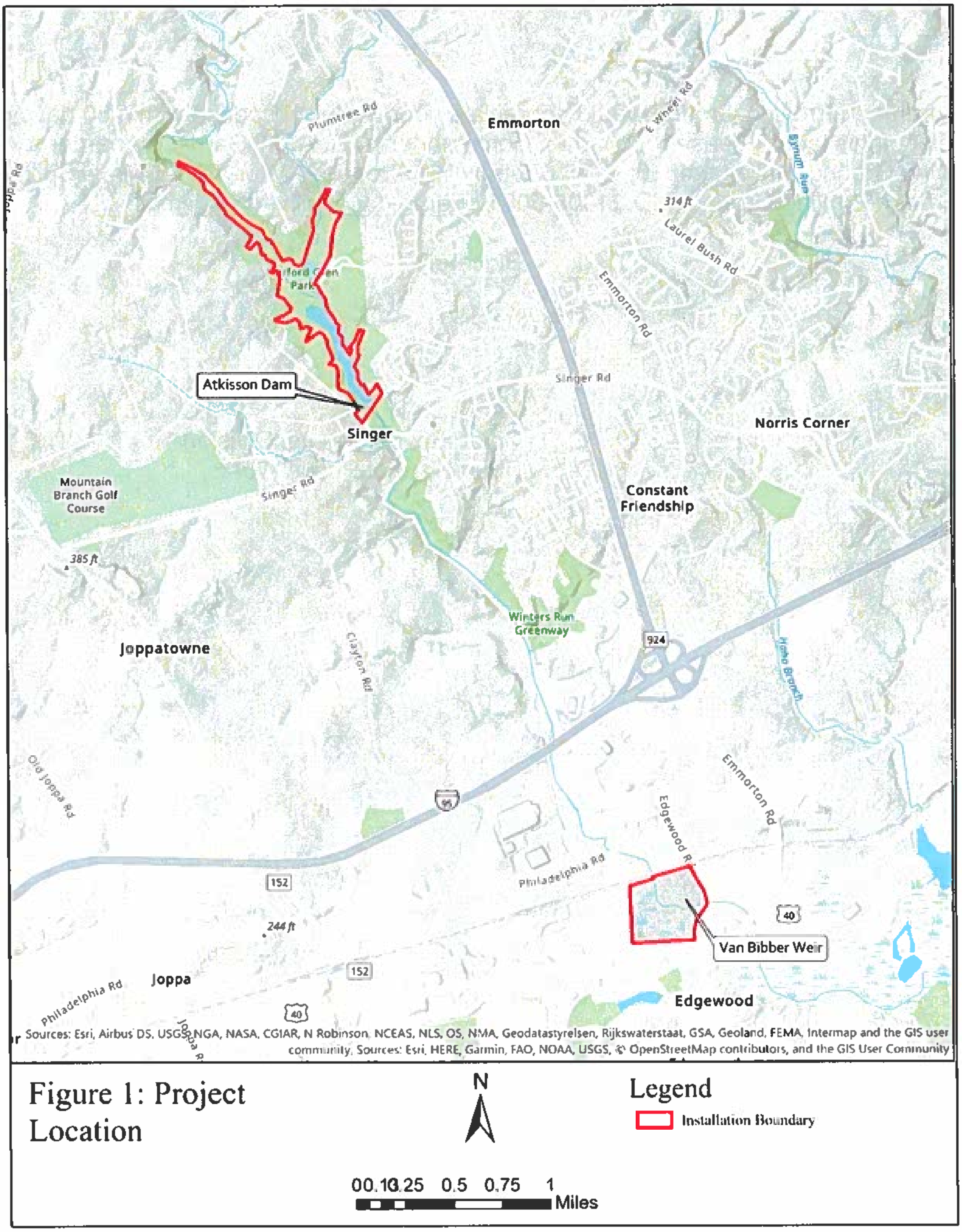

Figure 1: Project Location

Enclosure

DEPARTMENT OF THE ARMY
U.S. ARMY INSTALLATION MANAGEMENT COMMAND
U.S. ARMY GARRISON ABERDEEN PROVING GROUND
BUILDING 4510, 6429 BOOTHBY HILL AVENUE
ABERDEEN PROVING GROUND MARYLAND 21005-5001

Ms. Shannon Holsey, President
Stockbridge-Munsee Community Band of Mohican Indians
N8476 MohHeConNuck Road
Bowler, WI 54416-9464

Dear Ms. Holsey:

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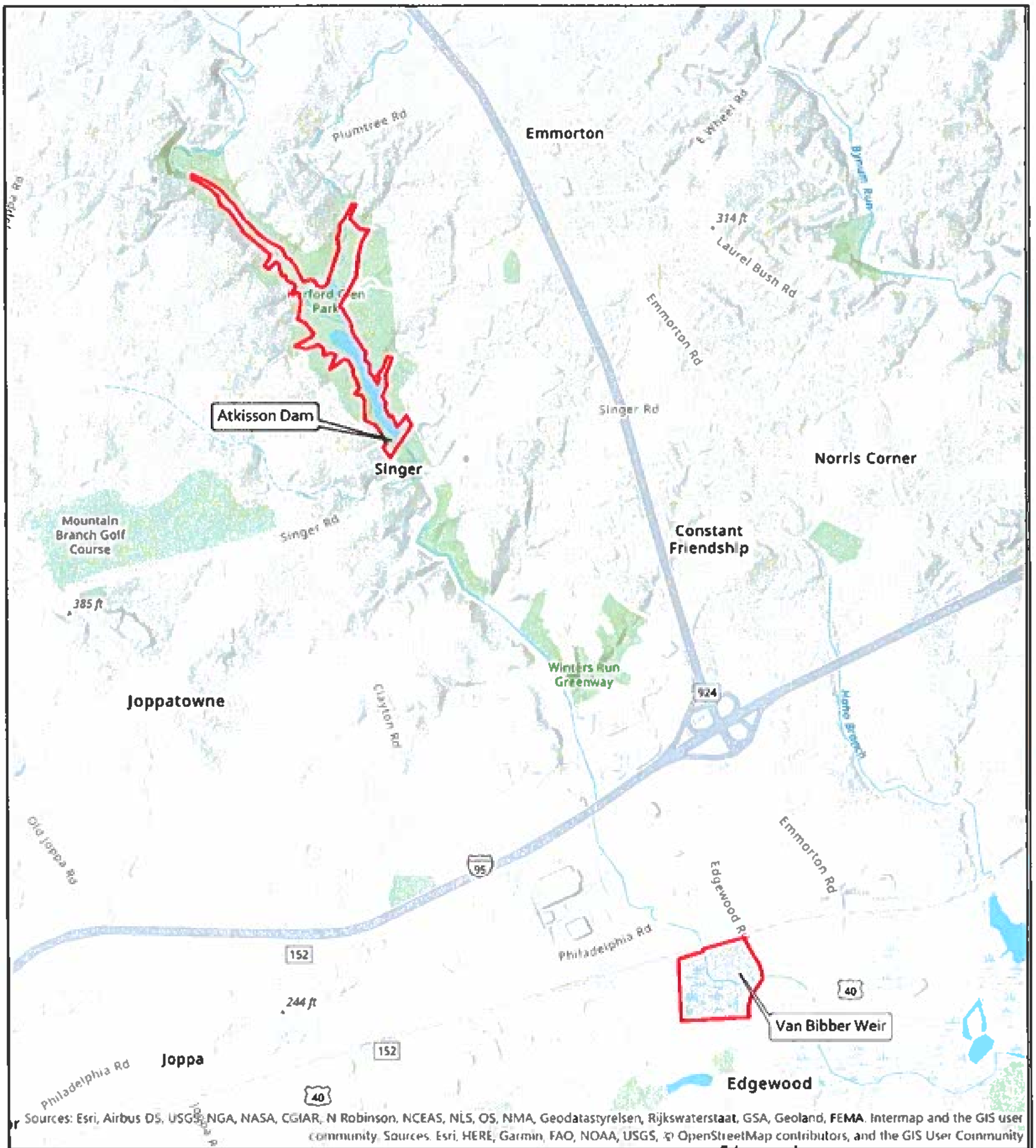
Sincerely,

Vance G. Hobbs
Chief, Environmental Division
Directorate of Public Works

Enclosure



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N

Legend

Installation Boundary

0 0.125 0.25 0.5 0.75 1 Miles

Enclosure

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U.S. ARMY INSTALLATION MANAGEMENT COMMAND
U.S. ARMY GARRISON ABERDEEN PROVING GROUND
BUILDING 4510, 6429 BOOTHBY HILL AVENUE
ABERDEEN PROVING GROUND MARYLAND 21005-5001

Ms. Bonney Hartley
Tribal Historic Preservation Officer
Stockbridge-Munsee Mohican Tribal NY Office
65 1st Street
Troy, NY 12180-4013

Dear Ms. Hartley:

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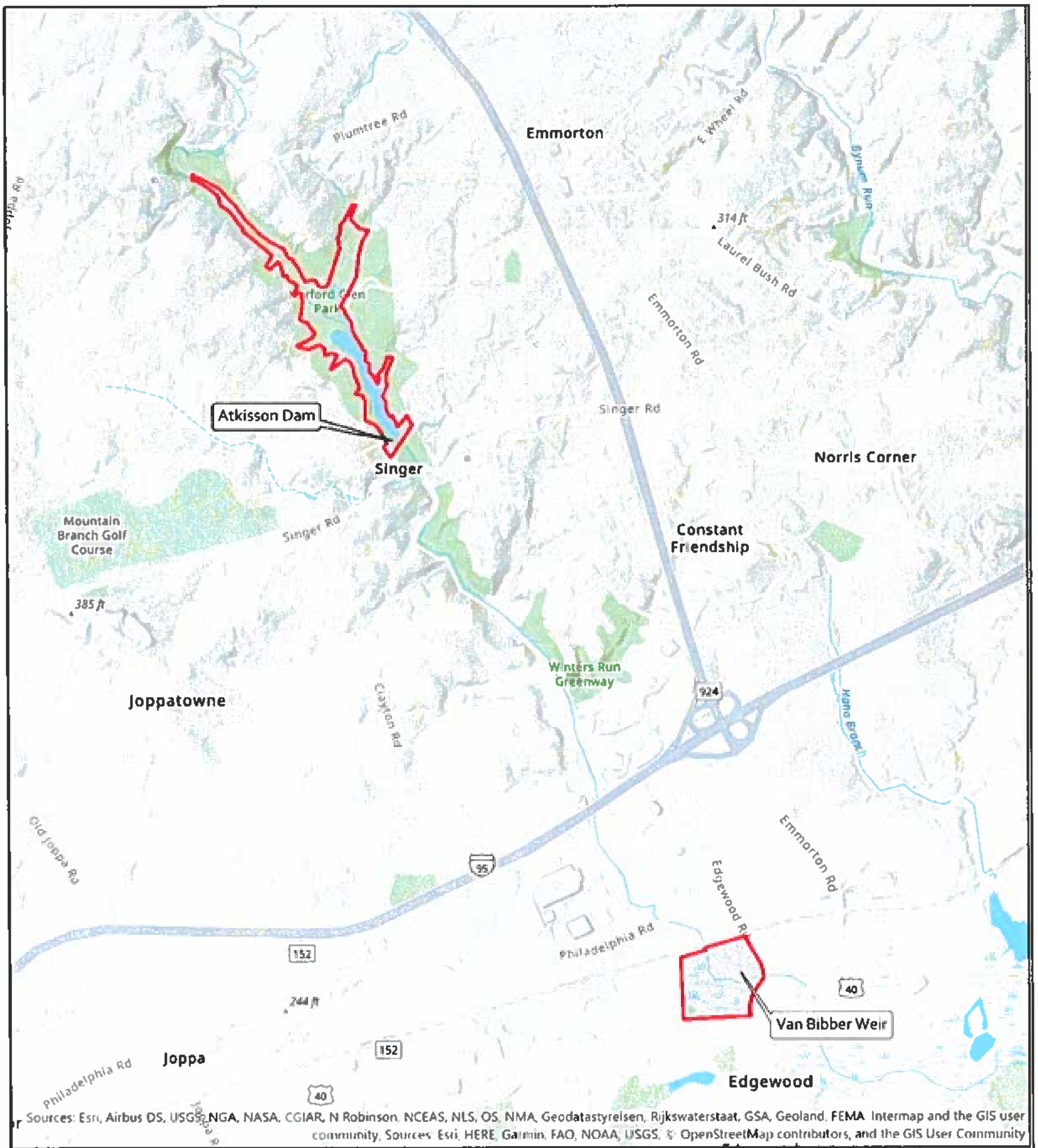
Sincerely,

for Ruid A Zadn

Vance G. Hobbs
Chief, Environmental Division
Directorate of Public Works

Enclosure



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N

Legend

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Enclosure

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U.S. ARMY GARRISON ABERDEEN PROVING GROUND
BUILDING 4510, 6429 BOOTHBY HILL AVENUE
ABERDEEN PROVING GROUND MARYLAND 21005-5001

Mr. Darwin Hall, Chief
Tonawanda Seneca Nation
7027 Meadville Road
Bascom, NY 14013-9749

Dear Mr. Hall:

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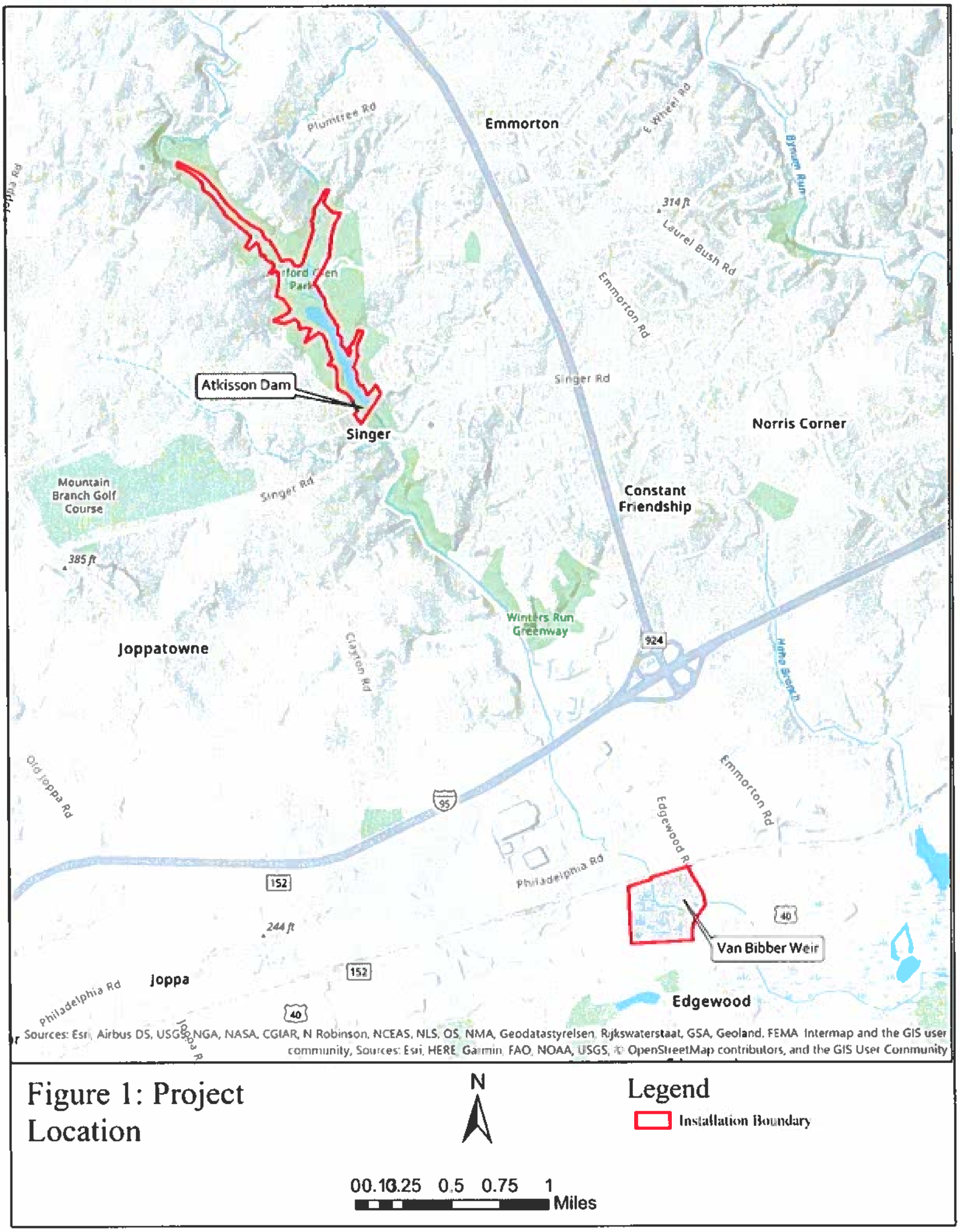
Sincerely,

for Rurich A Linden

Vance G. Hobbs
Chief, Environmental Division
Directorate of Public Works

Enclosure



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Enclosure

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U.S. ARMY GARRISON ABERDEEN PROVING GROUND
BUILDING 4510, 6429 BOOTHBY HILL AVENUE
ABERDEEN PROVING GROUND MARYLAND 21005-5001

Mr. Leo Henry, Chief
Tuscarora Nation
2006 Mt. Hope Road
Via Lewiston, NY 14092-9762

Dear Mr. Henry:

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Sincerely,

for Keith A Loden

Vance G. Hobbs
Chief, Environmental Division
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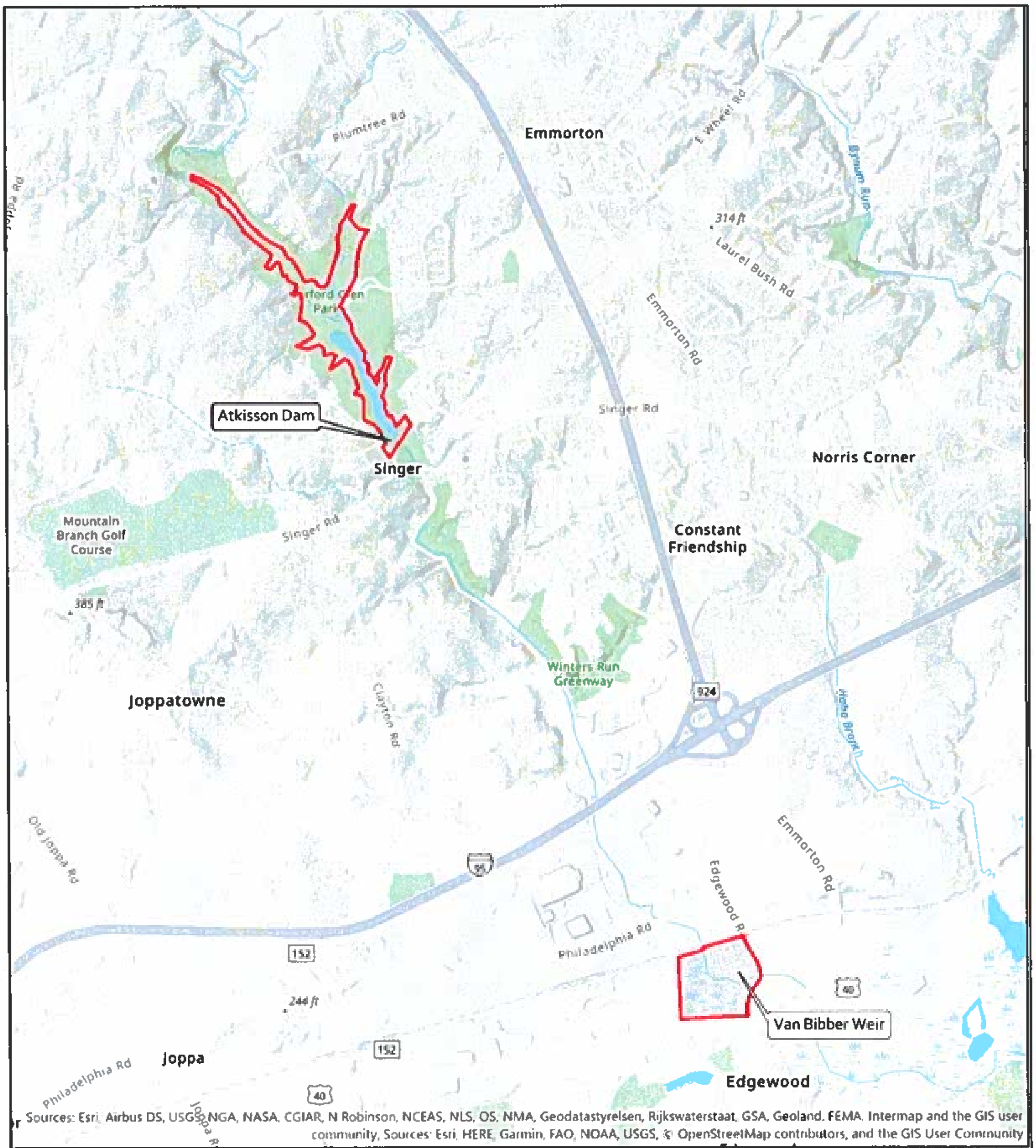
Enclosure



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Installation Boundary

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Enclosure

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U.S. ARMY INSTALLATION MANAGEMENT COMMAND
U.S. ARMY GARRISON ABERDEEN PROVING GROUND
BUILDING 4510, 6429 BOOTHBY HILL AVENUE
ABERDEEN PROVING GROUND MARYLAND 21005-5001

Mr. Neil Patterson, Jr.
Director of the Tuscarora Environmental Program
Tuscarora Nation
2045 Upper Mountain Road
Sanborn, NY 14132-9326

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Vance G. Hobbs
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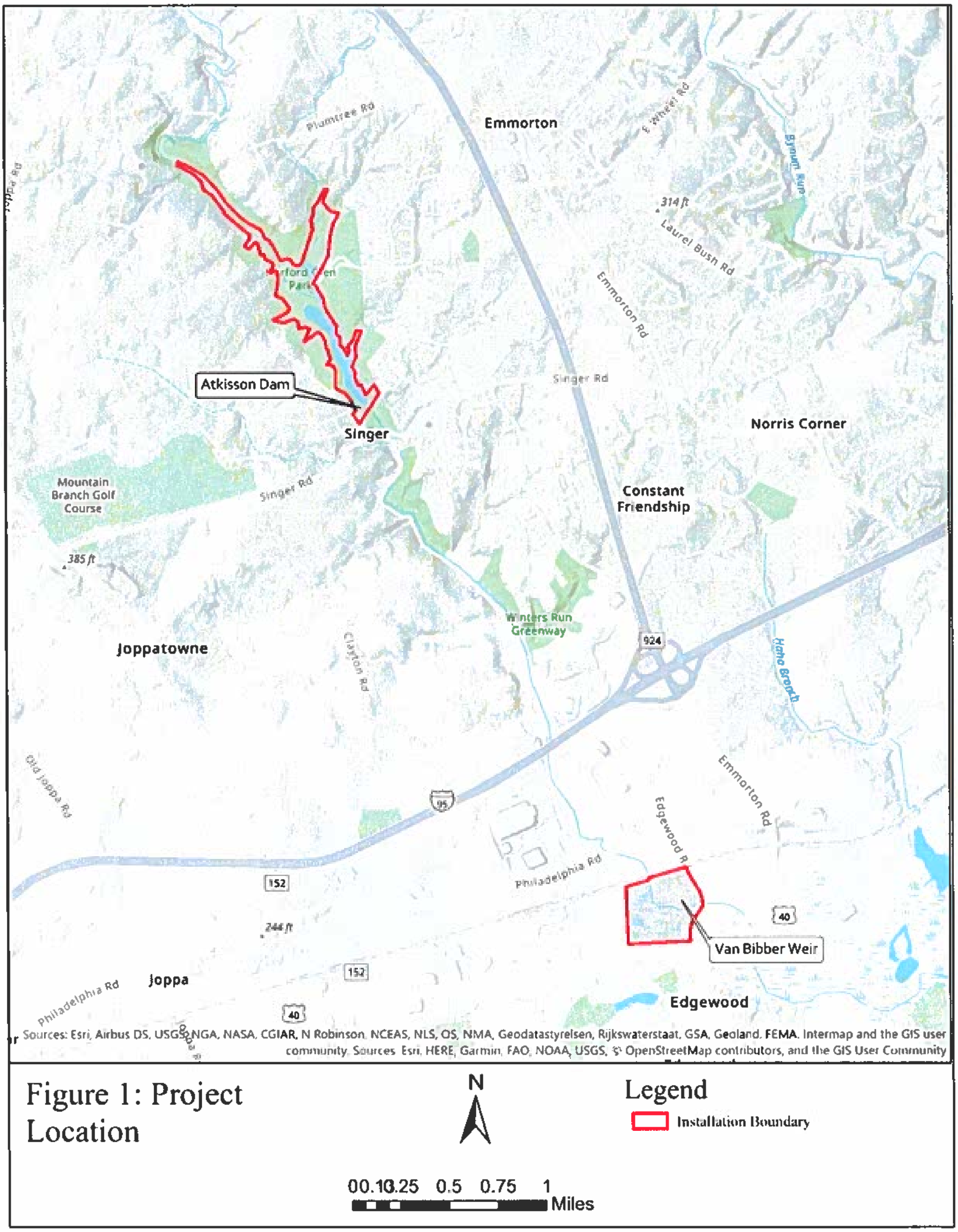

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ABERDEEN PROVING GROUND MARYLAND 21005-5001

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Tuscarora Nation
5226 Walmore Road
Via Lewiston, NY 14092-9733

Dear Mr. Printup:

The U.S. Army Garrison Aberdeen Proving Ground would like to initiate coordination with your Tribe for a new proposed undertaking, the removal of Atkisson Dam and Van Bibber Weir near Emmorton, MD, per Section 106 of the National Historic Preservation Act. Aberdeen Proving Ground is also preparing an Environmental Assessment for the proposed action, and would appreciate receiving your Tribe's early input to help identify issues for consideration regarding the proposed action.

The environmental assessment is being prepared pursuant to the National Environmental Policy Act of 1969 (42 United States Code, Section 4321 et seq.); the Council of Environmental Quality regulations that implement National Environmental Policy Act (40 Code of Federal Regulations 1500 to 1508); and Army Regulation 200-1, *Environmental Protection and Enhancement*, as promulgated in 32 Code of Federal Regulations 651, *Environmental Analysis of Army Actions*. This environmental assessment will analyze the potential impacts to the natural and human environment that could result from the full or partial removal of Atkisson Dam and Van Bibber Weir. The dam and weir are located along Winters Run, north of the Edgewood Area of Aberdeen Proving Ground, near Emmorton, MD (Figure 1). The area of potential effect for the undertaking will be those areas downstream and upstream that will be directly affected by the undertaking and those areas from which the undertaking will be visible.

The proposed action is to fully or partially remove Atkisson Dam and Van Bibber Weir. The proposed action is needed to eliminate the hazards to life and property that could accompany dam failure and to rectify the issue of sediment buildup that has started to degrade aquatic habitat in Winters Run. Additionally, the proposed action would bring the Army into compliance with Army Regulation 420-1, *Army Facilities Management*, by disposing of dams which are deemed excess to the needs of the Army. There are several courses of action being considered as part of the proposed action, including a quick draw down, a slow draw down that leaves accumulated sediments in place, and a slow draw down that leaves accumulated sediments in place and retains existing wetlands to the extent practicable.

Aberdeen Proving Ground has started to identify historic properties within the area of potential effect. The environmental assessment will consider potential impacts to cultural resources and historic properties from implementing the proposed action based on information compiled in the Aberdeen Proving Ground Final Integrated Cultural Resources Management Plan, July 2020; the Archaeological Survey of the Atkisson Dam and Van Bibber Weir Areas along Winters Run, February 2021; and a Determination of Eligibility for the Dam, Weir, and Water Treatment Plant, 5 March 2021.

Based on the Integrated Cultural Resources Management Plan, a total of 68 archaeological sites at Aberdeen Proving Ground have been assigned Maryland Archaeological Site Survey inventory numbers. None of these sites are expected to be impacted by the removal of Atkisson Dam and Van Bibber Weir, and no additional archaeological sites were identified during the February 2021 survey. The determination of eligibility for Atkisson Dam, Van Bibber Weir, and Water Treatment Plant (Inventory No. HA-2265) recommends that these facilities are not eligible for listing on the National Register of Historic Places. This determination of eligibility was submitted to the Maryland Historical Trust on November 9, 2020 and is currently under review. Pending concurrence by the Maryland Historical Trust with the determination of eligibility, no historic properties are expected to be impacted by this proposed action.

In the event that there is a discovery of any unreported archaeological resources or historic property (16 United States Code § 470aa et seq.), Native American sacred site and/or traditional cultural property, Aberdeen Proving Ground would implement its "accidental discovery" plan described in the Integrated Cultural Resources Management Plan to comply with the National Historic Preservation Act, Archaeological Resources Protection Act of 1979, Native American Graves Protection and Repatriation Act, American Indian Religious Freedom Act, 36 Code of Federal Regulations Part 79, and Executive Order 13007, *Indian Sacred Sites*. Under this plan, if prehistoric or historic artifacts that could be associated with Native American, early European, or American settlement are encountered at any time during activities in the proposed action, Aberdeen Proving Ground would cease all activities involving subsurface disturbance in the vicinity of the discovery until the APG Cultural Resources Manager, Maryland State Historic Preservation Officer, and selected Native American Tribes are contacted to properly identify and appropriately treat discovered items in accordance with applicable state and Federal law(s). Implementation of these measures would ensure that the proposed action would have "no adverse effect" on historic properties or cultural resources.

Aberdeen Proving Ground would appreciate your written response within 30 days of receipt of this letter. Please respond to: Commander, U.S. Army Garrison Aberdeen Proving Ground, Building 4510, 6429 Boothby Hill Avenue, AMIM-APP-E/Mr. O'Sullivan, Aberdeen Proving Ground, MD 21005-5001 or arnold.v.osullivan.civ@mail.mil.

Sincerely,

for Rich A Zador

Vance G. Hobbs
Chief, Environmental Division
Directorate of Public Works

Enclosure

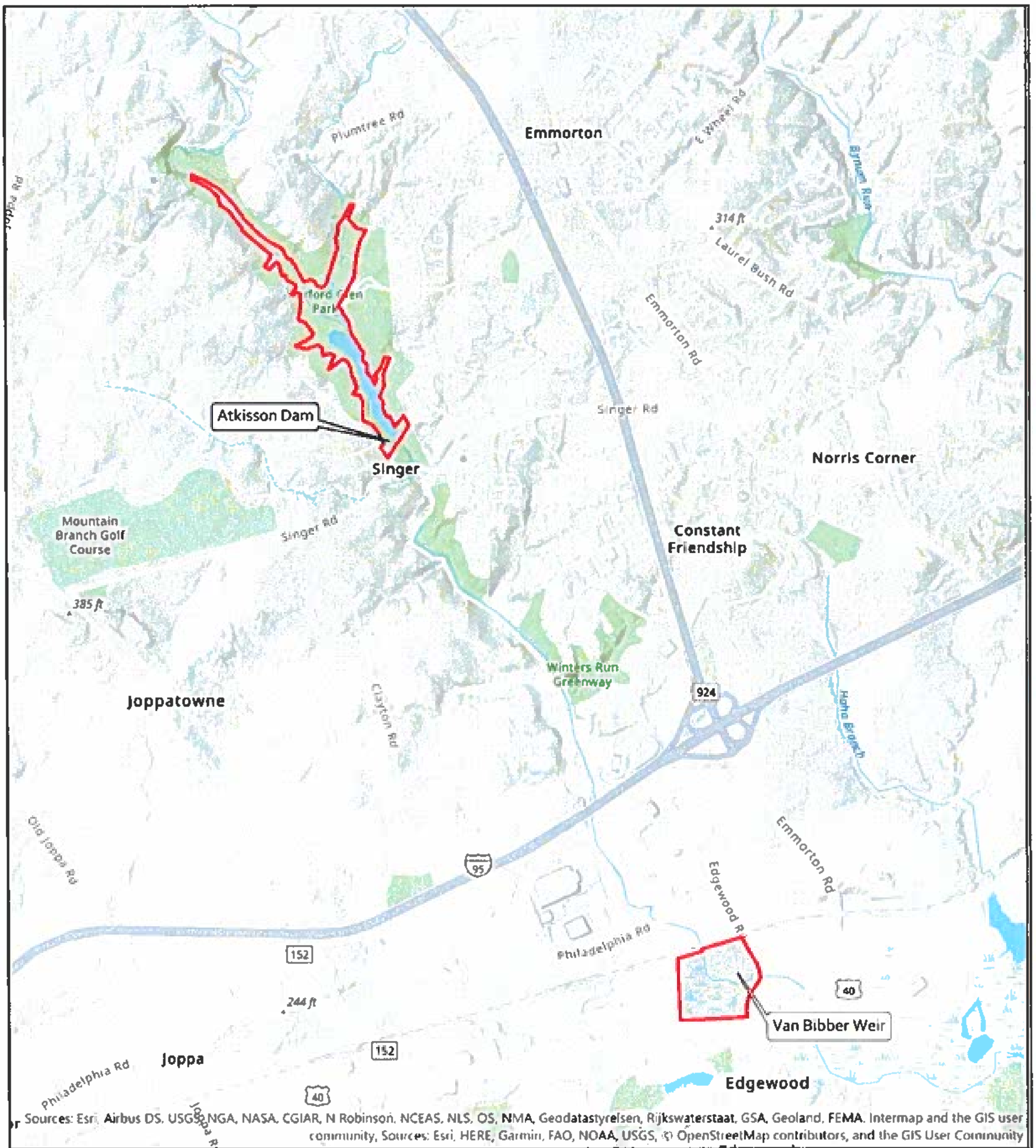


Figure 1: Project Location

N

Legend

Installation Boundary

00.10.25 0.5 0.75 1
Miles

Enclosure

From:	Falls, Eva E CIV USARMY CENAB (USA)
To:	Ramsey, Connie L CIV USARMY CENAB (USA); Franks, Maria M CIV USARMY CENAB (USA); Wetmore, Marisa L CIV USARMY CENAB (USA)
Subject:	FW: Re: MHT review of Atkisson Dam report
Date:	Monday, January 25, 2021 7:57:45 AM

FYSA

From: Dixie Henry -MDP- <dixie.henry@maryland.gov>
Sent: Friday, January 22, 2021 1:20 PM
To: Paula Bienenfeld <pbienenfeld@marstel-day.com>; Falls, Eva E CIV USARMY CENAB (USA) <Eva.E.Falls@usace.army.mil>
Subject: [Non-DoD Source] Re: MHT review of Atkisson Dam report

Hi Paula!

Thank you for providing the Maryland Historical Trust (MHT) with a copy of the report detailing the results of the Phase I archeological survey of the Atkisson Dam and Van Bibber Weir areas in Harford County. The study was carried out in compliance with Section 110 of the National Historic Preservation Act and to identify any archeological sites that could be impacted by the potential future removal of the dam and weir - both owned by the U.S. Army Garrison, APG, and both located along Winters Run. We have reviewed the document and are writing to provide the following comments and recommendations regarding potential effects on historic properties.

The Phase I report was prepared and submitted to our office by Marstel-Day, LLC on behalf of the U.S. Army Corps of Engineers, Baltimore District. The document, "Archaeological Survey of the Atkisson Dam and Van Bibber Weir Areas Along Winters Run, Harford County, Maryland" (Bienenfeld 2020*)* is consistent with the reporting requirements of the *Standards and Guidelines for Archeological Investigations in Maryland* (Shaffer and Cole 1994) and presents the necessary documentation on the goals, methods, results, and recommendations of the Phase I investigation that has been conducted within the project area.

The Phase I survey was carried out during July 20-22, 2020 and consisted of both a systematic walkover and the excavation of 30 shovel test pits.
Although the potential for archeological deposits had been anticipated given the project area's location along a river and its proximity to previously identified sites, the survey failed to identify any significant archeological resources. Based on the documentation presented in the Phase I report, we concur that the survey area possesses no archeological research potential and that further archeological investigations are not warranted for this project area.

The archeological survey work that has been conducted in the Atkisson Dam and Van Bibber Weir areas has generated important information regarding the presence of historic properties, and we appreciate the conscientious efforts that have been made to recover this information. If you have any questions or require further information, please do not hesitate to contact me at dixie.henry@maryland.gov. Thank you for providing us with this opportunity to comment.

- Dixie Henry

Dixie L. Henry, Ph.D.

Preservation Officer, Project Review and Compliance

Maryland Historical Trust

Maryland Department of Planning

100 Community Place

Crownsville, MD 21032

dixie.henry@maryland.gov/ 410-697-9553

mht.maryland.gov

Please take our customer service survey.

***Please note that email is currently the best means of contact, as MHT's Project Review and Compliance staff are largely teleworking at this time. To check on the status of a project submittal, please use our online search:** https://mht.maryland.gov/compliancelog/ComplianceLogSearch.aspx.

On Fri, Jan 15, 2021 at 10:33 AM Paula Bienenfeld <pbienenfeld@marstel-day.com> wrote:

> Hi Dixie,
> Thanks for getting back to me. Good timing on my part! I'll look for the comments,
> Hope you are staying well,
> Paula
>
> Paula Bienenfeld, Ph.D.
> Senior Cultural Resources Manager
> P: 540-395-7168
> pbienenfeld@marstel-day.com
>
> Marstel-Day, LLC
> 701 Kenmore Avenue
> Suite 220
> Fredericksburg, VA 22401

Wash your hands. Wear a mask.

From: Dixie Henry -MDP- <dixie.henry@maryland.gov>
Sent: Friday, January 15, 2021 9:47 AM
To: Paula Bienenfeld <pbienenfeld@marstel-day.com>
Subject: MHT review of Atkisson Dam report

Hi Paula! I hope things are well with you! Beth forwarded your inquiry to me regarding the above-referenced report, and I wanted to let you know that I am actually in the process of reviewing that report right now. I should have comments for you by this afternoon or Tuesday. FYI - it is MHT log # 202004563. For some reason, the project name was not entered into our database when it was assigned its log number, which is why it didn't show up when you searched for it....

Please let me know if you have any questions --

- Dixie Henry

Dixie L. Henry, Ph.D.

Preservation Officer, Project Review and Compliance

Maryland Historical Trust

Maryland Department of Planning

100 Community Place

Crownsville, MD 21032

dixie.henry@maryland.gov/ 410-697-9553

mht.maryland.gov

Please take our customer service survey.

***Please note that email is currently the best means of contact, as MHT's Project Review and Compliance staff are largely teleworking at this time.**
To check on the status of a project submittal, please use our online

search: https://mht.maryland.gov/compliancelog/ComplianceLogSearch.aspx.

Barry Glassman
HARFORD COUNTY EXECUTIVE

Billy Boniface
DIRECTOR OF ADMINISTRATION

Bradley F. Killian
DIRECTOR OF PLANNING & ZONING

August 13, 2021

MEMORANDUM

TO: Julie Mackert, Environmental Health
Jeff Schoenberger, Environmental Services
Joel Gallihue, Planning and Zoning

FROM: Jennifer Freeman, Planning and Zoning

RE: MD STATE CLEARINGHOUSE REVIEW – ID# 20210809-0656
Pre-Environmental Assessment Public Notice: Seeking Early Input for the Proposed Action to Remove Atkisson Dam and Van Bibber Weir located along Winters Run north of U.S. Army Garrison Aberdeen Proving Ground (APG) - Edgewood Area near Emmorton, Maryland

We received a request for comments on the above referenced project by the Maryland State Clearinghouse. Please check one response on behalf of your agency, and return this form and any comments to me no later than **September 3, 2021**. The document to be reviewed can be accessed on the internet at **https://apps.planning.maryland.gov/EMIRC_Files/MD20210809-0656.zip .**If you are unable to complete the review by the referenced date, or if you believe the application should be reviewed by any other agency, please let me know as soon as possible. Thank you.

___ __1. This project is consistent with our plans, programs and objectives.

_____2. This project is generally consistent with our plans, programs and objectives, but the attached qualifying comments are submitted for consideration.

___X__3. This project is generally consistent with our plans, programs and objectives *contingent* upon certain actions being taken as noted in the attached comments.

_____4. This project is not consistent and raises problems concerning compatibility with our plans, programs and objectives.

_____5. Additional information is requested to complete the review. The information needed is identified in the attached comments.

Brief Comments: Please see attached.

Signature: ______________________ Title: Chief of Long Range Planning

Agency: Department of Planning and Zoning Date: August 17, 2021

BARRY GLASSMAN
HARFORD COUNTY EXECUTIVE

JENNY B. JARKOWSKI
DIRECTOR OF PLANNING & ZONING

August 18, 2021

USAGAPG/Department of the Army
AMIM-APP-E c/o Arnold O'Sullivan
Building 4304, 6504 Rodman Road, 3rd Floor Suite B
APG Maryland 21005-5001;

Re: Environmental Assessment for the Removal of Atkisson Dam and Van Bibber Weir at APG

Mr. O'Sullivan:

The Harford County Department of Planning and Zoning will assist the Department of the Army or their designees with the Environmental Assessment. The following are noted:

- Removal of the dam and weir may impact county plans for paths or other amenities. Matters for coordination include drawdown staging, wetland remediation, and property ownership as well as construction staging.
- A MIHP/DOE Form is being prepared to document the Atkisson Dam and Van Bibber Weir (HA-2265). These facilities have association with World War II, the Cold War the effects of APG on Harford County. Other Harford County Historic Landmarks for inclusion in the EA include:
    - Harford Glen/Glen Echo Farm (HA-699-702)
    - Ring Factory Road Bridge/Iron Truss Bridge #54 (HA-1038)
    - Whitaker Mill (HA-1117)
    - Whitaker Mill Road Bridge/Harford County Bridge #51 (HA-1237)
- Maryland state geographic data indicates there are ecologically significant areas in the vicinity of the reservoir, dam, and weir.
- Harford County Department of Public Works has invested in stream restoration of Lower Wheel Creek, a tributary to the Atkisson Reservoir.

Thank you for your cooperation.

Sincerely,

Joel Gallihue
Chief, Long Range Planning Section

August 24, 2021

Ms. Sonja Ehrhardt
Directorate of Public Works
Environmental Division
Building 4304 - Aberdeen Proving Ground
Aberdeen Proving Ground MD 21005

Dear Ms. Ehrhardt:

Thank you for providing the Maryland Department of Transportation State Highway Administration (MDOT SHA) the opportunity to comment on the Environmental Assessment (EA) for the removal of Atkisson Dam and Van Bibber Weir at Aberdeen Proving Ground. The MDOT SHA submits the following comments regarding possible issues related to the removal of Atkisson Dam and Van Bibber Weir near Emmorton.

- The MDOT SHA requests the opportunity to review highway hydraulics analyses for full or partial removal of Atkisson Dam and Van Bibber Weir to assess potential impacts to MD 7 (Philadelphia Road), MD 24 (Emmorton Road), and US 40 (Pulaski Highway) Winters Run crossings, including within the US 40 interchange at MD 24. Please coordinate review with Dana Havlik, P.E., MDOT SHA Highway Hydraulics Chief, at 410-545-8418 or via email at dhavlik@mdot.maryland.gov.

- The MDOT SHA recommends full removal of sediments through dredging to avoid impacts to MDOT SHA roadways. Increased Winters Run sedimentation downstream of Atkisson Dam from the proposed sediment release, especially downstream of US 40 where the flow loses sediment transport capacity, likely will increase the frequency flooding of US 40 and possibly MD 24, MD 755 (Edgewood Road), and MD 7, all a relatively short distance upstream of US 40. For more information, please contact Andrzej Kosicki, P.E., MDOT SHA Structure Hydrology and Hydraulics Chief, at 410-545-8340 or via email at akosicki@mdot.maryland.gov.

- The MDOT SHA requests review of plans for the removal of Van Bibber Weir to evaluate potential impacts to an MDOT SHA wetland mitigation site located directly east of the weir (map attached). The removal of the weir possibly could affect the hydrology of the mitigation site. Please coordinate this review with Ms. Harmony Miller, MDOT SHA Environmental Program Chief, at 410-545-8617 or via email at hmiller1@mdot.maryland.gov.

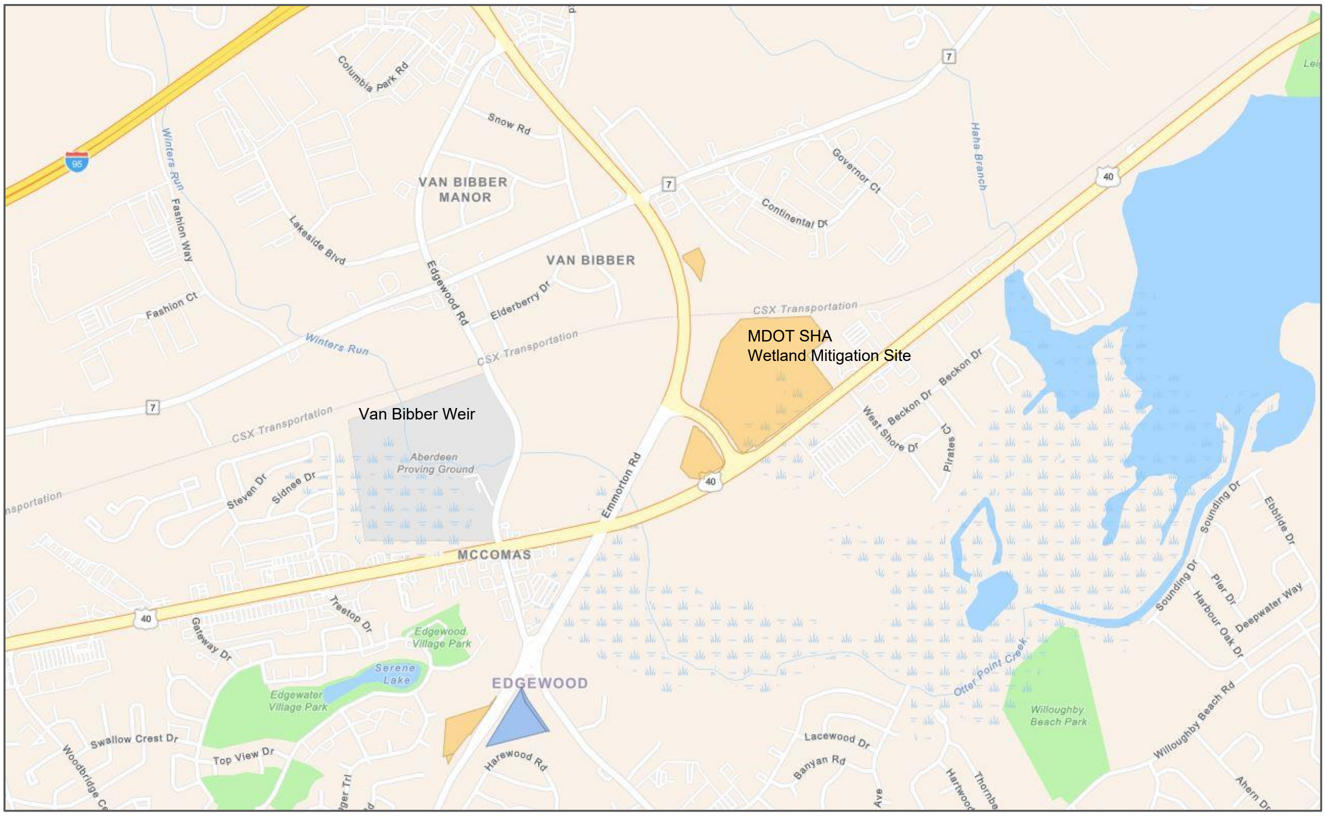
Thank you again for the opportunity to comment on the EA for the removal of the Atkisson Dam and Van Bibber Weir. If you have any additional questions or concerns, please contact Ms. Lisa Minnick Sirota, MDOT SHA Regional Planner, at 410-545-5550 or via email at lsirota@mdot.maryland.gov. Ms. Sirota will be happy to assist you.

Sincerely,

Matt Baker

Matt Baker
Chief
Regional and Intermodal Planning Division (RIPD)

Attachment
cc: Dana Havlik, P.E., Chief, Highway Hydraulics Division, MDOT SHA
Andrzej Kosicki, P.E., Chief, Structure Hydrology and Hydraulics Division, MDOT SHA
Ms. Harmony Miller, Chief, Environmental Program Division, MDOT SHA
Ms. Lisa Minnick Sirota, Regional Planner, RIPD, MDOT SHA



MDOT SHA
Wetland Mitigation Site
Van Bibber Weir
VAN BIBBER MANOR
VAN BIBBER
MCCOMAS
EDGEWOOD
Aberdeen Proving Ground
CSX Transportation
Winters Run
Haha Branch
Otter Point Creek
Edgewood Rd
Emmorton Rd
Columbia Park Rd
Snow Rd
Lakeside Blvd
Fashion Way
Fashion Ct
Elderberry Dr
Governor Ct
Continental Dr
West Shore Dr
Beckon Dr
Pirates Ct
Steven Dr
Sidnee Dr
Treetop Dr
Gateway Dr
Edgewood Village Park
Serene Lake
Edgewater Village Park
Swallow Crest Dr
Top View Dr
Harewood Rd
Lacewood Dr
Banyan Rd
Willoughby Beach Park
Willoughby Beach Rd
Sounding Dr
Pier Dr
Harbour Oak Dr
Deepwater Way
Ebbtide Dr

From: Traver, Carrie <Traver.Carrie@epa.gov>
Sent: Friday, September 3, 2021 11:27 AM
To: O'Sullivan, Arnold Victor JR CIV USARMY ID-SUSTAINMENT (USA) <arnold.v.osullivan.civ@mail.mil>
Cc: Nevshehirlian, Stepan <Nevshehirlian.Stepan@epa.gov>; Ehrhardt, Sonja M CTR USARMY ID-SUSTAINMENT (USA) <sonja.m.ehrhardt.ctr@mail.mil>
Subject: [Non-DoD Source] Atkisson Dam and Van Bibber Weir Public Notice - EA Scoping

All active links contained in this email were disabled. Please verify the identity of the sender, and confirm the authenticity of all links contained within the message prior to copying and pasting the address to a Web browser.

Good morning:

Thank you for providing the public notice that indicated an Environmental Assessment (EA) is being prepared to evaluate impacts associated with the removal of Atkisson Dam and Van Bibber Weir. The dam and weir are located along Winters Run, north of Aberdeen Proving Ground (APG)-Edgewood Area near Emmorton, Maryland.

The Proposed Action is to fully or partially remove Atkisson Dam and Van Bibber Weir. There are several courses of action being considered as part of the Proposed Action, including a quickdraw down, a slow draw down that leaves accumulated sediments in place, and a slow draw down that leaves sediments in place and retains existing wetlands to the extent practicable.

EPA supports restoration of the natural lotic conditions and aquatic habitat by removal of dams and other obstructions. We also support wetland retention to the extent possible and encourage actions that would restore or create additional wetlands adjacent to the stream channels.

We have several recommendations for your consideration in the development of the EA in compliance with the National Environmental Policy Act (NEPA) of 1969, the CEQ regulations implementingNEPA (40 CFR 1500-1508) and Section 309 of the Clean Air Act.

<u>Water Quality</u>
We recommend that the EA discuss the water quality and physical habitat impairments in Winters Run, upstream, and downstream, and discuss how the dam and weir contribute to the degraded conditions. We note that discussion of resource issues may not only be appropriate for evaluation of impacts but also may support the purpose and need.

<u>Biological Resources</u>
The area surrounding the dam largely appears to be forested. The Study would benefit from an assessment of temporary or permanent impacts associated with construction, including expected vegetation clearing for access or staging areas and temporal loss of resources. We recommend minimizing tree clearing and other construction impacts. It would be helpful to detail expected restoration of areas, including plans for replanting.

While we understand that the EA will include evaluation of habitat for listed threatened and endangered species, we recommend consideration of potential impacts on Forest Interior Dwelling Species, and Birds of Conservation Concern from clearing or habitat conversion. Time of year restrictions for construction or other measures may also be appropriate to reduce impacts on nesting, breeding, migration, or other sensitive life stages.

We recommend that the Study describe expected shifts in faunal communities including benthos and fish. We recommend evaluating the potential for vernal pools or other amphibian breeding habitat that could be impacted by construction or by changes in hydrology. We suggest the Study address the potential restoration of fish passage in light of other obstructions in the watershed.

<u>Aquatic Resources</u>
The EA should discuss the existing extent of wetlands and types and evaluate likely temporary and permanent impacts (e.g., changes in hydrology resulting in vegetative community shifts). If impacts may occur, we also recommend describing expected best management practices to minimize impacts (use of mats or pads, etc.)

To address water quality, habitat, and aquatic resource impacts, we recommend including a discussion of specific restoration actions (to the extent known at this time). Relevant information includes restoration goals, in-stream and upland sediment controls, construction access, planting plans, etc.

We support development of a monitoring and adaptive management plan to ensure that the restoration area is meeting the goals for the Proposed Action and is not contributing excess sediment downstream or creating instability in stream reaches.

<u>Invasive Species</u>
We recommend that invasive species presence in the Study area be evaluated, and that an invasive species management plan be developed.

<u>Contamination</u>
We recommend addressing the potential for sediments to be contaminated and whether any sediment testing or characterization has occurred or is planned.

The EA should describe known or likely contamination in the vicinity of the Proposed Action and assess any potential effects that may occur. The discussion should indicate any ongoing or planned remediation actions and site investigations. If appropriate, we recommend listing actions that may be taken to prevent the potential mobilization of contaminants.

<u>Air Quality</u>
A general conformity rule analysis should be conducted according to the guidance provided in Determining Conformity of General Federal Actions to State or Federal Implementation Plans. We recommend including any calculations as an appendix.

Climate Change and Resilience
We recommend that the EA address resiliency of the project in light of climate-related impacts such as more frequent and strong storms. As noted above, we recommend monitoring and adaptive management to ensure restoration is resilient and fully successful.

Health and Safety
We suggest that the EA address potential safety considerations from the existing dam and weir or from the potential failure of these structures.

Recreation
We recommend including a discussion of any expected temporary or permanent negative or beneficial impacts on recreation, such as fishing, trails, or recreational facility access.

Thank you for allowing us to provide comments for your consideration in the development of the Study. We would welcome the opportunity to discuss the project. Please feel free to contact me at 215-814-2772 or traver.carrie@epa.gov < Caution-mailto:%20traver.carrie@epa.gov > .

Have a great holiday weekend!
Carrie

Carrie Traver
Life Scientist
Office of Communities, Tribes, & Environmental Assessment
U.S. Environmental Protection Agency, Region 3
1650 Arch Street – 3RA12
Philadelphia, PA 19103
215-814-2772
traver.carrie@epa.gov < Caution-mailto:traver.carrie@epa.gov >

CLASSIFICATION: UNCLASSIFIED

From: thpo <thpo@mohican-nsn.gov>
Sent: Tuesday, September 7, 2021 3:26 PM
To: O'Sullivan, Arnold Victor JR CIV USARMY ID-SUSTAINMENT (USA) <arnold.v.osullivan.civ@mail.mil>
Subject: [Non-DoD Source] Atkisson Dam and Van Bibber Weir

All active links contained in this email were disabled. Please verify the identity of the sender, and confirm the authenticity of all links contained within the message prior to copying and pasting the address to a Web browser.

Mr. O'Sullivan,

Good afternoon. Thank you for requesting comments from the Stockbridge-Munsee Community Tribal Historic Preservation Office. We have reviewed the documents associated with the Atkisson Dam and Van Bibber Weir in Emmerton, MD. We have the following coments.

- The SMC THPO defer comment on the proposed Atkisson Dam and Van Bibber Weir projects as Emmerton, MD falls outside of our area-of-interest. We ask to be removed from future project notifications.

For your records, the SMC THPO asks that all future consultation requests and associated project documents be sent electronically thpo@mohican-nsn.gov. If you can please remove Ms. Shannon Holsey from your contact list and direct all correspondence to me as the Tribal Historic Preservation Officer.

Should you need to contact me directly, please see below my direct office contact information.

Thank you,
Nathan

Nathan Allison
Tribal Historic Preservation Officer & Archaeologist
Stockbridge-Munsee Mohican Tribal Historic Preservation
Extension Office
86 Spring Street
Williamstown, MA 01267
(413) 884-6029
nathan.allison@mohican-nsn.gov
Visit our FAQ page: https://www.mohican.com/cultural-affairs/faq/
Pronouns: He/Him

Stockbridge-Munsee Mohican Tribal Historic Preservation
Extension Office
86 Spring Street

Williamstown, MA 01267
(413) 884-6029
thpo@mohican-nsn.gov
www.mohican-nsn.gov

September 10, 2021

Mr. Arnold O'Sullivan, Directorate of Public Works, Environmental Division
U.S. Army Garrison, Aberdeen Proving Ground
IMAP-PWE
6504 Rodman Road, Building 4304
3rd Floor, Suite B
Aberdeen Proving Ground, MD 21005-5001

STATE CLEARINGHOUSE RECOMMENDATION

State Application Identifier: MD20210809-0656
Applicant: U.S. Army Garrison, Aberdeen Proving Ground
Project Description: Pre-Environmental Assessment Public Notice: Seeking Early Input for the Proposed Action to Remove Atkisson Dam and Van Bibber Weir located along Winters Run, North of U.S. Army Garrison Aberdeen Proving Ground (APG)—Edgewood Area near Emmorton, Maryland
Project Address: Aberdeen Proving Ground, Atkisson Dam and Van Bibber Weir, Emmorton and Edgewood, MD 21085
Project Location: Harford County
Recommendation: **Consistent with Qualifying Comments and Contingent Upon Certain Actions**

Dear Mr. O'Sullivan:

In accordance with Presidential Executive Order 12372 and Code of Maryland Regulation 34.02.02.04-.07, the State Clearinghouse has coordinated the intergovernmental review of the referenced project. This letter constitutes the State process review and recommendation.

Review comments were requested from the Maryland Departments of General Services, Natural Resources, Transportation, and the Environment; the Maryland Military Department; Harford County; and the Maryland Department of Planning, including the Maryland Historical Trust.

The Maryland Departments of General Services, and Transportation; and the Maryland Military Department found this project to be consistent with their plans, programs, and objectives.

The Maryland Department of Planning found this project to be generally consistent with their plans, programs, and objectives, but included the following qualifying comments: "The Van Bibber Weir appears to be located within the Critical Area Boundary. However, the designation on the Harford County Critical Area Boundary Map is Federal Land. The Critical Area staff should be consulted to determine any applicability with Critical Area Program compliance."

The Maryland Department of the Environment (MDE) found this project to be generally consistent with their plans, programs, and objectives, but included certain qualifying comments summarized below.

1. “If the applicant suspects that asbestos is present in any portion of the structure that will be renovated/demolished, then the applicant should contact the Community Environmental Services Program, Air and Radiation Management Administration at (410) 537-3215 to learn about the State's requirements for asbestos handling.
2. Construction, renovation and/or demolition of buildings and roadways must be performed in conformance with State regulations pertaining to ‘Particulate Matter from Materials Handling and Construction’ (COMAR 26.11.06.03D), requiring that during any construction and/or demolition work, reasonable precaution must be taken to prevent particulate matter, such as fugitive dust, from becoming airborne.
3. During the duration of the project, soil excavation/grading/site work will be performed; there is a potential for encountering soil contamination. If soil contamination is present, a permit for soil remediation is required from MDE's Air and Radiation Management Administration. Please contact the New Source Permits Division, Air and Radiation Management Administration at (410) 537-3230 to learn about the State's requirements for these permits.
4. Any solid waste including construction, demolition and land clearing debris, generated from the subject project, must be properly disposed of at a permitted solid waste acceptance facility, or recycled if possible. Contact the Solid Waste Program at (410) 537-3315 for additional information regarding solid waste activities and contact the Resource Management Program at (410) 537-3314 for additional information regarding recycling activities.
5. The Resource Management Program should be contacted directly at (410) 537-3314 by those facilities which generate or propose to generate or handle hazardous wastes to ensure these activities are being conducted in compliance with applicable State and federal laws and regulations. The Program should also be contacted prior to construction activities to ensure that the treatment, storage or disposal of hazardous wastes and low-level radioactive wastes at the facility will be conducted in compliance with applicable State and federal laws and regulations.”

The Maryland Historical Trust stated that their finding of consistency is contingent upon the applicant's completion of the review process required under Section 106 of the National Historic Preservation Act, as follows: “Contingent on completion of Section 106 consultation.”

The Maryland Department of Natural Resources (DNR) stated that their finding of consistency is contingent upon the applicant taking the following action: “Project is subject to MD CZMA [Coastal Zone Management Area] Federal Consistency Review - please submit for review.”

Harford County stated that their finding of consistency is contingent upon the applicant taking the following actions: “Consult with MDE and/or DNR as needed to obtain permits and approvals prior to starting work.” Two comment letters from Harford County Department of Planning & Zoning and Department of Public Works—Environmental Services are enclosed below.

The State Application Identifier Number <u>must</u> be placed on any correspondence pertaining to this project.

Please remember, you must comply with all applicable state and local laws and regulations. If you need assistance or have questions, contact the State Clearinghouse staff person noted above at 410-767-4490 or through e-mail at sylvia.mosser@maryland.gov.

Thank you for your cooperation with the MIRC process.

Sincerely,

Jason Dubow, Manager
Resource Conservation and Management

MB:SM
Enclosure—Comment letters from Harford County Department of Planning & Zoning and Department of Public Works—Environmental Services
cc:

Tanja Rucci - DGS	Amanda Redmiles - MDE	Kirk Yaukey - MILT	David Dahlstrom - MDPLU
Ian Beam - MDOT	Tony Redman - DNR	Jennifer Freeman - HRFD	Beth Cole - MHT

21-0656_CRR.CLS.docx

BARRY GLASSMAN
HARFORD COUNTY EXECUTIVE

BILLY BONIFACE
DIRECTOR OF ADMINISTRATION

HARFORD COUNTY MARYLAND
AT THE RISQUE OF OUR LIVES AND FORTUNES 1773

BRADLEY F. KILLIAN
DIRECTOR OF PLANNING & ZONING

August 13, 2021

MEMORANDUM

TO: Julie Mackert, Environmental Health
Jeff Schoenberger, Environmental Services
Joel Gallihue, Planning and Zoning

FROM: Jennifer Freeman, Planning and Zoning

RE: MD STATE CLEARINGHOUSE REVIEW – ID# 20210809-0656
Pre-Environmental Assessment Public Notice: Seeking Early Input for the Proposed Action to Remove Atkisson Dam and Van Bibber Weir located along Winters Run north of U.S. Army Garrison Aberdeen Proving Ground (APG) - Edgewood Area near Emmorton, Maryland

We received a request for comments on the above referenced project by the Maryland State Clearinghouse. Please check one response on behalf of your agency, and return this form and any comments to me no later than **September 3, 2021**. The document to be reviewed can be accessed on the internet at **https://apps.planning.maryland.gov/EMIRC_Files/MD20210809-0656.zip** .If you are unable to complete the review by the referenced date, or if you believe the application should be reviewed by any other agency, please let me know as soon as possible. Thank you.

_____1. This project is consistent with our plans, programs and objectives.

_____2. This project is generally consistent with our plans, programs and objectives, but the attached qualifying comments are submitted for consideration.

___X__3. This project is generally consistent with our plans, programs and objectives *contingent* upon certain actions being taken as noted in the attached comments.

_____4. This project is not consistent and raises problems concerning compatibility with our plans, programs and objectives.

_____5. Additional information is requested to complete the review. The information needed is identified in the attached comments.

Brief Comments: Please see attached.

Signature:______________________________ Title: Chief of Long Range Planning

Agency: Department of Planning and Zoning Date: August 17, 2021

BARRY GLASSMAN
HARFORD COUNTY EXECUTIVE

JENNY B. JARKOWSKI
DIRECTOR OF PLANNING & ZONING

August 18, 2021

USAGAPG/Department of the Army
AMIM-APP-E c/o Arnold O'Sullivan
Building 4304, 6504 Rodman Road, 3rd Floor Suite B
APG Maryland 21005-5001;

Re: Environmental Assessment for the Removal of Atkisson Dam and Van Bibber Weir at APG

Mr. O'Sullivan:

The Harford County Department of Planning and Zoning will assist the Department of the Army or their designees with the Environmental Assessment. The following are noted:

- Removal of the dam and weir may impact county plans for paths or other amenities. Matters for coordination include drawdown staging, wetland remediation, and property ownership as well as construction staging.
- A MIHP/DOE Form is being prepared to document the Atkisson Dam and Van Bibber Weir (HA-2265). These facilities have association with World War II, the Cold War the effects of APG on Harford County. Other Harford County Historic Landmarks for inclusion in the EA include:
    - Harford Glen/Glen Echo Farm (HA-699-702)
    - Ring Factory Road Bridge/Iron Truss Bridge #54 (HA-1038)
    - Whitaker Mill (HA-1117)
    - Whitaker Mill Road Bridge/Harford County Bridge #51 (HA-1237)
- Maryland state geographic data indicates there are ecologically significant areas in the vicinity of the reservoir, dam, and weir.
- Harford County Department of Public Works has invested in stream restoration of Lower Wheel Creek, a tributary to the Atkisson Reservoir.

Thank you for your cooperation.

Sincerely,

Joel Gallihue
Chief, Long Range Planning Section

BARRY GLASSMAN
HARFORD COUNTY EXECUTIVE

BILLY BONIFACE
DIRECTOR OF ADMINISTRATION

BRADLEY F. KILLIAN
DIRECTOR OF PLANNING & ZONING

August 13, 2021

MEMORANDUM

TO: John Resline, Environmental Health
Jeff Schoenberger, Environmental Services
Joel Gallihue, Planning and Zoning

FROM: Jennifer Freeman, Planning and Zoning

RE: MD STATE CLEARINGHOUSE REVIEW – ID# MD20210809-0656
Pre-Environmental Assessment Public Notice: Seeking Early Input for the Proposed Action to Remove Atkisson Dam and Van Bibber Weir located along Winters Run north of U.S. Army Garrison Aberdeen Proving Ground (APG) - Edgewood Area near Emmorton, Maryland

We received a request for comments on the above referenced project by the Maryland State Clearinghouse. Please check one response on behalf of your agency, and return this form and any comments to me no later than **September 3, 2021**. The document to be reviewed can be accessed on the internet at **https://apps.planning.maryland.gov/EMIRC_Files/MD20210809-0656.zip**. If you are unable to complete the review by the referenced date, or if you believe the application should be reviewed by any other agency, please let me know as soon as possible. Thank you.

_____1. This project is consistent with our plans, programs and objectives.

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__X__3. This project is generally consistent with our plans, programs and objectives *contingent* upon certain actions being taken as noted in the attached comments.

_____4. This project is not consistent and raises problems concerning compatibility with our plans, programs and objectives.

_____5. Additional information is requested to complete the review. The information needed is identified in the attached comments.

Brief Comments: See attached memo

Signature: [signature] Title: Administrator

Agency: DPW Date: 8/31/2021

BARRY GLASSMAN
HARFORD COUNTY EXECUTIVE

JOSEPH J. SIEMEK, P.E.
DIRECTOR OF PUBLIC WORKS

DEPARTMENT OF PUBLIC WORKS

31 August 2021

Memorandum

To: Jennifer Freeman, Planning and Zoning

From: Jeff Schoenberger, Environmental Services JS

Re: MD STATE CLEARINGHOUSE REVIEW – ID# MD20210809-0656
Pre-Environmental Assessment Public Notice: Seeking Early Input for the Proposed Action to Remove Atkisson Dam and Van Bibber Weir located along Winters Run north of U.S. Army Garrison Aberdeen Proving Ground (APG) - Edgewood Area near Emmorton, Maryland

The proposed action links 2 distinct projects together. Although both are located on Winters Run, they are 3 miles apart, as the crow flies, and present different challenges and opportunities regarding their removal.

With an established and mature wetland ecosystem upstream of the Atkisson dam, any option considered should allow the accumulated sediment to remain permanently in place. However, previous investigations concluded that sediments left in place would be subject to scour. More than 20 years ago, the sediments behind the dam were nearly 30 feet thick. The sediments are saturated and have very little strength. The sediments are also highly erodible and will remain that way even with dewatering to a more solid state. Vegetation alone is unlikely to provide adequate erosion protection, which would result in turbid water, significant downstream sedimentation, and destruction of existing habitat both upstream and downstream of the dam.

Because the Van Bibber weir is a relatively low structure, its removal should be a less complicated undertaking than removal of the Atkisson dam. With proper management to prevent downstream migration of accumulated sediments, removal of the weir provides the opportunity to reestablish the natural stream channel of the lower end of Winters Run.

EASTERN SHAWNEE
CULTURAL PRESERVATION DEPARTMENT
70500 East 128 Road, Wyandotte, OK 74370

September 16, 2021

Department of The Army Garrison Aberdeen Proving Ground
Buildong 4510, 6429 Boothby Hill Ave.
Aberdeen Proving Ground, Maryland 21005-5001

RE: ***Atkisson Dam and Van Bibber Weir, Hartford County, MD***

Dear Mr. Hobbs,

The Eastern Shawnee Tribe has received your letter regarding the above referenced project(s) within Hartford County, MD. The Eastern Shawnee Tribe is committed to protecting sites important to Tribal Heritage, Culture and Religion. Furthermore, the Tribe is particularly concerned with historical sites that may contain but not limited to the burial(s) of human remains and associated funerary objects.

As described in your correspondence, and upon research of our database(s) and files, we find our people occupied these areas historically and/or prehistorically. However, the project proposes **NO Adverse Effect** or endangerment to known sites of interest to the Eastern Shawnee Tribe. Please continue project as planned. However, should this project inadvertently discover an archeological site or object(s) we request that you immediately contact the Eastern Shawnee Tribe, as well as the appropriate state agencies (within 24 hours). We also ask that all ground disturbing activity stop until the Tribe and State agencies are consulted. Please note that any future changes to this project will require additional consultation.

In accordance with the NHPA of 1966 (16 U.S.C. § 470-470w-6), federally funded, licensed, or permitted undertakings that are subject to the Section 106 review process must determine effects to significant historic properties. As clarified in Section 101(d)(6)(A-B), historic properties may have religious and/or cultural significance to Indian Tribes. Section 106 of NHPA requires Federal agencies to consider the effects of their actions on all significant historic properties (36 CFR Part 800) as does the National Environmental Policy Act of 1969 (43 U.S.C. § 4321-4347 and 40 CFR § 1501.7(a). This letter evidences NHPA and NEPA historic properties compliance pertaining to consultation with this Tribe regarding the referenced proposed projects.

Thank you, for contacting the Eastern Shawnee Tribe, we appreciate your cooperation. Should you have any further questions or comments please contact our Office.

Sincerely,

Paul Barton

Paul Barton, Tribal Historic Preservation Officer (THPO)
Eastern Shawnee Tribe of Oklahoma
(918) 666-5151 Ext:1833

October 13, 2021

Vance Hobbs, Chief
Environmental Division
Directorate of Public Works
U.S. Army Garrison Aberdeen Proving Ground
Building 4510, 6429 Boothby Hill Avenue
Aberdeen Proving Ground, MD 21005-5001

Re: Removal of Atkisson Dam and Van Bibber Weir
Emmorton, Harford County

Dear Mr. Hobbs:

Thank you for your recent letter, dated September 1, 2020 and received by the Maryland Historical Trust (MHT) on September 10, 2021, to continue consultation under Section 106 of the National Historic Preservation Act for the above-referenced project. As Maryland's State Historic Preservation Office, we are writing at this time to provide concurrence with the Army's finding of effect for this undertaking.

The undertaking involves the removal of Attkisson Dam and the Van Bibber Weir and Water Treatment Facility by the U.S. Army Garrison Aberdeen Proving Ground (APG), which are located on along Winters Run in Emmorton. The Army previously submitted a Phase I archeological survey report. On February 1, 2021, MHT concurred that no archaeological sites eligible for listing on the National Register of Historic Places were identified during the survey.

On August 18, 2021, MHT received the Determination of Eligibility (DOE) Form for Atkisson Dam and Van Bibber Weir from Mark Gallihue, APG. This DOE Form, completed by consultant Marstel-Day, is consistent with the *Standards and Guidelines for Architectural and Historical Investigations in Maryland* (*Standards*) and the *General Guidelines for Compliance Generated DOEs* and will be added to the Maryland Inventory of Historic Properties (MIHP) and Medusa for the benefit of future researchers. MHT concurs with the preparer's recommendations that Atkisson Dam and Van Bibber Weir (MIHP #HA-2265) are not eligible for listing in the National Register of Historic Places under Criteria A, B, C or D.

Based on the results of the Phase I Archaeological survey and DOE Form for Atkisson Dam and Van Bibber Weir, we concur with the Army's determination that the undertaking will have no effect on historic properties eligible for listing in the National Register of Historic Places.

If you should have any questions regarding this matter, please contact Dixie Henry at dixie.henry@maryland.gov (regarding archaeology) or me at becky.roman@maryland.gov (regarding historic structures). Thank you for providing us this opportunity to comment.

Sincerely,

Becky Roman

Elizabeth L. (Becky) Roman
Preservation Officer, Project Review and Compliance
Maryland Historical Trust

ELR / 202103701 & 202103792

Cc: Amy Deel (APG / amy.e.deel.civ@mail.mil)
Arnold O'Sullivan (APG / arnold.v.osullivan.civ@mail.mil)
Mark Gallihue (APG / mark.t.gallihue.civ@mail.mil)
Eva Falls (USACE / eva.e.falls@usace.army.mil)
Kristie Baynard (Marstel-Day LLC / kbaynard@marstel-day.com)

August 12, 2022

Mr. Arnold V. O'Sullivan
USAGAPG/Dept. of the Army IMAP-PWE
4304 Rodman Road
3rd Floor, Suite B
APG, MD 21005-5001

RE: Environmental Review for EA for Removal of Atkisson Dam and Van Bibber Weir at US Army Garrison Aberdeen Proving Ground near Emmorton, Harford County, Maryland.

Dear Mr. O'Sullivan:

The Wildlife and Heritage Service has determined that the reservoir at Atkisson is designated in state regulations as a Nontidal Wetland of Special State Concern, which is regulated – along with its 100-foot upland buffer – by Maryland Department of the Environment. The following rare, threatened and endangered species are documented on, or within close proximity to, the Atkisson project site:

Scientific Name	Common Name	State Status
Cystopteris tennesseensis	Tennessee Bladder Fern	Highly Rare
Matteuccia struthiopteris	Ostrich Fern	Rare
Juglans cinerea	Butternut	Rare
Ludwigia decurrens	Primrose-willow	Rare
Maianthemum stellatum	Starflower Solomon's-plume	Endangered

For the Van Bibber site, the Wildlife and Heritage Service has determined that there are records for the following, rare, threatened and endangered species documented immediately downstream of the project site in Otter Creek:

Scientific Name	Common Name	State Status
Percina bimaculata	Chesapeake Logperch	Threatened
Ameiurus catus	White Catfish	Uncertain*
Strophitus undulatus	Creeper	In Need of Conservation

*Official state status is Uncertain, although it is thought to be possibly rare in Maryland.

For both sites, our remote analysis suggests that the forested area on this property contains Forest Interior Dwelling Bird habitat. Populations of many bird species which depend on this type of forested habitat are declining in Maryland and throughout the eastern United States. Interested landowners can contact us for further voluntary guidelines to help conserve this important habitat.

Thank you for allowing us the opportunity to review this project. If you should have any further questions regarding this information, please contact me at lori.byrne@maryland.gov or at (410) 260-8573.

Sincerely,

Lori A. Byrne

Lori A. Byrne,
Environmental Review Coordinator
Wildlife and Heritage Service
MD Dept. of Natural Resources

ER# 2022.0914.ha

Appendix B: Final Wetland Delineation Report - August 2021

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WETLAND DELINEATION REPORT
FOR THE
ENVIRONMENTAL ASSESSMENT FOR THE REMOVAL OF ATKISSON DAM AND VAN BIBBER WEIR, ABERDEEN PROVING GROUND

AUGUST 2021


PREPARED FOR:

U.S. ARMY GARRISON ABERDEEN PROVING GROUND
6504 RODMAN ROAD, BLDG 4304
ABERDEEN, MARYLAND 21005

PREPARED BY:

U.S. ARMY CORPS OF ENGINEERS
BALTIMORE DISTRICT, PLANNING DIVISION
2 HOPKINS PLAZA
BALTIMORE, MARYLAND 21201

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WETLAND DELINEATION REPORT FOR THE ENVIRONMENTAL ASSESSMENT FOR THE REMOVAL OF ATKISSON DAM AND VAN BIBBER WEIR, ABERDEEN PROVING GROUND

1. Introduction

Atkisson Dam is located on Winters Run near Emmorton, Harford County, Maryland. The dam was built in 1942, during World War II, to create the 75-acre Atkisson Reservoir as an emergency water supply for Aberdeen Proving Ground (APG). Van Bibber Weir is also located along Winters Run, but is closer to APG's Edgewood Area (APG-EA). The weir was constructed to provide water to APG-EA; however, water for APG-EA is now provided by Harford County via a water purchase agreement between APG and the County. Because Harford County is already providing water to APG-EA, Van Bibber Weir and the associated water treatment plant have been determined unnecessary. Both structures are currently being evaluated for their potential eligibility to be placed on the National Register of Historic Places. APG has retained ownership of the reservoir, dam, and area surrounding the reservoir up to the 130-foot contour line; however, the Harford County Board of Education was given full ownership of the 245-acre parcel, known as Harford Glen, just east of the reservoir.

Since Atkisson Dam's creation, a combination of major land development and large storm events have created excessive sediment deposits behind the dam. The sediments and beaver activity have created extensive non-tidal wetlands above the dam. In 1997, after Hurricane Agnes, 37 feet of sediment deposit was recorded above the dam. Several Maryland State-listed rare plants inhabit the wetland area and surrounding reservoir grounds. There is an active bald eagle nest on the west side of the Reservoir.

Atkisson Dam is classified as a high-risk dam by the National Dam Safety Program and other stakeholders. It is believed that a dam failure would reach Interstate-95 (I-95) within 3 hours. A Feasibility Study was conducted on the dam in 1998, but the report and integrated Environmental Assessment (EA) were never finalized. APG is currently evaluating the potential impacts of the full or partial removal of the dam on the natural resources in the area. New National Environmental Policy Act (NEPA) studies, including those outlined in this report, are being conducted to evaluate the consequences of dam removal.

2. Site Description

Atkisson Dam and Reservoir are located on Winters Run, which flows primarily north to south through west-central Harford County. The immediate area surrounding the reservoir and dam is forested with non-tidal wetlands located behind the dam. Residential and commercial development surrounds the forested lands. Harford Glen outdoor education area is located on the eastern side of Atkisson Reservoir, leaving it a mainly undisturbed forested area.

Van Bibber Weir is also located along Winters Run. The immediate area surrounding the weir is forested with non-tidal wetland located behind the weir to the west and northwest. Residential and commercial developments surround the forested lands, as well as several roads, including Maryland Route 40 and Edgewood Road.

The geology of Harford County consists of Cretaceous and younger unconsolidated sedimentary rocks of the Atlantic Coastal Plain to the southeast, and highly complex Precambrian to lower Paleozoic metamorphic and igneous rocks of the Appalachian Piedmont to the northwest. The Coastal Plain deposits are underlain by the crystalline rocks of the Piedmont. The two provinces meet along the Fall Line, that runs northeast to southwest, directly north of the Town of Aberdeen. The Coastal Plain formation increases in thickness from the Town of Aberdeen to the Chesapeake Bay.

3. Methodology

3.1 Data Collection and Analysis

Existing wetland information and geographic information system (GIS) data were collected from various sources for preliminary analysis and identification of potential wetland areas within the study area. Sources of data include: U.S. Geological Survey (USGS) topographic quadrangles (USGS, 1977), U.S. Department of Agriculture (USDA) web soil survey (USDA, 2019), and U.S. Fish and Wildlife Service's (USFWS) National Wetland Inventory (NWI) maps (including aerial photography) (USFWS, 2020). Figure 1 shows a vicinity map for this purpose; Figure 2 shows a vicinity waterways map with the delineated wetlands.

3.2 Wetland Delineation

The wetland delineation was performed pursuant to the 1987 *Corps of Engineers Wetland Delineation Manual* and the 2010 *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Atlantic and Gulf Coastal Plain Region*, as Federal and state agencies require use of these documents for jurisdictional investigations. The delineation field work was conducted between March and July of 2020. All delineations were conducted by a team from USACE, Baltimore District, Planning Division. Data points were completed for each wetland; forms can be found in Appendix B. Wetland boundaries were marked with consecutively numbered pink survey flagging. Photographs of streams and wetlands are included in Appendix C.

3.3 Global Positioning System (GPS) Methodology

The field survey was completed using the Trimble GeoXH handheld GPS. The objective of the GPS survey was to collect location data for each wetland delineation flag and soil sample point. This survey horizontally references the North American Datum of 1983 (NAD83). This data was then transferred into ArcGIS 11.2 for analysis and mapping.

4. Results

4.1 General Wetland Findings

Wetlands are defined by the presence of three parameters: hydrophytic vegetation, hydric soils, and wetland hydrology. Methods for determining if each of the three parameters are met are described in the 1987 *Corps of Engineers Wetland Delineation Manual* and the 2010 *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Atlantic and Gulf Coastal Plain Region*.

Preliminary analysis of topographic maps, soils, and NWI wetland mapping indicated the presence of wetlands and streams within the study area. Elkton silt loam, listed as hydric on the hydric soils list (USDA, 2011) is associated with coastal plains. Atkisson Dam, Atkisson Reservoir, and the entirety of Winters Run flowing south to Van Bibber is a regulatory floodplain (Zone AE), with the outward most sections in Zone X with a 0.2% annual chance flood hazard. Areas without a base flood elevation (BFE) are also common throughout Winters Run between Atkisson Reservoir south to Van Bibber Weir.

The USACE team placed numbered flags along the limits of three wetland complexes. The flags were located using GPS survey methods. The delineated areas amount to approximately 20.04 acres of wetlands (Table 3). The wetlands delineated at the project sites are shown in Figure 5 and Figure 6, Appendix A.

4.2 Vegetation

For purposes of wetland identification, many plants are assigned an indicator status by the USFWS, which is useful for determining the probability of their occurrence in wetlands. Wetlands delineated within the study area were dominated by plants normally expected to occur within wetlands. No plant species observed on the site are listed as rare, threatened, or endangered at either a Federal or state level.

4.3 General Soil Characteristics

The USDA web soil survey (USDA, 2019) identifies 35 soil series at Atkisson Dam/Reservoir and surrounding Van Bibber Weir, which are shown in Table 1 (see Figure 3 and 4, Appendix A). The table lists the soil name, the drainage class, and hydric status.

Hydric soils are defined by the National Technical Committee for Hydric Soils (NTCHS) as soils that formed under conditions of saturation, flooding, or ponding long enough during the growing season to develop anaerobic conditions in the upper part (Federal Register, 1994). These soils, under natural conditions, are either saturated or inundated long enough during the growing season to support the growth and reproduction of hydrophytic vegetation.

Drainage class refers to the frequency and duration of wet periods under conditions similar to those under which the soil formed. Alterations of the water regime by human activities, either through drainage or irrigation, are not a consideration unless they have significantly changed the morphology of the soil. Seven classes of natural soil drainage are recognized: excessively drained, somewhat excessively drained, well drained, moderately well drained, somewhat poorly drained, poorly drained, and very poorly drained.

Table 1. Soils at Atkisson Dam and Van Bibber Weir

Soil Name	Map Symbol	Drainage Class	Hydric	Atkisson Dam	Van Bibber Weir
Aldino silt loam, 3 to 8 percent slopes	AdB	Moderately well drained	No	X	
Alluvial Land	Av	Poorly drained	Yes	X	
Brandywine gravelly loam, 15 to 25 percent slopes	BrD3	Well drained	No	X	
Brandywine gravelly loam, 25 to 45 percent slopes	BrE3	Well drained	No	X	
Brandywine gravelly loam, 8 to 15 percent slopes	BrC2	Well drained	No	X	
Codorus silt loam	Cu	Moderately well drained	No	X	X
Comus silt loam	Cv	Well drained	No		X

Soil Name	Map Symbol	Drainage Class	Hydric	Atkisson Dam	Van Bibber Weir
Cut and fill land	Cx	Moderately well drained	No		X
Delanco silt loam, 0 to 3 percent slopes	DcA	Moderately well drained	No		
Delanco silt loam, 3 to 8 percent slopes	DcB	Moderately well drained	No		X
Elsinboro loam, 0 to 2 percent slopes	EsA	Well drained	No		X
Glenelg gravelly loam, 3 to 8 percent slopes	GgB2	Well drained	No	X	
Glenelg gravelly loam, 8 to 15 percent slopes	GgC3/2	Well drained	No	X	
Glenelg loam, 3 to 8 percent slopes	GcB2	Well drained	No	X	
Glenelg loam, 8 to 15 percent slopes	GcC2	Well drained	No	X	
Glenville silt loam, 3 to 8 percent slopes	GnB	Moderately well drained	No	X	
Hatboro silt loam	Hb	Poorly drained	Yes	X	X
Joppa gravelly sandy loam, 5 to 10 precent slopes	JpC	Well drained	No		
Kelly silt loam, 3 to 8 percent slopes	KeB	Poorly drained	Yes	X	
Kelly silt loam, 8 to 15 percent slopes	KeC2	Poorly drained	Yes	X	
Legore silt loam, 15 to 25 percent slopes	LeD2	Well drained	No	X	
Legore silt loam, 25 to 45 percent slopes	LeE	Well drained	No	X	
Legore silt loam, 3 to 8 percent slopes	LeB2	Well drained	No	X	
Legore silt loam, 8 to 15 percent slopes	LeC2	Well drained	No	X	
Legore silty clay loam, 15 to 25 percent slopes	LgD3	Well drained	No	X	
Legore silty clay loam, 8 to 15 percent slopes	LgC3	Well drained	No	X	
Manor channery loam, 15 to 25 percent slopes	McD2/3	Well drained	No	X	
Manor channery loam, 8 to 15 percent slopes	McC3/2	Well drained	No	X	
Manor loam, 15 to 25 percent slopes	MbD3	Well drained	No	X	
Manor loam, 8 to 15 percent slopes	MbC2	Well drained	No	X	
Manor Soils, 25 to 45 percent slopes	Mfe	Well drained	No	X	
Manor very stony loam, 25 to 45 percent slopes	MdE	Well drained	No	X	
Neshaminy silt loam, 3 to 8 percent slopes	NeB2	Well drained	No	X	
Neshaminy silt loam, 8 to 15 percent slopes	NeC2	Well drained	No	X	
Stony land, steep	St	Well drained	No	X	

*2 indicates moderate erosion
*3 indicates severe erosion

4.4 Hydrology

Evidence of wetland hydrology was observed in the areas identified as wetlands during the site investigation, and included oxidized rhizospheres along living roots, geomorphic position, high water table, sediment deposits, Facultative hydrophyte (FAC)-neutral test, saturation, surface water, iron deposits, and water-stained leaves.

4.5 Streams

The dominant hydrologic feature on the proposed site is Winters Run, the stream upon which Atkisson Dam and Van Bibber Weir are built. All wetland points were closely adjacent to Atkisson Dam, Atkisson Reservoir, Winters Run, and Van Bibber Weir. Winters Run originates north of the proposed site, flows south southeast directly through the site and continues south emptying into Bush River, which empties into the Chesapeake Bay.

Descriptions are provided in Table 2. A classification key follows the table.

Table 2. Streams at Atkisson Dam and Van Bibber Weir

Stream Reach	Classification	Linear Feet (LF) within the site	Average Width (feet)	Connection to Navigable Waters
Winters Run	**R2UBH**	1,000	30	Flows to Bush River to Chesapeake Bay
Atkisson Reservoir	**R2USA** **L1Ubh**	5,057	570	Flows into Winters Run to Bush River to Chesapeake Bay
	Total	**1,717 LF**		

Classification Key
R2UBH: Riverine lower perennial unconsolidated bottom with a permanent flood regime
R2USA: Riverine lower perennial unconsolidated bottom with a temporary flood regime
L1UBh: Lacustrine limnetic unconsolidated bottom with a permanent flood regime

4.6 Wetlands

Three wetlands were delineated within the proposed site, amounting to approximately 20.04 acres. Wetland data forms are located in Appendix B. Descriptions of each wetland are provided in Table 3. A Cowardin classification key can be found in Appendix D.

Plants found in and around the wetlands are classified by regional wetland indicator status based on USDA's National Wetland Plant List. Indicator categories found in the wetlands on this site include:

FAC: Facultative Hydrophyte - Sometimes found in wetlands (34-66% frequency)
FACW: Facultative Wet Hydrophyte - Usually found in wetlands (66-99% frequency)
OBL: Obligate Hydrophyte - Almost always found in wetlands (99+% frequency)
NI: No Indicator – USDA has not assigned an indicator status for the species

Wetland A is located on the southern portion of the site, just south of Van Bibber Weir. It flows into Winters Run, which empties into Bush River and eventually into the Chesapeake Bay. It is classified as palustrine forested wetland with broad-leaved deciduous vegetation and a seasonally flooded water regime (PFO1C). The dominant species observed within the wetland was lizard's tail (*Saururus cernuus*). Indicators for wetland hydrology were water-stained leaves, oxidized rhizospheres, drainage patterns, and geomorphic position. The soil matrix was predominantly 10YR 4/2 with 10YR 4/6 and 7.5YR 4/6 concentrations in the matrix which meets the hydric soil criteria for a depleted matrix.

Wetland B is located on the southern portion of the site, just north of Van Bibber Weir. It flows into Winters Run, which empties into Bush River and eventually into the Chesapeake Bay and is classified as palustrine forested wetland with broad-leaved deciduous vegetation and a seasonally flooded water regime (PFO1C). The dominant species observed within the wetland were silver maple (*Acer saccharinum*), Northern spicebush (*Lindera benzoin*), and green ash (*Fraxinus pennsylvanica*). Indicators for wetland hydrology were oxidized rhizospheres and geomorphic position. The soil matrix was predominantly 10YR 3/4 with a 2.5YR 3/4 concentration in the pore lining, which meets the hydric soil criteria for a depleted matrix.

Wetland C is a wetland complex that extends from Atkisson Dam as far north as Harford Glen. It flows into Winters Run, which empties into Bush River and eventually into the Chesapeake Bay.

The wetland has several different classifications, as it is a larger system that is connected by Atkisson reservoir on either side, which flows into Winters Run to the south. It is classified as a palustrine forested diked/impound wetland with broad-leaved deciduous vegetation and seasonal flood regime (PFO1Ch), a palustrine forested wetland with broad-leaved deciduous vegetation and seasonal flood regime (PFO1C), a palustrine forested wetland with broad-leaved vegetation and temporary flood regime (PFO1A), a palustrine emergent dike/impound wetland with persistent vegetation and a semipermanent flood regime (PEM1Fh), a palustrine, beaver modified wetland with an unconsolidated bottom and semipermanent flood regime (PUBFb), and a palustrine dike/impound wetland with an unconsolidated bottom and permanent flood regime (PUBHh). Indicators for wetland hydrology were high water table, saturation, water-stained leaves, oxidized rhizospheres, geomorphic position, FAC-neutral test, and sediment deposits. The soil matrix varied amongst the four wetland data points. All soil matrix information can be found in the datasheets attached in Appendix B.

Table 3. Wetlands at Atkisson Dam and Van Bibber Weir

Wetland	Cowardin Classification	Acreage within the site	Data Point	Connection to Navigable Waters
Wetland A	PFO1C	1.23	VB DP-1	South of Winters Run, flows into Bush River to the Chesapeake Bay
Wetland B	PFO1C	0.01	VB DP-4	North of Winter Run, flows into Winters Run to Bush River to Chesapeake Bay
Wetland C	PFO1Ch PFO1C PFO1A PEM1Fh PUBFb PUBHh	18.80	DP-1 DP-2 DP-4 DP-5	North of Atkisson Dam, flows into Winters Run to Bush River to Chesapeake Bay
	Total	**20.04 Acres**		

5. Conclusions

Three wetlands were delineated by USACE, Baltimore District, Planning Division, within the vicinity of Atkisson Dam and Van Bibber Weir, near Emmorton, Maryland. The delineation was performed between March and July 2020.

The jurisdiction of the wetlands included in this report have not been verified by USACE-Regulatory Branch or Maryland Department of the Environment (MDE). Any future design or construction that may impact these wetlands or the wetland buffers will require coordination with the USACE and MDE, specifically in regard to potential permitting actions within Section 404, Section 10, and all other potential permitting actions.

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6. Acronyms and Abbreviations

APG	Aberdeen Proving Ground
APG-EA	Aberdeen Proving Ground, Edgewood Area
BFE	Base Flood Elevation
EA	Environmental Assessment
FAC	Facultative Hydrophyte
FACW	Facultative Wet Hydrophyte
GIS	Geographic Information System
GPS	Global Positioning System
MDE	Maryland Department of the Environment
NAD83	North American Datum of 1983NT
NEPA	National Environmental Policy Act
NI	No Indicator
NTCHS	National Technical Committee for Hydric Soils
NWI	National Wetland Inventory
OBL	Obligate Hydrophyte
USACE	U.S. Army Corps of Engineers
USDA	U.S. Department of Agriculture
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geologic Survey

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APPENDIX A
Figures

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Figure 1: Atkisson Dam Vicinity Map

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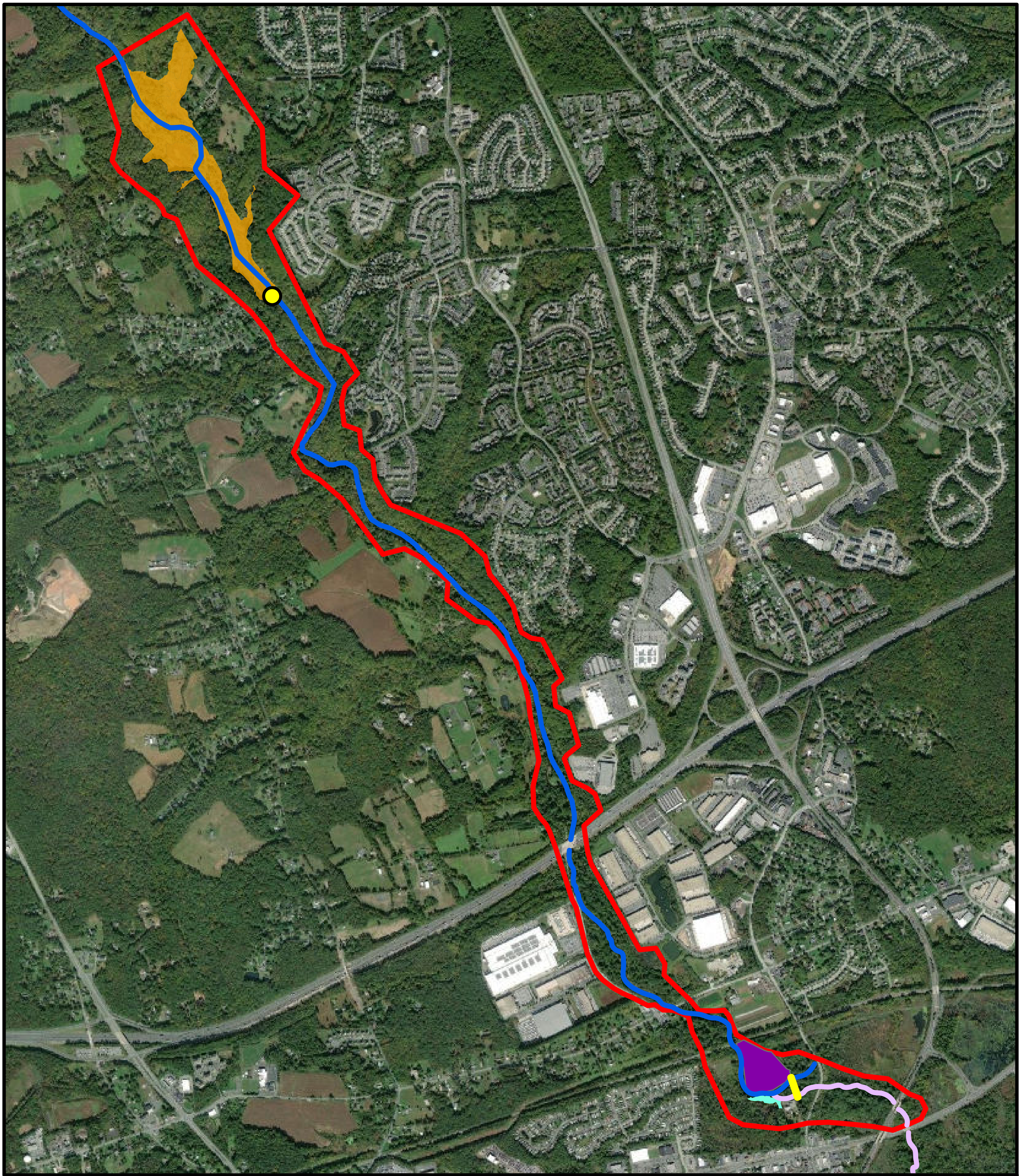

Figure 2: Atkisson Dam Waterways

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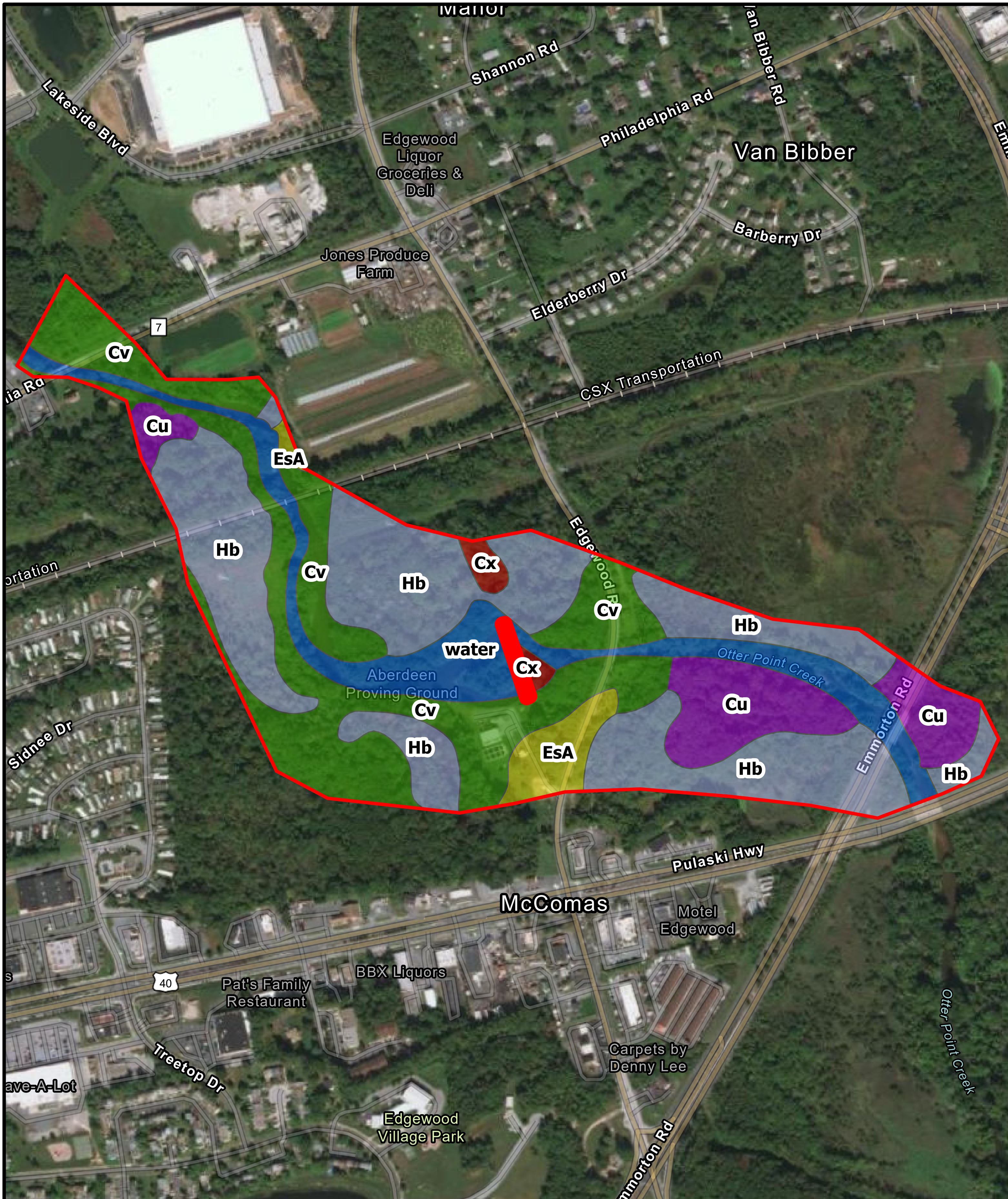

Figure 3: Van Bibber Weir Soils 2020

1 inch equals 575 feet

0 960 Feet

N

Van Bibber Weir

Site Extent

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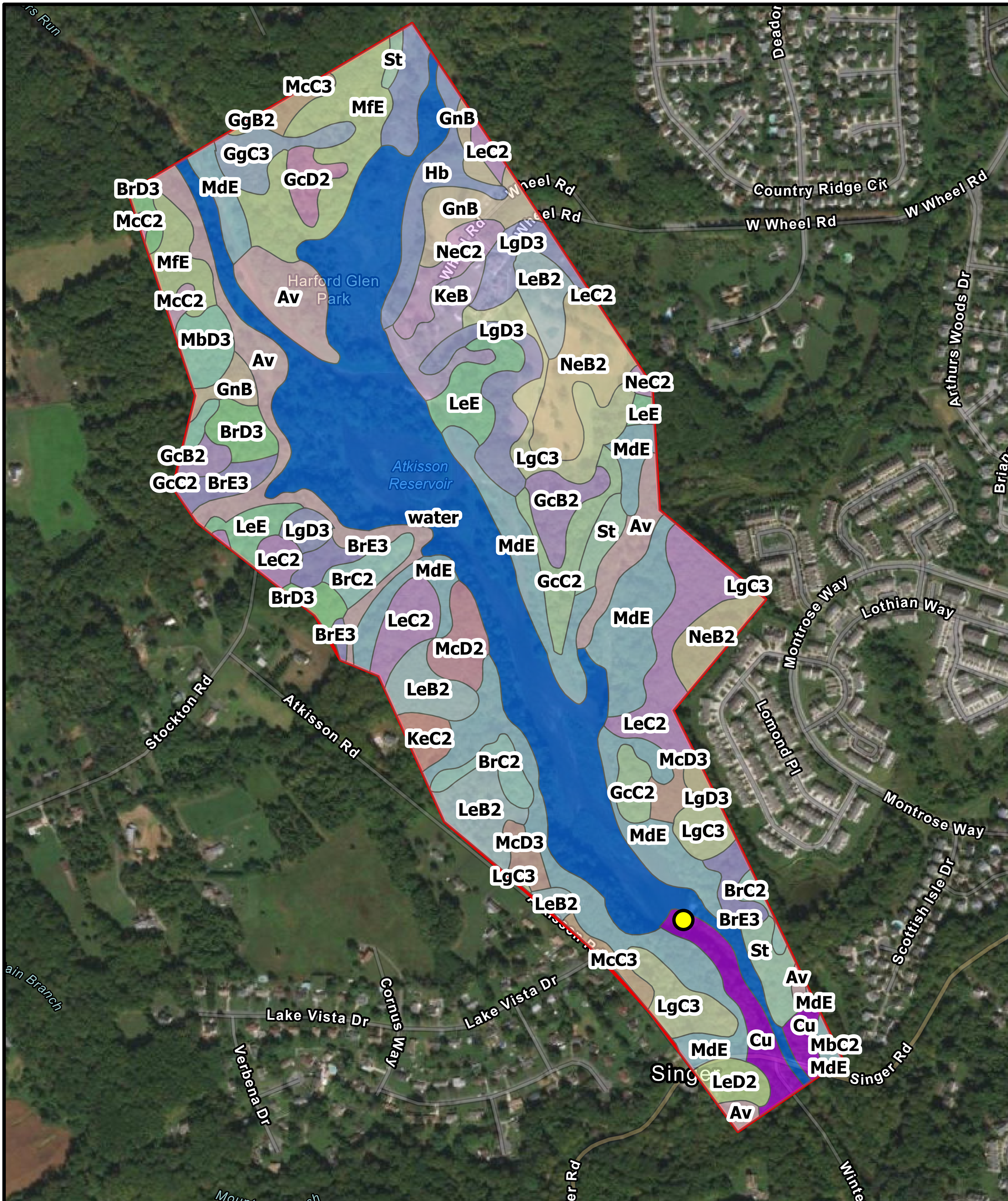

Figure 4: Atkisson Dam Soils 2020

1 inch equals 667 feet

0 — 1,125 Feet

N

Atkisson Dam

Site Extent

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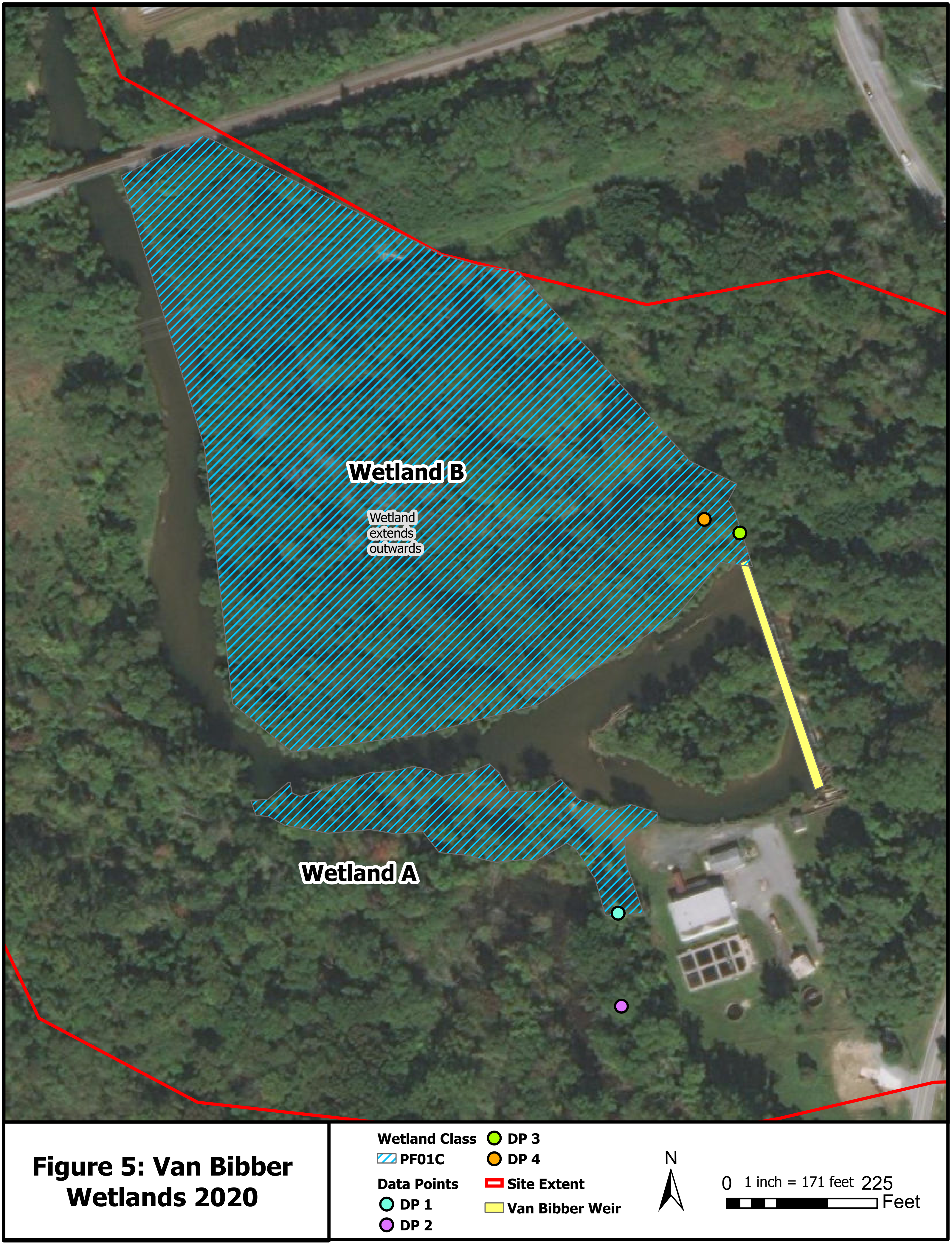

Figure 5: Van Bibber Wetlands 2020

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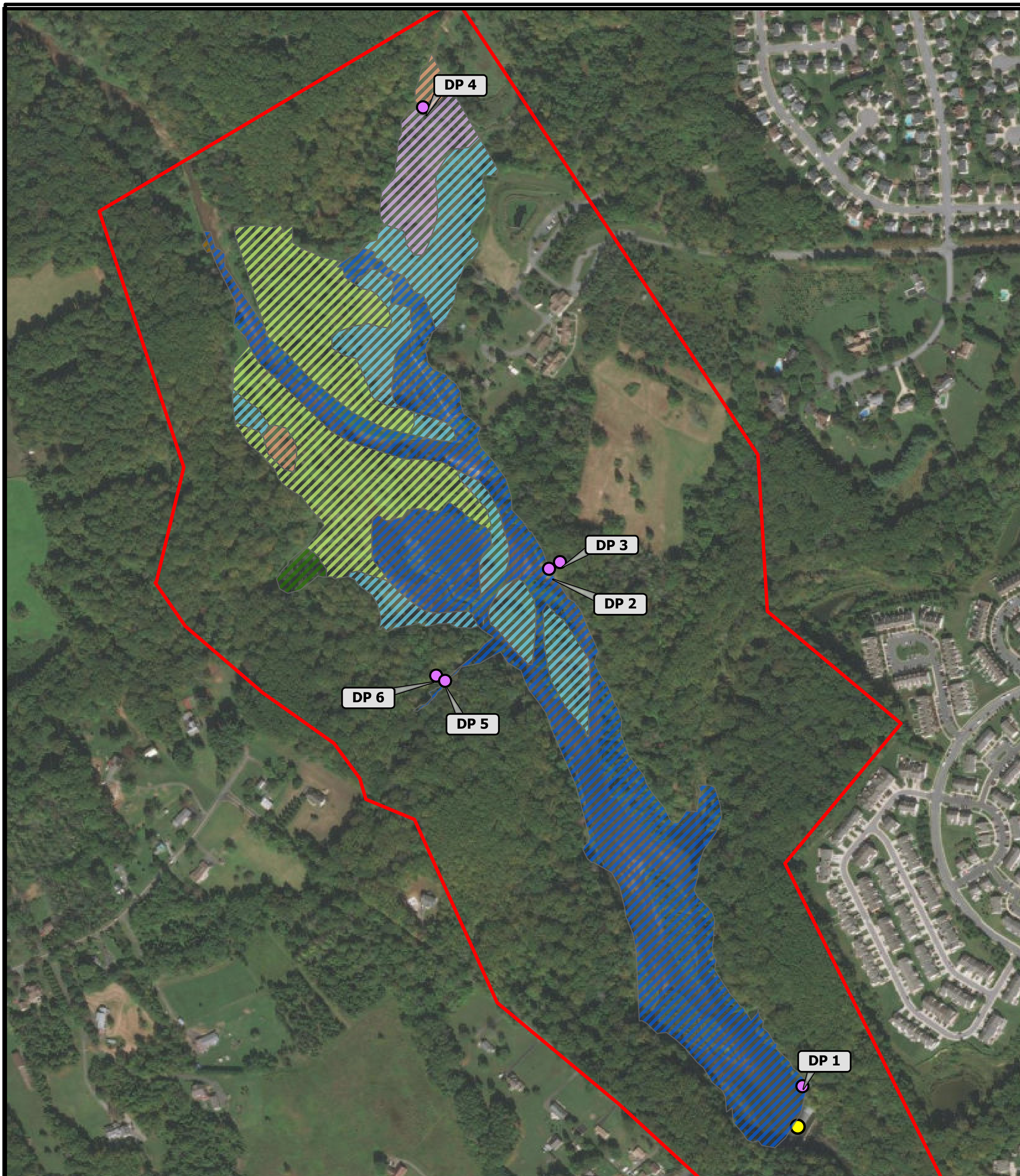
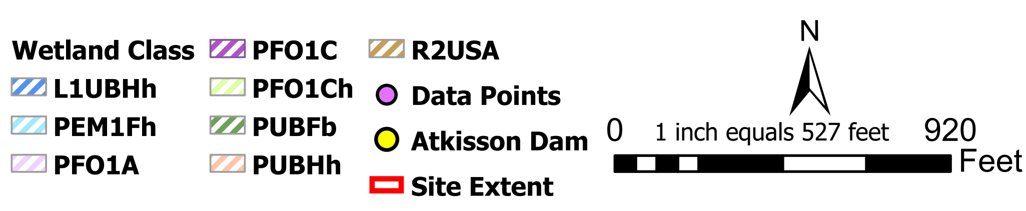


Figure 6: Atkisson Dam Wetlands 2020



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APPENDIX B
Routine Wetland Data Forms

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WETLAND DETERMINATION DATA FORM - Atlantic and Gulf Coastal Plain Region

Project/Site: Atkisson Dam/DC City/County: Harford Sampling Date: 07-23-20

Applicant/Owner: APG State: MD Sampling Point: Van Bibber DP-1

Investigator(s): DRC/LEJ/CAO Section, Township, Range: ____

Landform (hillslope, terrace, etc.): Lower area near creeek Local relief (concave, convex, none): Concave Slope (%): 4

Subregion (LRR or MLRA): LRRS/MLRA 149A Lat: 42°52'35.82" Long: 63°32'01.80" Datum: NAD83

Soil Map Unit Name: Fallsington sandy loams, 0-2 % slopes (FaaA) NWI classification: PFO

Are climatic/hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks)

Are Vegetation ___, Soil ___, or Hydrology ___ significantly disturbed? Are "Normal Circumstances" present? Yes X No ___

Are Vegetation ___, Soil ___, or Hydrology ___ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No ___	**Is the Sampled Area within a Wetland?**	**Yes** X **No** ___
Hydric Soil Present?	Yes X	No ___		
Wetland Hydrology Present?	Yes X	No ___		

Remarks:

Wetland A

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- X Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15) **(LRR U)**
- ___ Hydrogen Sulfide Odor (C1)
- X Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- X Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- X Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)
- ___ Sphagnum Moss (D8) **(LRR T, U)**

Field Observations:

Surface Water Present?	Yes ___	No X	Depth (inches): ___	
Water Table Present?	Yes ___	No X	Depth (inches): ___	
Saturation Present? (includes capillary fringe)	Yes ___	No X	Depth (inches): 0”	**Wetland Hydrology Present? Yes** X **No** ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Heavy rainfall in the last 12 hours

VEGETATION (Five Strata) - Use scientific names of plants.

Sampling Point:

Tree Stratum (Plot Size: 20-foot radius plot)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
		= Total Cover	
50% of total cover:		20% of total cover:	

Sapling Stratum (Plot Size: 20-foot radius plot)			
1.			
2.			
3.			
4.			
5.			
6.			
		= Total Cover	
50% of total cover:		20% of total cover:	

Shrub Stratum (Plot Size: 20-foot radius plot)			
1.			
2.			
3.			
4.			
5.			
6.			
		= Total Cover	
50% of total cover:		20% of total cover:	

Herb Stratum (Plot Size: 10-foot radius plot)			
1. *Ludwigia palustrus*	10	N	OBL
2. *Saururus cernuus*	70	Y	OBL
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	80	= Total Cover	
50% of total cover:	40	20% of total cover:	16

Woody Vine Stratum (Plot Size: 20-foot radius plot)			
1.			
2.			
3.			
		= Total Cover	
50% of total cover:		20% of total cover:	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	
FACW species		x 2 =	
FAC species		x 3 =	
FACU species		x 4 =	
UPL species		x 5 =	
Column Totals:		(A)	(B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

- ___ 1 - Rapid Test for Hydrophytic Vegetation
- ___ 2 - Dominance Test is >50%
- ___ 3 - Prevalence Index is ≤3.0[1]
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Five Vegetation Strata:

Tree - Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling - Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in (7.6 cm) DBH.

Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody vine - All woody vines, regardless of height.

Remarks: (if observed, list morphological adaptations below.)

Hydrophytic Vegetation Present? **Yes** x **No** ___

SOIL Sampling Point: ____________

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (Inches)	Matrix Color (Moist)	Matrix %	Redox Features Color (Moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-4	10YR 4/2	70	10YR 4/6	30	C	M	Silt loam	
4-12	10YR 4/2	70	7.5YR 4/6	30	C	M	Clay loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators:

___ Histosol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Stratified Layers (A5)
___ Organic Bodies (A6) **(LRR P, T, U)**
___ 5 cm Mucky Mineral (A7) **(LRR P, T, U)**
___ Muck Presence (A8) **(LRR U)**
___ 1 cm Muck (A9) **(LRR P, T)**
___ Depleted Below Dark Surface (A11)
___ Thick Dark Surface (A12)
___ Coast Prairie Redox (A16) **(MLRA 150A)**
___ Sandy Mucky Mineral (S1) **(LRR O, S)**
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)
___ Dark Surface (S7) **(LRR P, S, T, U)**

___ Polyvalue Below Surface (S8) **(LRR S, T, U)**
___ Thin Dark Surface (S9) **(LRR S, T, U)**
___ Loamy Mucky Mineral (F1) **(LRR O)**
___ Loamy Gleyed Matrix (F2)
X Depleted Matrix (F3)
___ Redox Dark Surface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)
___ Marl (F10) **(LRR U)**
___ Depleted Ochric (F11) **(MLRA 151)**
___ Iron-Manganese Masses (F12) **(LRR O, P, T)**
___ Umbric Surface (F13) **(LRR P, T, U)**
___ Delta Ochric (F17) **(MLRA 151)**
___ Reduced Vertic (F18) **(MLRA 150A, 150B)**
___ Piedmont Floodplains Soils (F19) **(MLRA 149A)**
___ Anomalous Bright Loamy Soils (F20) **(MLRA 149A, 153C, 153D)**

Indicators for Problematic Hydric Soils[3]:

___ 1 cm Muck (A9) **(LRR O)**
___ 2 cm Muck (A10) **(LRR S)**
___ Reduced Vertic (F18) **(Outside MLRA 150A, B)**
___ Piedmont Floodplain Soils (F19) **(LRR P, S, T)**
___ Anomalous Bright Loamy Soils (F20) **(MLRA 153B)**
___ Red Parent Material (TF2)
___ Very Shallow Dark Surface (TF12)
___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):
Type: ____________
Depth (inches): ____________

Hydric Soil Present? **Yes** X **No** ____

Remarks:

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WETLAND DETERMINATION DATA FORM - Atlantic and Gulf Coastal Plain Region

Project/Site: Atkisson Dam/DC City/County: Harford Sampling Date: 07-23-20

Applicant/Owner: APG State: MD Sampling Point: VB DP-2

Investigator(s): DRC/LEJ/CAO Section, Township, Range: ____

Landform (hillslope, terrace, etc.): ____ Local relief (concave, convex, none): Concave Slope (%): 4

Subregion (LRR or MLRA): LRRS/MLRA 149A Lat: 42°52'35.82" Long: 63°32'01.80" Datum: NAD83

Soil Map Unit Name: Fallsington sandy loams, 0-2 % slopes (FaaA) NWI classification: UPL

Are climatic/hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks)

Are Vegetation ____ , Soil ____ , or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation ____ , Soil ____ , or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

	Yes	No
Hydrophytic Vegetation Present?	X	
Hydric Soil Present?		X
Wetland Hydrology Present?		X

Is the Sampled Area within a Wetland? **Yes** ____ **No** **X**

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ____ Surface Water (A1)
- ____ High Water Table (A2)
- ____ Saturation (A3)
- ____ Water Marks (B1)
- ____ Sediment Deposits (B2)
- ____ Drift Deposits (B3)
- ____ Algal Mat or Crust (B4)
- ____ Iron Deposits (B5)
- ____ Inundation Visible on Aerial Imagery (B7)
- ____ Water-Stained Leaves (B9)
- ____ Aquatic Fauna (B13)
- ____ Marl Deposits (B15) **(LRR U)**
- ____ Hydrogen Sulfide Odor (C1)
- ____ Oxidized Rhizospheres along Living Roots (C3)
- ____ Presence of Reduced Iron (C4)
- ____ Recent Iron Reduction in Tilled Soils (C6)
- ____ Thin Muck Surface (C7)
- ____ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ____ Surface Soil Cracks (B6)
- ____ Sparsely Vegetated Concave Surface (B8)
- ____ Drainage Patterns (B10)
- ____ Moss Trim Lines (B16)
- ____ Dry-Season Water Table (C2)
- ____ Crayfish Burrows (C8)
- ____ Saturation Visible on Aerial Imagery (C9)
- ____ Geomorphic Position (D2)
- ____ Shallow Aquitard (D3)
- ____ FAC-Neutral Test (D5)
- ____ Sphagnum Moss (D8) **(LRR T, U)**

Field Observations:

	Yes	No	Depth (inches):
Surface Water Present?		X	
Water Table Present?		X	
Saturation Present? (includes capillary fringe)		X	

Wetland Hydrology Present? **Yes** ____ **No** **X**

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION (Five Strata) - Use scientific names of plants.

Sampling Point:

Tree Stratum (Plot Size: 20-foot radius plot)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Fraxinus pensylvanica*	10	Y	FACW
2. *Liquidambar styraciflua*	5	Y	FAC
3. *Platanus occidentalis*	5	Y	FACW
4.			
5.			
6.			
	20	= Total Cover	
50% of total cover:		20% of total cover:	4

Sapling Stratum (Plot Size: 20-foot radius plot)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Fraxinus pensylvanica*	10	Y	FACW
2. *Lindera benzoin*	10	Y	FACW
3.			
4.			
5.			
6.			
	20	= Total Cover	
50% of total cover:		20% of total cover:	4

Shrub Stratum (Plot Size: 20-foot radius plot)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Viburnum dentatum*	5	Y	FAC
2. *Virburnum prunifolium*	5	Y	FACU
3.			
4.			
5.			
6.			
	10	= Total Cover	
50% of total cover:		20% of total cover:	2

Herb Stratum (Plot Size: 10-foot radius plot)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Toxicodendron radicaans*	15	Y	FAC
2. *Celastrus orbiculatus*	15	Y	FACU
3. *Rubus allgheniensis*	15	Y	UPL
4. *Lonicera japonica*	5	N	FACU
5. *Microstegium vimineum*	15	Y	FAC
6. *Rosa multiflora*	5	N	FACU
7. *Pathenocissus quinquefolia*	5	N	FACU
8.			
9.			
10.			
11.			
	75	= Total Cover	
50% of total cover:	37.5	20% of total cover:	15

Woody Vine Stratum (Plot Size: 20-foot radius plot)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
		= Total Cover	
50% of total cover:		20% of total cover:	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC:	8	(A)
Total Number of Dominant Species Across All Strata:	11	(B)
Percent of Dominant Species That Are OBL, FACW, or FAC:	72	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	
FACW species		x 2 =	
FAC species		x 3 =	
FACU species		x 4 =	
UPL species		x 5 =	
Column Totals:		(A)	(B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation
___ 2 - Dominance Test is >50%
___ 3 - Prevalence Index is ≤3.0[1]
___ Problematic Hydrophytic Vegetation[1]

(Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Five Vegetation Strata:

Tree - Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling - Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in (7.6 cm) DBH.

Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody vine - All woody vines, regardless of height.

Remarks: (if observed, list morphological adaptations below.)

Hydrophytic Vegetation Present? Yes x No ___

SOIL Sampling Point: ______

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (Inches)	Matrix Color (Moist)	Matrix %	Redox Features Color (Moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-3	10YR 4/3						Fine sandy loam	High organic matter
4/12	10YR 4/4						Fine sandy loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators:

___ Histosol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Stratified Layers (A5)
___ Organic Bodies (A6) **(LRR P, T, U)**
___ 5 cm Mucky Mineral (A7) **(LRR P, T, U)**
___ Muck Presence (A8) **(LRR U)**
___ 1 cm Muck (A9) **(LRR P, T)**
___ Depleted Below Dark Surface (A11)
___ Thick Dark Surface (A12)
___ Coast Prairie Redox (A16) **(MLRA 150A)**
___ Sandy Mucky Mineral (S1) **(LRR O, S)**
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)
___ Dark Surface (S7) **(LRR P, S, T, U)**
___ Polyvalue Below Surface (S8) **(LRR S, T, U)**
___ Thin Dark Surface (S9) **(LRR S, T, U)**
___ Loamy Mucky Mineral (F1) **(LRR O)**
___ Loamy Gleyed Matrix (F2)
___ Depleted Matrix (F3)
___ Redox Dark Surface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)
___ Marl (F10) **(LRR U)**
___ Depleted Ochric (F11) **(MLRA 151)**
___ Iron-Manganese Masses (F12) **(LRR O, P, T)**
___ Umbric Surface (F13) **(LRR P, T, U)**
___ Delta Ochric (F17) **(MLRA 151)**
___ Reduced Vertic (F18) **(MLRA 150A, 150B)**
___ Piedmont Floodplains Soils (F19) **(MLRA 149A)**
___ Anomalous Bright Loamy Soils (F20) **(MLRA 149A, 153C, 153D)**

Indicators for Problematic Hydric Soils[3]:

___ 1 cm Muck (A9) **(LRR O)**
___ 2 cm Muck (A10) **(LRR S)**
___ Reduced Vertic (F18) **(Outside MLRA 150A, B)**
___ Piedmont Floodplain Soils (F19) **(LRR P, S, T)**
___ Anomalous Bright Loamy Soils (F20) **(MLRA 153B)**
___ Red Parent Material (TF2)
___ Very Shallow Dark Surface (TF12)
___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):
Type: ______
Depth (inches): ______

Hydric Soil Present? **Yes** ______ **No** **X**

Remarks:

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WETLAND DETERMINATION DATA FORM - Atlantic and Gulf Coastal Plain Region

Project/Site: Atkisson Dam/DC City/County: Harford Sampling Date: 07-23-20

Applicant/Owner: APG State: MD Sampling Point: VB DP-3

Investigator(s): DRC/LEJ/CAO Section, Township, Range: ____

Landform (hillslope, terrace, etc.): Upland side of weir Local relief (concave, convex, none): Concave Slope (%): 2

Subregion (LRR or MLRA): LRRS/MLRA 149A Lat: 42°52'35.82" Long: 63°32'01.80" Datum: NAD83

Soil Map Unit Name: Fallsington sandy loams, 0-2 % slopes (FaaA) NWI classification: UPL

Are climatic/hydrologic conditions on the site typical for this time of year? Yes X No ___ (If no, explain in Remarks)

Are Vegetation ___, Soil ___, or Hydrology ___ significantly disturbed? Are "Normal Circumstances" present? Yes X No ___

Are Vegetation ___, Soil ___, or Hydrology ___ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes	X	No	
Hydric Soil Present?	Yes		No	X
Wetland Hydrology Present?	Yes		No	X

Is the Sampled Area within a Wetland? **Yes** ___ **No** **X**

Remarks:

WETLAND A

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15) **(LRR U)**
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)
- ___ Sphagnum Moss (D8) **(LRR T, U)**

Field Observations:

Surface Water Present?	Yes		No	X	Depth (inches):
Water Table Present?	Yes		No	X	Depth (inches):
Saturation Present? (includes capillary fringe)	Yes		No	X	Depth (inches):

Wetland Hydrology Present? **Yes** ___ **No** **X**

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Just downstream of weir, off to side
Heavy rain within 24 hours

VEGETATION (Five Strata) - Use scientific names of plants.

Sampling Point:

Tree Stratum (Plot Size: 20-foot radius plot)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Acer negundo*	20	Y	FAC
2. *Platanus occidentalis*	10	Y	FACW
3. *Acer saccharinum*	10	Y	FAC
4.			
5.			
6.			
	40	= Total Cover	
50% of total cover:	20	20% of total cover:	8

Sapling Stratum (Plot Size: 20-foot radius plot)			
1.			
2.			
3.			
4.			
5.			
6.			
		= Total Cover	
50% of total cover:		20% of total cover:	

Shrub Stratum (Plot Size: 20-foot radius plot)			
1. *Lindera benzoin*	40	Y	FACW
2.			
3.			
4.			
5.			
6.			
	40	= Total Cover	
50% of total cover:	20	20% of total cover:	8

Herb Stratum (Plot Size: 10-foot radius plot)			
1. *Rosa multiflora*	5	Y	FACU
2. *Microstegium viminuem*	5	Y	FAC
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	10	= Total Cover	
50% of total cover:	5	20% of total cover:	2

Woody Vine Stratum (Plot Size: 20-foot radius plot)			
1. *Celastrus oribiculatus*	5	Y	FACU
2.			
3.			
	5	= Total Cover	
50% of total cover:	2.5	20% of total cover:	1

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC:	5	(A)
Total Number of Dominant Species Across All Strata:	7	(B)
Percent of Dominant Species That Are OBL, FACW, or FAC:	71	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	
FACW species		x 2 =	
FAC species		x 3 =	
FACU species		x 4 =	
UPL species		x 5 =	
Column Totals:	(A)		(B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation
___ 2 - Dominance Test is >50%
___ 3 - Prevalence Index is ≤3.0[1]
___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Five Vegetation Strata:

Tree - Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling - Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in (7.6 cm) DBH.

Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody vine - All woody vines, regardless of height.

Remarks: (if observed, list morphological adaptations below.)

Hydrophytic Vegetation Present? **Yes** x **No** ___

SOIL Sampling Point: ____________

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (Inches)	Matrix Color (Moist)	Matrix %	Redox Features Color (Moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-2	10YR 3/3						Fine sandy loam	Micaceoous
2-6	10YR 3/4						Fine sandy loam	Micaceoous
6+	10YR 4/4							Loamy sand

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators:

___ Histosol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Stratified Layers (A5)
___ Organic Bodies (A6) **(LRR P, T, U)**
___ 5 cm Mucky Mineral (A7) **(LRR P, T, U)**
___ Muck Presence (A8) **(LRR U)**
___ 1 cm Muck (A9) **(LRR P, T)**
___ Depleted Below Dark Surface (A11)
___ Thick Dark Surface (A12)
___ Coast Prairie Redox (A16) **(MLRA 150A)**
___ Sandy Mucky Mineral (S1) **(LRR O, S)**
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)
___ Dark Surface (S7) **(LRR P, S, T, U)**
___ Polyvalue Below Surface (S8) **(LRR S, T, U)**
___ Thin Dark Surface (S9) **(LRR S, T, U)**
___ Loamy Mucky Mineral (F1) **(LRR O)**
___ Loamy Gleyed Matrix (F2)
___ Depleted Matrix (F3)
___ Redox Dark Surface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)
___ Marl (F10) **(LRR U)**
___ Depleted Ochric (F11) **(MLRA 151)**
___ Iron-Manganese Masses (F12) **(LRR O, P, T)**
___ Umbric Surface (F13) **(LRR P, T, U)**
___ Delta Ochric (F17) **(MLRA 151)**
___ Reduced Vertic (F18) **(MLRA 150A, 150B)**
___ Piedmont Floodplains Soils (F19) **(MLRA 149A)**
___ Anomalous Bright Loamy Soils (F20) **(MLRA 149A, 153C, 153D)**

Indicators for Problematic Hydric Soils[3]:

___ 1 cm Muck (A9) **(LRR O)**
___ 2 cm Muck (A10) **(LRR S)**
___ Reduced Vertic (F18) **(Outside MLRA 150A, B)**
___ Piedmont Floodplain Soils (F19) **(LRR P, S, T)**
___ Anomalous Bright Loamy Soils (F20) **(MLRA 153B)**
___ Red Parent Material (TF2)
___ Very Shallow Dark Surface (TF12)
___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):
Type: ____________
Depth (inches): ____________

Hydric Soil Present? **Yes** ______ **No** X

Remarks:

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WETLAND DETERMINATION DATA FORM - Atlantic and Gulf Coastal Plain Region

Project/Site: Atkisson Dam/DC City/County: Harford Sampling Date: 07-23-20

Applicant/Owner: APG State: MD Sampling Point: VB DP-4

Investigator(s): DRC/LEJ/CAO Section, Township, Range: ______

Landform (hillslope, terrace, etc.): Area above weir Local relief (concave, convex, none): Concave Slope (%): 1

Subregion (LRR or MLRA): LRRS/MLRA 149A Lat: 42°52'35.82" Long: 63°32'01.80" Datum: NAD83

Soil Map Unit Name: Fallsington sandy loams, 0-2 % slopes (FaaA) NWI classification: PFO

Are climatic/hydrologic conditions on the site typical for this time of year? Yes X No ___ (If no, explain in Remarks)

Are Vegetation ___ , Soil ___ , or Hydrology ___ significantly disturbed? Are "Normal Circumstances" present? Yes X No ___

Are Vegetation ___ , Soil ___ , or Hydrology ___ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No ___	**Is the Sampled Area within a Wetland?**	**Yes X No ___**
Hydric Soil Present?	Yes X	No ___		
Wetland Hydrology Present?	Yes X	No ___		

Remarks:
Wetland B

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15) **(LRR U)**
- ___ Hydrogen Sulfide Odor (C1)
- X Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- X Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)
- ___ Sphagnum Moss (D8) **(LRR T, U)**

Field Observations:

Surface Water Present?	Yes ___	No X	Depth (inches): ___
Water Table Present?	Yes ___	No X	Depth (inches): ___
Saturation Present? (includes capillary fringe)	Yes ___	No X	Depth (inches): ___

Wetland Hydrology Present? **Yes X** **No ___**

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Wetland upstream of weir, off to side

VEGETATION (Five Strata) - Use scientific names of plants.

Sampling Point:

Tree Stratum (Plot Size: 20-foot radius plot)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Acer saccharinum*	30	Y	FAC
2.			
3.			
4.			
5.			
6.			
	30	= Total Cover	
50% of total cover:	15	20% of total cover:	6

Sapling Stratum (Plot Size: 20-foot radius plot)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Lindera benzoin*	30	Y	FACW
2. *Fraxinus pennsylvanica*	10	Y	FACW
3.			
4.			
5.			
6.			
	40	= Total Cover	
50% of total cover:	20	20% of total cover:	8

Shrub Stratum (Plot Size: 20-foot radius plot)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
		= Total Cover	
50% of total cover:		20% of total cover:	

Herb Stratum (Plot Size: 10-foot radius plot)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Microstegium vimineum*	80	Y	FAC
2. Rosa multiflora	10	N	FACU
3. *Symplocarpus foetidus*	5	N	FACW
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	95	= Total Cover	
50% of total cover:	47.5	20% of total cover:	19

Woody Vine Stratum (Plot Size: 20-foot radius plot)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Celastrus orbiculatus*	10	Y	FACU
2. *Toxicodendron radicaans*	5	Y	FAC
3.			
	15	= Total Cover	
50% of total cover:	7.5	20% of total cover:	3

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 5 (A)

Total Number of Dominant Species Across All Strata: 6 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 83 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	
FACW species		x 2 =	
FAC species		x 3 =	
FACU species		x 4 =	
UPL species		x 5 =	
Column Totals:	(A)		(B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

	1 - Rapid Test for Hydrophytic Vegetation
	2 - Dominance Test is >50%
	3 - Prevalence Index is ≤3.0[1]
	Problematic Hydrophytic Vegetation[1]

(Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Five Vegetation Strata:

Tree - Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling - Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in (7.6 cm) DBH.

Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody vine - All woody vines, regardless of height.

Remarks: (if observed, list morphological adaptations below.)

Hydrophytic Vegetation Present? Yes x No ____

SOIL Sampling Point: ______

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (Inches)	Matrix Color (Moist)	Matrix %	Redox Features Color (Moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-3	10YR 4/2	80	10YR 4/6	20	C	PL	Silt loam	
3-12	10YR 3/4	80	2.5YR 3/4	20	C	PL	Silt loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators:

___ Histosol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Stratified Layers (A5)
___ Organic Bodies (A6) **(LRR P, T, U)**
___ 5 cm Mucky Mineral (A7) **(LRR P, T, U)**
___ Muck Presence (A8) **(LRR U)**
___ 1 cm Muck (A9) **(LRR P, T)**
___ Depleted Below Dark Surface (A11)
___ Thick Dark Surface (A12)
___ Coast Prairie Redox (A16) **(MLRA 150A)**
___ Sandy Mucky Mineral (S1) **(LRR O, S)**
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)
___ Dark Surface (S7) **(LRR P, S, T, U)**
___ Polyvalue Below Surface (S8) **(LRR S, T, U)**
___ Thin Dark Surface (S9) **(LRR S, T, U)**
___ Loamy Mucky Mineral (F1) **(LRR O)**
___ Loamy Gleyed Matrix (F2)
X Depleted Matrix (F3)
___ Redox Dark Surface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)
___ Marl (F10) **(LRR U)**
___ Depleted Ochric (F11) **(MLRA 151)**
___ Iron-Manganese Masses (F12) **(LRR O, P, T)**
___ Umbric Surface (F13) **(LRR P, T, U)**
___ Delta Ochric (F17) **(MLRA 151)**
___ Reduced Vertic (F18) **(MLRA 150A, 150B)**
___ Piedmont Floodplains Soils (F19) **(MLRA 149A)**
___ Anomalous Bright Loamy Soils (F20) **(MLRA 149A, 153C, 153D)**

Indicators for Problematic Hydric Soils[3]:

___ 1 cm Muck (A9) **(LRR O)**
___ 2 cm Muck (A10) **(LRR S)**
___ Reduced Vertic (F18) **(Outside MLRA 150A, B)**
___ Piedmont Floodplain Soils (F19) **(LRR P, S, T)**
___ Anomalous Bright Loamy Soils (F20) **(MLRA 153B)**
___ Red Parent Material (TF2)
___ Very Shallow Dark Surface (TF12)
___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):
Type: ______
Depth (inches): ______

Hydric Soil Present? **Yes** **X** **No** ______

Remarks:

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WETLAND DETERMINATION DATA FORM - Atlantic and Gulf Coastal Plain Region

Project/Site: Atkisson Dam/DC City/County: Harford Sampling Date: 03-02-20

Applicant/Owner: APG State: MD Sampling Point: DP-1

Investigator(s): DRC/LEJ/CAO Section, Township, Range: ____

Landform (hillslope, terrace, etc.): Bench Local relief (concave, convex, none): Concave Slope (%): 1

Subregion (LRR or MLRA): LRRS/MLRA 149A Lat: 42°52'35.82" Long: 63°32'01.80" Datum: NAD83

Soil Map Unit Name: Fallsington sandy loams, 0-2 % slopes (FaaA) NWI classification: LEM

Are climatic/hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

	Yes	No
Hydrophytic Vegetation Present?		
Hydric Soil Present?	x	
Wetland Hydrology Present?	x	

Is the Sampled Area within a Wetland? **Yes** x **No** ____

Remarks:

WETLAND A

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ____ Surface Water (A1)
- x High Water Table (A2)
- x Saturation (A3)
- ____ Water Marks (B1)
- ____ Sediment Deposits (B2)
- ____ Drift Deposits (B3)
- ____ Algal Mat or Crust (B4)
- ____ Iron Deposits (B5)
- ____ Inundation Visible on Aerial Imagery (B7)
- x Water-Stained Leaves (B9)
- ____ Aquatic Fauna (B13)
- ____ Marl Deposits (B15) **(LRR U)**
- ____ Hydrogen Sulfide Odor (C1)
- x Oxidized Rhizospheres along Living Roots (C3)
- ____ Presence of Reduced Iron (C4)
- ____ Recent Iron Reduction in Tilled Soils (C6)
- ____ Thin Muck Surface (C7)
- ____ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ____ Surface Soil Cracks (B6)
- ____ Sparsely Vegetated Concave Surface (B8)
- ____ Drainage Patterns (B10)
- ____ Moss Trim Lines (B16)
- ____ Dry-Season Water Table (C2)
- ____ Crayfish Burrows (C8)
- ____ Saturation Visible on Aerial Imagery (C9)
- x Geomorphic Position (D2)
- ____ Shallow Aquitard (D3)
- x FAC-Neutral Test (D5)
- ____ Sphagnum Moss (D8) **(LRR T, U)**

Field Observations:

	Yes	No	Depth (inches)
Surface Water Present?		X	
Water Table Present?	x		6
Saturation Present? (includes capillary fringe)	X		0

Wetland Hydrology Present? **Yes** X **No** ____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:
Accumulated sediments behind the dam.

VEGETATION (Five Strata) - Use scientific names of plants.

Sampling Point:

Tree Stratum (Plot Size: 20-foot radius plot)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
		= Total Cover	
50% of total cover:		20% of total cover:	

Sapling Stratum (Plot Size: 20-foot radius plot)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
		= Total Cover	
50% of total cover:		20% of total cover:	

Shrub Stratum (Plot Size: 20-foot radius plot)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
		= Total Cover	
50% of total cover:		20% of total cover:	

Herb Stratum (Plot Size: 10-foot radius plot)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Saururus cernuus*	20	Y	OBL
2. *Cuscuta sp.*	15	Y	NL
3. *Symplocarpus foetidus*	2	N	OBL
4. *Cinna arundinacea*	2	N	OBL
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	39	= Total Cover	
50% of total cover:	19.5	20% of total cover:	7.8

Woody Vine Stratum (Plot Size: 20-foot radius plot)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Lonicera japonica*	10	Y	FACU
2. *Toxicodendron radicans*	5	Y	FAC
3.			
	15	= Total Cover	
50% of total cover:	7.5	20% of total cover:	3

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 75 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	
FACW species		x 2 =	
FAC species		x 3 =	
FACU species		x 4 =	
UPL species		x 5 =	
Column Totals:	(A)		(B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation
___ 2 - Dominance Test is >50%
___ 3 - Prevalence Index is ≤3.0[1]
___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Five Vegetation Strata:

Tree - Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling - Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in (7.6 cm) DBH.

Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody vine - All woody vines, regardless of height.

Remarks: (if observed, list morphological adaptations below.)

Hydrophytic Vegetation Present? **Yes** x **No** ___

SOIL Sampling Point: **DP-1**

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (Inches)	Matrix Color (Moist)	Matrix %	Redox Features Color (Moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-3	10YR4/2	70	5YR 3/4	30	C	M	Silt loam	
3-12	10YR3/1	75	5YR3/4	15	C	M	Silt loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators:

___ Histosol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Stratified Layers (A5)
___ Organic Bodies (A6) **(LRR P, T, U)**
___ 5 cm Mucky Mineral (A7) **(LRR P, T, U)**
___ Muck Presence (A8) **(LRR U)**
___ 1 cm Muck (A9) **(LRR P, T)**
___ Depleted Below Dark Surface (A11)
___ Thick Dark Surface (A12)
___ Coast Prairie Redox (A16) **(MLRA 150A)**
___ Sandy Mucky Mineral (S1) **(LRR O, S)**
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)
___ Dark Surface (S7) **(LRR P, S, T, U)**

___ Polyvalue Below Surface (S8) **(LRR S, T, U)**
___ Thin Dark Surface (S9) **(LRR S, T, U)**
___ Loamy Mucky Mineral (F1) **(LRR O)**
___ Loamy Gleyed Matrix (F2)
x Depleted Matrix (F3)
___ Redox Dark Surface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)
___ Marl (F10) **(LRR U)**
___ Depleted Ochric (F11) **(MLRA 151)**
___ Iron-Manganese Masses (F12) **(LRR O, P, T)**
___ Umbric Surface (F13) **(LRR P, T, U)**
___ Delta Ochric (F17) **(MLRA 151)**
___ Reduced Vertic (F18) **(MLRA 150A, 150B)**
___ Piedmont Floodplains Soils (F19) **(MLRA 149A)**
___ Anomalous Bright Loamy Soils (F20) **(MLRA 149A, 153C, 153D)**

Indicators for Problematic Hydric Soils[3]:

___ 1 cm Muck (A9) **(LRR O)**
___ 2 cm Muck (A10) **(LRR S)**
___ Reduced Vertic (F18) **(Outside MLRA 150A, B)**
___ Piedmont Floodplain Soils (F19) **(LRR P, S, T)**
___ Anomalous Bright Loamy Soils (F20) **(MLRA 153B)**
___ Red Parent Material (TF2)
___ Very Shallow Dark Surface (TF12)
___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: ______

Depth (inches): ______

Hydric Soil Present? **Yes** **X** **No** ______

Remarks:

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WETLAND DETERMINATION DATA FORM - Atlantic and Gulf Coastal Plain Region

Project/Site: Atkisson Dam/DC   City/County: Harford   Sampling Date: 03-03-20

Applicant/Owner: APG   State: MD   Sampling Point: DP-2

Investigator(s): DRC/LEJ/CAO   Section, Township, Range: ____

Landform (hillslope, terrace, etc.): Bench w/in floodplain   Local relief (concave, convex, none): Flat   Slope (%): 0

Subregion (LRR or MLRA): LRRS/MLRA 149A   Lat: 42°53'51.31"   Long: 63°32'33.63"   Datum: NAD83

Soil Map Unit Name: Fallsington sandy loams, 0-2 % slopes (FaaA)   NWI classification: LEM

Are climatic/hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks)

Are Vegetation ___, Soil ___, or Hydrology ___ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation ___, Soil ___, or Hydrology ___ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes x	No ____
Hydric Soil Present?	Yes x	No ____
Wetland Hydrology Present?	Yes x	No ____

Is the Sampled Area within a Wetland? **Yes** x **No** ____

Remarks:

WETLAND A

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- x Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15) **(LRR U)**
- ___ Hydrogen Sulfide Odor (C1)
- x Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- x Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)
- ___ Sphagnum Moss (D8) **(LRR T, U)**

Field Observations:

Surface Water Present?	Yes ____	No x	Depth (inches): ____
Water Table Present?	Yes ____	No x	Depth (inches): ____
Saturation Present? (includes capillary fringe)	Yes ____	No x	Depth (inches): ____

Wetland Hydrology Present? **Yes** x **No** ____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:
Bench/sediment deposit off of hill.

VEGETATION (Five Strata) - Use scientific names of plants.

Sampling Point:

Tree Stratum (Plot Size: 20-foot radius plot)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
		= Total Cover	
50% of total cover:		20% of total cover:	

Sapling Stratum (Plot Size: 20-foot radius plot)			
1.			
2.			
3.			
4.			
5.			
6.			
		= Total Cover	
50% of total cover:		20% of total cover:	

Shrub Stratum (Plot Size: 20-foot radius plot)			
1.			
2.			
3.			
4.			
5.			
6.			
		= Total Cover	
50% of total cover:		20% of total cover:	

Herb Stratum (Plot Size: 10-foot radius plot)			
1. *Microstegium vimineum*	85	Y	FAC
2. *Symplocarpus foetidus*	5	N	OBL
3. *Cinna arundinacea*	5	N	OBL
4. *Hemorcallis fulva*	1	N	UPL
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	96	= Total Cover	
50% of total cover:	48	20% of total cover:	19.2

Woody Vine Stratum (Plot Size: 20-foot radius plot)			
1.			
2.			
3.			
		= Total Cover	
50% of total cover:		20% of total cover:	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	
FACW species		x 2 =	
FAC species		x 3 =	
FACU species		x 4 =	
UPL species		x 5 =	
Column Totals:	(A)		(B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation
___ 2 - Dominance Test is >50%
___ 3 - Prevalence Index is ≤3.0[1]
___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Five Vegetation Strata:

Tree - Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling - Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in (7.6 cm) DBH.

Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody vine - All woody vines, regardless of height.

Remarks: (if observed, list morphological adaptations below.)

Hydrophytic Vegetation Present? **Yes** x **No** ___

SOIL Sampling Point: **DP-2**

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (Inches)	Matrix Color (Moist)	Matrix %	Redox Features Color (Moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-2	10YR4/3						Silt	
2-8	10YR4/2	60	2.5YR	40	C	M	Silt loam	
8-12	2.5Y4/2	60	2.5YR	40	C	M	Silt loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Organic Bodies (A6) **(LRR P, T, U)**
- ___ 5 cm Mucky Mineral (A7) **(LRR P, T, U)**
- ___ Muck Presence (A8) **(LRR U)**
- ___ 1 cm Muck (A9) **(LRR P, T)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Coast Prairie Redox (A16) **(MLRA 150A)**
- ___ Sandy Mucky Mineral (S1) **(LRR O, S)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) **(LRR P, S, T, U)**
- ___ Polyvalue Below Surface (S8) **(LRR S, T, U)**
- ___ Thin Dark Surface (S9) **(LRR S, T, U)**
- ___ Loamy Mucky Mineral (F1) **(LRR O)**
- ___ Loamy Gleyed Matrix (F2)
- x Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Marl (F10) **(LRR U)**
- ___ Depleted Ochric (F11) **(MLRA 151)**
- ___ Iron-Manganese Masses (F12) **(LRR O, P, T)**
- ___ Umbric Surface (F13) **(LRR P, T, U)**
- ___ Delta Ochric (F17) **(MLRA 151)**
- ___ Reduced Vertic (F18) **(MLRA 150A, 150B)**
- ___ Piedmont Floodplains Soils (F19) **(MLRA 149A)**
- ___ Anomalous Bright Loamy Soils (F20) **(MLRA 149A, 153C, 153D)**

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) **(LRR O)**
- ___ 2 cm Muck (A10) **(LRR S)**
- ___ Reduced Vertic (F18) **(Outside MLRA 150A, B)**
- ___ Piedmont Floodplain Soils (F19) **(LRR P, S, T)**
- ___ Anomalous Bright Loamy Soils (F20) **(MLRA 153B)**
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: ______

Depth (inches): ______

Hydric Soil Present? **Yes** **X** **No** ______

Remarks:

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WETLAND DETERMINATION DATA FORM - Atlantic and Gulf Coastal Plain Region

Project/Site: Atkisson Dam/DC City/County: Harford Sampling Date: 03-03-20

Applicant/Owner: APG State: MD Sampling Point: DP-3

Investigator(s): DRC/LEJ/CAO Section, Township, Range: ______

Landform (hillslope, terrace, etc.): Slope above DP-2 Local relief (concave, convex, none): Hillside Slope (%): 30

Subregion (LRR or MLRA): LRRS/MLRA 149A Lat: 42°53'52.04" Long: 63°32'32.23" Datum: NAD83

Soil Map Unit Name: ______ NWI classification: UPL

Are climatic/hydrologic conditions on the site typical for this time of year? Yes X No ___ (If no, explain in Remarks)

Are Vegetation ___, Soil ___, or Hydrology ___ significantly disturbed? Are "Normal Circumstances" present? Yes X No ___

Are Vegetation ___, Soil ___, or Hydrology ___ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

	Yes	No
Hydrophytic Vegetation Present?		X
Hydric Soil Present?		X
Wetland Hydrology Present?		X

Is the Sampled Area within a Wetland? **Yes** ___ **No** **X**

Remarks:

Slope about DP2 bench

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15) **(LRR U)**
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)
- ___ Sphagnum Moss (D8) **(LRR T, U)**

Field Observations:

	Yes	No	Depth (inches)
Surface Water Present?		x	
Water Table Present?		x	
Saturation Present? (includes capillary fringe)		x	

Wetland Hydrology Present? **Yes** ___ **No** **X**

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:
Slope above DP2-2 bench

VEGETATION (Five Strata) - Use scientific names of plants.

Sampling Point:

Tree Stratum (Plot Size: 20-foot radius plot)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Fagus grandifolia*	10	Y	FACU
2. *Liriodendron tulipifera*	5	Y	FACU
3. *Quercus rubra*	5	Y	FACU
4.			
5.			
6.			
	20	= Total Cover	
50% of total cover:	10	20% of total cover:	4

Sapling Stratum (Plot Size: 20-foot radius plot)			
1. *Fagus grandifolia*	40	Y	FACU
2.			
3.			
4.			
5.			
6.			
	40	= Total Cover	
50% of total cover:	20	20% of total cover:	8

Shrub Stratum (Plot Size: 20-foot radius plot)			
1. *Cornus amomum*	5	Y	FACW
2.			
3.			
4.			
5.			
6.			
	5	= Total Cover	
50% of total cover:	2.5	20% of total cover:	1

Herb Stratum (Plot Size: 10-foot radius plot)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
		= Total Cover	
50% of total cover:		20% of total cover:	

Woody Vine Stratum (Plot Size: 20-foot radius plot)			
1. *Lonicera japonica*	7	Y	FACU
2. *Rosa multiflora*	10	Y	FACU
3. *Microstegium vimineum*	10	Y	FAC
	27	= Total Cover	
50% of total cover:	13.5	20% of total cover:	5.4

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 8 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 25 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	
FACW species		x 2 =	
FAC species		x 3 =	
FACU species		x 4 =	
UPL species		x 5 =	
Column Totals:	(A)		(B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation
___ 2 - Dominance Test is >50%
___ 3 - Prevalence Index is ≤3.0[1]
___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Five Vegetation Strata:

Tree - Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling - Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in (7.6 cm) DBH.

Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody vine - All woody vines, regardless of height.

Remarks: (if observed, list morphological adaptations below.)

Hydrophytic Vegetation Present? **Yes** ___ **No** x

SOIL Sampling Point: ____________

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

	Matrix		Redox Features					
Depth (Inches)	Color (Moist)	%	Color (Moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-1	10YR2/2						Fine sandy loam	Lots of OM
1-4	10YR3/3						Fine sandy loam	
4-12	10YR5/4						Fine sandy loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Organic Bodies (A6) **(LRR P, T, U)**
- ___ 5 cm Mucky Mineral (A7) **(LRR P, T, U)**
- ___ Muck Presence (A8) **(LRR U)**
- ___ 1 cm Muck (A9) **(LRR P, T)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Coast Prairie Redox (A16) **(MLRA 150A)**
- ___ Sandy Mucky Mineral (S1) **(LRR O, S)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) **(LRR P, S, T, U)**
- ___ Polyvalue Below Surface (S8) **(LRR S, T, U)**
- ___ Thin Dark Surface (S9) **(LRR S, T, U)**
- ___ Loamy Mucky Mineral (F1) **(LRR O)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Marl (F10) **(LRR U)**
- ___ Depleted Ochric (F11) **(MLRA 151)**
- ___ Iron-Manganese Masses (F12) **(LRR O, P, T)**
- ___ Umbric Surface (F13) **(LRR P, T, U)**
- ___ Delta Ochric (F17) **(MLRA 151)**
- ___ Reduced Vertic (F18) **(MLRA 150A, 150B)**
- ___ Piedmont Floodplains Soils (F19) **(MLRA 149A)**
- ___ Anomalous Bright Loamy Soils (F20) **(MLRA 149A, 153C, 153D)**

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) **(LRR O)**
- ___ 2 cm Muck (A10) **(LRR S)**
- ___ Reduced Vertic (F18) **(Outside MLRA 150A, B)**
- ___ Piedmont Floodplain Soils (F19) **(LRR P, S, T)**
- ___ Anomalous Bright Loamy Soils (F20) **(MLRA 153B)**
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: ____________

Depth (inches): ____________

Hydric Soil Present? **Yes** ______ **No** X

Remarks:

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WETLAND DETERMINATION DATA FORM - Atlantic and Gulf Coastal Plain Region

Project/Site: Atkisson Dam/DC   City/County: Harford   Sampling Date: 03-03-20

Applicant/Owner: APG   State: MD   Sampling Point: DP-4

Investigator(s): DRC/LEJ/CAO   Section, Township, Range: ____

Landform (hillslope, terrace, etc.): ____   Local relief (concave, convex, none): Slightly concave   Slope (%): 1

Subregion (LRR or MLRA): LRRS/MLRA 149A   Lat: 42°54'56.69"   Long: 63°32'45.07"   Datum: NAD83

Soil Map Unit Name: ____   NWI classification: LEM

Are climatic/hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

	Yes	No
Hydrophytic Vegetation Present?	x	
Hydric Soil Present?	x	
Wetland Hydrology Present?	x	

Is the Sampled Area within a Wetland? **Yes** x **No** ____

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

	Surface Water (A1)		Aquatic Fauna (B13)
	High Water Table (A2)		Marl Deposits (B15) **(LRR U)**
	Saturation (A3)		Hydrogen Sulfide Odor (C1)
	Water Marks (B1)	x	Oxidized Rhizospheres along Living Roots (C3)
x	Sediment Deposits (B2)		Presence of Reduced Iron (C4)
	Drift Deposits (B3)		Recent Iron Reduction in Tilled Soils (C6)
	Algal Mat or Crust (B4)		Thin Muck Surface (C7)
	Iron Deposits (B5)		Other (Explain in Remarks)
	Inundation Visible on Aerial Imagery (B7)		
x	Water-Stained Leaves (B9)		

Secondary Indicators (minimum of two required)

	Surface Soil Cracks (B6)
	Sparsely Vegetated Concave Surface (B8)
	Drainage Patterns (B10)
	Moss Trim Lines (B16)
	Dry-Season Water Table (C2)
	Crayfish Burrows (C8)
	Saturation Visible on Aerial Imagery (C9)
x	Geomorphic Position (D2)
	Shallow Aquitard (D3)
	FAC-Neutral Test (D5)
	Sphagnum Moss (D8) **(LRR T, U)**

Field Observations:

	Yes	No	Depth (inches)
Surface Water Present?		x	
Water Table Present?	x		6
Saturation Present? (includes capillary fringe)	x		

Wetland Hydrology Present? **Yes** x **No** ____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:
Large root mat at bottom of soil core

VEGETATION (Five Strata) - Use scientific names of plants.

Sampling Point:

Tree Stratum (Plot Size: 20-foot radius plot)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Salix nigra*	5	Y	OBL
2. *Liriodendron tulipifera*	5	Y	FACU
3.			
4.			
5.			
6.			
	5	= Total Cover	
50% of total cover:	2.5	20% of total cover:	1

Sapling Stratum (Plot Size: 20-foot radius plot)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
		= Total Cover	
50% of total cover:		20% of total cover:	

Shrub Stratum (Plot Size: 20-foot radius plot)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
		= Total Cover	
50% of total cover:		20% of total cover:	

Herb Stratum (Plot Size: 10-foot radius plot)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Agrostis stolonifera*	70	Y	FACW
2. *Phalaris arundinacea*	30	Y	OBL
3. *Typha sp.*	10	N	OBL
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	110	= Total Cover	
50% of total cover:	55	20% of total cover:	22

Woody Vine Stratum (Plot Size: 20-foot radius plot)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
		= Total Cover	
50% of total cover:		20% of total cover:	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 75 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	
FACW species		x 2 =	
FAC species		x 3 =	
FACU species		x 4 =	
UPL species		x 5 =	
Column Totals:		(A)	(B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation
___ 2 - Dominance Test is >50%
___ 3 - Prevalence Index is ≤3.0[1]
___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Five Vegetation Strata:

Tree - Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling - Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in (7.6 cm) DBH.

Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody vine - All woody vines, regardless of height.

Remarks: (if observed, list morphological adaptations below.)

Hydrophytic Vegetation Present? **Yes** x **No** ___

SOIL Sampling Point: ______

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (Inches)	Matrix Color (Moist)	Matrix %	Redox Features Color (Moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-4	25Y4/2	60	7.5YR4/4	40	C	P	Silt loam	
4-12	10YR4/2	60	2.5YR3/4	40	C	P	Silt loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Organic Bodies (A6) **(LRR P, T, U)**
- ___ 5 cm Mucky Mineral (A7) **(LRR P, T, U)**
- ___ Muck Presence (A8) **(LRR U)**
- ___ 1 cm Muck (A9) **(LRR P, T)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Coast Prairie Redox (A16) **(MLRA 150A)**
- ___ Sandy Mucky Mineral (S1) **(LRR O, S)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) **(LRR P, S, T, U)**
- ___ Polyvalue Below Surface (S8) **(LRR S, T, U)**
- ___ Thin Dark Surface (S9) **(LRR S, T, U)**
- ___ Loamy Mucky Mineral (F1) **(LRR O)**
- ___ Loamy Gleyed Matrix (F2)
- x Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Marl (F10) **(LRR U)**
- ___ Depleted Ochric (F11) **(MLRA 151)**
- ___ Iron-Manganese Masses (F12) **(LRR O, P, T)**
- ___ Umbric Surface (F13) **(LRR P, T, U)**
- ___ Delta Ochric (F17) **(MLRA 151)**
- ___ Reduced Vertic (F18) **(MLRA 150A, 150B)**
- ___ Piedmont Floodplains Soils (F19) **(MLRA 149A)**
- ___ Anomalous Bright Loamy Soils (F20) **(MLRA 149A, 153C, 153D)**

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) **(LRR O)**
- ___ 2 cm Muck (A10) **(LRR S)**
- ___ Reduced Vertic (F18) **(Outside MLRA 150A, B)**
- ___ Piedmont Floodplain Soils (F19) **(LRR P, S, T)**
- ___ Anomalous Bright Loamy Soils (F20) **(MLRA 153B)**
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: ______

Depth (inches): ______

Hydric Soil Present? **Yes** x **No** ______

Remarks:

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WETLAND DETERMINATION DATA FORM - Atlantic and Gulf Coastal Plain Region

Project/Site: Atkisson Dam/DC City/County: Harford Sampling Date: 03-04-20

Applicant/Owner: APG State: MD Sampling Point: DP-5

Investigator(s): DRC/LEJ/CAO Section, Township, Range: ____

Landform (hillslope, terrace, etc.): ____ Local relief (concave, convex, none): concave Slope (%): ____

Subregion (LRR or MLRA): LRRS/MLRA 149A Lat: 42°53'38.90" Long: 63°32'57.22" Datum: NAD83

Soil Map Unit Name: Fallsington sandy loam NWI classification: PEM

Are climatic/hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks)

Are Vegetation ___, Soil ___, or Hydrology ___ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation ___, Soil ___, or Hydrology ___ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes	x	No	
Hydric Soil Present?	Yes	x	No	
Wetland Hydrology Present?	Yes	x	No	

Is the Sampled Area within a Wetland? **Yes** x **No** ____

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

	Surface Water (A1)		Aquatic Fauna (B13)
	High Water Table (A2)		Marl Deposits (B15) **(LRR U)**
	Saturation (A3)		Hydrogen Sulfide Odor (C1)
	Water Marks (B1)	x	Oxidized Rhizospheres along Living Roots (C3)
	Sediment Deposits (B2)		Presence of Reduced Iron (C4)
	Drift Deposits (B3)		Recent Iron Reduction in Tilled Soils (C6)
	Algal Mat or Crust (B4)		Thin Muck Surface (C7)
	Iron Deposits (B5)		Other (Explain in Remarks)
	Inundation Visible on Aerial Imagery (B7)		
	Water-Stained Leaves (B9)		

Secondary Indicators (minimum of two required)

	Surface Soil Cracks (B6)
	Sparsely Vegetated Concave Surface (B8)
	Drainage Patterns (B10)
	Moss Trim Lines (B16)
	Dry-Season Water Table (C2)
	Crayfish Burrows (C8)
	Saturation Visible on Aerial Imagery (C9)
x	Geomorphic Position (D2)
	Shallow Aquitard (D3)
	FAC-Neutral Test (D5)
	Sphagnum Moss (D8) **(LRR T, U)**

Field Observations:

Surface Water Present?	Yes		No	x	Depth (inches):	
Water Table Present?	Yes	x	No		Depth (inches):	7
Saturation Present? (includes capillary fringe)	Yes	x	No		Depth (inches):	0

Wetland Hydrology Present? **Yes** x **No** ____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION (Five Strata) - Use scientific names of plants.

Sampling Point:

Tree Stratum (Plot Size: 20-foot radius plot)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Platanus occidentalis*	10	Y	FACW
2. *Acer rubra*	5	Y	FAC
3.			
4.			
5.			
6.			
	15	= Total Cover	
50% of total cover:	7.5	20% of total cover:	3

Sapling Stratum (Plot Size: 20-foot radius plot)			
1.			
2.			
3.			
4.			
5.			
6.			
		= Total Cover	
50% of total cover:		20% of total cover:	

Shrub Stratum (Plot Size: 20-foot radius plot)			
1. *Lindera benzoin*	10	Y	FACW
2.			
3.			
4.			
5.			
6.			
	10	= Total Cover	
50% of total cover:	5	20% of total cover:	2

Herb Stratum (Plot Size: 10-foot radius plot)			
1. *Symplocarpus foetidus*	2	Y	OBL
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	2	= Total Cover	
50% of total cover:	1	20% of total cover:	0.4

Woody Vine Stratum (Plot Size: 20-foot radius plot)			
1. *Lonicera japonica*	5	Y	FACU
2.			
3.			
	5	= Total Cover	
50% of total cover:	2.5	20% of total cover:	1

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 4 (A)

Total Number of Dominant Species Across All Strata: 5 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 80 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	
FACW species		x 2 =	
FAC species		x 3 =	
FACU species		x 4 =	
UPL species		x 5 =	
Column Totals:	(A)		(B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Five Vegetation Strata:

Tree - Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling - Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in (7.6 cm) DBH.

Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody vine - All woody vines, regardless of height.

Remarks: (if observed, list morphological adaptations below.)

Hydrophytic Vegetation Present? **Yes** X **No** ___

SOIL Sampling Point: ____________

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (Inches)	Matrix Color (Moist)	Matrix %	Redox Features Color (Moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-3	10YR3/2	70	7.5YR3/4	30	C	PL	Silt loam	
3-6	10YR4/2	70	7.5YR3/4	30	C	PL	Silt loam	
6-12	2.5YR4/2						Loamy sand	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators:

___ Histosol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Stratified Layers (A5)
___ Organic Bodies (A6) **(LRR P, T, U)**
___ 5 cm Mucky Mineral (A7) **(LRR P, T, U)**
___ Muck Presence (A8) **(LRR U)**
___ 1 cm Muck (A9) **(LRR P, T)**
___ Depleted Below Dark Surface (A11)
___ Thick Dark Surface (A12)
___ Coast Prairie Redox (A16) **(MLRA 150A)**
___ Sandy Mucky Mineral (S1) **(LRR O, S)**
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)
___ Dark Surface (S7) **(LRR P, S, T, U)**
___ Polyvalue Below Surface (S8) **(LRR S, T, U)**
___ Thin Dark Surface (S9) **(LRR S, T, U)**
___ Loamy Mucky Mineral (F1) **(LRR O)**
___ Loamy Gleyed Matrix (F2)
_x_ Depleted Matrix (F3)
___ Redox Dark Surface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)
___ Marl (F10) **(LRR U)**
___ Depleted Ochric (F11) **(MLRA 151)**
___ Iron-Manganese Masses (F12) **(LRR O, P, T)**
___ Umbric Surface (F13) **(LRR P, T, U)**
___ Delta Ochric (F17) **(MLRA 151)**
___ Reduced Vertic (F18) **(MLRA 150A, 150B)**
___ Piedmont Floodplains Soils (F19) **(MLRA 149A)**
___ Anomalous Bright Loamy Soils (F20) **(MLRA 149A, 153C, 153D)**

Indicators for Problematic Hydric Soils[3]:

___ 1 cm Muck (A9) **(LRR O)**
___ 2 cm Muck (A10) **(LRR S)**
___ Reduced Vertic (F18) **(Outside MLRA 150A, B)**
___ Piedmont Floodplain Soils (F19) **(LRR P, S, T)**
___ Anomalous Bright Loamy Soils (F20) **(MLRA 153B)**
___ Red Parent Material (TF2)
___ Very Shallow Dark Surface (TF12)
___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):
Type: ____________
Depth (inches): ____________

Hydric Soil Present? **Yes** _x_ **No** ____

Remarks:

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WETLAND DETERMINATION DATA FORM - Atlantic and Gulf Coastal Plain Region

Project/Site: Atkisson Dam/DC City/County: Harford Sampling Date: 03-04-20

Applicant/Owner: APG State: MD Sampling Point: DP-6

Investigator(s): DRC/LEJ/CAO Section, Township, Range: ______

Landform (hillslope, terrace, etc.): Slight slope Local relief (concave, convex, none): ______ Slope (%): 4%

Subregion (LRR or MLRA): LRRS/MLRA 149A Lat: 42° 53' 39.09" Long: 63° 32' 58.25" Datum: NAD83

Soil Map Unit Name: ______ NWI classification: UPL

Are climatic/hydrologic conditions on the site typical for this time of year? Yes X No ___ (If no, explain in Remarks)

Are Vegetation ___, Soil ___, or Hydrology ___ significantly disturbed? Are "Normal Circumstances" present? Yes X No ___

Are Vegetation ___, Soil ___, or Hydrology ___ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

	Yes	No
Hydrophytic Vegetation Present?		x
Hydric Soil Present?		x
Wetland Hydrology Present?		X

Is the Sampled Area within a Wetland? **Yes** ___ **No** **x**

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15) **(LRR U)**
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)
- ___ Sphagnum Moss (D8) **(LRR T, U)**

Field Observations:

	Yes	No	Depth (inches)
Surface Water Present?		x	
Water Table Present?		x	
Saturation Present? (includes capillary fringe)		X	

Wetland Hydrology Present? **Yes** ___ **No** **x**

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

No signs

VEGETATION (Five Strata) - Use scientific names of plants.

Sampling Point:

Tree Stratum (Plot Size: 20-foot radius plot)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Fagus grandifolia*	60	Y	FACU
2. *Quercus rubra*	60	Y	UPL
3. *Liriodendron tulipifera*	20	N	FACU
4. *Quercus alba*	5	N	FACU
5. *Carya tomentosa*	5	N	NL
6.			
	150	= Total Cover	
50% of total cover:	75	20% of total cover:	30

Sapling Stratum (Plot Size: 20-foot radius plot)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Fagus grandifolia*	6	Y	FACU
2.			
3.			
4.			
5.			
6.			
	6	= Total Cover	
50% of total cover:	3	20% of total cover:	1.2

Shrub Stratum (Plot Size: 20-foot radius plot)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
		= Total Cover	
50% of total cover:		20% of total cover:	

Herb Stratum (Plot Size: 10-foot radius plot)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Carex blanda*	2	Y	FAC
2. *Lonicera japonica*	2	Y	FACU
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	4	= Total Cover	
50% of total cover:	2	20% of total cover:	0.8

Woody Vine Stratum (Plot Size: 20-foot radius plot)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Lonicera japonica*	10	Y	FACU
2.			
3.			
	10	= Total Cover	
50% of total cover:	5	20% of total cover:	2

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: ______ (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 16.7 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	
FACW species		x 2 =	
FAC species		x 3 =	
FACU species		x 4 =	
UPL species		x 5 =	
Column Totals:	(A)		(B)

Prevalence Index = B/A = ______

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation
___ 2 - Dominance Test is >50%
___ 3 - Prevalence Index is ≤3.0[1]
___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Five Vegetation Strata:

Tree - Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling - Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in (7.6 cm) DBH.

Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody vine - All woody vines, regardless of height.

Remarks: (if observed, list morphological adaptations below.)

Hydrophytic Vegetation Present? **Yes** ______ **No** x

SOIL Sampling Point: ______

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (Inches)	Matrix Color (Moist)	Matrix %	Redox Features Color (Moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-2	2.5YR2.5/2						Fine sandy loam	
2-6	10YR3/4						Fine sandy loam	
6-12	10YR3/6						Fine sandy loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Organic Bodies (A6) **(LRR P, T, U)**
- ___ 5 cm Mucky Mineral (A7) **(LRR P, T, U)**
- ___ Muck Presence (A8) **(LRR U)**
- ___ 1 cm Muck (A9) **(LRR P, T)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Coast Prairie Redox (A16) **(MLRA 150A)**
- ___ Sandy Mucky Mineral (S1) **(LRR O, S)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) **(LRR P, S, T, U)**
- ___ Polyvalue Below Surface (S8) **(LRR S, T, U)**
- ___ Thin Dark Surface (S9) **(LRR S, T, U)**
- ___ Loamy Mucky Mineral (F1) **(LRR O)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Marl (F10) **(LRR U)**
- ___ Depleted Ochric (F11) **(MLRA 151)**
- ___ Iron-Manganese Masses (F12) **(LRR O, P, T)**
- ___ Umbric Surface (F13) **(LRR P, T, U)**
- ___ Delta Ochric (F17) **(MLRA 151)**
- ___ Reduced Vertic (F18) **(MLRA 150A, 150B)**
- ___ Piedmont Floodplains Soils (F19) **(MLRA 149A)**
- ___ Anomalous Bright Loamy Soils (F20) **(MLRA 149A, 153C, 153D)**

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) **(LRR O)**
- ___ 2 cm Muck (A10) **(LRR S)**
- ___ Reduced Vertic (F18) **(Outside MLRA 150A, B)**
- ___ Piedmont Floodplain Soils (F19) **(LRR P, S, T)**
- ___ Anomalous Bright Loamy Soils (F20) **(MLRA 153B)**
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: ______

Depth (inches): ______

Hydric Soil Present? **Yes** ______ **No** x

Remarks:

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APPENDIX C
Photographs

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Photo 1: Overlooking Atkisson dam to the south

Photo 2: Representative photo of Wetland C, northern section facing east

Photo 3: Looking west at Van Bibber Weir

Photo 4: Wetland B northwest of Van Bibber Weir

Photo 5: Invasive bamboo in Wetland B

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APPENDIX D
Cowardin Classification Key

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WETLANDS AND DEEPWATER HABITATS CLASSIFICATION

System: M - Marine

Subsystem: 1 - Subtidal

Class	RB – Rock Bottom	UB – Unconsolidated Bottom	AB – Aquatic Bed	RF – Reef
Subclass	1 Bedrock 2 Rubble	1 Cobble-Gravel 2 Sand 3 Mud	1 Algal 3 Rooted Vascular	1 Coral 3 Worm

Subsystem: 2 - Intertidal

Class	AB – Aquatic Bed	RF – Reef	RS – Rocky Shore	US – Unconsolidated Shore
Subclass	1 Algal 3 Rooted Vascular	1 Coral 3 Worm	1 Bedrock 2 Rubble	1 Cobble-Gravel 2 Sand 3 Mud 4 Organic

System: E - Estuarine

Subsystem: 1 - Subtidal

Class	RB – Rock Bottom	UB – Unconsolidated Bottom	AB – Aquatic Bed	RF – Reef
Subclass	1 Bedrock 2 Rubble	1 Cobble-Gravel 2 Sand 3 Mud 4 Organic	1 Algal 3 Rooted Vascular 4 Floating Vascular	2 Mollusk 3 Worm

Subsystem: 2 - Intertidal

Class	AB – Aquatic Bed	RF – Reef	SB – Streambed	RS – Rocky Shore	US – Unconsolidated Shore	EM – Emergent	SS – Scrub-Shrub	FO – Forested
Subclass	1 Algal 3 Rooted Vascular 4 Floating Vascular	2 Mollusk 3 Worm	1 Bedrock 2 Rubble 3 Cobble-Gravel 4 Sand 5 Mud 6 Organic	1 Bedrock 2 Rubble	1 Cobble-Gravel 2 Sand 3 Mud 4 Organic	1 Persistent 2 Non-persistent 5 *Phragmites australis*	1 Broad-Leaved Deciduous 2 Needle-Leaved Deciduous 3 Broad-Leaved Evergreen 4 Needle-Leaved Evergreen 5 Dead 6 Deciduous 7 Evergreen	1 Broad-Leaved Deciduous 2 Needle-Leaved Deciduous 3 Broad-Leaved Evergreen 4 Needle-Leaved Evergreen 5 Dead 6 Deciduous 7 Evergreen

System: R - Riverine

Subsystem: 1 - Tidal; 2 – Lower Perennial; 3 – Upper Perennial; 4* - Intermittent; 5* – Unknown Perennial

Class	RB** – Rock Bottom	UB – Unconsolidated Bottom	SB** – Streambed	AB – Aquatic Bed	RS – Rocky Shore	US – Unconsolidated Shore	EM – Emergent
Subclass	1 Bedrock 2 Rubble	1 Cobble-Gravel 2 Sand 3 Mud 4 Organic	1 Bedrock 2 Rubble 3 Cobble-Gravel 4 Sand 5 Mud 6 Organic 7 Vegetated	1 Algal 2 Aquatic Moss 3 Rooted Vascular 4 Floating Vascular	1 Bedrock 2 Rubble	1 Cobble-Gravel 2 Sand 3 Mud 4 Organic 5 Vegetated	2 Nonpersistent

* **Intermittent** is limited to the **Streambed** Class;
Unknown Perennial is limited to **Unconsolidated Bottom** Class code **R5UB** only
** **Rock Bottom** is not permitted for the **Lower Perennial** Subsystem;
Streambed is limited to **Tidal** and **Intermittent** Subsystems

WETLANDS AND DEEPWATER HABITATS CLASSIFICATION

System: L - Lacustrine

Subsystem: 1 - Limnetic

Class	RB – Rock Bottom	UB – Unconsolidated Bottom	AB – Aquatic Bed
Subclass	1 Bedrock 2 Rubble	1 Cobble-Gravel 2 Sand 3 Mud 4 Organic	1 Algal 2 Aquatic Moss 3 Rooted Vascular 4 Floating Vascular

Subsystem: 2 - Littoral

Class	RB – Rock Bottom	UB – Unconsolidated Bottom	AB – Aquatic Bed	RS – Rocky Shore	US – Unconsolidated Shore	EM – Emergent
Subclass	1 Bedrock 2 Rubble	1 Cobble-Gravel 2 Sand 3 Mud 4 Organic	1 Algal 2 Aquatic Moss 3 Rooted Vascular 4 Floating Vascular	1 Bedrock 2 Rubble	1 Cobble-Gravel 2 Sand 3 Mud 4 Organic 5 Vegetated	2 Nonpersistent

System: P - Palustrine

Class	RB – Rock Bottom	UB – Unconsolidated Bottom	AB – Aquatic Bed	US – Unconsolidated Shore	ML – Moss-Lichen	EM – Emergent	SS – Scrub-Shrub	FO – Forested
Subclass	1 Bedrock 2 Rubble	1 Cobble-Gravel 2 Sand 3 Mud 4 Organic	1 Algal 2 Aquatic Moss 3 Rooted Vascular 4 Floating Vascular	1 Cobble-Gravel 2 Sand 3 Mud 4 Organic 5 Vegetated	1 Moss 2 Lichen	1 Persistent 2 Nonpersistent 5 *Phragmites australis*	1 Broad-Leaved Deciduous 2 Needle-Leaved Deciduous 3 Broad-Leaved Evergreen 4 Needle-Leaved Evergreen 5 Dead 6 Deciduous 7 Evergreen	1 Broad-Leaved Deciduous 2 Needle-Leaved Deciduous 3 Broad-Leaved Evergreen 4 Needle-Leaved Evergreen 5 Dead 6 Deciduous 7 Evergreen

MODIFIERS

In order to more adequately describe the wetland and deepwater habitats, one or more of the water regime, water chemistry, soil, or special modifiers may be applied at the class or lower level in the hierarchy. The farmed modifier may also be applied to the ecological system.

Water Regime			Special Modifiers	Water Chemistry			Soil
Nontidal	**Saltwater Tidal**	**Freshwater Tidal**		**Coastal Halinity**	**Inland Salinity**	**pH Modifiers for all Fresh Water**	
A Temporarily Flooded	L Subtidal	S Temporarily Flooded-Tidal	b Beaver	1 Hyperhaline	7 Hypersaline	a Acid	g Organic
B Saturated	M Irregularly Exposed	R Seasonally Flooded-Tidal	d Partly Drained/Ditched	2 Euhaline	8 Eusaline	t Circumneutral	n Mineral
C Seasonally Flooded	N Regularly Flooded	T Semipermanently Flooded-Tidal	f Farmed	3 Mixohaline (Brackish)	9 Mixosaline	i Alkaline	
E Seasonally Flooded/ Saturated	P Irregularly Flooded	V Permanently Flooded-Tidal	h Diked/Impounded	4 Polyhaline	0 Fresh		
F Semipermanently Flooded			r Artificial	5 Mesohaline			
G Intermittently Exposed			s Spoil	6 Oligohaline			
H Permanently Flooded			x Excavated	0 Fresh			
J Intermittently Flooded							
K Artificially Flooded							

Appendix C: Final Stream Assessment Report – August 2021

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STREAM ASSESSMENT REPORT
FOR THE
ENVIRONMENTAL ASSESSMENT FOR THE REMOVAL OF ATKISSON DAM AND VAN BIBBER WEIR, ABERDEEN PROVING GROUND

JULY 2021

PREPARED FOR:

U.S. ARMY GARRISON ABERDEEN PROVING GROUND
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PREPARED BY:

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This report was prepared as part of an overall assessment of the habitat surrounding Atkisson Dam and Van Bibber Weir. This stream assessment was contracted, managed, and reviewed by U.S. Army Corps of Engineers, Baltimore District (USACE) with support from Arcadis. In addition to this stream assessment, USACE has also delineated forest stands and wetlands and has prepared associated reports describing those findings. These surveys were prepared in support of impact analyses for National Environmental Policy Act (NEPA) documentation for the proposed removal of Atkisson Dam and Van Bibber Weir.

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Aberdeen Proving Ground, Edgewood, Maryland

Atkisson Dam Environmental Surveys Findings Report

21 July 2021

Atkisson Dam Environmental Surveys Findings Report

Aberdeen Proving Ground, Edgewood, Maryland

July 21, 2021

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Acronyms and Abbreviations

APG	Aberdeen Proving Ground
BIBI	benthic invertebrate index of biotic integrity
COMAR	Code of Maryland Regulations
DO	dissolved oxygen
EPT	Ephemeroptera (mayflies), plecoptera (stoneflies) and trichoptera (caddisflies)
FIBI	fish index of biotic integrity
IBI	index of biotic integrity
MBSS	Maryland Biological Stream Survey
NEPA	National Environmental Policy Act
ORP	oxidation-reduction potential
PCB	polychlorinated biphenyls
TKN	total Kjeldahl nitrogen
TMDL	Total Maximum Daily Load
TSS	total suspended solids
USACE	United States Army Corps of Engineers
USEPA	United States Environmental Protection Agency

1 Introduction

This Findings Report for the United States Army Corps of Engineers (USACE) and Aberdeen Proving Ground (APG) has been prepared to summarize the results of environmental surveys conducted on Winters Run on APG in Edgewood, Maryland. These surveys were conducted to support potential future National Environmental Policy Act (NEPA) documentation for possible removal of the Atkisson Dam and Van Bibber Weir on Winters Run at APG. This report presents the results of the summer 2020 and spring 2021 surveys conducted by Arcadis and the USACE to characterize and compare the aquatic resources present upstream and downstream of both Atkisson Dam and Van Bibber Weir. Arcadis and USACE biologists performed fish community surveys in the summer of 2020 and fish community surveys, macroinvertebrate community surveys, and water quality sampling in the spring of 2021 following the methods detailed in the Atkisson Dam Environmental Survey Work Plan (Arcadis 2020). The sampling and analysis methods in the Work Plan were based on the protocols presented in the Maryland Biological Stream Survey (MBSS): Round Four Field Sampling Manual (Stranko et al. 2019). Sampling was completed under Maryland Scientific Collection Permits SCP202095 and SCP202123.

1.1 Site Background

APG is located in Harford County and Baltimore County, Maryland and covers an area of over 72,500 acres of land and 44,000 acres of water (Water Management Administration Water Supply Program 2005). Winters Run is an approximately 14.5-mile-long tributary of the Bush River in Harford County, Maryland which flows through APG. Winters Run begins north of Fallston, Maryland and flows 11 miles southeast to the Atkisson Dam (Figure 1). The Atkisson Dam and the reservoir above it were constructed by the U.S. Army in 1942 to provide freshwater to the Edgewood Arsenal. Below the Atkisson Dam, Winters Run flows for approximately 3.5 miles to the Van Bibber Weir which was part of the U.S. Army's water supply as well. Fish passage is currently blocked by the Atkisson Dam but the Van Bibber Weir has a denil fish ladder made of concrete which was constructed in 1990 and opened 3.5 miles of spawning habitat for anadromous herring and shad above the Weir (Chesapeake Executive Council 1990). Below the Weir, Winters Run turns into Otter Point Creek which empties into the Chesapeake Bay.

2 Methods

Four locations on Winters Run (WR-1 though WR-4) were selected with a location both upstream and downstream of both the Atkisson Reservoir and Van Bibber Weir (Figure 1). At each of the four stream locations the field team established 75-meter sample reaches following MBSS protocols. At each of these locations, a field team of Arcadis and USACE scientists conducted backpack electrofishing surveys during the 2020 MBSS summer index period and conducted surface water sampling and invertebrate surveys during the 2021 MBSS spring index period as described below.

After conducting the field work during the summer index period in 2020, the project team added two additional locations, one each in the impounded section above Atkisson Dam (WR-1A) and Van Bibber Weir (WR-4A). These locations were added to assess the different habitat in the impounded sections compared to the four stream locations. Both boat-mounted electrofishing surveys and surface water sampling were conducted at the two impounded locations during the 2021 spring sampling event.

2.1 Fish Surveys

Stream Fish Surveys

Fish surveys were completed following the MBSS protocols. At each sample reach block nets were placed at the upstream and downstream ends to prevent fish escape. Ahead of fish sampling, the field team set up and tested Smith-Root model LR-20b backpack electrofishing units to determine the proper settings and function. In order to ensure sufficient coverage of the stream, up to four backpack electrofishing units were used for each reach with additional netters assisting backpack operators with fish collection. Once the proper settings and number of units were determined, the crew began surveying the 75-meter reach at the downstream end. The crew worked from downstream to upstream, shocking all available habitat and collecting all fish encountered. Collected fish were held in aerated holding tanks or holding nets until processing. Once the first pass of the survey was complete, all fish were identified, counted, weighed and checked for anomalies before being released outside of the blocked off sample reach. Representative photos of each species encountered were also taken during processing. A second pass of the 75-meter reach was then conducted following the same procedures as the first pass, and fish were similarly processed and released. The fish field data was used to calculate metrics following the procedures found in the new biological indicators to better assess the condition of Maryland streams (Southerland et al. 2005).

Metrics

Metrics are characteristics that change in some predictable way with increased human influence (Barbour et al. 1999) and are commonly used to assess the health of aquatic communities. Many states, including Maryland, use metrics to calculate multi-metric indices of biotic integrity (IBI)s. IBIs are commonly used indicators of stream condition as they provide a regionally appropriate framework for assessing and comparing stream health to reference waterbodies (Southerland et al. 2005). Maryland is divided into ecoregions which utilize different metrics to characterize the biological community within that region. Since APG property is located on the border between the Coastal Plain and Piedmont ecoregions which two locations in each, metrics were calculated for both ecoregions (Figure 2). Calculating both sets of metrics allows a more direct comparison between the Winters Run locations using the same metrics.

Six metrics were calculated for the Coastal Plain ecoregion: 1) Abundance per square meter, 2) Number of benthic species, 3) Percent tolerant, 4) Percent generalist, omnivores, invertivores, 5) Percent round-bodied suckers, and 6) Percent abundance dominant taxa. Six metrics were calculated for the Piedmont ecoregion: 1) Abundance per square meter, 2) Number of benthic species, 3) Percent tolerant, 4) Percent generalist, omnivores, invertivores, 5) Biomass per square meter, and 6) Percent lithophilic spawners.

The protocol provides criteria used to assign scores of 1, 3 or 5 to each metric. These metric scores are then averaged to produce a fish index of biotic integrity (FIBI) for each location. FIBI scores can range between 1.0 to 5.0; and are interpreted as follows:1.0 – 1.9 = very poor, 2.0 - 2.9 = poor, 3.0 – 3.9 = fair, 4.0 – 5.0 = good.

Impounded Area Fish Surveys

As previously discussed, two additional locations were surveyed in 2021, one each in the impounded section above Atkisson Dam (WR-1A) and Van Bibber Weir (WR-4A). These two locations were added to characterize the fish community and water quality immediately upstream of both water control structures.

MBSS protocols are not designed for non-wadeable, impounded waterbodies and due to the water depths and habitat at WR-1A and WR-4A, backpack electrofishing units could not be used. Instead, the impounded areas were sampled with a boat-mounted electrofishing unit with the crew making a complete pass of the sampleable habitat within the impounded section. Collected fish were processed following MBSS protocol similar to the stream reaches. MBSS protocols do not apply to non-wadeable reservoirs and as such the MBSS metrics and FIBI scores cannot be directly applied to the impounded locations. However, metrics and corresponding scores are presented for the impounded areas for comparisons to generally characterize the fish community and help assess differences in the fish communities potentially caused by the Atkisson Dam and Van Bibber Weir.

2.2 Macroinvertebrate Surveys

Benthic macroinvertebrate community surveys were conducted using D-framed kick nets and sweep netting techniques in accordance with the MBSS protocol. D-framed nets were used to jab or sweep material such as root wads, woody debris or leaf packs while riffles were sampled by disturbing the substrate just upstream of the net and allowing the current to wash dislodged organisms into the net. The available habitat was proportionally sampled for a total of 20 ft^2 per sample reach. All the material collected in the D-framed nets was strained through a sieve and then containerized and preserved with 91% isopropyl alcohol. The preserved samples were shipped to EcoAnalysts Inc. in Moscow, Idaho for taxonomic identification and enumeration.

At the laboratory, macroinvertebrate samples were processed and analyzed following the MBSS Laboratory Methods for Benthic Macroinvertebrate Processing and Taxonomy Protocols (MDNR 2000). Specifically, the sample matrices were rinsed through a 500-micron sieve and individual aliquots were distributed into a gridded pan partially filled with water. Invertebrate specimens were removed under magnification from randomly selected grids and sorted by type until a random count of 100 (+/- 10%) was obtained. Specimens were identified typically to genus level and then assigned a pollution tolerance value ranging from 0 to 10; where low values indicate pollution sensitivity. Metrics were then calculated to compare the invertebrate community at each location.

Similar to the fish surveys, since two of the sample locations fall within the Piedmont ecoregion and two within the Coastal Plain both sets of metrics were calculated for each location. Seven metrics were calculated for the Coastal Plain ecoregion: 1) Number of taxa, 2) Number of Ephemeroptera, Plecoptera, and Trichoptera (EPT) taxa (mayflies, stoneflies and caddisflies), 3) Percent Ephemeroptera (mayfly) Specimens 4) Number of scraper taxa, 5) Number of Ephemeroptera (mayfly) taxa, 6) Percent climber specimens, and 7) Percent intolerant urban specimens. Six metrics were calculated for the Piedmont ecoregion: 1) Number of taxa, 2) Number of EPT taxa (mayflies, stoneflies and caddisflies), 3) Number of Ephemeroptera (mayfly) taxa, 4) Percent intolerant urban specimens, 5) Percent Chironomidae and 6) Percent Clingers. The protocol provides criteria used to assign scores of 1, 3, or 5 to each metric. These metric scores are then averaged to produce a benthic invertebrate index of biotic integrity (BIBI) and stream condition rating for each location. BIBI scores range from 1.0 to 5.0; and are interpreted as follows: 1.0 – 1.9 = very poor, 2.0 - 2.9 = poor, 3.0 – 3.9 = fair, 4.0 – 5.0 = good.

2.3 Surface Water Sampling

During the 2021 spring index period sampling event, the field team recorded in-situ water quality measurements and collected surface water samples from all six locations (the four flowing sections of Winters Run and two impounded sections). At each location water depth, velocity, temperature, pH, conductivity, oxidation-reduction potential (ORP), turbidity and dissolved oxygen (DO) were recorded with a handheld water quality meter. Surface water samples were then collected by direct filling sample jars from mid-water column in an undisturbed section of the reach. Samples were preserved on ice and sent to Eurofins Lancaster Laboratory in Lancaster, Pennsylvania for analysis of total nitrogen, total Kjeldahl nitrogen (TKN), phosphorus, and total suspended solids (TSS).

3 Results

The results of the 2020 and 2021 APG environmental surveys are discussed below. The surface water laboratory analytical report is presented in Appendix A. A photolog of each reach and representative fish species is presented in Appendix B.

3.1 Fish Surveys

Fish community data was collected at stream locations WR-1 through WR-4 on August 19 and 20, 2020 during the summer index period in accordance with the MBSS protocol. The impounded locations (WR-1A and WR-4A) were surveyed using a boat-mounted electrofishing unit on March 31 and April 1, 2021.

Fish community survey results are presented in Table 1 (stream locations) and Table 2 (impounded locations). Fish community metrics and FIBI scores for all locations are presented in Table 3. Fish community survey results for the stream sections of Winters Run indicate a healthy fish community with at least several hundred individuals collected at each location. Abundance was highest at the most upstream location WR-1 (748 individuals) and lowest at WR-3 (384 individuals). Diversity ranged from a high of 29 species at the most downstream location (WR-4) to a low of 19 species at WR-2. Some species such as fallfish (Semotilus corporalis), northern hogsucker (Hypentelium nigricans), tessellated darter (Etheostoma olmstedi) and redbreast sunfish (Lepomis auritus) were abundant at all four locations while others were found only at the upstream or downstream location (Table 1). American eel (Anguilla rostrata), a catadromous species which migrates between salt and fresh water, was abundant at the three locations downstream of Atkisson Dam but was not observed at location WR-1. This indicates that the fish ladder in Van Bibber Weir is allowing fish passage upstream, but Atkisson Dam may be blocking upstream fish movement. Species such as striped bass (Morone saxatilis), eastern mosquitofish (Gambusia holbrooki), and white perch (Morone americana) were only collected at the downstream location (WR-4) which is closest to the Chesapeake Bay.

Community survey results within the impounded sections were more variable with abundance ranging from 1,019 individuals at WR-1A to 153 individuals at WR-4A (Table 2). Species richness was higher at WR-1A with 18 species compared to 15 species at WR-4A. Although abundance was higher at WR-1, over 85% of the total number of individuals was from of a single tolerant species (bluntnose minnow). Common carp (Cyprinus carpio), also a tolerant and non-native species, were only collected at WR-1A but were abundant and provided a large percentage of the biomass at that location. Having a large percentage of a community comprised of a few tolerant species can indicate a stressed or degraded system as intolerant species are usually the first to disappear following disturbance (AFS 2021, Barbour et al. 1999).

FIBI scores ranged from 4.0 to 4.3 and all four stream locations were classified as “good” based on the MBSS stream condition rating (Table 7). The Winters Run stream locations scored similar to other waterbodies that had publicly available MBSS fish data in the area (Table 8). The results of the fish surveys at the four stream locations show a healthy and diverse fish community within flowing portions of Winters Run. All four stream locations scored as “good” which is considered minimally impacted and comparable to reference streams (MDOE 2009). Although differences in habitat and sampling methodology make direct comparisons difficult, the impounded sections of Winters Run appear to have a less diverse fish community dominated by tolerant individuals, at least above Atkisson Dam. No catadromous or anadromous species were observed upstream of the Atkisson Dam indicating that the Atkisson Dam may have an effect on the fish community within Winters Run.

3.2 Macroinvertebrate Surveys

Macroinvertebrate community surveys were conducted at the four stream locations on April 30, 2021. Taxa and counts are presented in Table 5 and the results of the metrics and BIBI scores are presented in Table 6. Overall, the invertebrate community appears relatively similar between all four locations with midges being the most common taxa at all locations (Table 5). Ephemeroptera (mayflies), plecoptera (stoneflies) and trichoptera (caddisflies), collectively referred to as EPT taxa, are generally considered to be intolerant to pollution and were observed at each location except for WR-4 which lacked stoneflies but had mayflies and caddisflies present. Diversity was similar between the four locations, ranging from 36 taxa at WR-2 to 28 taxa at WR-3. IBI scores ranged from 3.7 (WR-1 and WR-2) to 4.4 (WR-3). The two upstream locations both scored “fair” while the two downstream locations scored “good” on the MBSS stream condition rating. Overall, the results of the Winters Run invertebrate survey show a healthy invertebrate community at all four locations. The four stream locations assessed as part of APG stream surveys scored better than, or similar to other nearby MBSS locations on different waterbodies (Table 7).

3.3 Surface Water Sampling

Water quality parameters were measured and surface water samples were taken from each location on Winters Run on March 30, 2021. The results of the surface water sampling compared to applicable water quality criteria and select benchmarks are presented in Table 8.

Per the Code of Maryland Regulations (COMAR), WR-4 is designated as Use Class I (Water Contact Recreation, and Protection of Nontidal Warmwater Aquatic Life), which supports the following individual designated uses:

- Growth and propagation of fish (not trout), other aquatic life and wildlife
- Water contact sports
- Leisure activities involving direct contact with surface water
- Fishing
- Agricultural water supply
- Industrial water supply

WR-1A, WR-2, WR-3, and WR-4A are designated as Use Class I-P (Water Contact Recreation, Protection of Aquatic Life, and Public Water Supply), which supports all the designations outlined in Use Class I as well as:

- Public water supply

WR-1 is designated as Use Class IV-P (Recreational Trout Waters and Public Water Supply), which supports all the designations outlined in Use Class I as well as:

- Capable of supporting adult trout for a put and take fishery

The water quality standards specific to designated uses and water quality criteria for Class I, I-P, and IV-P are outlined in Table 8 for parameters analyzed at the site. Turbidity, DO, pH, and temperature at all locations were within the water quality standards for their given class designations.

Comparison of the analytical results is not straight-forward, as several of the parameters do not have regulated surface water criteria, including TSS, total nitrite and nitrate, and TKN. The site is within the Chesapeake Bay watershed, which has an approved Total Maximum Daily Load (TMDL) for nitrogen, phosphorus and TSS. In addition, the site is within the Bush River watershed, which has an approved TMDL for polychlorinated biphenyls (PCBs). However, both TMDLs do not have waste load allocations for the constituents of concern.

According to COMAR §26.08.02.03-2.H(1), the total nitrogen limit based on acute water quality criteria for freshwater aquatic life, salmonids present (WR-1; Use Class IV-P) is between 19.9 mg/L (for a pH of 6.7) and 44.6 mg/L (for a pH of 7.5). The total nitrogen limit based on acute water quality criteria for freshwater aquatic life, salmonids not present (all locations except WR-1; Use Class I and I-P) is between 13.3 mg/L (for a pH of 6.7) and 29.8 mg/L (for a pH of 7.5). Based on the measured pH in the streams, all total nitrogen levels are well within the acute water quality criteria for freshwater aquatic life.

Maryland does not have phosphorus limits for surface waters; however, to prevent eutrophication, the U.S. Environmental Protection Agency (USEPA) recommends that total phosphorus levels do not exceed 0.05 mg/L in streams that enter lakes (locations WR-1/WR-1A) and 0.1 mg/L in flowing streams (WR-2 through WR-4A). All locations were non-detect for total phosphorus levels. All measured total nitrate and nitrite levels are well below the drinking water standard for nitrates, which is set at 10 mg/L. Although a direct comparison to water quality standards is not applicable for all constituents and measurements, in general, the sample locations on Winters Run appear to meet applicable criteria and are capable of supporting aquatic life.

4 Discussion

The results of the surveys show that Winters Run supports a healthy and diverse aquatic community, especially considering the location within an urbanized area of the state. Many species of fish and invertebrates were observed, including several taxa considered by Maryland to be intolerant to pollution. In total, 2,154 fish from 36 species were collected from the four stream locations and 1,172 fish from 25 species were collected from the two impounded locations with multiple size classes present, indicating a naturally reproducing fish community. Comparison between the stream and the impounded locations showed a more diverse fish community within the stream sections than the impounded sections. The impounded locations had a greater percentage of tolerant fish species and individuals and less diversity than the stream sections. Changes in stream flow and dams can affect fish both directly and indirectly by blocking migration, disrupting reproduction, or altering habitat and water quality which may promote tolerant or non-native species and cause changes in the fish assemblage (AFS, 2021). During the fish sampling the habitat was observed to be different within the impounded sections, where there was less coarse substrate and habitat variability than the stream locations. Especially above the Atkisson Dam fine grained sediment had built up, creating shallow flats that lacked structure for fish habitat.

The fish ladder at Van Bibber Weir appears to be working as American eel were observed upstream of Van Bibber Weir, but none were observed upstream of Atkisson Dam. Atkisson Dam does not currently have fish passage and may block anadromous and catadromous fish from utilizing Winters Run above the dam.

Although formal wildlife surveys were not conducted as part of the stream assessments, many species of herptiles, birds and mammals were observed incidentally during the stream assessment activities, including northern two-lined salamanders (Eurycea bislineata), green frogs (Lithobates clamitans melanota), bull frogs (Lithobates catesbeianus), green winged teal (Anas carolinensis), wood duck (Aix sponsa), mallard (Anas platyrhynchos), Canada geese (Branta canadensis), belted kingfisher (Megaceryle alcyon), osprey (Pandion haliaetus), bald eagles (Haliaeetus leucocephalus), beaver (Castor canadensis), muskrat (Ondatra zibethicus), and whitetail deer (Odocoileus virginianus). No threatened or endangered species of fish or invertebrates were observed during the sampling, but several fish species and invertebrate taxa classified as intolerant to pollution were collected indicating good water quality. The in-situ water quality parameters and surface water analysis met applicable criteria and are capable of supporting a healthy assemblage of aquatic life.

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Tables

Table 1
2020 Fish Community Survey Data
Aberdeen Proving Ground, Edgewood, Maryland

Location	WR-1					WR-2					WR-3					WR-4				
Sample Date	8/18/2020					8/19/2020					8/18/2020					8/19/2020				
Pass #	Pass #1		Pass #2			Pass #1		Pass #2			Pass #1		Pass #2			Pass #1		Pass #2		
	Number of Individuals	Total Weight (g)	Number of Individuals	Total Weight (g)	Anomalies	Number of Individuals	Total Weight (g)	Number of Individuals	Total Weight (g)	Anomalies	Number of Individuals	Total Weight (g)	Number of Individuals	Total Weight (g)	Anomalies	Number of Individuals	Total Weight (g)	Number of Individuals	Total Weight (g)	Anomalies
American eel	--	--	--	--	--	80	3861	28	1346	UL	48	2875	18	1402	--	79	4797	43	2086	--
Blacknose dace	5	21	8	19	BL	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Bluegill	--	--	--	--	--	--	--	--	--	--	25	592	17	289	--	13	203	17	219	FI
Bluegill x green sunfish	--	--	1	16	--	--	--	--	--	--	1	40	3	139	--	--	--	--	--	--
Bluegill x pumpkinseed	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	1	41	--	--	--
Blue ridge sculpin	41	120	41	99	--	2	6	3	10	--	--	--	--	--	--	--	--	--	--	--
Bluntnose minnow	69	164	66	156	--	19	38	10	29	--	29	89	2	8	BL	1	2	10	14	--
Common shiner	38	212	16	109	BL	32	81	9	42	BL	--	--	--	--	--	--	--	3	4	--
Creek Chub	--	--	--	--	--	--	--	1	2	--	--	--	--	--	--	1	4	--	--	--
Cutlips minnow	11	92	1	20	BL	6	37	3	22	--	1	8	--	--	BL	1	9	--	--	BL
Eastern mosquitofish	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	9	15	FU
Eastern silvery minnow	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	1	12	--
Emerald shiner	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	1	9	1	11	--
Fallfish	16	383	28	427	BL	3	23	4	24	--	15	35	16	233	BL	4	53	14	97	BL,FI
Fathead minnow	1	2	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Green sunfish	--	--	--	--	--	--	--	--	--	--	7	134	7	71	--	2	30	--	--	BL,FU
Johhny darter	9	13	4	11	--	2	3	1	2	--	3	3	2	2	--	--	--	--	--	--
Largemouth bass	--	--	--	--	--	--	--	--	--	--	3	22	3	172	EP	1	13	2	17	--
Longnose dace	20	77	20	60	BL	14	39	9	20	--	2	15	12	59	FI	5	26	8	42	--
Margined madtom	7	70	8	122	--	10	73	7	26	--	11	76	9	45	--	13	119	10	118	--
Northern hogsucker	32	911	43	965	--	30	1496	35	1127	--	23	954	8	318	--	4	239	7	294	--
Pumpkinseed	1	10	--	--	--	--	--	--	--	--	1	13	--	--	--	5	66	5	54	EC,FI
Redbreast sunfish	10	166	6	72	--	47	494	15	229	--	30	188	23	159	--	53	647	44	357	--
River chub	20	320	19	268	BL	67	318	58	624	BL,NO	2	7	6	75	BL	1	12	3	76	BL
Rosyface shiner	9	18	9	27	--	4	9	9	10	--	2	3	1	4	--	--	--	2	3	--
Rosyside dace	--	--	--	--	--	--	--	--	--	--	1	1	1	1	--	--	--	--	--	--
Satinfin shiner	4	10	5	9	--	8	19	4	9	--	8	20	2	2	--	3	12	7	21	FI
Smallmouth bass	10	870	3	373	--	10	738	3	9	--	6	373	3	290	DV, EC	3	213	2	87	--
Spotfin shiner	12	19	9	13	--	13	24	3	5	--	4	6	3	8	--	8	15	18	37	--
Spottail shiner	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	5	10	--
Striped bass	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	1	1713	--
Swallowtail shiner	25	43	12	28	--	--	--	1	2	--	4	6	1	2	--	--	--	--	--	--
Tessellated darter	30	60	8	19	EP	17	25	9	12	--	13	25	5	9	BL	14	16	10	14	--
White perch	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	2	111	--	--	--
White sucker	38	1820	33	1327	--	--	--	--	--	--	1	83	2	399	--	5	423	3	295	--
Yellow bullhead	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	1	42	--
Total Number of Individuals	408		340			364		212			240		144			220		226		

Notes:

BL = black spot
DV = deformities of the vertebral column
EC = eye cloudiness
EP = visible external parasites
FI = fin erosion
FU = fungus
NO = eye missing
UL = ulcerations/lesions

Table 2
2021 Fish Community Survey Data
Aberdeen Proving Ground, Edgewood, Maryland

Location	WR-1A			WR-4A		
Sample Date	4/1/2021			3/31/2021		
	Number of Individuals	Total Weight (g)	Anomalies	Number of Individuals	Total Weight (g)	Anomalies
American eel	--	--	--	9	410	--
Black crappie	--	--	--	1	50	--
Bluegill	8	89	--	17	667	--
Bluntnose minnow	868	1419	--	1	2	--
Brown bullhead	1	115	--	--	--	--
Common carp	12	70752	--	--	--	--
Common shiner	12	106	--	--	--	--
Creek Chub	1	5	--	--	--	--
Creek chubsucker	3	93	--	1	81	--
Eastern mosquitofish	1	1	--	--	--	--
Emerald shiner	1	3	--	--	--	--
Fallfish	7	198	--	5	274	BL
Fathead minnow	2	7	BL	--	--	--
Golden shiner	16	41	BL	--	--	--
Green sunfish	--	--	--	1	2	--
Largemouth bass	4	127	--	2	661	--
Northern hogsucker	--	--	--	6	428	--
Pumpkinseed	17	178	--	1	20	--
Redbreast sunfish	4	63	--	63	1672	BL, EP
Swallowtail shiner	7	25	--	--	--	--
Smallmouth bass	--	--	--	3	180	--
Spotfin shiner	8	12	--	--	--	--
Tessellated darter	--	--	--	1	2	--
White sucker	47	2840	--	40	7674	--
Yellow bullhead	--	--	--	2	264	--
Total Number of Individuals	1019			153		

Notes:

BL = black spot

EP = visible external parasites

Table 3
Fish Community Metrics
Aberdeen Proving Ground, Edgewood, Maryland

	Metric	Stream Locations								Impounded Locations			
		WR-1		WR-2		WR-3		WR-4		WR-1A		WR-4A	
		Value	Score	Value	Score	Value	Score	Value	Score	Value	Score	Value	Score
Piedmont	Abundance per square meter	0.94	3	0.79	3	0.44	3	0.55	3	0.048	1	0.010	1
	Number of Benthic Species	0.75	5	0.75	5	0.56	5	0.38	5	0.0	1	0.19	3
	Percent Tolerant	34	5	9.7	5	30	5	20	5	94	1	41	5
	Percent Generalist, Omnivores, Invertivores	87	3	97	3	95	3	96	3	100	1	97	3
	Biomass per square meter	12	5	15	5	11	5	16	5	3.6	3	0.84	1
	Percent Lithophilic Spawners	58	3	46	3	22	1	12	1	7.3	1	33	3
	Index of Biotic Integrity (IBI)	4.0		4.0		3.7		3.7		1.3		2.7	
	Stream Condition Rating	Good		Good		Fair		Fair		Poor*		Poor*	
Coastal Plain	Abundance per square meter	0.94	5	0.79	5	0.44	1	0.55	3	0.048	1	0.010	1
	Number of Benthic Species[1]	0.44	5	0.44	5	0.33	5	0.22	5	0.0	1	0.11	3
	Percent Tolerant	34	5	9.7	5	30	5	20	5	94	3	41	5
	Percent Generalist, Omnivores, Invertivores	87	5	97	3	95	3	97	3	100	1	97	3
	Percent Round-bodied Suckers	10	5	11	5	8.1	5	2.5	5	0.0	1	4.6	5
	Percent Abundance Dominant Taxa	18	5	22	5	17	5	27	5	85	1	41	3
	Index of Biotic Integrity (IBI)	5.0		4.7		4.0		4.3		1.3		3.3	
	Stream Condition Rating	Good		Good		Good		Good		Poor*		Fair*	

Piedmont FIBI Metrics and Thresholds			
Metric	5	3	1
Abundance per square meter	≥ 1.25	0.25 – 1.24	< 0.25
Number of Benthic species *	≥ 0.26	0.09 – 0.25	<0.09
Percent Tolerant	≤ 45	46-68	>68
Percent Generalist, Omnivores, Invertivores	≤ 80	81-99	100
Biomass per square meter	≥ 8.6	4.0-8.5	<4.0
Percent Lithophilic Spawners	≥ 61	32-60	<32

Coastal Plain FIBI Metrics and Thresholds			
Metric	5	3	1
Abundance per square meter	≥ 0.72	0.45 – 0.71	< 0.45
Number of Benthic species *	≥ 0.22	0.01 – 0.21	0
Percent Tolerant	≤ 68	69 - 97	> 97
Percent Generalist, Omnivores, Invertivor	≤ 92	93 - 99	100
Percent Round-bodied Suckers	≥ 2	1	0
Percent Abundance Dominant Taxa	≤ 40	41 - 69	> 69

Notes:

1. Metrics shown are those recommended for the Coastal Plain and Piedmont ecoregions in Maryland protocol (Southerland et al 2005).
2. Both sets of metrics are shown for comparison purposes. Grey shading indicates the ecoregion that the location falls into and the accompanying index score. See Figure 2.
3. * = MBSS metrics and scores are not directly comparable for WR-1A and WR-4A due to differences in habitat and sampling methods, values are presented for comparison purposes only.

Table 4
2020 APG Stream Fish Community Data Compared to Reference
Aberdeen Proving Ground, Edgewood, Maryland

	APG Locations				Reference Locations				
Location	**WR-1**	**WR-2**	**WR-3**	**WR-4**	**ATKI-101-X-2019[1]**	**HA-N-092-304-96[2]**	**LWIN-308-R-2018[3]**	**LWIN-306-A-2012[4]**	**LIGU-307-R-2017**
Sample Date	**8/18/2020**	**8/19/2020**	**8/18/2020**	**8/19/2020**	**6/11/2019**	**8/7/1996**	**7/12/2018**	**6/11/2012**	**8/2/2017**
Fish Species	**Number of Individuals**	**Number of Individuals**	**Number of Individuals**	**Number of Individuals**	**Number of Individuals**	**Number of Individuals**	**Number of Individuals**	**Number of Individuals**	**Number of Individuals**
American eel	0	108	66	122	0	138	67	130	119
Banded killifish	0	0	0	0	0	0	0	2	0
Blacknose dace	13	0	0	0	61	1	1	0	1
Bluegill	0	0	42	30	0	0	13	5	0
Bluegill x green sunfish	1	0	4	0	0	0	0	0	0
Bluegill x pumpkinseed	0	0	0	1	0	0	0	0	0
Blue ridge sculpin	82	5	0	0	80	24	0	0	0
Bluntnose minnow	135	29	31	11	150	1	9	18	0
Brown bullhead	0	0	0	0	0	0	0	0	0
Common carp	0	0	0	0	0	0	0	0	0
Common shiner	54	41	0	3	3	107	5	0	176
Creek Chub	0	1	0	1	59	6	0	23	13
Creek chubsucker	0	0	0	0	0	0	0	15	0
Cutlips minnow	12	9	1	1	0	0	0	0	0
Eastern mudminnow	0	0	0	0	0	0	0	1	0
Eastern mosquitofish	0	0	0	9	0	0	0	0	0
Eastern silvery minnow	0	0	0	1	0	0	0	3	0
Emerald shiner	0	0	0	2	0	0	0	0	0
Fallfish	44	7	31	18	1	28	42	7	0
Fathead minnow	1	0	0	0	0	0	0	0	0
Green sunfish	0	0	14	2	0	0	1	4	0
Johhny darter	13	3	5	0	0	0	0	0	0
Largemouth bass	0	0	6	3	0	2	3	4	0
Longnose dace	40	23	14	13	2	53	0	2	68
Margined madtom	15	17	20	23	1	136	18	6	128
Northern hogsucker	75	65	31	11	0	67	27	0	105
Pumpkinseed	1	0	1	10	0	2	7	23	0
Redbreast sunfish	18	62	53	97	7	14	148	68	1
Redfin pickerel	0	0	0	0	0	0	0	1	0
River chub	39	125	8	4	0	295	7	0	489
Rosyface shiner	18	13	3	2	0	0	0	0	7
Rosyside dace	0	0	2	0	7	1	0	0	5
Satinfin shiner	9	12	10	10	0	12	3	5	0
Sea lamprey	0	0	0	0	0	0	10	8	20
Smallmouth bass	13	13	9	5	0	0	18	8	31
Spotfin shiner	21	16	7	26	0	0	0	0	0
Spottail shiner	0	0	0	5	0	0	0	5	0
Striped bass	0	0	0	1	0	0	0	0	0
Swallowtail shiner	37	1	5	0	0	0	0	0	0
Tessellated darter	38	26	18	24	0	75	6	63	48
White perch	0	0	0	2	0	0	0	6	0
White sucker	71	0	3	8	8	6	7	30	34
Yellow bullhead	0	0	0	1	0	0	0	0	0
Yellow perch	0	0	0	0	0	0	0	1	0
Total Number of Individuals	750	576	384	446	379	968	392	438	1245
Piedmont Metrics									
Fish Index of Biotic Integrity	4.0	4.0	3.7	4.0	3.7	4.0	--	--	4.7
Stream Condition Rating	Good	Good	Fair	Good	Fair	Good	--	--	Good
Coastal Plain Metrics									
Fish Index of Biotic Integrity	5.0	4.3	4.0	4.7	--	--	4.0	4.0	--
Stream Condition Rating	Good	Good	Good	Good	--	--	Good	Good	--

Notes:

1. Data from MBSS site summary for ATKI-101-X-2019 as part of the Maryland DNR Maryland Biological Stream Survey. The location is upstream of Atkisson Dam on Wheel Creek.
2. Data from MBSS site summary for HA-N-092-304-96 as part of the Maryland DNR Maryland Biological Stream Survey. The location is downstream of the Atkisson Dam on Winters Run.
3. Data from MBSS site summary for LWIN-308-R-2018 as part of the Maryland DNR Maryland Biological Stream Survey. The location is upstream of the Van Bibber weir on Winters Run.
4. Data from MBSS site summary for LWIN-306-A-2012 as part of the Maryland DNR Maryland Biological Stream Survey. The Location is downstream of the Van Bibber weir on Otter Point Creek.
5. The reference locations are ordered upstream to downstream to match the site locations, except location LIGU-307-R-2017 which represents a location on the Little Gunpowder Falls, a Class III stream adjacent to Winter's Run.
6. Grey shading incicates the ecoregion that the location falls into and the accompanying index score.
7. 2021 impoundement fish community data does not have applicable and comparable background data from MBSS database so is not presented here.

Table 5
2021 Benthic Invertebrate Community Data
Aberdeen Proving Ground, Edgewood, Maryland

Taxon	Common Name	WR-1	WR-2	WR-3	WR-4
	Location	WR-1	WR-2	WR-3	WR-4
	Sample Date	4/30/2021	4/30/2021	4/30/2021	4/30/2021
Taxon	Common Name	Number of Individuals	Number of Individuals	Number of Individuals	Number of Individuals
Nematoda		1	2		
Trombidiformes					
Lebertiidae	mites				
Lebertia			1		2
Sperchontidae	mites				
Sperchon			1	1	
Veneroida					
Corbiculidae	clams				
Corbicula					1
Hoplonemertea					
Tetrastemmatidae					
Prostoma			1		
Coleoptera					
Elmidae	riffle beetles				
Macronychus				1	1
Microcylloepus					2
Oulimnius			2	2	3
Stenelmis			1	2	17
Psephenidae	water-penny beetles				
Psephenus			1		4
Lumbriculida	aquatic oligochaete worms				
Lumbriculidae		1			
Tubificida					
Naididae	aquatic oligochaete worms	1			3
Gastropoda		1			
Diptera					
Blephariceridae	net-winged midges		1		
Chironomidae	midges				
Ablabesmyia		1			
Brillia		1			
Cardiocladius		2	2		
Cladotanytarsus		1	1		
Corynoneura		1	1	1	
Cricotopus		16	12	26	21
Cricotopus/Orthocladius		5	2	1	4
Eukiefferiella		9	11	7	9
Hydrobaenus			10	28	
Nilotanypus					1
Microtendipes			2		
Orthocladius		7	6	3	9
Parachaetocladius				1	
Parakiefferiella					1
Parametriocnemus			1		
Paratanytarsus			2	2	
Paratendipes					1
Polypedilum		9	3	4	
Potthastia		1		1	2
Rheocricotopus				1	4
Rheotanytarsus		7	13	3	7
Sublettea					3
Sympotthastia		1		2	
Tanytarsus		1	1	7	4
Thienemanniella		1	2	1	
Tvetenia		2	2	2	
Empididae	balloon flies, dance flies				1
Clinocera		2	2		
Neoplasta					1
Simuliidae	black flies, buffalo gnats				
Simulium		4			
Tipulidae	crane flies				
Antocha		1	1		
Ephemeroptera					
Baetidae	small minnow mayflies				
Acentrella			1		
Acerpenna				3	
Ephemerellidae	spiny crawler mayflies				
Ephemerella		1			
Eurylophella				1	
Teloganopsis			1		3
Heptageniidae	flatheaded mayflies				
Maccaffertium		5	8	5	7
Isonychiidae	brush-legged mayflies				
Isonychia		5	2	1	
Plecoptera					
Nemouridae	spring stoneflies				
Amphinemura		1	2	1	
Perlodidae	perlodid stoneflies				
Isoperla		1			
Lepidoptera					
Pyralidae	grass moths, snout moths				
Petrophila					1
Trichoptera					
Brachycentridae	humpless casemaker caddisflies				
Micrasema					1
Hydropsychidae	net-spinning caddisflies				
Cheumatopsyche		22	9	3	5
Hydropsyche			2		2
Hydroptilidae	micro-caddisflies				
Hydroptila		1			
Leucotrichia			2		
Lepidostomatidae	scaly-mouth caddisflies				
Lepidostoma		1			
Philopotamidae	finger-net caddisflies				
Chimarra		4		1	2
Psychomyiidae	trumpet-net/tube-making caddisflies				
Psychomyia			1		1
Uenoidae	stonecase caddisflies				
Neophylax			1		
Amphipoda					
Crangonyctidae	cave-dwelling freshwater amphipod				
Crangonyx			2	1	
Gammaridae	amphipods, scuds				
Gammarus				1	
	Total Number of Individuals	117	113	113	123

Notes:
1. Common names provided for the families.

Table 6
2021 Benthic Invertebrate Community Metrics
Aberdeen Proving Ground, Edgewood, Maryland

	Metric	WR-1		WR-2		WR-3		WR-4	
		Value	Score	Value	Score	Value	Score	Value	Score
Piedmont	Number of Taxa	31	5	36	5	28	5	29	5
	EPT Taxa	9.0	3	10	3	7.0	3	7	3
	Ephemeroptera Taxa	3.0	3	4.0	5	4.0	5	2.0	3
	Percent Intolerant Urban Taxa	13	3	15	3	12	1	13	3
	Percent Chironomidae	56	3	62	3	80	1	54	3
	Percent Clingers	76	5	65	3	54	3	70	3
	Index of Biotic Integrity (IBI)	3.7		3.7		3.0		3.3	
	Stream Condition Rating	Fair		Fair		Fair		Fair	
Coastal Plain	Number of Taxa	31	5	36	5	28	5	29	5
	EPT Taxa	9.0	5	10	5	7.0	5	7.0	5
	Ephemeroptera Taxa	3.0	5	4.0	5	4.0	5	2.0	5
	Percent Intolerant Urban Taxa	13	3	15	3	12	3	13	3
	Percent Ephemeroptera	9.4	3	10	3	8.8	3	6.7	3
	Scraper Taxa	2.0	5	7.0	5	6.0	5	6.0	5
	Percent Climbers	10	5	3.7	3	9.9	5	4.5	3
	Index of Biotic Integrity (IBI)	4.4		4.1		4.4		4.1	
	Stream Condition Rating	Good		Good		Good		Good	

Piedmont IBI Metrics and Thresholds			
Metric	**5**	**3**	**1**
Number of Taxa	>=25	15-24	<15
Number of EPT Taxa	>=11	5-10	<5
Number of Ephemeroptera Taxa	>=4	2-3	<2
Percent Intolerant Urban (Tol = 0-3)	>=51	12-50	<12
Percent Chironomidae	<24	24-63	>63
Percent Clingers	>=74	31-73	<31

Coastal Plain IBI Metrics and Thresholds			
Metric	**5**	**3**	**1**
Number of Taxa	>=22	14-21	<14
Number of EPT Taxa	>=5	2-4	<2
Number of Ephemeroptera Taxa	>=2	1	<1
Percent Intolerant Urban (Tol = 0-3)	>=28	10-27	<10
Percent Ephemeroptera	>=11	0.8-10.9	<0.8
Number of Scraper Taxa	>=2	1	<1
Percent Climbers	>=8	0.9-7.9	<0.9

Notes:

1. Metrics shown are those recommended for the Coastal Plain and Piedmont ecoregions in Maryland protocol (Southerland et al 2005).
2. MBSS IBI rating categories:
   Good = 4.0 - 5.0
   Fair = 3.0 - 3.9
   Poor = 2.0 - 2.9
   Very Poor = 1.0 - 1.9
3. Both sets of metrics are shown for comparison purposes. Grey shading incicates the ecoregion that the location falls into and the accompanying index score. See Figure 2.

Table 7
2021 Benthic Invertebrate Community Data vs Reference
Aberdeen Proving Ground, Edgewood, Maryland

		APG Locations				Reference Locations				
	Location	WR-1	WR-2	WR-3	WR-4	ATKI-101-X-2019[1]	HA-N-092-304-96[2]	LWIN-308-R-2018[3]	LWIN-306-A-2012[4]	LIGU-307-R-2017
	Sample Date	4/30/2021	4/30/2021	4/30/2021	4/30/2021	6/11/2019	8/7/1996	7/12/2018	6/11/2012	8/2/2017
Taxon	Common Name	Number of Individuals	Number of Individuals	Number of Individuals	Number of Individuals	Number of Individuals	Number of Individuals	Number of Individuals	Number of Individuals	Number of Individuals
Nematoda		1	2							
Trombidiformes										
Lebertiidae	mites									
Lebertia			1		2					
Sperchontidae	mites									
Sperchon			1	1						
Veneroida										
Corbiculidae	clams									
Corbicula					1					
Odonata										
Coenagrionidae	narrow-winged damselflies									
Argia							1	1		
Gomphidae	clubtails									
Stylogomphus							1			
Megaloptera										
Corydalidae	Dobsonflies, fishflies, hellgrammites									
Corydalus							1			1
Hoplonemertea										
Tetrastemmatidae										
Prostoma			1							
Coleoptera										
Dryopidae										
Helichus							1			
Elmidae	riffle beetles									
Dubiraphia										1
Macronychus				1	1					
Microcylloepus					2			2		1
Oulimnius			2	2	3			1	1	
Promoresia										1
Stenelmis			1	2	17				1	
Psephenidae	water-penny beetles									
Psephenus			1		4		1	1		
Lumbriculida	aquatic oligochaete worms									
Lumbriculidae		1								
Tubificida										
Naididae	aquatic oligochaete worms	1			3	1				3
Gastropoda		1								
Basommatophora										
Lymnaeidae	pondsnails									
Stagnicola										1
Planorbidae	ramshorn snail									
Ferrissia										1
Diptera										
Blephariceridae	net-winged midges		1							
Chironomidae	midges									
Ablabesmyia		1								
Brillia		1							6	
Cardiocladius		2	2			6		1		
Cladotanytarsus		1	1							
Corynoneura		1	1	1				1	1	3
Cricotopus		16	12	26	21	7		1	5	
Cricotopus/Orthocladius		5	2	1	4		23			
Diamesa						9				3
Eukiefferiella		9	11	7	9	5		14		1
Hydrobaenus			10	28					11	
Nanocladius									1	
Nilotanypus					1					
Micropsectra						1				
Microtendipes			2							
Orthocladiinae						10		5	4	1
Orthocladius		7	6	3	9	49		22	41	9
Parachaetocladius				1						
Parakiefferiella					1					
Parametriocnemus			1			3		2		
Paratanytarsus			2	2		1				1
Paratendipes					1					
Phaenopsectra									1	
Polypedilum		9	3	4				7	1	
Potthastia		1		1	2				1	
Rheocricotopus				1	4			2	5	1
Rheotanytarsus		7	13	3	7	3		9		2
Sublettea					3					
Sympotthastia		1		2		3				
Synorthocladius								1		
Tanytarsus		1	1	7	4	1		8	2	6
Thienemanniella		1	2	1				10	1	
Tribelos									1	
Tvetenia		2	2	2		2		5		
Empididae	balloon flies, dance flies				1					
Clinocera		2	2							3
Hemerodromia										1
Neoplasta					1					
Simuliidae	black flies, buffalo gnats									
Prosimulium							10	1		
Simulium		4				3		9		
Tipulidae	crane flies									
Antocha		1	1			2		1		6

Table 7
2021 Benthic Invertebrate Community Data vs Reference
Aberdeen Proving Ground, Edgewood, Maryland

		APG Locations				Reference Locations				
	Location	WR-1	WR-2	WR-3	WR-4	ATKI-101-X-2019[1]	HA-N-092-304-96[2]	LWIN-308-R-2018[3]	LWIN-306-A-2012[4]	LIGU-307-R-2017
	Sample Date	4/30/2021	4/30/2021	4/30/2021	4/30/2021	6/11/2019	8/7/1996	7/12/2018	6/11/2012	8/2/2017
Taxon	Common Name	Number of Individuals	Number of Individuals	Number of Individuals	Number of Individuals	Number of Individuals	Number of Individuals	Number of Individuals	Number of Individuals	Number of Individuals
Ephemeroptera										
Ameletidae	combmouthed minnow mayflies									
Ameletus									2	
Baetidae	small minnow mayflies									
Acentrella			1							
Acerpenna				3						
Ephemerellidae	spiny crawler mayflies									
Ephemerella		1								5
Eurylophella				1						
Serratella							1			
Teloganopsis			1		3			2		
Heptageniidae	flatheaded mayflies									2
Stenonema							4			
Maccaffertium		5	8	5	7			4	4	8
Isonychiidae	brush-legged mayflies									
Isonychia		5	2	1			2	4	2	6
Plecoptera										
Nemouridae	spring stoneflies									
Amphinemura		1	2	1						
Perlidae	common stoneflies								1	3
Perlodidae	perlodid stoneflies									
Isoperla		1								
Lepidoptera										
Pyralidae	grass moths, snout moths									
Petrophila					1					
Trichoptera										
Brachycentridae	humpless casemaker caddisflies									
Micrasema					1					2
Goeridae	weighted casemaker caddisflies									
Goerinae										1
Hydropsychidae	net-spinning caddisflies									
Cheumatopsyche		22	9	3	5	1	2			18
Diplectrona										1
Hydropsyche			2		2		2	1		17
Hydroptilidae	micro-caddisflies									
Hydroptila		1							1	
Leucotrichia			2							
Lepidostomatidae	scaly-mouth caddisflies									
Lepidostoma		1								
Leptoceridae	long-horned caddisflies									
Oecetis										2
Triaenodes										1
Philopotamidae	finger-net caddisflies									
Chimarra		4		1	2	16		6		1
Polycentropodidae	trumpet-net/tube-making caddisflies									
Neureclipsis										1
Polycentropus									2	3
Psychomyiidae	trumpet-net/tube-making caddisflies									
Psychomyia			1		1					1
Uenoidae	stonecase caddisflies									
Neophylax			1							
Amphipoda										
Crangonyctidae	cave-dwelling freshwater amphipod									
Crangonyx			2	1					11	
Gammaridae	amphipods, scuds									
Gammarus				1					8	
	Total Number of Individuals	117	113	113	123	123	49	121	114	118
Piedmont Metrics										
	Benthic Index of Biotic Integrity	3.7	3.7	3.0	3.3	1.7	2.7	--	--	4.3
	Stream Condition Rating	Fair	Fair	Fair	Fair	Poor	Poor	--	--	Good
Coastal Plain Metrics										
	Benthic Index of Biotic Integrity	4.4	4.1	4.4	4.1	--	--	4.1	4.1	--
	Stream Condition Rating	Good	Good	Good	Good	--	--	Good	Good	--

Notes:

1. Data from MBSS site summary for ATKI-101-X-2019 as part of the Maryland DNR Maryland Biological Stream Survey. The location is upstream of Atkisson Dam on Wheel Creek.
2. Data from MBSS site summary for HA-N-092-304-96 as part of the Maryland DNR Maryland Biological Stream Survey. The location is downstream of the Atkisson Dam on Winters Run.
3. Data from MBSS site summary for LWIN-308-R-2018 as part of the Maryland DNR Maryland Biological Stream Survey. The location is upstream of the Van Bibber weir on Winters Run.
4. Data from MBSS site summary for LWIN-306-A-2012 as part of the Maryland DNR Maryland Biological Stream Survey. The Location is downstream of the Van Bibber weir on Otter Point Creek.
5. The reference locations are ordered upstream to downstream to match the site locations, except location LIGU-307-R-2017 which represents a location on the Little Gunpowder Falls, a Class III stream adjacent to Winter's Run.
6. Grey shading incicates the ecoregion that the location falls into and the accompanying index score. See Figure 2.
7. Common names provided for the families.

Table 8
2021 Surface Water Field Parameters and Analytical Results
Aberdeen Proving Ground, Edgewood, Maryland

Parameter	Winters Run						Water Quality Criteria		
	WR-1	WR-1A	WR-2	WR-3	WR-4	WR-4A	Benchmarks	Criteria (I & I-P/IV-P)	Source
Waterbody Designated Use Classification	IV-P	I-P	I-P	I-P	I	I-P			
Field Parameters									
Depth (ft)	2.2	0.67	3.1	2.0	3.2	1.5	--	--	--
Flow (ft/sec.)	1.4	0.010	0.73	1.6	2.4	0.18	--	--	--
Conductivity (mS/cm)	0.208	0.217	0.228	0.221	0.226	0.266	--	--	--
Oxidation-Reduction Potential (mV)	22.8	87.4	64.4	92.2	98.6	142	--	--	--
Temperature (°C)	10.8	13.1	9.7	8.5	8.1	8.1	--	< 32°C/ <23.9°C	1
Dissolved Oxygen (mg/L)	12.71	13.09	17.12	12.92	12.26	11.77	--	> 5 mg/L	1
pH	7.40	7.39	7.43	7.00	6.73	6.90	--	6.5 - 8.5	1
Turbidity (NTU)	1.8	3.5	3.0	7.5	7.4	6.3	--	<150 NTU	1
Analysis (mg/L)									
Total Kjeldahl Nitrogen	0.50 U	0.50 U	0.50 U [0.50 U]	0.50 U	0.50 U	0.50 U		--	--
Total Nitrate/Nitrite Nitrogen	2.9	2.6	2.6 [2.6]	2.3	2.3	2.3	10 mg/L	--	3
Total Phosphorus	0.05 U	0.05 U	0.05 U [0.05 U]	0.05 U	0.05 U	0.05 U	0.05 or 0.1 mg/L	--	4
Total Suspended Solids	1.9 J	3.8	1.8 J [1.1 J]	2.6 J	2.6 J	2.7 J	N/A	--	5
Total Nitrogen	2.9	2.6	2.6 [2.6]	2.3	2.3	2.3	--	44.6 - 19.9/ 29.8 - 13.3 mg/L	2

Notes:

1. Maryland Water Quality Standards for Class I, I-P, and IV-P Designated Use waterbody (26.08.02.03-3 Water Quality Criteria Specific to Designated Uses).
2. Total Nitrogen based on Acute Water Quality Criteria for freshwater aquatic life (based on pH between 6.7 and 7.5, salmonids present and salmonids not present), COMAR §26.08.02.03-2.H(1).
3. Drinking water standard for nitrates are set at 10 mg/L, nitrite standard is set at 1 mg/L.
4. Maryland does not have phosphorus limits for surface waters, however, the EPA recommends TP levels to not exceed 0.05 mg/L for streams that enter lakes and 0.1 mg/L in flowing waters. WR-1 and WR-1A flow into Atkisson Reservoir so will be screened against the 0.05 mg/L benchmark. The rest of the locations will be screened against the 0.1 mg/L benchmark.
5. There is an approved PCB TMDL for the Bush River watershed; however, loads associated with re-suspension and diffusion from sediments and tidal influences from the Chesapeake Bay mainstem are not considered to be directly controllable (reducible) within the framework of the TMDL and are thus not assigned baseline loads or allocations.
6. All samples collected on March 30, 2021.
7. 'Bracketed value represents field duplicate results.
8. '°C = degrees Celsius.
9. ft/sec. - feet per second.
10. J - result is less than the reporting limit but greater than or equal to the method detection limit and the concentration is an approximate value.
11. mg/L - milligram per liter.
12. mS/cm - milliSiemen per centimeter.
13. mV - millivolt.
14. NTU - nephelometric turbidity unit.
15. U - indicates the analyte was analyte was analyzed but not detected. Value represents the method detection limit.

Figures

Fish Community Survey
Aberdeen Proving Ground
Aberdeen, MD

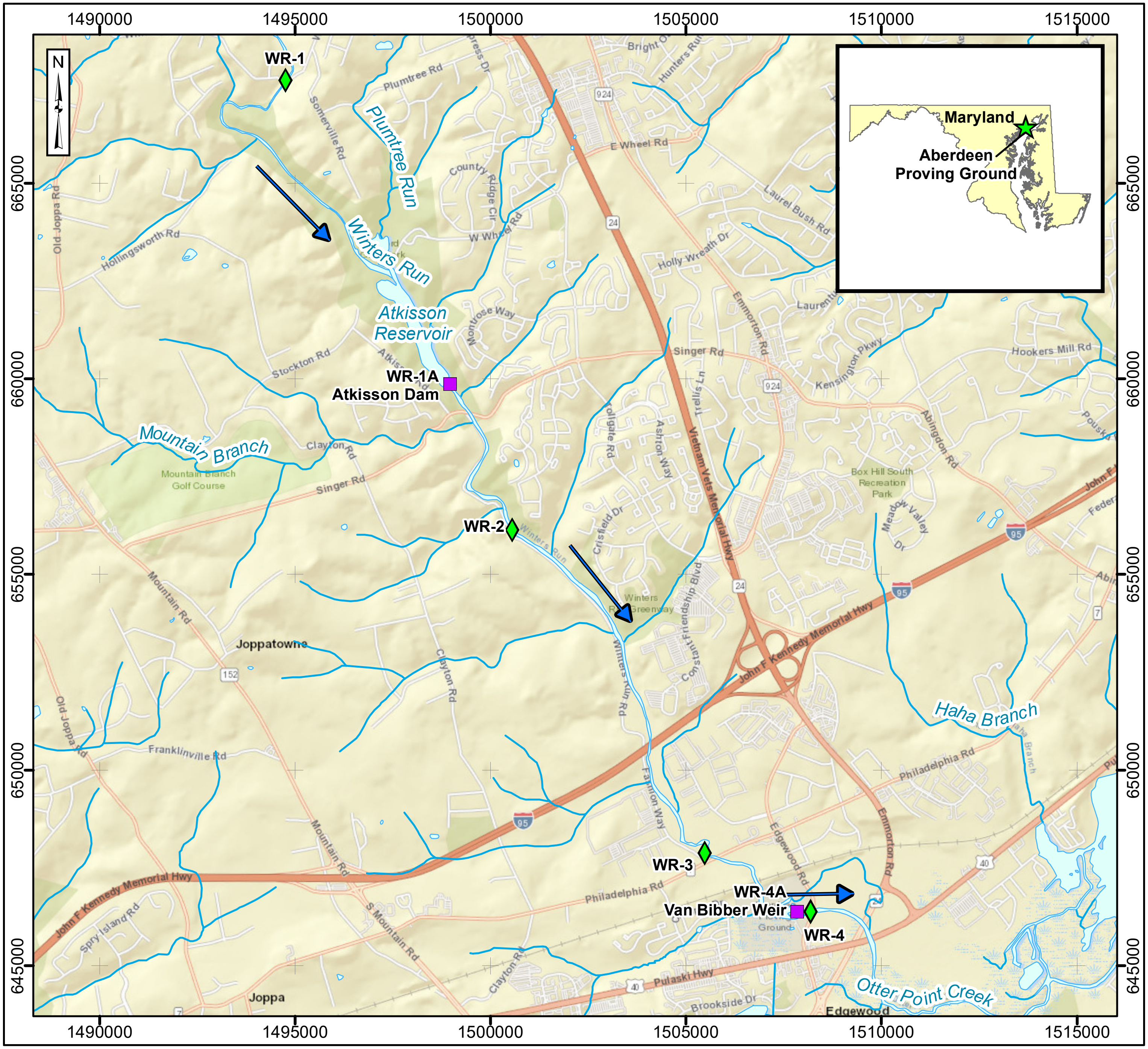


Figure 1
Sample Reach Locations

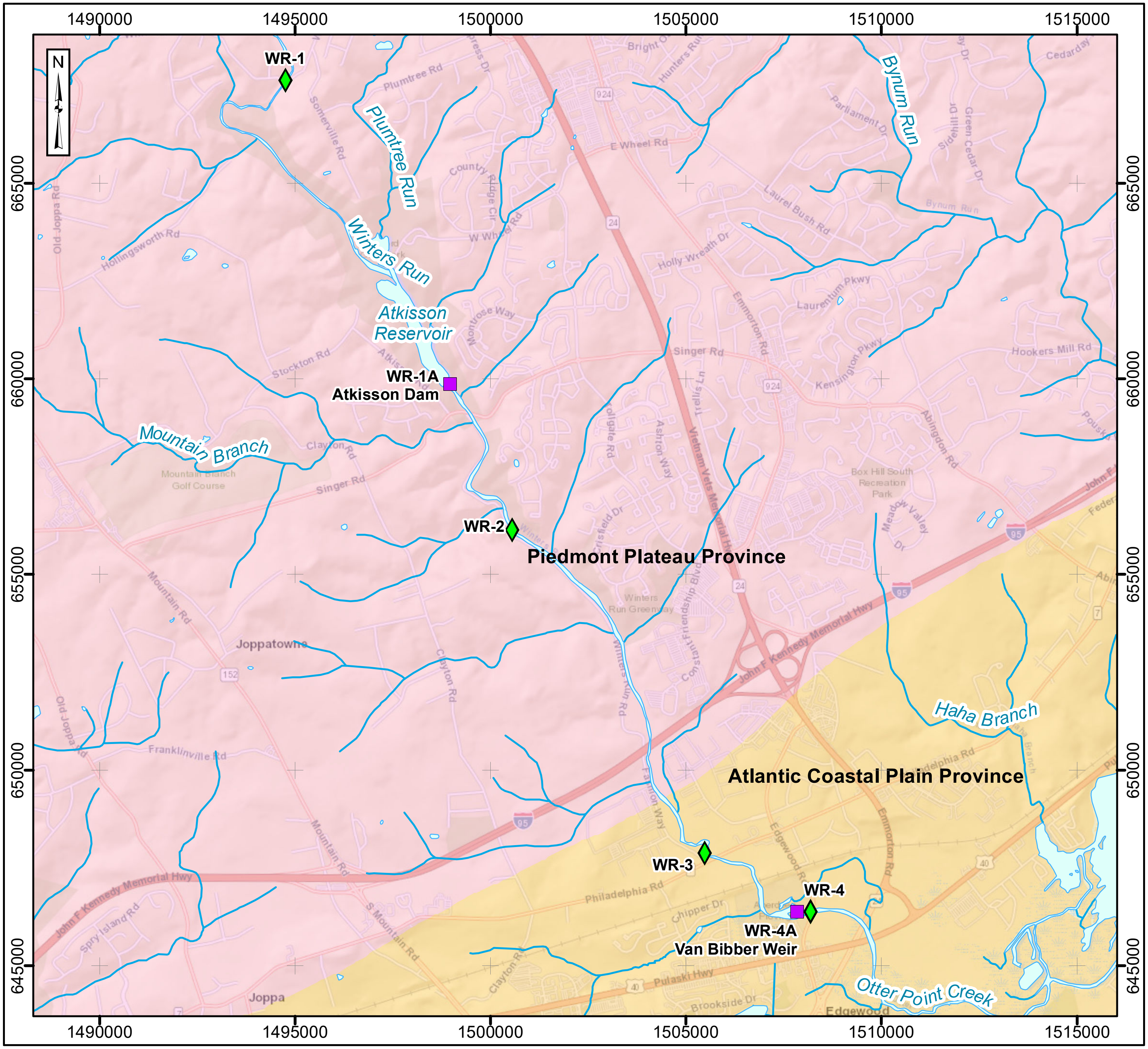
Legend

- River/Stream
- Water Body
- 2020 Sample Reach Location
- 2021 Sample Reach Location
- Surface Water Flow Direction

0 2,000 4,000
Feet

Data Sources: USGS, NHD Data, 2020;
ESRI, ArcGIS Online,
Street Map Data

Coordinate System: MD, State Plane
Datum: NAD83
Units: Feet



Fish Community Survey
Aberdeen Proving Grounds
Aberdeen, MD

Figure 2
Sample Reaches and Physiographic Regions

Legend

River/Stream
Water Body
2020 Sample Reach Location
2021 Sample Reach Location

Physiographic Regions

Atlantic Coastal Plain Province
Piedmont Plateau Province

0 2,000 4,000
Feet

Data Sources: MGS, Physiographic Map of Maryland, 2003; USGS, NHD Data, 2020; ESRI, ArcGIS Online, Street Map Data

Coordinate System: MD, State Plane
Datum: NAD83
Units: Feet

Appendix A

Surface Water Laboratory Analytical Report

eurofins

Environment Testing
America

ANALYTICAL REPORT

Eurofins Lancaster Laboratories Env, LLC
2425 New Holland Pike
Lancaster, PA 17601
Tel: (717)656-2300

Laboratory Job ID: 410-34150-1
Client Project/Site: Surface Waters for MBSS

For:
ARCADIS U.S. Inc
One Lincoln Center
110 West Fayette St, Suite 300
Syracuse, New York 13202

Attn: Matthew Frackelton

Barb Weyandt

Authorized for release by:
4/19/2021 8:10:27 AM

Barbara Weyandt, Project Manager
(717)556-7264
Barbara.Weyandt@eurofinset.com

The test results in this report meet all 2003 NELAC, 2009 TNI, and 2016 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

Analytical test results meet all requirements of the associated regulatory program (e.g., NELAC (TNI), DoD, and ISO 17025) unless otherwise noted under the individual analysis. Data qualifiers are applied to note exceptions. Noncompliant quality control (QC) is further explained in narrative comments.
· QC results that exceed the upper limits and are associated with non-detect samples are qualified but further narration is not required since the bias is high and does not change a non-detect result. Further narration is also not required with QC blank detection when the associated sample concentration is non-detect or more than ten times the level in the blank.
· Matrix QC may not be reported if insufficient sample or site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD is performed, unless otherwise specified in the method.
· Surrogate and/or isotope dilution analyte recoveries (if applicable) which are outside of the QC window are confirmed unless attributed to a dilution or otherwise noted in the narrative.
Regulated compliance samples (e.g. SDWA, NPDES) must comply with the associated agency requirements/permits.

Measurement uncertainty values, as applicable, are available upon request.

Test results relate only to the sample tested. Clients should be aware that a critical step in a chemical or microbiological analysis is the collection of the sample. Unless the sample analyzed is truly representative of the bulk of material involved, the test results will be meaningless. If you have questions regarding the proper techniques of collecting samples, please contact us. We cannot be held responsible for sample integrity, however, unless sampling has been performed by a member of our staff. Times are local to the area of activity. Parameters listed in the 40 CFR Part 136 Table II as "analyze immediately" and tested in the laboratory are not performed within 15 minutes of collection.

WARRANTY AND LIMITS OF LIABILITY - In accepting analytical work, we warrant the accuracy of test results for the sample as submitted. The foregoing express warranty is exclusive and is given in lieu of all other warranties, expressed or implied, except as otherwise agreed. We disclaim any other warranties, expressed or implied, including a warranty of fitness for particular purpose and warranty of merchantability. In no event shall Eurofins Lancaster Laboratories Environmental, LLC be liable for indirect, special, consequential, or incidental damages including, but not limited to, damages for loss of profit or goodwill regardless of (A) the negligence (either sole or concurrent) of Eurofins Lancaster Laboratories Environmental and (B) whether Eurofins Lancaster Laboratories Environmental has been informed of the possibility of such damages. We accept no legal responsibility for the purposes for which the client uses the test results. Except as otherwise agreed, no purchase order or other order for work shall be accepted by Eurofins Lancaster Laboratories Environmental which includes any conditions that vary from the Standard Terms and Conditions, and Eurofins Lancaster Laboratories Environmental hereby objects to any conflicting terms contained in any acceptance or order submitted by client.

Barb Weyandt

Barbara Weyandt
Project Manager
4/19/2021 8:10:27 AM

Table of Contents

Client: ARCADIS U.S. Inc | Job ID: 410-34150-1
Project/Site: Surface Waters for MBSS

Qualifiers

General Chemistry

Qualifier	Qualifier Description
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
1C	Result is from the primary column on a dual-column method.
2C	Result is from the confirmation column on a dual-column method.
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Case Narrative

Client: ARCADIS U.S. Inc
Project/Site: Surface Waters for MBSS

Job ID: 410-34150-1

Job ID: 410-34150-1

Laboratory: Eurofins Lancaster Laboratories Env, LLC

Narrative

Job Narrative
410-34150-1

Receipt
The samples were received on 3/31/2021 9:27 AM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperature of the cooler at receipt was 2.4º C.

Receipt Exceptions
The container label for the following sample did not match the information listed on the Chain-of-Custody (COC): WR 1A (410-34150-2). The container labels list WR 2A, while the COC lists WR 1A.
The container label for the following sample did not match the information listed on the Chain-of-Custody (COC): WR 4 (410-34150-5). The container labels list 09:30 03/30/21, while the COC lists 09:15 03/30/21.

General Chemistry
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Detection Summary

Client: ARCADIS U.S. Inc
Project/Site: Surface Waters for MBSS

Job ID: 410-34150-1

Client Sample ID: WR 1

Lab Sample ID: 410-34150-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Total Suspended Solids	1.9	J	3.0	1.0	mg/L	1		2540 D-2011	Total/NA
Nitrate Nitrite as N	2.9		0.10	0.040	mg/L	1		353.2	Total/NA
Nitrogen, Total	2.9		1.0	0.50	mg/L	1		SM4500	Total/NA

Client Sample ID: WR 1A

Lab Sample ID: 410-34150-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Total Suspended Solids	3.8		3.0	1.0	mg/L	1		2540 D-2011	Total/NA
Nitrate Nitrite as N	2.6		0.10	0.040	mg/L	1		353.2	Total/NA
Nitrogen, Total	2.6		1.0	0.50	mg/L	1		SM4500	Total/NA

Client Sample ID: WR 2

Lab Sample ID: 410-34150-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Total Suspended Solids	1.8	J	3.0	1.0	mg/L	1		2540 D-2011	Total/NA
Nitrate Nitrite as N	2.6		0.10	0.040	mg/L	1		353.2	Total/NA
Nitrogen, Total	2.6		1.0	0.50	mg/L	1		SM4500	Total/NA

Client Sample ID: WR 3

Lab Sample ID: 410-34150-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Total Suspended Solids	2.6	J	3.0	1.0	mg/L	1		2540 D-2011	Total/NA
Nitrate Nitrite as N	2.3		0.10	0.040	mg/L	1		353.2	Total/NA
Nitrogen, Total	2.3		1.0	0.50	mg/L	1		SM4500	Total/NA

Client Sample ID: WR 4

Lab Sample ID: 410-34150-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Total Suspended Solids	2.6	J	3.0	1.0	mg/L	1		2540 D-2011	Total/NA
Nitrate Nitrite as N	2.3		0.10	0.040	mg/L	1		353.2	Total/NA
Nitrogen, Total	2.3		1.0	0.50	mg/L	1		SM4500	Total/NA

Client Sample ID: WR 4A

Lab Sample ID: 410-34150-6

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Total Suspended Solids	2.7	J	3.0	1.0	mg/L	1		2540 D-2011	Total/NA
Nitrate Nitrite as N	2.3		0.10	0.040	mg/L	1		353.2	Total/NA
Nitrogen, Total	2.3		1.0	0.50	mg/L	1		SM4500	Total/NA

Client Sample ID: DUP

Lab Sample ID: 410-34150-7

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Total Suspended Solids	1.1	J	3.0	1.0	mg/L	1		2540 D-2011	Total/NA
Nitrate Nitrite as N	2.6		0.10	0.040	mg/L	1		353.2	Total/NA
Nitrogen, Total	2.6		1.0	0.50	mg/L	1		SM4500	Total/NA

This Detection Summary does not include radiochemical test results.

Client Sample ID: WR 1

Lab Sample ID: 410-34150-1

Date Collected: 03/30/21 14:00
Date Received: 03/31/21 09:27
Matrix: Water

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Suspended Solids	**1.9**	**J**	3.0	1.0	mg/L			03/31/21 13:50	1
Total Kjeldahl Nitrogen	ND		1.0	0.50	mg/L		04/01/21 07:10	04/06/21 14:57	1
Nitrate Nitrite as N	**2.9**		0.10	0.040	mg/L			04/08/21 12:53	1
Total Phosphorus as P	ND		0.10	0.050	mg/L		04/01/21 08:45	04/02/21 10:27	1
Nitrogen, Total	**2.9**		1.0	0.50	mg/L			04/01/21 05:59	1

Client Sample ID: WR 1A

Lab Sample ID: 410-34150-2

Date Collected: 03/30/21 13:15
Date Received: 03/31/21 09:27
Matrix: Water

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Suspended Solids	**3.8**		3.0	1.0	mg/L			03/31/21 13:50	1
Total Kjeldahl Nitrogen	ND		1.0	0.50	mg/L		04/01/21 07:10	04/06/21 14:59	1
Nitrate Nitrite as N	**2.6**		0.10	0.040	mg/L			04/08/21 12:55	1
Total Phosphorus as P	ND		0.10	0.050	mg/L		04/01/21 08:45	04/02/21 10:28	1
Nitrogen, Total	**2.6**		1.0	0.50	mg/L			04/01/21 05:59	1

Client Sample ID: WR 2

Lab Sample ID: 410-34150-3

Date Collected: 03/30/21 12:15
Date Received: 03/31/21 09:27
Matrix: Water

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Suspended Solids	**1.8**	**J**	3.0	1.0	mg/L			03/31/21 13:50	1
Total Kjeldahl Nitrogen	ND		1.0	0.50	mg/L		04/01/21 07:10	04/06/21 14:59	1
Nitrate Nitrite as N	**2.6**		0.10	0.040	mg/L			04/08/21 12:57	1
Total Phosphorus as P	ND		0.10	0.050	mg/L		04/01/21 08:45	04/02/21 10:28	1
Nitrogen, Total	**2.6**		1.0	0.50	mg/L			04/01/21 05:59	1

Client Sample ID: WR 3

Lab Sample ID: 410-34150-4

Date Collected: 03/30/21 11:30
Date Received: 03/31/21 09:27
Matrix: Water

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Suspended Solids	**2.6**	**J**	3.0	1.0	mg/L			03/31/21 13:50	1
Total Kjeldahl Nitrogen	ND		1.0	0.50	mg/L		04/01/21 07:10	04/06/21 14:58	1
Nitrate Nitrite as N	**2.3**		0.10	0.040	mg/L			04/08/21 13:13	1
Total Phosphorus as P	ND		0.10	0.050	mg/L		04/01/21 08:45	04/02/21 10:27	1
Nitrogen, Total	**2.3**		1.0	0.50	mg/L			04/01/21 05:59	1

Client Sample ID: WR 4

Lab Sample ID: 410-34150-5

Date Collected: 03/30/21 09:15
Date Received: 03/31/21 09:27
Matrix: Water

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Suspended Solids	**2.6**	**J**	3.0	1.0	mg/L			03/31/21 13:50	1
Total Kjeldahl Nitrogen	ND		1.0	0.50	mg/L		04/01/21 07:10	04/06/21 15:00	1
Nitrate Nitrite as N	**2.3**		0.10	0.040	mg/L			04/08/21 13:17	1

Client Sample ID: WR 4
Lab Sample ID: 410-34150-5

Date Collected: 03/30/21 09:15
Matrix: Water
Date Received: 03/31/21 09:27

General Chemistry (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Phosphorus as P	ND		0.10	0.050	mg/L		04/01/21 08:45	04/02/21 10:28	1
Nitrogen, Total	**2.3**		1.0	0.50	mg/L			04/01/21 05:59	1

Client Sample ID: WR 4A
Lab Sample ID: 410-34150-6

Date Collected: 03/30/21 10:15
Matrix: Water
Date Received: 03/31/21 09:27

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Suspended Solids	**2.7**	**J**	3.0	1.0	mg/L			03/31/21 13:50	1
Total Kjeldahl Nitrogen	ND		1.0	0.50	mg/L		04/01/21 07:10	04/06/21 14:58	1
Nitrate Nitrite as N	**2.3**		0.10	0.040	mg/L			04/08/21 13:15	1
Total Phosphorus as P	ND		0.10	0.050	mg/L		04/01/21 08:45	04/02/21 10:27	1
Nitrogen, Total	**2.3**		1.0	0.50	mg/L			04/01/21 05:59	1

Client Sample ID: DUP
Lab Sample ID: 410-34150-7

Date Collected: 03/30/21 00:00
Matrix: Water
Date Received: 03/31/21 09:27

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Suspended Solids	**1.1**	**J**	3.0	1.0	mg/L			04/02/21 10:06	1
Total Kjeldahl Nitrogen	ND		1.0	0.50	mg/L		04/01/21 07:10	04/06/21 14:57	1
Nitrate Nitrite as N	**2.6**		0.10	0.040	mg/L			04/08/21 13:48	1
Total Phosphorus as P	ND		0.10	0.050	mg/L		04/01/21 08:45	04/02/21 10:27	1
Nitrogen, Total	**2.6**		1.0	0.50	mg/L			04/01/21 05:59	1

Method: 2540 D-2011 - Total Suspended Solids (Dried at 103-105°C)

Lab Sample ID: MB 410-109455/1
Matrix: Water
Analysis Batch: 109455

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Suspended Solids	ND		3.0	1.0	mg/L			03/31/21 13:50	1

Lab Sample ID: LCS 410-109455/2
Matrix: Water
Analysis Batch: 109455

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Suspended Solids	150	151		mg/L		100	89 - 105

Lab Sample ID: MB 410-110269/1
Matrix: Water
Analysis Batch: 110269

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Suspended Solids	ND		3.0	1.0	mg/L			04/02/21 10:06	1

Lab Sample ID: LCS 410-110269/2
Matrix: Water
Analysis Batch: 110269

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Suspended Solids	149	142		mg/L		95	89 - 105

Lab Sample ID: LCSD 410-110269/3
Matrix: Water
Analysis Batch: 110269

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Total Suspended Solids	153	146		mg/L		96	89 - 105	3	20

Method: 351.2 - Nitrogen, Total Kjeldahl

Lab Sample ID: MB 410-109737/2-A
Matrix: Water
Analysis Batch: 111355

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 109737

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Kjeldahl Nitrogen	ND		1.0	0.50	mg/L		04/01/21 07:10	04/06/21 14:51	1

Lab Sample ID: LCS 410-109737/1-A
Matrix: Water
Analysis Batch: 111355

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 109737

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Kjeldahl Nitrogen	4.00	4.36		mg/L		109	90 - 110

QC Sample Results

Client: ARCADIS U.S. Inc	Job ID: 410-34150-1
Project/Site: Surface Waters for MBSS

Method: 353.2 - Nitrogen, Nitrate-Nitrite

Lab Sample ID: MB 410-112443/20	**Client Sample ID: Method Blank**
Matrix: Water	**Prep Type: Total/NA**
Analysis Batch: 112443

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Nitrate Nitrite as N	ND		0.10	0.040	mg/L			04/08/21 12:04	1

Lab Sample ID: MB 410-112443/50	**Client Sample ID: Method Blank**
Matrix: Water	**Prep Type: Total/NA**
Analysis Batch: 112443

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Nitrate Nitrite as N	ND		0.10	0.040	mg/L			04/08/21 12:59	1

Lab Sample ID: LCS 410-112443/21	**Client Sample ID: Lab Control Sample**
Matrix: Water	**Prep Type: Total/NA**
Analysis Batch: 112443

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Nitrate Nitrite as N	2.50	2.61		mg/L		105	90 - 110

Lab Sample ID: LCS 410-112443/51	**Client Sample ID: Lab Control Sample**
Matrix: Water	**Prep Type: Total/NA**
Analysis Batch: 112443

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Nitrate Nitrite as N	2.50	2.65		mg/L		106	90 - 110

Method: 365.1 - Phosphorus, Total

Lab Sample ID: MB 410-109816/2-A	**Client Sample ID: Method Blank**
Matrix: Water	**Prep Type: Total/NA**
Analysis Batch: 110288	**Prep Batch: 109816**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Phosphorus as P	ND		0.10	0.050	mg/L		04/01/21 08:45	04/02/21 10:23	1

Lab Sample ID: LCS 410-109816/1-A	**Client Sample ID: Lab Control Sample**
Matrix: Water	**Prep Type: Total/NA**
Analysis Batch: 110288	**Prep Batch: 109816**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Phosphorus as P	1.36	1.37		mg/L		101	90 - 110

QC Association Summary

Client: ARCADIS U.S. Inc
Project/Site: Surface Waters for MBSS

Job ID: 410-34150-1

General Chemistry

Analysis Batch: 108137

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
410-34150-1	WR 1	Total/NA	Water	SM4500	
410-34150-2	WR 1A	Total/NA	Water	SM4500	
410-34150-3	WR 2	Total/NA	Water	SM4500	
410-34150-4	WR 3	Total/NA	Water	SM4500	
410-34150-5	WR 4	Total/NA	Water	SM4500	
410-34150-6	WR 4A	Total/NA	Water	SM4500	
410-34150-7	DUP	Total/NA	Water	SM4500	

Analysis Batch: 109455

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
410-34150-1	WR 1	Total/NA	Water	2540 D-2011	
410-34150-2	WR 1A	Total/NA	Water	2540 D-2011	
410-34150-3	WR 2	Total/NA	Water	2540 D-2011	
410-34150-4	WR 3	Total/NA	Water	2540 D-2011	
410-34150-5	WR 4	Total/NA	Water	2540 D-2011	
410-34150-6	WR 4A	Total/NA	Water	2540 D-2011	
MB 410-109455/1	Method Blank	Total/NA	Water	2540 D-2011	
LCS 410-109455/2	Lab Control Sample	Total/NA	Water	2540 D-2011	

Prep Batch: 109737

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
410-34150-1	WR 1	Total/NA	Water	351.2	
410-34150-2	WR 1A	Total/NA	Water	351.2	
410-34150-3	WR 2	Total/NA	Water	351.2	
410-34150-4	WR 3	Total/NA	Water	351.2	
410-34150-5	WR 4	Total/NA	Water	351.2	
410-34150-6	WR 4A	Total/NA	Water	351.2	
410-34150-7	DUP	Total/NA	Water	351.2	
MB 410-109737/2-A	Method Blank	Total/NA	Water	351.2	
LCS 410-109737/1-A	Lab Control Sample	Total/NA	Water	351.2	

Prep Batch: 109816

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
410-34150-1	WR 1	Total/NA	Water	365.1	
410-34150-2	WR 1A	Total/NA	Water	365.1	
410-34150-3	WR 2	Total/NA	Water	365.1	
410-34150-4	WR 3	Total/NA	Water	365.1	
410-34150-5	WR 4	Total/NA	Water	365.1	
410-34150-6	WR 4A	Total/NA	Water	365.1	
410-34150-7	DUP	Total/NA	Water	365.1	
MB 410-109816/2-A	Method Blank	Total/NA	Water	365.1	
LCS 410-109816/1-A	Lab Control Sample	Total/NA	Water	365.1	

Analysis Batch: 110269

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
410-34150-7	DUP	Total/NA	Water	2540 D-2011	
MB 410-110269/1	Method Blank	Total/NA	Water	2540 D-2011	
LCS 410-110269/2	Lab Control Sample	Total/NA	Water	2540 D-2011	
LCSD 410-110269/3	Lab Control Sample Dup	Total/NA	Water	2540 D-2011	

QC Association Summary

General Chemistry

Analysis Batch: 110288

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
410-34150-1	WR 1	Total/NA	Water	365.1	109816
410-34150-2	WR 1A	Total/NA	Water	365.1	109816
410-34150-3	WR 2	Total/NA	Water	365.1	109816
410-34150-4	WR 3	Total/NA	Water	365.1	109816
410-34150-5	WR 4	Total/NA	Water	365.1	109816
410-34150-6	WR 4A	Total/NA	Water	365.1	109816
410-34150-7	DUP	Total/NA	Water	365.1	109816
MB 410-109816/2-A	Method Blank	Total/NA	Water	365.1	109816
LCS 410-109816/1-A	Lab Control Sample	Total/NA	Water	365.1	109816

Analysis Batch: 111355

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
410-34150-1	WR 1	Total/NA	Water	351.2	109737
410-34150-2	WR 1A	Total/NA	Water	351.2	109737
410-34150-3	WR 2	Total/NA	Water	351.2	109737
410-34150-4	WR 3	Total/NA	Water	351.2	109737
410-34150-5	WR 4	Total/NA	Water	351.2	109737
410-34150-6	WR 4A	Total/NA	Water	351.2	109737
410-34150-7	DUP	Total/NA	Water	351.2	109737
MB 410-109737/2-A	Method Blank	Total/NA	Water	351.2	109737
LCS 410-109737/1-A	Lab Control Sample	Total/NA	Water	351.2	109737

Analysis Batch: 112443

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
410-34150-1	WR 1	Total/NA	Water	353.2	
410-34150-2	WR 1A	Total/NA	Water	353.2	
410-34150-3	WR 2	Total/NA	Water	353.2	
410-34150-4	WR 3	Total/NA	Water	353.2	
410-34150-5	WR 4	Total/NA	Water	353.2	
410-34150-6	WR 4A	Total/NA	Water	353.2	
410-34150-7	DUP	Total/NA	Water	353.2	
MB 410-112443/20	Method Blank	Total/NA	Water	353.2	
MB 410-112443/50	Method Blank	Total/NA	Water	353.2	
LCS 410-112443/21	Lab Control Sample	Total/NA	Water	353.2	
LCS 410-112443/51	Lab Control Sample	Total/NA	Water	353.2	

Lab Chronicle

Client: ARCADIS U.S. Inc
Project/Site: Surface Waters for MBSS

Job ID: 410-34150-1

Client Sample ID: WR 1

Date Collected: 03/30/21 14:00
Date Received: 03/31/21 09:27

Lab Sample ID: 410-34150-1
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	2540 D-2011		1	109455	03/31/21 13:50	M98K	ELLE
Total/NA	Prep	351.2			109737	04/01/21 07:10	UNJS	ELLE
Total/NA	Analysis	351.2		1	111355	04/06/21 14:57	JCG7	ELLE
Total/NA	Analysis	353.2		1	112443	04/08/21 12:53	UJE2	ELLE
Total/NA	Prep	365.1			109816	04/01/21 08:45	UNJS	ELLE
Total/NA	Analysis	365.1		1	110288	04/02/21 10:27	MFV9	ELLE
Total/NA	Analysis	SM4500		1	108137	04/01/21 05:59	USJM	ELLE

Client Sample ID: WR 1A

Date Collected: 03/30/21 13:15
Date Received: 03/31/21 09:27

Lab Sample ID: 410-34150-2
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	2540 D-2011		1	109455	03/31/21 13:50	M98K	ELLE
Total/NA	Prep	351.2			109737	04/01/21 07:10	UNJS	ELLE
Total/NA	Analysis	351.2		1	111355	04/06/21 14:59	JCG7	ELLE
Total/NA	Analysis	353.2		1	112443	04/08/21 12:55	UJE2	ELLE
Total/NA	Prep	365.1			109816	04/01/21 08:45	UNJS	ELLE
Total/NA	Analysis	365.1		1	110288	04/02/21 10:28	MFV9	ELLE
Total/NA	Analysis	SM4500		1	108137	04/01/21 05:59	USJM	ELLE

Client Sample ID: WR 2

Date Collected: 03/30/21 12:15
Date Received: 03/31/21 09:27

Lab Sample ID: 410-34150-3
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	2540 D-2011		1	109455	03/31/21 13:50	M98K	ELLE
Total/NA	Prep	351.2			109737	04/01/21 07:10	UNJS	ELLE
Total/NA	Analysis	351.2		1	111355	04/06/21 14:59	JCG7	ELLE
Total/NA	Analysis	353.2		1	112443	04/08/21 12:57	UJE2	ELLE
Total/NA	Prep	365.1			109816	04/01/21 08:45	UNJS	ELLE
Total/NA	Analysis	365.1		1	110288	04/02/21 10:28	MFV9	ELLE
Total/NA	Analysis	SM4500		1	108137	04/01/21 05:59	USJM	ELLE

Client Sample ID: WR 3

Date Collected: 03/30/21 11:30
Date Received: 03/31/21 09:27

Lab Sample ID: 410-34150-4
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	2540 D-2011		1	109455	03/31/21 13:50	M98K	ELLE
Total/NA	Prep	351.2			109737	04/01/21 07:10	UNJS	ELLE
Total/NA	Analysis	351.2		1	111355	04/06/21 14:58	JCG7	ELLE
Total/NA	Analysis	353.2		1	112443	04/08/21 13:13	UJE2	ELLE

Client Sample ID: WR 3

Lab Sample ID: 410-34150-4
Date Collected: 03/30/21 11:30
Matrix: Water
Date Received: 03/31/21 09:27

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	365.1			109816	04/01/21 08:45	UNJS	ELLE
Total/NA	Analysis	365.1		1	110288	04/02/21 10:27	MFV9	ELLE
Total/NA	Analysis	SM4500		1	108137	04/01/21 05:59	USJM	ELLE

Client Sample ID: WR 4

Lab Sample ID: 410-34150-5
Date Collected: 03/30/21 09:15
Matrix: Water
Date Received: 03/31/21 09:27

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	2540 D-2011		1	109455	03/31/21 13:50	M98K	ELLE
Total/NA	Prep	351.2			109737	04/01/21 07:10	UNJS	ELLE
Total/NA	Analysis	351.2		1	111355	04/06/21 15:00	JCG7	ELLE
Total/NA	Analysis	353.2		1	112443	04/08/21 13:17	UJE2	ELLE
Total/NA	Prep	365.1			109816	04/01/21 08:45	UNJS	ELLE
Total/NA	Analysis	365.1		1	110288	04/02/21 10:28	MFV9	ELLE
Total/NA	Analysis	SM4500		1	108137	04/01/21 05:59	USJM	ELLE

Client Sample ID: WR 4A

Lab Sample ID: 410-34150-6
Date Collected: 03/30/21 10:15
Matrix: Water
Date Received: 03/31/21 09:27

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	2540 D-2011		1	109455	03/31/21 13:50	M98K	ELLE
Total/NA	Prep	351.2			109737	04/01/21 07:10	UNJS	ELLE
Total/NA	Analysis	351.2		1	111355	04/06/21 14:58	JCG7	ELLE
Total/NA	Analysis	353.2		1	112443	04/08/21 13:15	UJE2	ELLE
Total/NA	Prep	365.1			109816	04/01/21 08:45	UNJS	ELLE
Total/NA	Analysis	365.1		1	110288	04/02/21 10:27	MFV9	ELLE
Total/NA	Analysis	SM4500		1	108137	04/01/21 05:59	USJM	ELLE

Client Sample ID: DUP

Lab Sample ID: 410-34150-7
Date Collected: 03/30/21 00:00
Matrix: Water
Date Received: 03/31/21 09:27

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	2540 D-2011		1	110269	04/02/21 10:06	UOCA	ELLE
Total/NA	Prep	351.2			109737	04/01/21 07:10	UNJS	ELLE
Total/NA	Analysis	351.2		1	111355	04/06/21 14:57	JCG7	ELLE
Total/NA	Analysis	353.2		1	112443	04/08/21 13:48	UJE2	ELLE
Total/NA	Prep	365.1			109816	04/01/21 08:45	UNJS	ELLE
Total/NA	Analysis	365.1		1	110288	04/02/21 10:27	MFV9	ELLE
Total/NA	Analysis	SM4500		1	108137	04/01/21 05:59	USJM	ELLE

Laboratory References:

ELLE = Eurofins Lancaster Laboratories Env, LLC, 2425 New Holland Pike, Lancaster, PA 17601, TEL (717)656-2300

Accreditation/Certification Summary

Client: ARCADIS U.S. Inc
Project/Site: Surface Waters for MBSS

Job ID: 410-34150-1

Laboratory: Eurofins Lancaster Laboratories Env, LLC

Unless otherwise noted, all analytes for this laboratory were covered under each accreditation/certification below.

Authority	Program	Identification Number	Expiration Date
Maryland	State	100	04-12-21

The following analytes are included in this report, but the laboratory is not certified by the governing authority. This list may include analytes for which the agency does not offer certification.

Analysis Method	Prep Method	Matrix	Analyte
2540 D-2011		Water	Total Suspended Solids
351.2	351.2	Water	Total Kjeldahl Nitrogen
353.2		Water	Nitrate Nitrite as N
365.1	365.1	Water	Total Phosphorus as P
SM4500		Water	Nitrogen, Total

Method Summary

Client: ARCADIS U.S. Inc
Project/Site: Surface Waters for MBSS

Job ID: 410-34150-1

Method	Method Description	Protocol	Laboratory
2540 D-2011	Total Suspended Solids (Dried at 103-105°C)	SM	ELLE
351.2	Nitrogen, Total Kjeldahl	MCAWW	ELLE
353.2	Nitrogen, Nitrate-Nitrite	MCAWW	ELLE
365.1	Phosphorus, Total	EPA	ELLE
SM4500	Total Nitrogen	SM	ELLE
351.2	Nitrogen, Total Kjeldahl	MCAWW	ELLE
365.1	Sample Digestion for Total Phosphorus	MCAWW	ELLE

Protocol References:

EPA = US Environmental Protection Agency

MCAWW = "Methods For Chemical Analysis Of Water And Wastes", EPA-600/4-79-020, March 1983 And Subsequent Revisions.

SM = "Standard Methods For The Examination Of Water And Wastewater"

Laboratory References:

ELLE = Eurofins Lancaster Laboratories Env, LLC, 2425 New Holland Pike, Lancaster, PA 17601, TEL (717)656-2300

Sample Summary

Client: ARCADIS U.S. Inc
Project/Site: Surface Waters for MBSS

Job ID: 410-34150-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
410-34150-1	WR 1	Water	03/30/21 14:00	03/31/21 09:27	
410-34150-2	WR 1A	Water	03/30/21 13:15	03/31/21 09:27	
410-34150-3	WR 2	Water	03/30/21 12:15	03/31/21 09:27	
410-34150-4	WR 3	Water	03/30/21 11:30	03/31/21 09:27	
410-34150-5	WR 4	Water	03/30/21 09:15	03/31/21 09:27	
410-34150-6	WR 4A	Water	03/30/21 10:15	03/31/21 09:27	
410-34150-7	DUP	Water	03/30/21 00:00	03/31/21 09:27	

Chain of Custody Record

410-34150 Chain of Custody

eurofins Environment Testing America

Client Information	Sampler: Nick Firman	Lab PM: Weyandt, Barbara A		COC No: 10-16874-5958.1
Client Contact: ~~Ms. Bryn Hartley~~ Matt Frackelton	Phone: 315 671 9687	E-Mail: Barbara.Weyandt@eurofinset.com	State of Origin: Maryland	Page: Page 1 of 1
Company: ARCADIS U.S., Inc.	PWSID:	Analysis Requested		Job #:
Address: 10 Friends Lane Suite 100	Due Date Requested:			Preservation Codes:
City: Newtown	TAT Requested (days): standard			
State, Zip: PA, 18940	Compliance Project: Δ Yes Δ No			
Phone: 315-671-9687(Tel)	PO #: Purchase Order Requested			
Email: ~~bryn.hartley@arcadis.com~~ Matthew.Frackelton@arcadis.com	WO #:			
Project Name: Surface Waters for MBSS	Project #: 41005843			
Site: APG Sampling, Aberdeen, MD	SSOW#:			

Preservation Codes:
A - HCL, B - NaOH, C - Zn Acetate, D - Nitric Acid, E - NaHSO4, F - MeOH, G - Amchlor, H - Ascorbic Acid, I - Ice, J - DI Water, K - EDTA, L - EDA
M - Hexane, N - None, O - AsNaO2, P - Na2O4S, Q - Na2SO3, R - Na2S2O3, S - H2SO4, T - TSP Dodecahydrate, U - Acetone, V - MCAA, W - pH 4-5, Z - other (specify)

Other:

Sample Identification	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	Total Phosphorus	TKN	Nitrogen, Nitrate-Nitrite	Total Nitrogen	TSS	Total Number of containers	Special Instructions/Note:
				Preservation Code:			S	S	S	N	N		
WR 1	3/30/21	1400	G	W	N	N	X	X	X	X	X	3	
WR 1A	↓	1315	↓	↓	↓	↓	↓	↓	↓	↓	↓	3	
WR 2	↓	1215	↓	↓	↓	↓	↓	↓	↓	↓	↓	3	
WR 3	↓	1130	↓	↓	↓	↓	↓	↓	↓	↓	↓	3	
WR 4	↓	0915	↓	↓	↓	↓	↓	↓	↓	↓	↓		
WR 4A	↓	1015	↓	↓	↓	↓	↓	↓	↓	↓	↓	3	
DUP	↓	–	↓	↓	↓	↓	↓	↓	↓	↓	↓		

Possible Hazard Identification
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐ Radiological

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return To Client ☒ Disposal By Lab ☐ Archive For ________ Months

Deliverable Requested: I, II, III, IV, Other (specify)

Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment

Relinquished by	Date/Time	Company	Received by	Date/Time	Company
Matt Frackelton	3/30/21	Arcadis			
			[signature]	3/31/21 927	ELLE

Custody Seals Intact: Δ Yes Δ No	Custody Seal No.: n/A	Cooler Temperature(s) °C and Other Remarks: 2.4

Ver: 01/16/2019

4/19/2021

1 2 3 4 5 6 7 8 9 10 11 12 13 14

Login Sample Receipt Checklist

Client: ARCADIS U.S. Inc

Job Number: 410-34150-1

Login Number: 34150
List Number: 1
Creator: Colon Martinez, Jessenia C

List Source: Eurofins Lancaster Laboratories Env

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	N/A	
The cooler's custody seal is intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable (</=6C, not frozen).	True	
Cooler Temperature is recorded.	True	
WV: Container Temperature is acceptable (</=6C, not frozen).	N/A	
WV: Container Temperature is recorded.	N/A	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
There are no discrepancies between the containers received and the COC.	False	Refer to Job Narrative for details.
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
There is sufficient vol. for all requested analyses.	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	N/A	
Is the Field Sampler's name present on COC?	True	
Sample Preservation Verified.	N/A	
Residual Chlorine Checked.	N/A	
Sample custody seals are intact.	N/A	

Appendix B

Project Photographs

Project Photographs

Atkisson Dam Environmental Surveys
Aberdeen Proving Ground, Edgewood, Maryland

Photo: 1

Description:
WR-1 location looking upstream

Photo: 2

Description:
WR-1 location looking downstream

Project Photographs

Atkisson Dam Environmental Surveys
Aberdeen Proving Ground, Edgewood, Maryland

Photo: 3

Description:
WR-2 location looking upstream

Photo: 4

Description:
WR-2 location looking downstream

Project Photographs

Atkisson Dam Environmental Surveys
Aberdeen Proving Ground, Edgewood, Maryland

Photo: 5

Description:
WR-3 location looking upstream

Photo: 6

Description:
WR-3 location looking downstream

Project Photographs

Atkisson Dam Environmental Surveys
Aberdeen Proving Ground, Edgewood, Maryland

Photo: 7

Description:
WR-4 location looking upstream

Photo: 8

Description:
WR-4 location looking downstream

Project Photographs

Atkisson Dam Environmental Surveys
Aberdeen Proving Ground, Edgewood, Maryland

Photo: 9

Description:
WR-1A location looking upstream

Photo: 10

Description:
WR-1A location looking downstream

Project Photographs

Atkisson Dam Environmental Surveys
Aberdeen Proving Ground, Edgewood, Maryland

Photo: 11

Description:

WR-4A location looking upstream

Photo: 12

Description:

WR-4A location looking downstream at head of Atkisson Dam

Project Photographs

Atkisson Dam Environmental Surveys
Aberdeen Proving Ground, Edgewood, Maryland

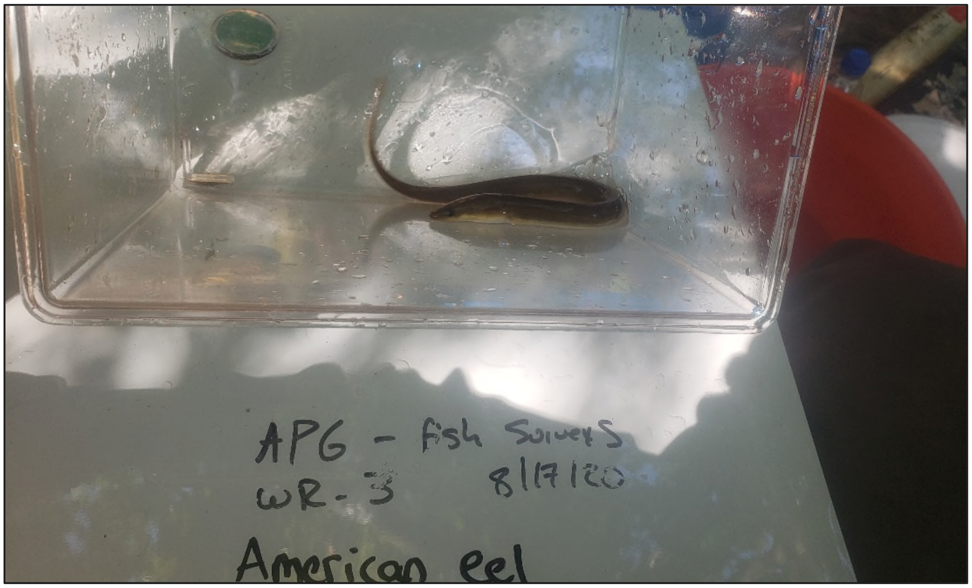


Photo: 13

Description:
American eel - juvenile

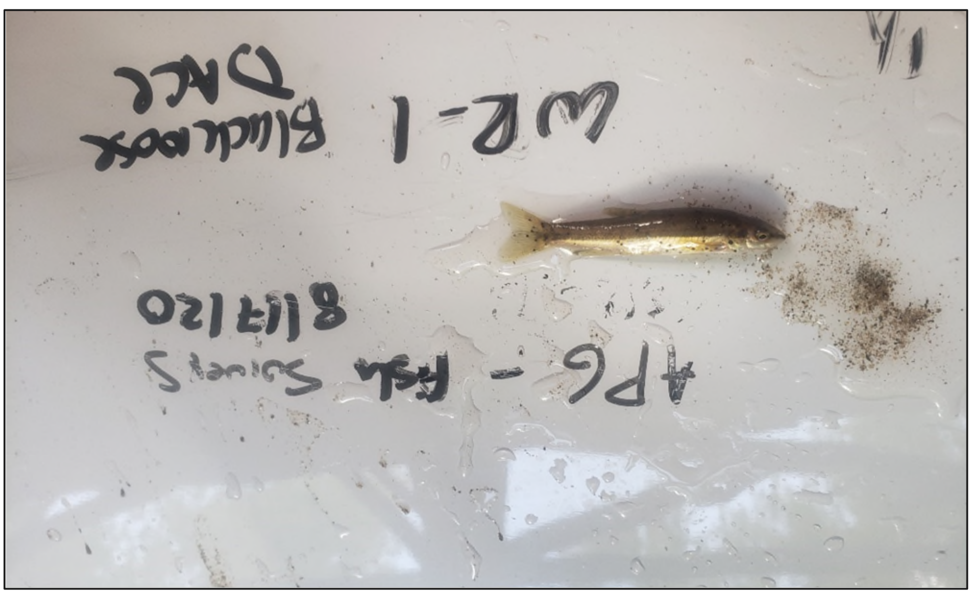


Photo: 14

Description:
Blacknose dace

Project Photographs

Atkisson Dam Environmental Surveys
Aberdeen Proving Ground, Edgewood, Maryland

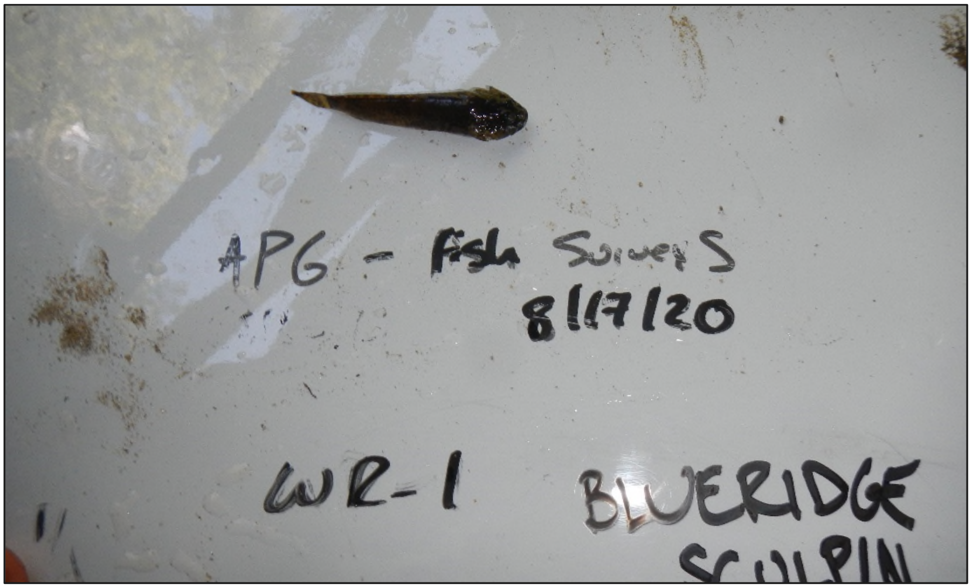


Photo: 15

Description:
Blue ridge sculpin

Photo: 16

Description:
Bluegill

Project Photographs

Atkisson Dam Environmental Surveys
Aberdeen Proving Ground, Edgewood, Maryland

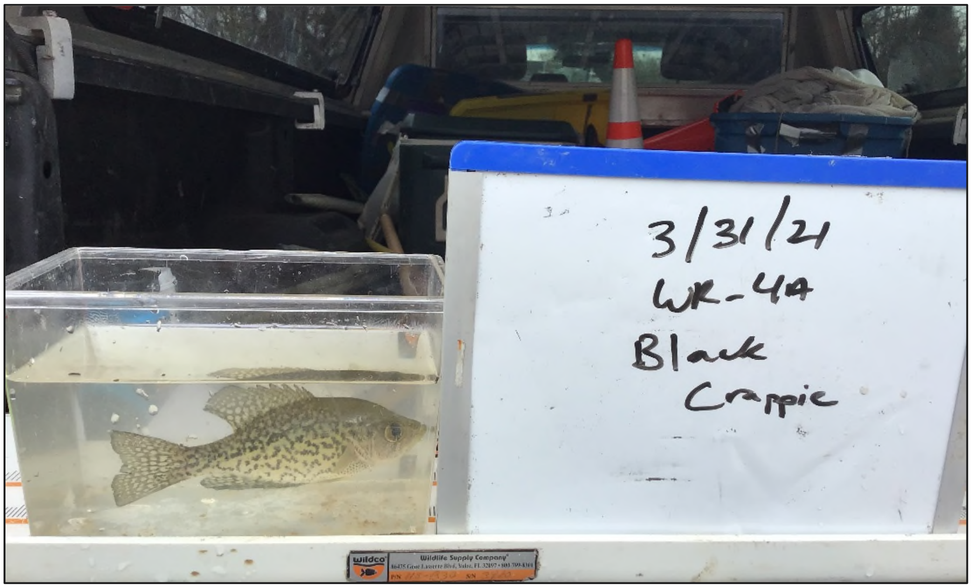


Photo: 17

Description:
Black crappie

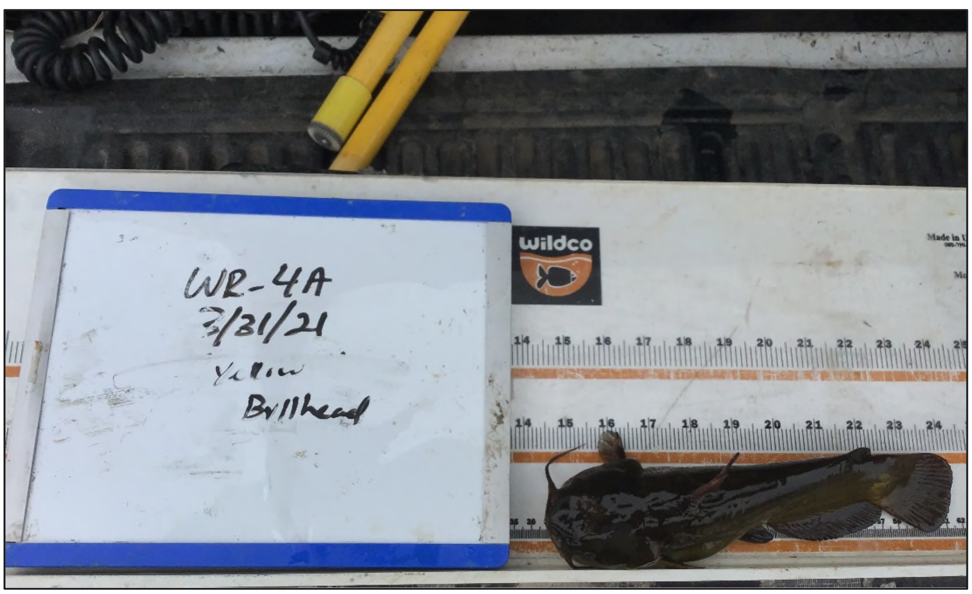


Photo: 18

Description:
Brown bullhead

Project Photographs

Atkisson Dam Environmental Surveys
Aberdeen Proving Ground, Edgewood, Maryland

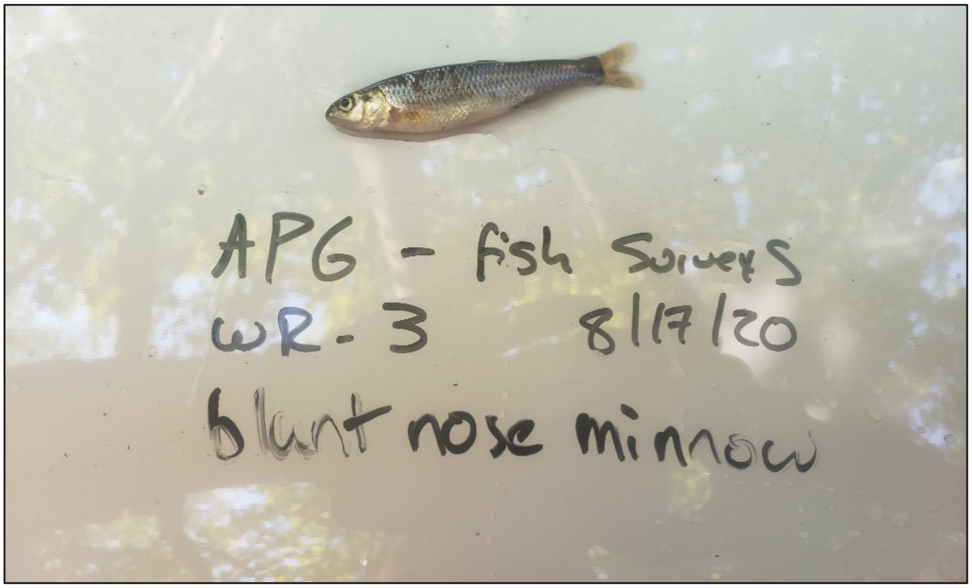


Photo: 19

Description:
Bluntnose minnow

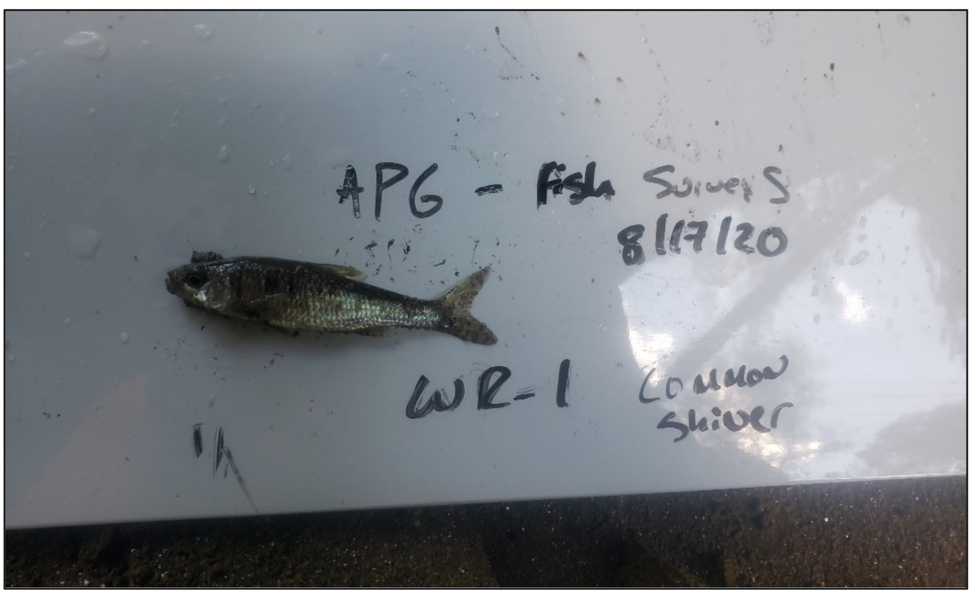


Photo: 20

Description:
Common shiner

Project Photographs

Atkisson Dam Environmental Surveys
Aberdeen Proving Ground, Edgewood, Maryland

Photo: 21

Description:
Creek chub

Photo: 22

Description:
Cutlips minnow

Project Photographs

Atkisson Dam Environmental Surveys
Aberdeen Proving Ground, Edgewood, Maryland

Photo: 23

Description:
Common carp

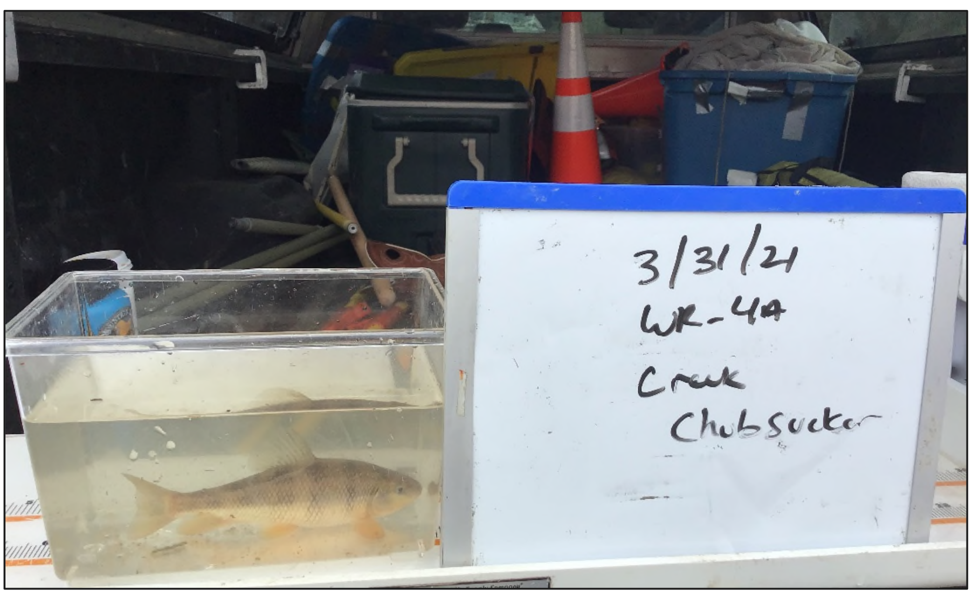


Photo: 24

Description:
Creek chubsucker

Project Photographs

Atkisson Dam Environmental Surveys
Aberdeen Proving Ground, Edgewood, Maryland

Photo: 25

Description:
Eastern mosquitofish

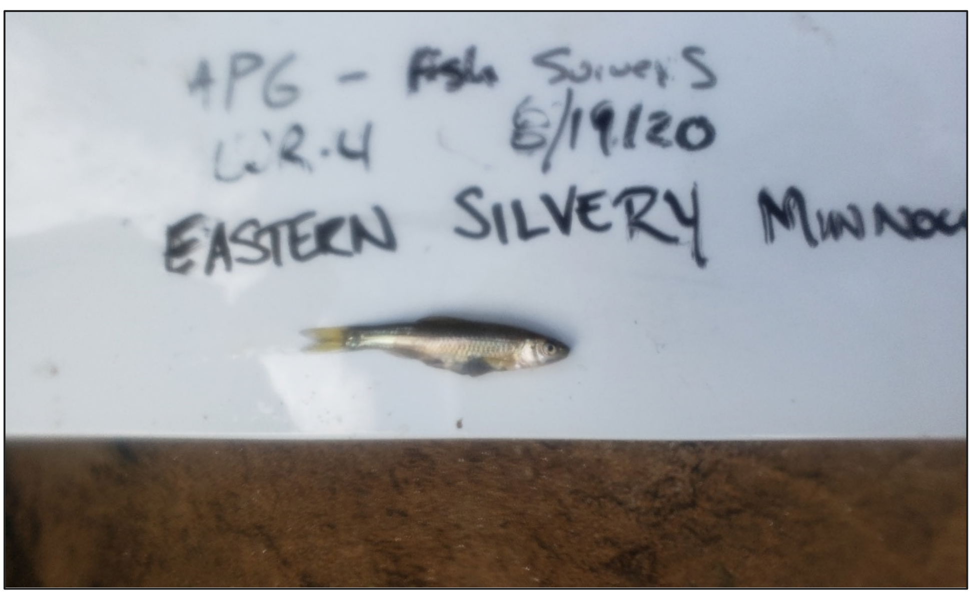


Photo: 26

Description:
Eastern silvery minnow

Project Photographs

Atkisson Dam Environmental Surveys
Aberdeen Proving Ground, Edgewood, Maryland

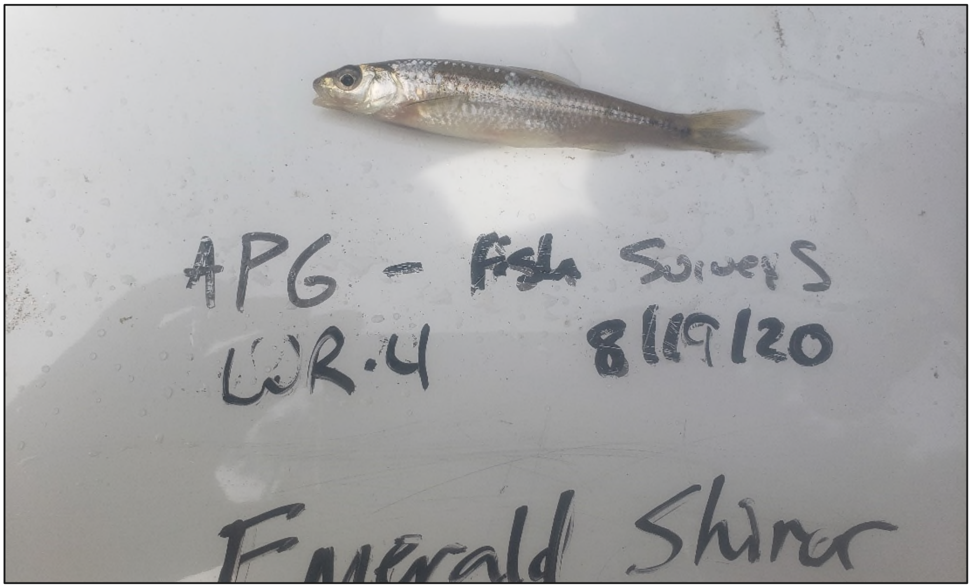


Photo: 27

Description:
Emerald shiner

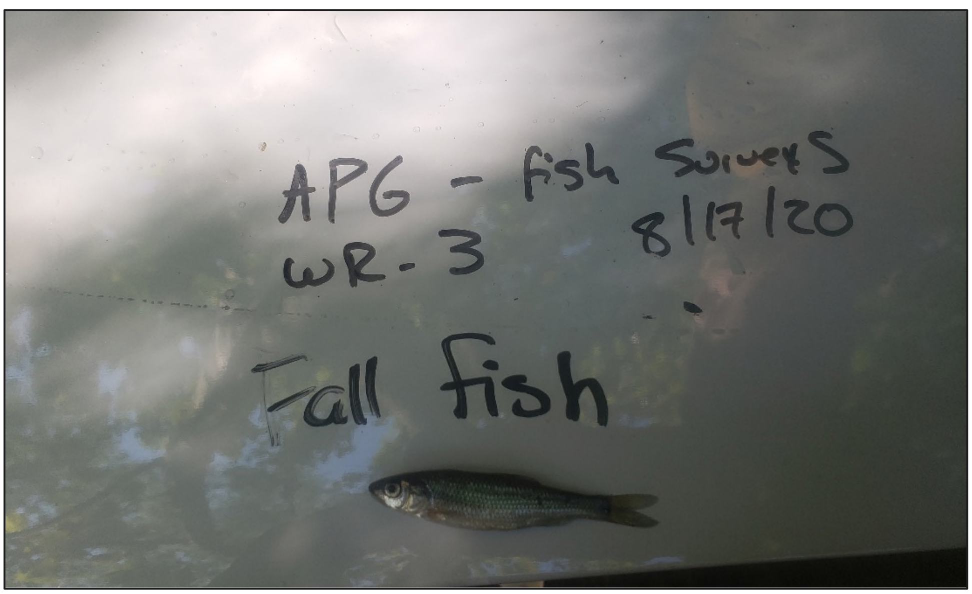


Photo: 28

Description:
Fall fish

Project Photographs

Atkisson Dam Environmental Surveys
Aberdeen Proving Ground, Edgewood, Maryland

Photo: 29

Description:
Fall fish

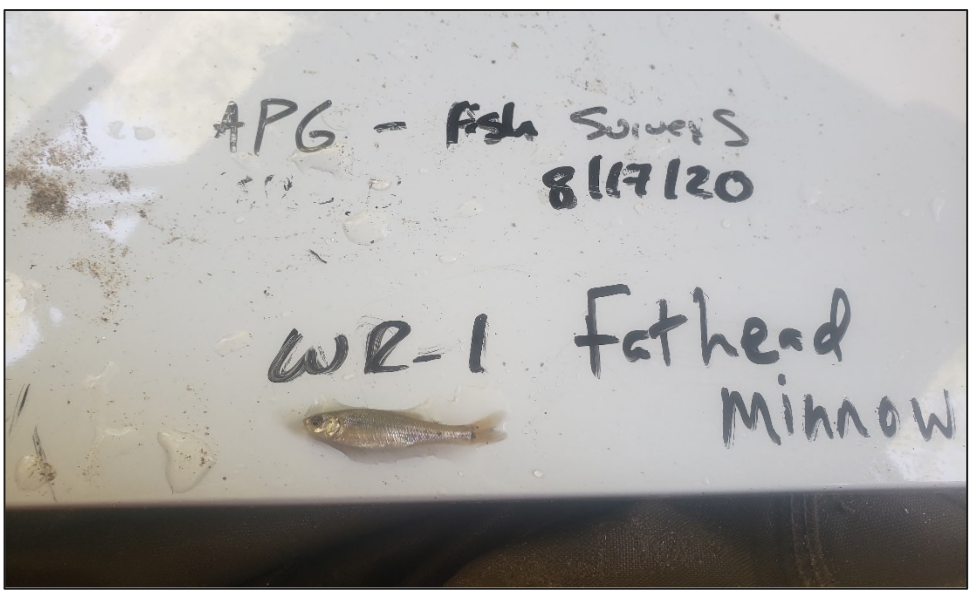


Photo: 30

Description:
Fathead minnow

Project Photographs

Atkisson Dam Environmental Surveys
Aberdeen Proving Ground, Edgewood, Maryland

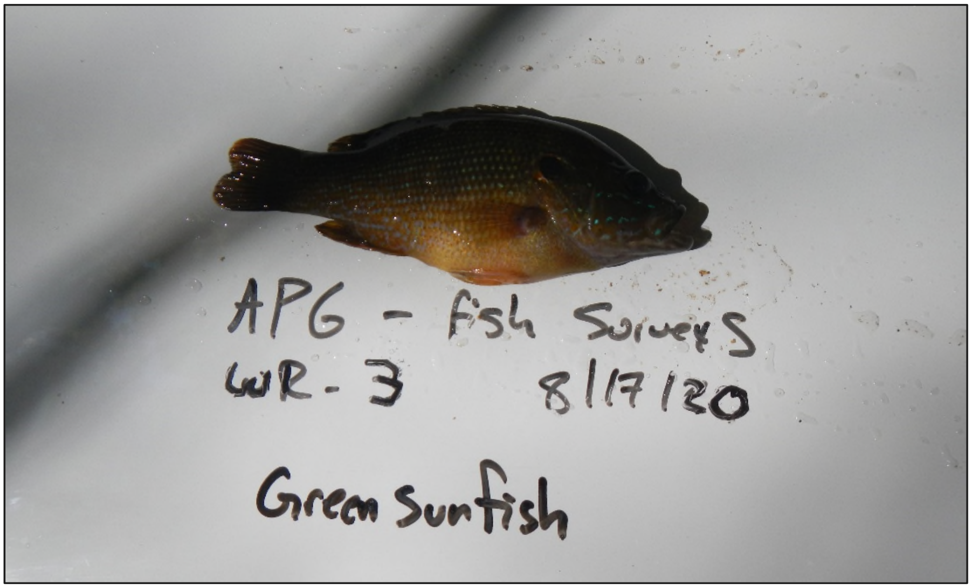


Photo: 31

Description:
Green sunfish

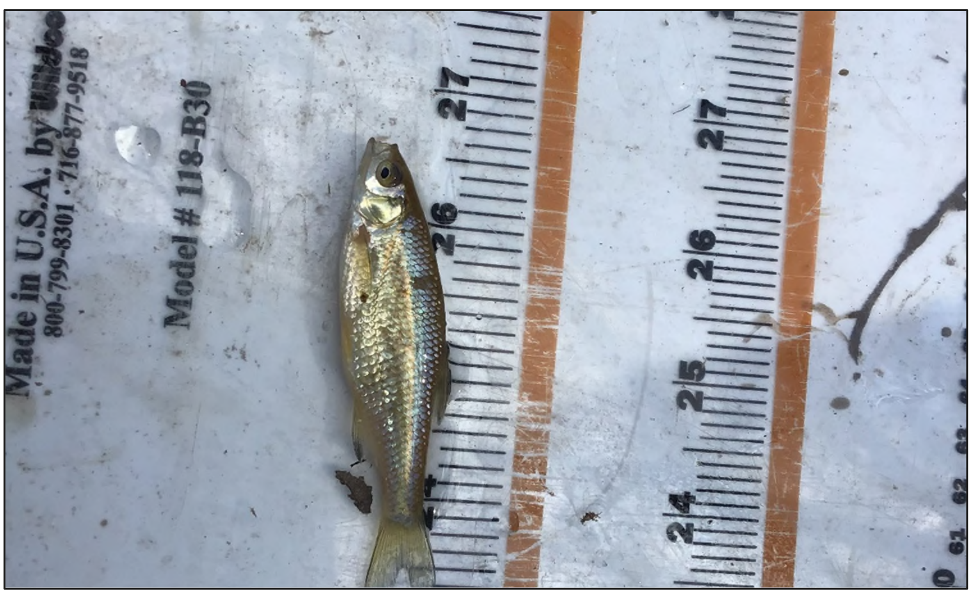


Photo: 32

Description:
Golden shiner

Project Photographs

Atkisson Dam Environmental Surveys
Aberdeen Proving Ground, Edgewood, Maryland

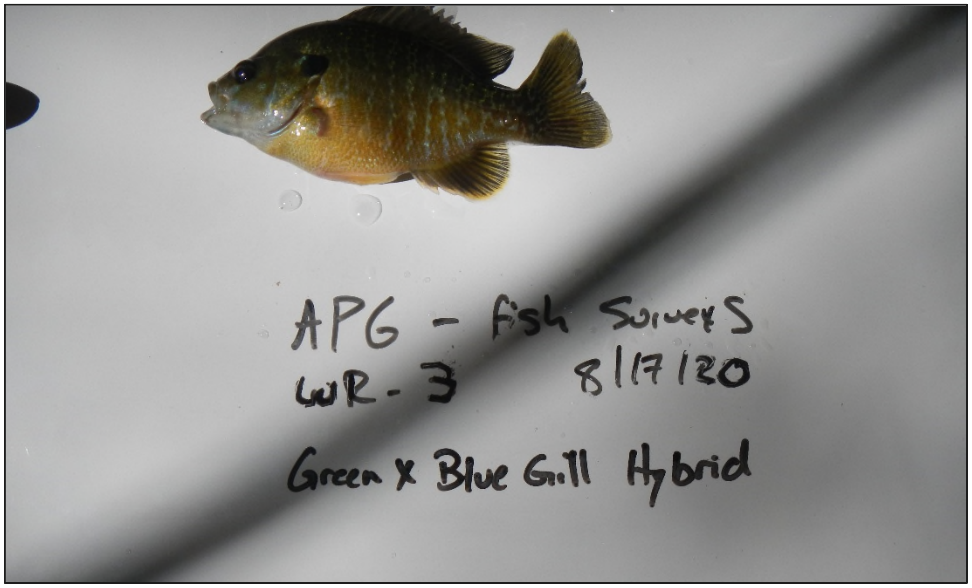


Photo: 33

Description:

Green sunfish x bluegill hybrid

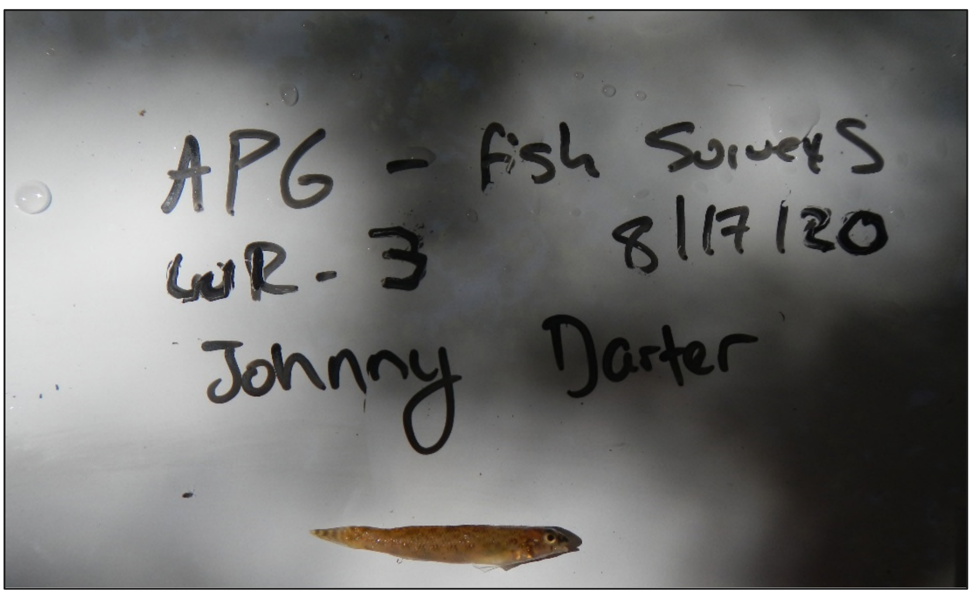


Photo: 34

Description:

Johnny darter

Project Photographs

Atkisson Dam Environmental Surveys
Aberdeen Proving Ground, Edgewood, Maryland

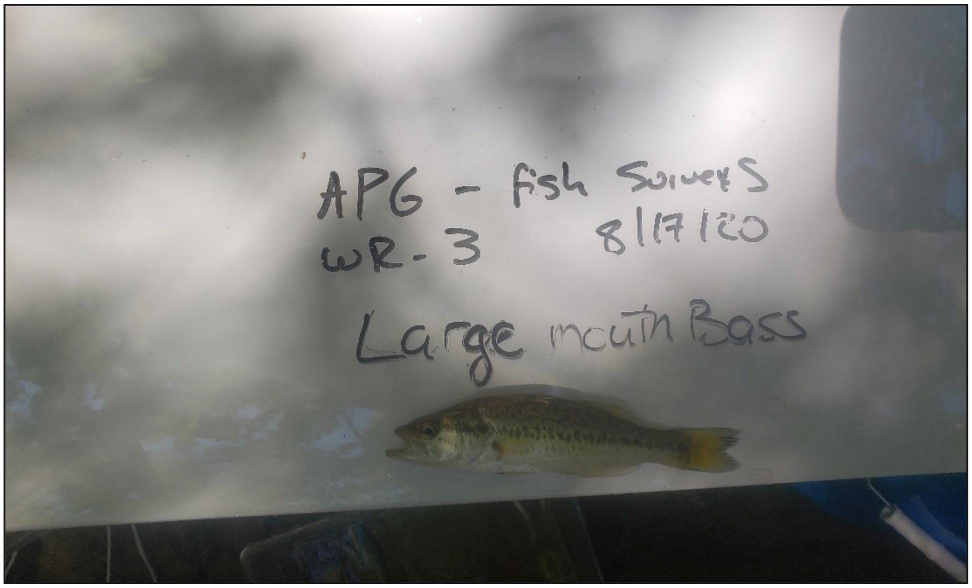


Photo: 35

Description:
Largemouth bass

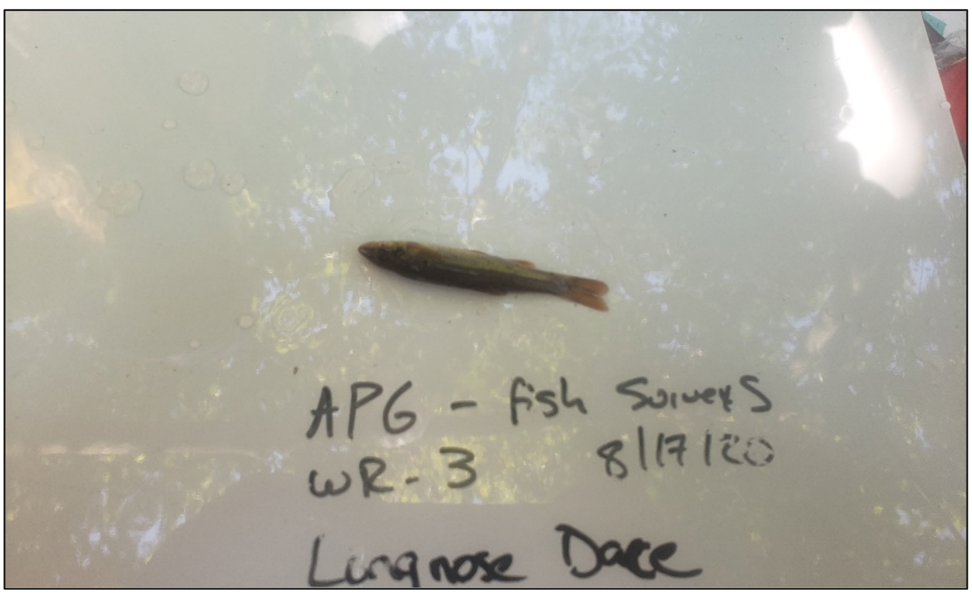


Photo: 36

Description:
Longnose dace

Project Photographs

Atkisson Dam Environmental Surveys
Aberdeen Proving Ground, Edgewood, Maryland

Photo: 37

Description:
Margined madtom

Photo: 38

Description:
Northern hogsucker.

Project Photographs

Atkisson Dam Environmental Surveys
Aberdeen Proving Ground, Edgewood, Maryland

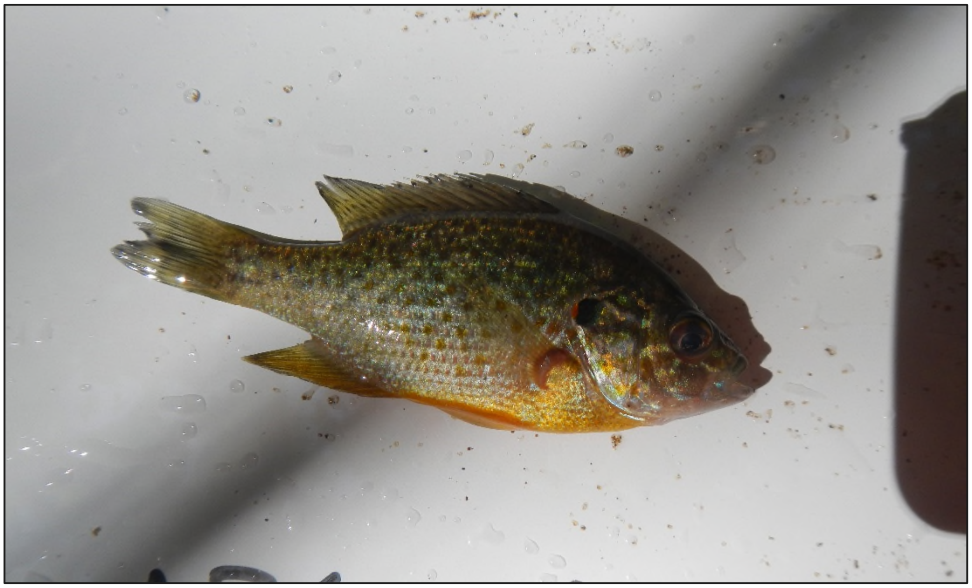


Photo: 39

Description:
Pumpkinseed

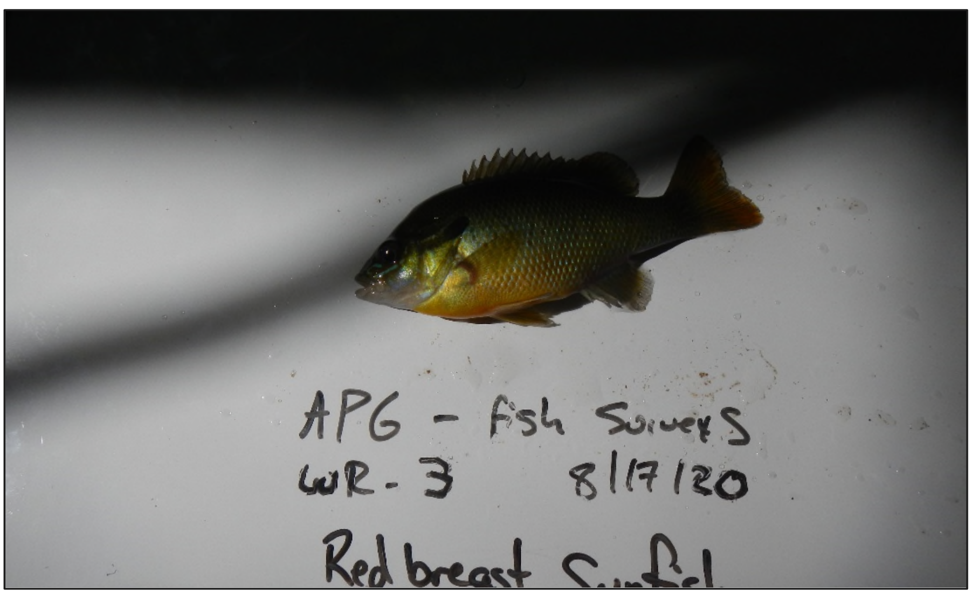


Photo: 40

Description:
Redbreast sunfish

Project Photographs

Atkisson Dam Environmental Surveys
Aberdeen Proving Ground, Edgewood, Maryland

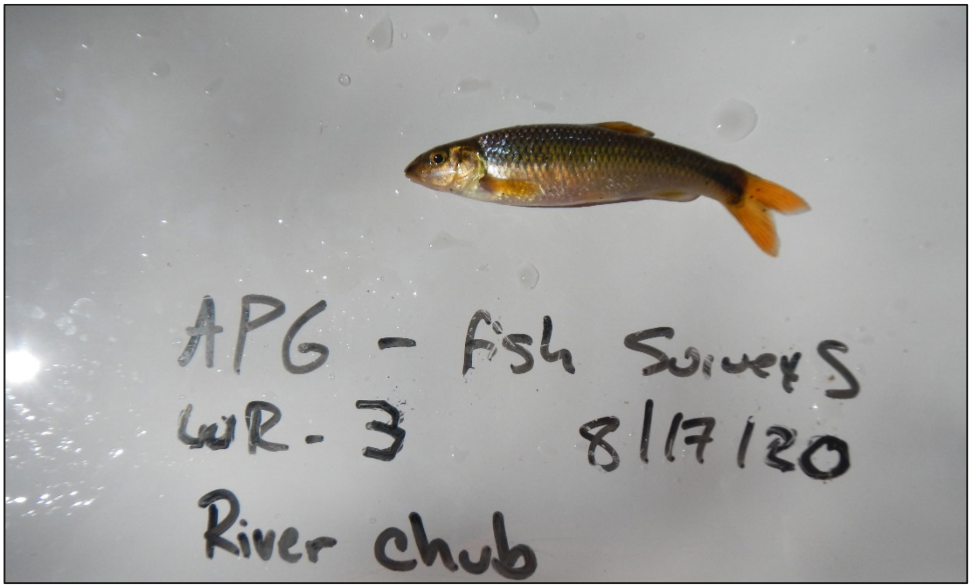


Photo: 41

Description:
River chub

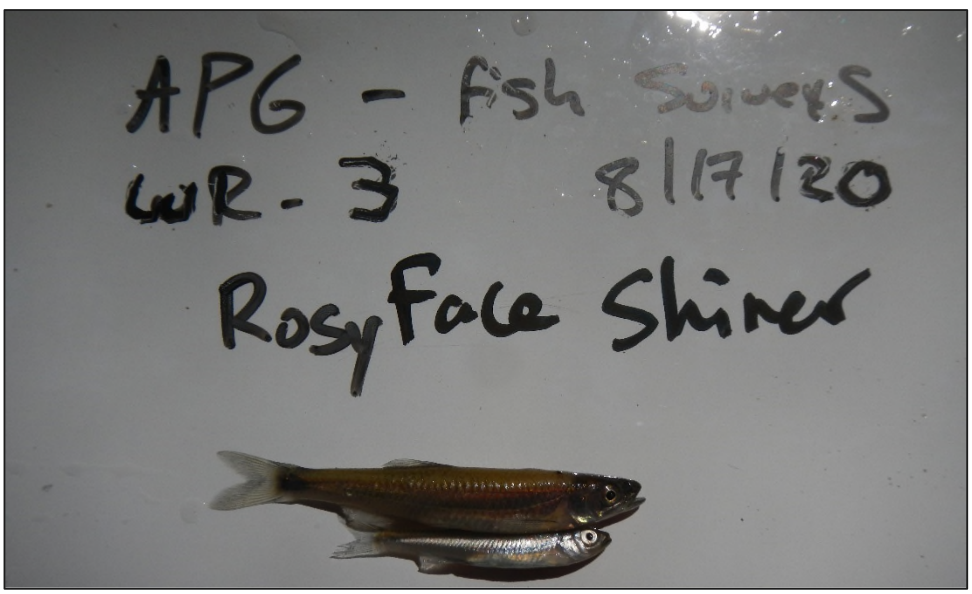


Photo: 42

Description:
Rosyface shiner

Project Photographs

Atkisson Dam Environmental Surveys
Aberdeen Proving Ground, Edgewood, Maryland

Photo: 43

Description:
Rosyside dace

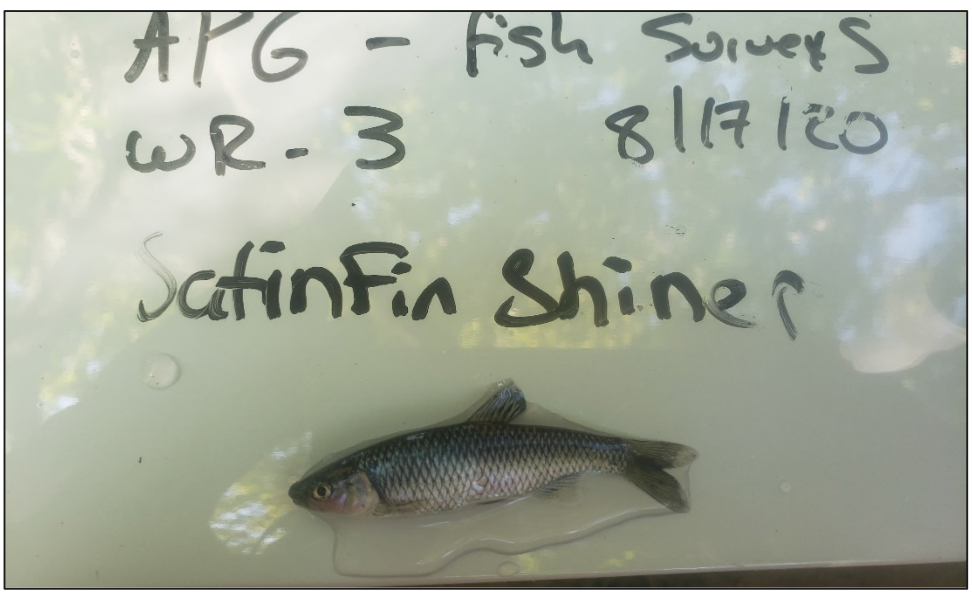


Photo: 44

Description:
Satinfin shiner

Project Photographs

Atkisson Dam Environmental Surveys
Aberdeen Proving Ground, Edgewood, Maryland

Photo: 45

Description:
Pumpkinseed x bluegill hybrid

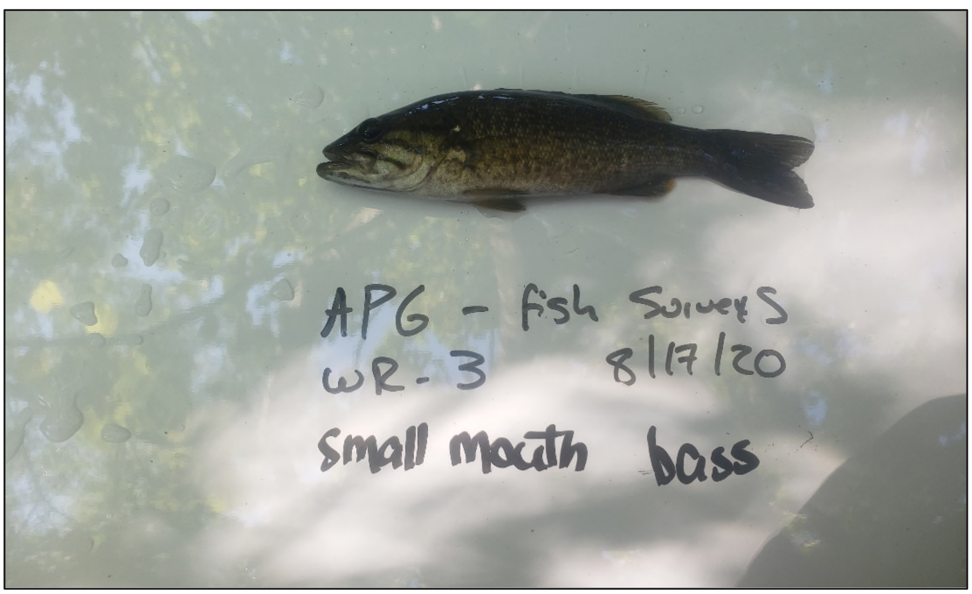


Photo: 46

Description:
Smallmouth bass

Project Photographs

Atkisson Dam Environmental Surveys
Aberdeen Proving Ground, Edgewood, Maryland

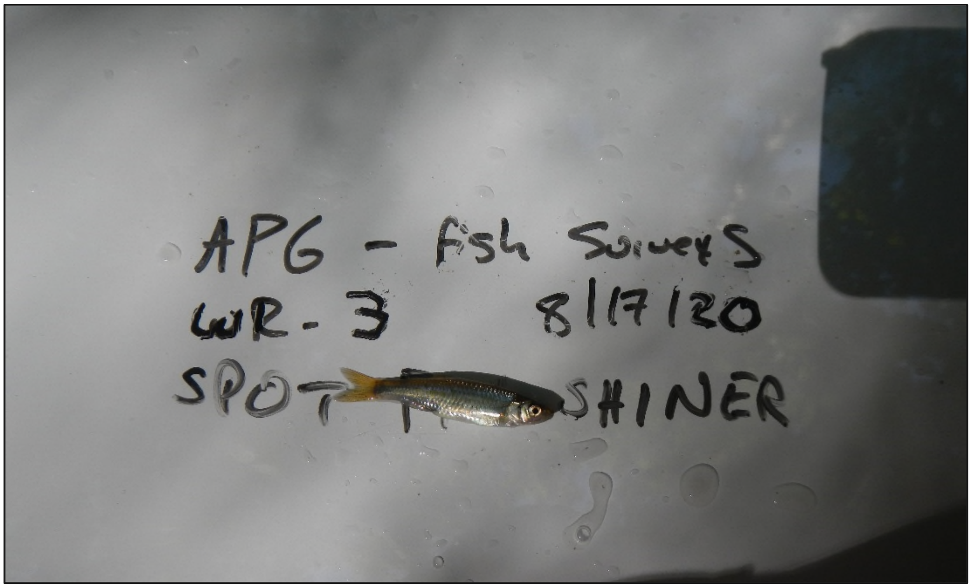


Photo: 47

Description:
Spotfin shiner

Photo: 48

Description:
Striped bass

Project Photographs

Atkisson Dam Environmental Surveys
Aberdeen Proving Ground, Edgewood, Maryland

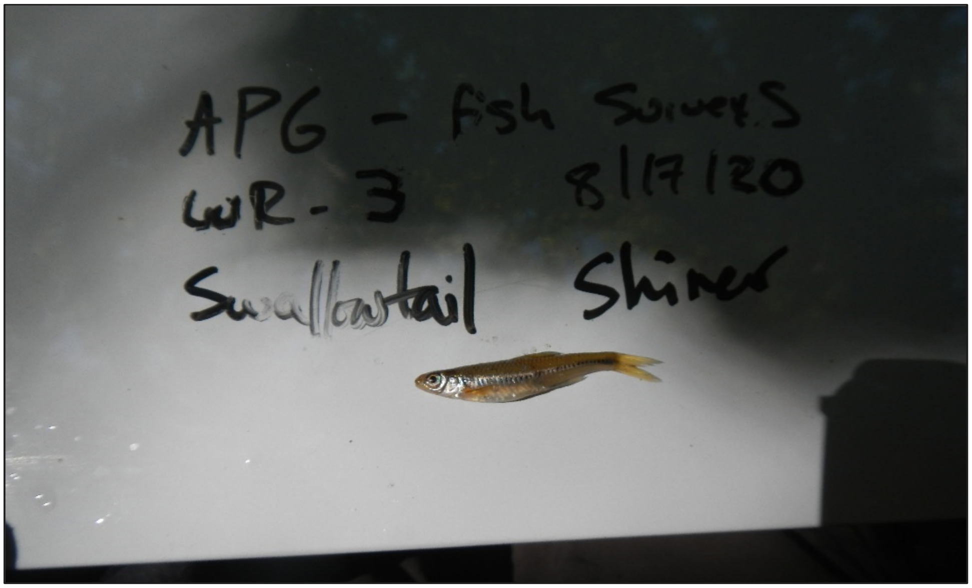


Photo: 49

Description:
Swallowtail shiner

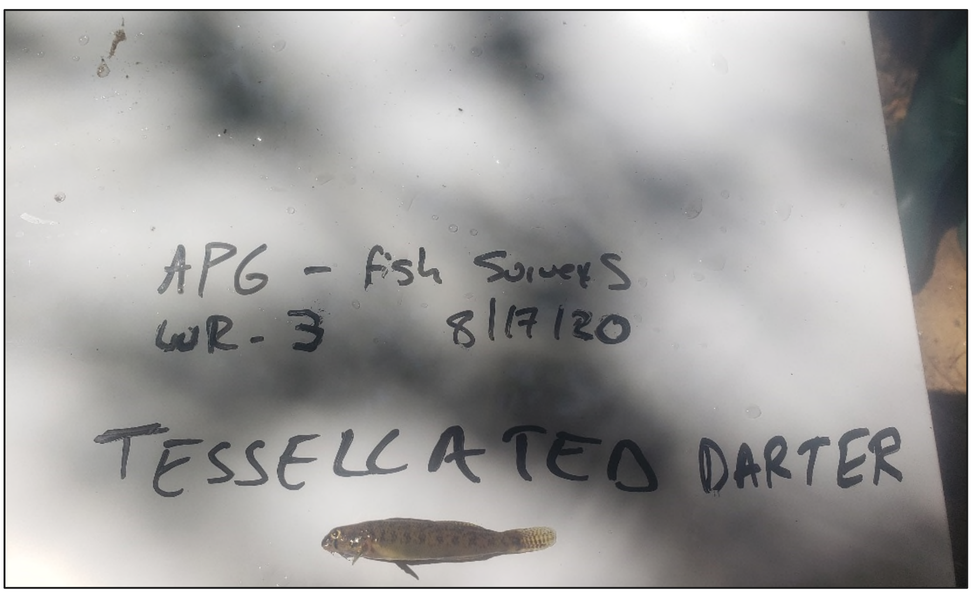


Photo: 50

Description:
Tessellated darter

Project Photographs

Atkisson Dam Environmental Surveys
Aberdeen Proving Ground, Edgewood, Maryland

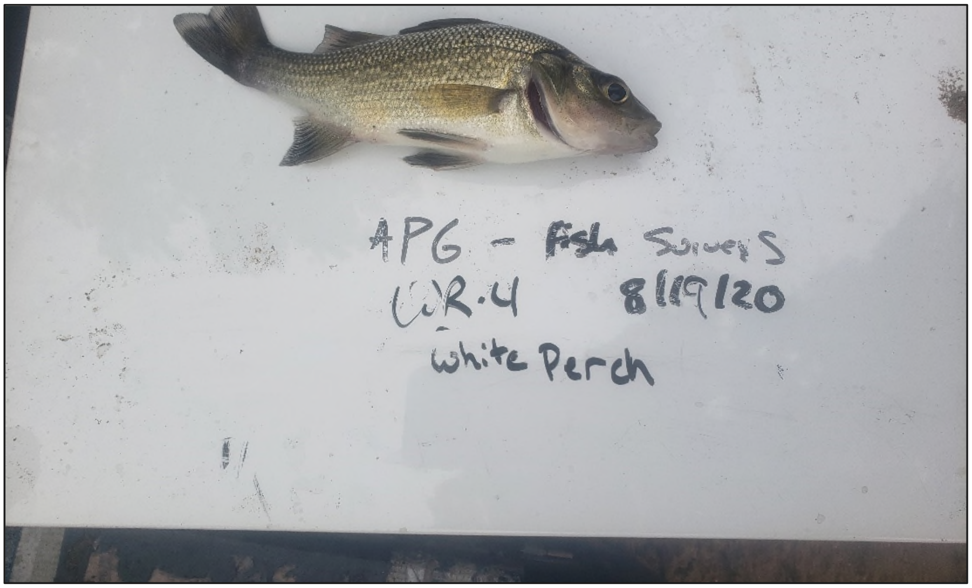


Photo: 51

Description:
White perch

Photo: 52

Description:
White sucker

Project Photographs

Atkisson Dam Environmental Surveys
Aberdeen Proving Ground, Edgewood, Maryland

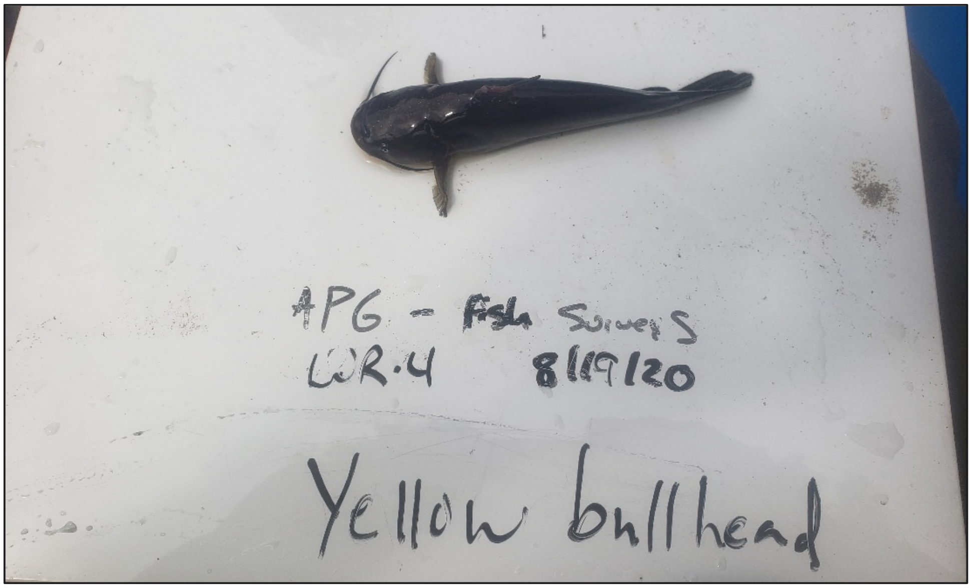


Photo: 53

Description:
Yellow bullhead

Photo: 54

Description:
Spottail shiner

Arcadis U.S., Inc.
7550 Teague Road, Suite 210
Hanover
Maryland 21076
Phone: 410 987 0032
Fax: 410 799 2533
www.arcadis.com

Appendix D: Final Forest Stand Delineation Report – August 2021

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FOREST STAND DELINEATION REPORT
FOR THE
ENVIRONMENTAL ASSESSMENT FOR THE REMOVAL OF ATKISSON DAM AND VAN BIBBER WEIR, ABERDEEN PROVING GROUND

AUGUST 2021

PREPARED FOR:

U.S. ARMY GARRISON ABERDEEN PROVING GROUND
DIRECTORATE OF PUBLIC WORKS, ENVIRONMENTAL DIVISION
6504 RODMAN ROAD, BLDG 4304
ABERDEEN, MARYLAND 21005

PREPARED BY:

U.S. ARMY CORPS OF ENGINEERS
BALTIMORE DISTRICT, PLANNING DIVISION
2 HOPKINS PLAZA
BALTIMORE, MARYLAND 21201

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FOREST STAND DELINEATION REPORT FOR THE ENVIRONMENTAL ASSESSMENT FOR THE REMOVAL OF ATKISSON DAM AND VAN BIBBER WEIR, ABERDEEN PROVING GROUND

1. Introduction

Atkisson Dam is located on Winters Run near Emmorton, Harford County, Maryland. The dam was built in 1942, during World War II, to create the 75-acre Atkisson Reservoir as an emergency water supply for Aberdeen Proving Ground (APG). Van Bibber Weir is also located along Winters Run, but is closer to APG's Edgewood Area (APG-EA). The weir was constructed to provide water to APG-EA; however, water for APG-EA is now provided by Harford County via a water purchase agreement between APG and the county. Because Harford County is already providing water to APG-EA, Van Bibber Weir and the associated water treatment plant have been determined unnecessary. Both structures are currently being evaluated for their potential eligibility to be placed on the National Register of Historic Places. APG has retained ownership of the reservoir, dam, and area surrounding the reservoir up to the 130-foot contour line; however, the Harford County Board of Education was given full ownership of the 245-acre parcel, known as Harford Glen, just east of the reservoir.

Since its creation, a combination of major land development and large storm events have created excessive sediment deposits behind the dam. The sediments and beaver activity have created extensive non-tidal wetlands above the dam. In 1997, after Hurricane Agnes, 37 feet of sediment deposit was recorded above the dam. Several Maryland State-listed rare plants inhabit the wetland area and surrounding reservoir grounds. There is an active bald eagle nest on the west side of the reservoir.

Atkisson Dam is classified as a high-risk dam by the National Dam Safety Program and other stakeholders. It is believed that a dam failure would reach Interstate-95 (I-95) within 3 hours. A Feasibility Study was conducted on the dam in 1998, but the report and integrated Environmental Assessment (EA) were never finalized. APG is currently evaluating the potential impacts of the full or partial removal of the dam on the natural resources in the area. New National Environmental Policy Act (NEPA) studies, including those outlined in this report, are being conducted to evaluate the consequences of dam removal.

2. Site Description

Atkisson Dam and Reservoir are located on Winters Run, which flows primarily north to south through west-central Harford County. The immediate area surrounding the reservoir and dam is forested with non-tidal wetlands located behind the dam. Residential and commercial development surrounds the forested lands. Harford Glen outdoor education area is located on the eastern side of Atkisson Reservoir, leaving it a mainly undisturbed forested area.

Van Bibber Weir is also located along Winters Run. The immediate area surrounding the weir is forested with non-tidal wetland located behind the weir to the west and northwest. Residential and commercial developments surround the forested lands, as well as several roads, including Maryland Route 40 and Edgewood Road.

The geology of Harford County consists of Cretaceous and younger unconsolidated sedimentary rocks of the Atlantic Coastal Plain to the southeast, and highly complex Precambrian to lower Paleozoic metamorphic and igneous rocks of the Appalachian Piedmont to the northwest. The Coastal Plain deposits are underlain by the crystalline rocks of the Piedmont. The two provinces meet along the Fall Line, that runs northeast to southwest, directly north of the Town of Aberdeen. The Coastal Plain formation increases in thickness from the Town of Aberdeen to the Chesapeake Bay.

3. Methodology

Prior to conducting field investigations, topographic maps, soil survey and digital aerial photographs were reviewed to identify probable forest stand boundaries. Forest stands were distinguished primarily by differences in species composition and successional stage.

A full Forest Stand Delineation was conducted between 6 March and 2 June 2020. A 1/10-acre fixed plot sampling technique was used to assess forest stand conditions and forest structure. Sampling plots were chosen to be evenly distributed throughout the stand. A stick flag was placed in the center of each plot and along the perimeter of the circular plot in each of the four cardinal directions. The plot center was marked in the field with orange flagging and the stand and plot number labeled with a black marker. All additional forest stand and forest structure procedures for data collection follow guidelines of the Maryland State Forest Conservation Technical Manual (Third edition, 1997). Priority 1 stands have wetlands, specimen trees, streams, steep slopes, and/or other sensitive areas and are typically late or mature successional stages with little invasive cover. Priority 2 stands can have one of the characteristics of Priority 1 stands, but no more and often have higher invasive species percentages. Priority 3 stands have the least sensitive features to qualify for preservation. In some cases, a stand can have a sensitive area within its boundaries but be of low quality based upon quality of vegetation, presence of invasive species or other values. These are noted in the stand descriptions.

4. Results

Van Bibber Weir is surrounded largely by forested area; however, the removal of Atkisson Dam or Van Bibber Weir would not affect these areas. Forest stand delineations were not conducted near Van Bibber Weir because of a dense bamboo (*Bambusoideae* spp.) covering. The invasive bamboo was so dense it was prohibitive to conducting forest stand delineations. In addition, delineations were not required as the area is nearly entirely homogenous in species. Visual inspections from outside the dense cover revealed very sparse sycamore (*Platanus occidentalis*), black cherry (*Prunus serotina*), and silver maple (*Acer saccharinum*) trees.

Seven forest stands were identified surrounding Atkisson Reservoir. The cover types were oak/hickory, silver maple, and tulip poplar (*Liriodendron tulipifera*). Stand variations result from changes in topographic position, degree of slope, and amount and type of historical human disturbance. Forest stand conditions and forest structure were assessed at sample plots within the stand as detailed in the following stand description (see also Appendix A). A summary of forest conditions within the stand is included in Appendix B. The attached map in Appendix C depicts the approximate location of the sampling plots and boundaries of forest cover types within the study area. A brief description of the forest stands are as follows:

Stand 1

Sample Plots: **4**
Successional Stage: **Late**
Priority: **1**
Cover Type: **Oak/Hickory**

Stand 1 is co-dominated by white oak (*Quercus alba*), and northern red oak (*Quercus rubra)* of size class 20-29.9" diameter at breast height (dbh), with approximately 100% canopy closure. Other trees in the canopy included tulip poplar, American beech *(Fagus grandifolia*), American hop-hornbeam (*Carpinus caroliniana*), mockernut hickory (*Carya tomentosa*), pignut hickory (*Carya glabra*), black gum (*Nyssa sylvatica*), and flowering dogwood (*Cornus florida*).

The understory from 3' to 20' tall averages 100% coverage, and includes American beech, northern spicebush (*Lindera benzoin*), mockernut hickory, and invasive Japanese honeysuckle (*Lonicera japonica*). Coverage was approximately 100%. Common herbaceous and woody species 0' to 3' tall consist of Christmas fern (*Polystichum acrostichoides*), American holly (*Ilex opaca*), Beech drops (*Epifagus virginiana*), Low-bush blueberry (*Vaccinium angustifolium),* and crane-fly orchid (*Tipularia discolor)*.

Invasive species observed were wineberry (*Rubus phoenicolasius*), multiflora rose (*Rosa multiflora*), Japanese barberry (*Berberis thunbergii*), field garlic (*Allium vineale*), oriental bittersweet (*Celastrus orbiculatus*), common privet (*Ligustrum vulgare*), and Japanese honeysuckle with a coverage of approximately 15 percent. The wildlife value of the stand is moderate due to the presence of cover and forage, mostly in the form of hard mast.

Environmental Features
Stand 1 rates a Priority 1 for retention because of its late successional stage, specimen trees and location on the slopes above the reservoir.

Stand 2

Sample Plots: **1**
Successional Stage: **Mature**
Priority: **1**
Cover Type: **Tulip Poplar**

Stand 2 is dominated by tulip poplar, of size class 20-29.9" dbh, with approximately 60% canopy closure. Other trees in the canopy include common apple (*Malus spp.),* tulip poplar, sycamore, and green ash (*Fraxinus pennsylvanica).*

The understory from 3' to 20' tall averages 60% coverage, and includes northern spicebush, poison ivy (*Toxicodendron radicans*), and mayapple (*Podophyllum peltatum*). Common herbaceous and woody species 0' to 3' tall consists of Christmas fern, Virginia creeper (*Parthenocissus quinquefolia*), and wineberry, with approximately 100% cover.

Invasive species observed in the sample plot were multiflora rose, garlic mustard (*Alliaria petiolata*), Japanese honeysuckle, Japanese stiltgrass (*Microstegium vimineum*), Chinese bushclover (*Sericea lespedeza*), and English ivy (*Hedera helix*) with a coverage of 60%. The wildlife value of the stand is medium due to the presence of cover and forage, mostly in the form of soft mast.

Environmental Features
Stand 2 rates a Priority 1 for retention because of its mature successional stage, specimen tree and location on the slopes above the reservoir.

Stand 3

Sample Plots: **1**
Successional Stage: **Mature**
Priority: **3**
Cover Type: **Silver Maple**

Stand 3 is dominated by silver maple, of size class 12-19.9" dbh, with approximately 60% canopy closure. Other trees in the canopy include black walnut (*Juglans nigra*), and green ash.

The understory from 3' to 20' tall incudes northern spice bush. Common herbaceous and woody species 0' to 3' tall consist of Virginia creeper, Christmas fern, enchanter's nightshade (*Circaea lutetiana)*, New York fern (*Parathelypteris noveboracensis*), poison ivy, fox grape (*Vitis labrusca*), and invasive wineberry, with an approximately 100% cover.

Invasive species observed were Japanese honeysuckle, oriental bittersweet, Japanese stiltgrass, garlic mustard, multiflora rose, and autumn-olive *(Elaeagnus umbellata*) with approximately 95% cover. The wildlife value of the stand is medium due to the presence of cover and forage.

Environmental Features
Stand 3 rates as a Priority 3 for retention because of its mature successional stage, but has a lack of sensitive features such as specimen trees or wetlands and has dense invasive cover.

Stand 4

Sample Plots: **2**
Successional Stage: **Mature**
Priority: **2**
Cover Type: **Silver Maple**

Stand 4 is dominated by silver maple, of size class 6-11.9" dbh, with approximately 80% canopy closure. Other trees in the canopy include black willow (*Salix nigra*), Norway maple (*Acer negundo*), sycamore, and green ash.

The understory from 3' to 20' tall was spicebush with an approximate coverage of 20%. Common herbaceous and woody species 0' to 3' tall consist of wingstem (*Verbesina alternifolia*), stout wood reed (*Cinna arundinacea*), lizard's tail (*Saururus cernuus*), skunk cabbage (*Symplocarpus foetidus*), and deertongue grass (*Dichanthelium clandestinum)*, with approximately 100% cover.

Invasive species observed were Japanese stiltgrass, Japanese hops (*Humulus japonicus*) garlic mustard, ground ivy, mile-a-minute (*Persicaria perfoliata*), oriental bittersweet, and multiflora rose with a coverage of 90%. The wildlife value of the stand is moderate due to the presence of cover and forage, mostly in the form of hard mast.

Environmental Features
Stand 4 rates as a Priority 2 for retention because of its mature successional stage, but has dense invasive cover and a lack of specimen trees and other sensitive features.

<u>Stand 5</u>

Sample Plots:	**2**
Successional Stage:	**Mature**
Priority:	**2**
Cover Type:	**Silver Maple**

Stand 5 is dominated by silver maple and black willow, of size class 20-29.9" dbh, with approximately 80% canopy closure. Other trees in the canopy include Norway maple and black locust (*Robinia pseduoacacia*).

The understory from 3' to 20' tall includes Norway maple and black locust, with an approximate cover of 30%. Common herbaceous and woody species 0' to 3' tall consist of common jewelweed (*Impatiens capensis*), Japanese stiltgrass, Canada wood nettle (*Laportea canadensis*), posion ivy, common reed grass (*Phragmites australis*), arrow-leaved tearthumb (*Persicaria sagittata*), and creeping bentgrass (*Agrostis stolonifera*), with an approximate cover of 90%.

Invasive species observed were Japanese hops, mile-a-minute, Japanese stiltgrass, common reed, garlic mustard, multiflora rose, and Japanese knotweed (*Reynoutria japonica*) with 50% approximate cover. The wildlife value of the stand is moderate due to the presence of cover and forage.

Environmental Features
Stand 5 rates as a Priority 2 for retention because of its mature successional stage but has a moderately high amount of invasive cover and a lack of specimen trees.

Stand 6

Sample Plots: **1**
Successional Stage: **Mature**
Priority: **1**
Cover Type: **Oak/hickory**

Stand 6 is co-dominated by northern red oak and mockernut hickory of size class 6-11.9" dbh, with approximately 100% canopy closure. Other trees in the canopy include American beech, tulip poplar, and red maple.

The understory from 3' to 20' tall includes Christmas fern, mayapple, wineberry, wild yam (*Dioscorea villosa*), New York fern, northern spicebush, and poison ivy, with an approximate cover of 30%. Common herbaceous and woody species 0' to 3' tall consist of Christmas fern, mayapple, New York fern , wineberry, wild yam, northern spicebush, poison ivy, Indian cucumber (*Medeola virginiana*), and white wood-aster (*Eurybia divaricata*), with an approximate cover of 100%.

Invasive species observed were oriental bittersweet, English ivy, and Japanese honeysuckle with 10% approximate cover. The wildlife value of the stand is high due to the presence of cover, water, and forage, mostly in the form of hard mast.

Environmental Features
Stand 6 rates as a Priority 1 for retention because of its mature successional stage, low invasive coverage, wetlands, and specimen trees, location on the slopes above the reservoir.

Stand 7

Sample Plots: **8**
Successional Stage: **Mature**
Priority: **1**
Cover Type: **Tulip Poplar**

Stand 7 is dominated by tulip poplar, of size class 12-19.9" dbh, with approximately 100% canopy closure. Other trees in the canopy include American beech, black gum, flowering dogwood, red maple, sassafras, black oak (*Quercus velutina*), pignut hickory, northern red oak, and white oak.

The understory from 3' to 20' tall includes northern spicebush, American holly, mockernut hickory, flowering dogwood, American beech, sassafras, red maple, blackhaw (*Viburnum prunifolium*), and paw-paw (*Asimina triloba*), and invasive common privet and Japanese barberry, with an approximate cover of 70%. Common herbaceous and woody species 0' to 3' tall consist of northern spicebush, American holly, deertongue, poison ivy, skunk cabbage, pin oak (*Quercus palustris*), enchanter's nightshade, cleavers (*Galium aparine*), Sweet Joe-Pye weed (*Eutrochium purpureum*), Christmas fern, southern grape fern (*Sceptridium biternatum*), Jack-in-the-pulpit (*Arisaema triphyllum*), Indian cucumber, white wood aster, common oak fern (*Gymnocarpium* *dryopteris*), Canadian wild ginger (*Asarum canadense*), New York fern, Virginia pennywort (*Obalaria virgniana*), bloodroot (*Sanguinaria canadensis*), maidenhair fern (*Adiantum spp.)*, buttercup (*Hepatica spp*.), mayapple, maple-leaf and viburnum (*Viburnum acerifolium*) with an approximate cover of 100%.

Invasive species observed were oriental bittersweet, English ivy, Japanese honeysuckle, multiflora rose, Japanese barberry, common privet, Chinese privet, Japanese stiltgrass, wineberry, and burning bush (*Euonymus alatus*) with 50% approximate cover. The wildlife value of the stand is moderate due to the presence of cover and forage.

Environmental Features

Stand 7 rates as a Priority 1 for retention because of its mature successional stage, specimen trees, an active bald eagle nest, and location on the slopes above the reservoir.

5. Conclusions

Seven forest stands were delineated and assessed on the site, comprised of three cover types – oak/ hickory, tulip poplar, and silver maple. There are multiple specimen trees within the forest stands on-site and all stands are abutting or within close proximity to the reservoir. The stands on the eastern side of the reservoir are located on the Harford Glen property. Invasive species coverage is moderate to high in Stands 2, 3, 4, 5, and 7, but is relatively low in Stands 1 and 6. Stands 1, 2, 6, and 7 rank as Priority 1 retention stands due to the presence of sensitive areas (wetlands and streams), specimen trees and the mature successional stage. Stands 4 and 5 rank as Priority 2 and Stand 3 ranks as Priority 3 for retention because of the lack of sensitive areas, young successional stage and high invasive coverage.

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6. References

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7. Acronyms and Abbreviations

APG	Aberdeen Proving Ground
APG-EA	Aberdeen Proving Ground, Edgewood Area
dbh	diameter at breast height
EA	Environmental Assessment
NEPA	National Environmental Policy Act

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APPENDIX A

Field Sampling Data Sheets

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FOREST STAND DELINEATION
Field Sampling Data Sheet

Property: Atkisson Dam	**Prepared By: DRC/LJ/CO**	
Owner: APG	**Stand #:1**	**Plot #: 1**
Forest Cover Type: Oak/Hickory	**Date: 03/06/20**	
Plot Size 1/10 Acre (37.5' radius):		

Basal Area in Square Feet per Acre: 190	**SIZE CLASS OF TREES >20' HEIGHT WITHIN SAMPLE PLOT**																
TREE SPECIES	**Number of Trees 2-5.9" dbh**			**Number of Trees 6-11.9" dbh**			**Number of Trees 12-19.9" dbh**			**Number of Trees 20-29.9" dbh**			**Number of Trees >30" dbh**			**Average Tree Height (ft)**	
Crown Position	**Dom**	**CoD**	**Other**	**Dom**	**CoD**	**Other**	**Dom**	**CoD**	**Other**	**Dom**	**CoD**	**Other**	**Dom**	**CoD**	**Other**		**Total**
1 Northern Red Oak		1															1
2 Tulip Poplar								2			4			1			7
3 American Beech			1			4											5
4 Mockernut Hickory						3											3
5 Bitternut Hickory			1														1
6																	0
7																	0
8																	0
9																	0
Total Number of Trees per Size Class	3			7			2			4			1				
Number & Size of Standing Dead Trees																	0

List of Woody Plant Species 3'-20':
American Beech, Northern Spicebush, Bitternut Hickory, Common Privet

Canopy Closure:

C	N	E	S	W	%
Y	Y	Y	Y	Y	100

Percent of Invasive Cover per Plot (all layers): 20%

Plot Successional Stage: Mature/Late

List of Understory Species 0'-3':
Wineberry, Multiflora rose, Common Privet, Japanese honeysuckle, Christmas fern, Oriental bittersweet, Garlic mustard, Japanese barberry

Understory Cover 3'-20':

C	N	E	S	W	%
Y	Y	Y	Y	Y	100

List of Major Invasive Species per Plot (All Layers):
Wineberry, Japanese honeysuckle, Multiflora rose, Common privet, Garlic mustard, Japanese barberry, Field garlic, Oriental bittersweet

Rare, etc. Species?	No
Specimen Trees?	Yes
Historic Sites?	No
Disease?	No
Insects/Infestation?	No
Exotic Plants?	No
Leaf litter?	Heavy
Downed woody debris:	Light

Herbaceous & Woody Cover 0'-3':

C	N	E	S	W	%
Y	Y	Y	Y	Y	100

Downed Woody Debris:

C	N	E	S	W	%
Y	Y	N	N	N	40

HABITAT: What species present? rabbit, beaver

Habitat size, location, configuration: large contiguous forest

Wildlife cover/food/water? yes/yes/yes

Stand corridor/patch? corridor

FUNCTION: Where is stand in relation to sensitive areas on site?

Comments:

Dominant Red Oak, Tulip Poplar
Slight slope to reservoir

FOREST STAND DELINEATION
Field Sampling Data Sheet

Property: Atkisson Dam	**Prepared By: DRC/CO/LJ**
Owner: APG	**Stand #:1** **Plot #: 2**
Forest Cover Type: Oak/Hickory	**Date: 03/06/20**
Plot Size 1/10 Acre (37.5' radius):	

Basal Area in Square Feet per Acre: 80	**SIZE CLASS OF TREES >20' HEIGHT WITHIN SAMPLE PLOT**																
TREE SPECIES	**Number of Trees 2-5.9" dbh**			**Number of Trees 6-11.9" dbh**			**Number of Trees 12-19.9" dbh**			**Number of Trees 20-29.9" dbh**			**Number of Trees >30" dbh**			**Average Tree Height (ft)**	
Crown Position	**Dom**	**CoD**	**Other**	**Dom**	**CoD**	**Other**	**Dom**	**CoD**	**Other**	**Dom**	**CoD**	**Other**	**Dom**	**CoD**	**Other**		Total
1 Tulip Poplar													2				2
2 American Beech						1			2								3
3 Pignut Hickory									3			1					4
4 Northern Red Oak													1				1
5 American Hop-hornbeam						1											1
6																	0
7																	0
8																	0
9																	0
Total Number of Trees per Size Class	0			2			5			1			3				
Number & Size of Standing Dead Trees							1						1				2

List of Woody Plant Species 3'-20':
American beech, Japanese honeysuckle, Northern spicebush

Canopy Closure:

C	N	E	S	W	%
Y	Y	Y	Y	Y	100

Percent of Invasive Cover per Plot (all layers): 100%

Plot Successional Stage: Late

List of Understory Species 0'-3':
Oriental bittersweet, Japanese honeysuckle, Multiflora rose

Understory Cover 3'-20':

C	N	E	S	W	%
Y	Y	Y	Y	Y	100

List of Major Invasive Species per Plot (All Layers):
Oriental bittersweet, Japanese honeysuckle, Multiflora rose

Rare, etc. Species?	No
Specimen Trees?	No
Historic Sites?	No
Disease?	No
Insects/Infestation?	No
Exotic Plants?	No
Leaf litter?	Light
Downed woody debris:	Moderate

Herbaceous & Woody Cover 0'-3':

C	N	E	S	W	%
Y	Y	Y	Y	Y	100

Downed Woody Debris:

C	N	E	S	W	%
N	Y	N	Y	N	40

HABITAT: What species present?
deer, beaver, squirrel, rabbit

Habitat size, location, configuration:
contiguous forest

Wildlife cover/food/water?
yes/yes/yes

Stand corridor/patch? No

FUNCTION: Where is stand in relation to sensitive areas on site? uphill of reservoir

Comments:

FOREST STAND DELINEATION
Field Sampling Data Sheet

Property: Atkisson Dam | **Prepared By: DRC/CO/LJ**
Owner: APG | **Stand #:1** | **Plot #: 3**
Forest Cover Type: Oak/Hickory | **Date: 03/06/20**
Plot Size 1/10 Acre (37.5' radius):

Basal Area in Square Feet per Acre: 130	SIZE CLASS OF TREES >20' HEIGHT WITHIN SAMPLE PLOT																
TREE SPECIES	Number of Trees 2-5.9" dbh			Number of Trees 6-11.9" dbh			Number of Trees 12-19.9" dbh			Number of Trees 20-29.9" dbh			Number of Trees >30" dbh			Average Tree Height (ft)	
Crown Position	Dom	CoD	Other	Dom	CoD	Other	Dom	CoD	Other	Dom	CoD	Other	Dom	CoD	Other		Total
1 American Beech			1			3			2			2					8
2 Black Gum			2			1											3
3 White Oak							1			1			1				3
4 Flowering Dogwood			1														1
5																	0
6																	0
7																	0
8																	0
9																	0
Total Number of Trees per Size Class	4			4			3			3			1				
Number & Size of Standing Dead Trees																	0

List of Woody Plant Species 3'-20':

Canopy Closure:

C	N	E	S	W	%
N	Y	Y	Y	N	60

Percent of Invasive Cover per Plot (all layers): 5%

Plot Successional Stage: Mature

List of Understory Species 0'-3':
American beech, American holly, Beech drops, Multiflora rose, Low-bush blueberry, Crane-fly orchid

Understory Cover 3'-20':

C	N	E	S	W	%
Y	N	N	N	Y	40

List of Major Invasive Species per Plot (All Layers):
Mutlifora rose, Wineberry

Rare, etc. Species?	No
Specimen Trees?	Yes
Historic Sites?	No
Disease?	No
Insects/Infestation?	No
Exotic Plants?	No
Leaf litter?	Light
Downed woody debris:	Light/Moderate

Herbaceous & Woody Cover 0'-3':

C	N	E	S	W	%
Y	Y	N	Y	N	60

Downed Woody Debris:

C	N	E	S	W	%
Y	N	Y	N	N	40

HABITAT: What species present?
beaver, deer

Habitat size, location, configuration:
contiguous forest

Wildlife cover/food/water?
yes/yes/yes

Stand corridor/patch? no

FUNCTION: Where is stand in relation to sensitive areas on site?

Comments:

FOREST STAND DELINEATION
Field Sampling Data Sheet

Property: Atkisson Dam	**Prepared By: DRC/CO/LJ**	
Owner: APG	**Stand #:1**	**Plot #: 4**
Forest Cover Type: Oak/Hickory	**Date: 03/06/20**	
Plot Size 1/10 Acre (37.5' radius):		

Basal Area in Square Feet per Acre: 220	**SIZE CLASS OF TREES >20' HEIGHT WITHIN SAMPLE PLOT**																
TREE SPECIES	**Number of Trees 2-5.9" dbh**			**Number of Trees 6-11.9" dbh**			**Number of Trees 12-19.9" dbh**			**Number of Trees 20-29.9" dbh**			**Number of Trees >30" dbh**			**Average Tree Height (ft)**	
Crown Position	**Dom**	**CoD**	**Other**	**Dom**	**CoD**	**Other**	**Dom**	**CoD**	**Other**	**Dom**	**CoD**	**Other**	**Dom**	**CoD**	**Other**		**Total**
1 White Oak																	0
2 American Beech						1			2			2					5
3 Tulip Poplar							1			5			1				7
4 Northern Red Oak									1								1
5																	0
6																	0
7																	0
8																	0
9																	0
Total Number of Trees per Size Class	0			1			4			7			1				
Number & Size of Standing Dead Trees																	0

List of Woody Plant Species 3'-20':

Canopy Closure:

C	N	E	S	W	%
Y	Y	Y	Y	Y	100

Percent of Invasive Cover per Plot (all layers): 20%

Plot Successional Stage: Mature

List of Understory Species 0'-3':
Multiflora rose, Low-bush blueberry, Beech drops, Japanese honeysuckle

Understory Cover 3'-20':

C	N	E	S	W	%
Y	Y	Y	Y	N	80

List of Major Invasive Species per Plot (All Layers):
Japanese honeysuckle, multiflora rose

Rare, etc. Species?	No
Specimen Trees?	Yes
Historic Sites?	No
Disease?	No
Insects/Infestation?	No
Exotic Plants?	No
Leaf litter?	Moderate
Downed woody debris:	Light

Herbaceous & Woody Cover 0'-3':

C	N	E	S	W	%
Y	Y	Y	Y	Y	100

Downed Woody Debris:

C	N	E	S	W	%
N	N	Y	Y	N	40

HABITAT: What species present?

Habitat size, location, configuration:
above reservoir

Wildlife cover/food/water?
yes/yes/yes

Stand corridor/patch? no

FUNCTION: Where is stand in relation to sensitive areas on site?

Comments:

FOREST STAND DELINEATION
Field Sampling Data Sheet

Property:Atkisson Dam	**Prepared By: DRC/LJ**
Owner: APG	**Stand #:2** **Plot #: 1**
Forest Cover Type: Tulip Poplar	**Date:06/01/20**
Plot Size: 1/10 Acre (37.5' radius)	

Basal Area in Square Feet per Acre: 60

SIZE CLASS OF TREES >20' HEIGHT WITHIN SAMPLE PLOT

TREE SPECIES	Number of Trees 2-5.9" dbh			Number of Trees 6-11.9" dbh			Number of Trees 12-19.9" dbh			Number of Trees 20-29.9" dbh			Number of Trees >30" dbh			Average Tree Height (ft)	
Crown Position	Dom	CoD	Other	Dom	CoD	Other	Dom	CoD	Other	Dom	CoD	Other	Dom	CoD	Other		Total
1 Apple Tree						3											3
2 Tulip Poplar										2			1				3
3 Sycamore									1								1
4 Green Ash						1											1
5																	0
6																	0
7																	0
8																	0
9																	0
Total Number of Trees per Size Class	0			4			1			2			1				
Number & Size of Standing Dead Trees				1													1

List of Woody Plant Species 3'-20':
Northern spice bush, Posion ivy, Mayapple

Canopy Closure:

C	N	E	S	W	%
Y	Y	N	N	Y	60

Percent of Invasive Cover per Plot (all layers): 60%

Plot Successional Stage: Mature

List of Understory Species 0'-3':
Wineberry, Christmas fern

Understory Cover 3'-20':

C	N	E	S	W	%
N	Y	Y	N	Y	60

List of Major Invasive Species per Plot (All Layers):
Garlic mustard, Multiflora rose, Japanese honeysuckle, Japanese stiltgrass, Chinese bush clover, English ivy, Oriental bittersweet

Rare, etc. Species?	No
Specimen Trees?	Yes
Historic Sites?	No
Disease?	No
Insects/Infestation?	No
Exotic Plants?	No
Leaf litter?	Light
Downed woody debris:	Moderate

Herbaceous & Woody Cover 0'-3':

C	N	E	S	W	%
Y	Y	Y	Y	Y	100

Downed Woody Debris:

C	N	E	S	W	%
N	Y	Y	Y	Y	80

HABITAT: What species present?
Woodpecker, deer, beaver

Habitat size, location, configuration:
Continued forest above river

Wildlife cover/food/water?
yes/yes/yes

Stand corridor/patch? corridor

FUNCTION: Where is stand in relation to sensitive areas on site?

Comments:

Dense groundcover and understory
Many invasives, few trees
Farily open canopy, lots of regrowth

FOREST STAND DELINEATION
Field Sampling Data Sheet

Property: Atkisson Dam — **Prepared By: DRC/CO**

Owner: APG — **Stand #:3** — **Plot #: 1**

Forest Cover Type: Silver Maple — **Date: 06/01/20**

Plot Size 1/10 Acre (37.5' radius):

Basal Area in Square Feet per Acre: 70

SIZE CLASS OF TREES >20' HEIGHT WITHIN SAMPLE PLOT

TREE SPECIES	Number of Trees 2-5.9" dbh			Number of Trees 6-11.9" dbh			Number of Trees 12-19.9" dbh			Number of Trees 20-29.9" dbh			Number of Trees >30" dbh			Average Tree Height (ft)	
Crown Position	Dom	CoD	Other	Dom	CoD	Other	Dom	CoD	Other	Dom	CoD	Other	Dom	CoD	Other		Total
1 Silver Maple				2			2			2							6
2 Black Walnut									1			2					3
3 Green Ash			1														1
4																	0
5																	0
6																	0
7																	0
8																	0
9																	0
Total Number of Trees per Size Class	1			2			3			4			0				
Number & Size of Standing Dead Trees							1										1

List of Woody Plant Species 3'-20':
Northern spice bush

Canopy Closure: C	N	E	S	W	%
N	Y	N	Y	Y	60

Percent of Invasive Cover per Plot (all layers): 95%

Plot Successional Stage: Mature

List of Understory Species 0'-3':
Virginia creeper, Christmas fern, Enchanter's nightshade, New York fern, Poison ivy, Wineberry, Fox grape

Understory Cover 3'-20': C	N	E	S	W	%
Y	Y	Y	Y	Y	100

List of Major Invasive Species per Plot (All Layers):
Oriental bittersweet, Japanese honeysuckle, Japanese stiltgrass, Garlic mustard, Multiflora rose, Autumn-olive,

Rare, etc. Species?	No
Specimen Trees?	No
Historic Sites?	No
Disease?	No
Insects/Infestation?	No
Exotic Plants?	No
Leaf litter?	Light
Downed woody debris:	Light

Herbaceous & Woody Cover 0'-3': C	N	E	S	W	%
Y	Y	Y	Y	Y	100

Downed Woody Debris: C	N	E	S	W	%
N	N	Y	N	N	20

HABITAT: What species present?

Habitat size, location, configuration:
Continuous stand with open field

Wildlife cover/food/water?
Yes/Yes/Yes

Stand corridor/patch? corridor

FUNCTION: Where is stand in relation to sensitive areas on site?

Comments:
Large corridor to river, larger open area with dense invasive groundcover

FOREST STAND DELINEATION
Field Sampling Data Sheet

Property: Atkisson Dam	**Prepared By: DRC/CO**	
Owner: APG	**Stand #:4**	**Plot #: 1**
Forest Cover Type: Maple	**Date: 06/02/20**	
Plot Size 1/10 Acre (37.5' radius):		

Basal Area in Square Feet per Acre: 90	SIZE CLASS OF TREES >20' HEIGHT WITHIN SAMPLE PLOT															
TREE SPECIES	Number of Trees 2-5.9" dbh			Number of Trees 6-11.9" dbh			Number of Trees 12-19.9" dbh			Number of Trees 20-29.9" dbh			Number of Trees >30" dbh			Average Tree Height (ft)	
Crown Position	Dom	CoD	Other	Dom	CoD	Other	Dom	CoD	Other	Dom	CoD	Other	Dom	CoD	Other		Total
1 Black Willow									2								2
2 Silver Maple	4			6			2			1							13
3 Norway Maple			3			3											6
4																	0
5																	0
6																	0
7																	0
8																	0
9																	0
Total Number of Trees per Size Class	7			9			4			1			0				
Number & Size of Standing Dead Trees																	0

List of Woody Plant Species 3'-20':

Canopy Closure:

C	N	E	S	W	%
Y	N	Y	Y	Y	80

Percent of Invasive Cover per Plot (all layers): 95%

Plot Successional Stage: Late

List of Understory Species 0'-3':
Wingstem, Stout wood reed, Lizard's tail, Skunk cabbage, Rens fern

Understory Cover 3'-20':

C	N	E	S	W	%
N	N	N	N	Y	20

List of Major Invasive Species per Plot (All Layers):
Japanese stilitgrass, Japnese hops, Garlic mustard, Ground ivy, Mile-a-minute

Rare, etc. Species?	No
Specimen Trees?	No
Historic Sites?	No
Disease?	No
Insects/Infestation?	No
Exotic Plants?	No
Leaf litter?	Very Light
Downed woody debris:	Light

Herbaceous & Woody Cover 0'-3':

C	N	E	S	W	%
Y	Y	Y	Y	Y	100

Downed Woody Debris:

C	N	E	S	W	%
N	N	N	N	N	100

HABITAT: What species present?
Carolina wren, muskrat

Habitat size, location, configuration:
open field with adjacent forest

Wildlife cover/food/water?
Yes/yes/yes

Stand corridor/patch? patch

FUNCTION: Where is stand in relation to sensitive areas on site?

Comments:
Japanese stiltgrass dense groundcover

FOREST STAND DELINEATION
Field Sampling Data Sheet

Property: Atkisson Dam | **Prepared By: DRC/CO**
Owner: APG | **Stand #:4** | **Plot #: 2**
Forest Cover Type: Maple | **Date: 06/02/20**
Plot Size 1/10 Acre (37.5' radius):

Basal Area in Square Feet per Acre: 40	SIZE CLASS OF TREES >20' HEIGHT WITHIN SAMPLE PLOT																
TREE SPECIES	Number of Trees 2-5.9" dbh			Number of Trees 6-11.9" dbh			Number of Trees 12-19.9" dbh			Number of Trees 20-29.9" dbh			Number of Trees >30" dbh			Average Tree Height (ft)	
Crown Position	Dom	CoD	Other	Dom	CoD	Other	Dom	CoD	Other	Dom	CoD	Other	Dom	CoD	Other		Total
1 Sassafras				1						1							2
2 Norway Maple			1						1								2
3 Sycamore									1								1
4 Green Ash			1			1			2								4
5																	0
6																	0
7																	0
8																	0
9																	0
Total Number of Trees per Size Class	2			2			4			1			0				
Number & Size of Standing Dead Trees																	0

List of Woody Plant Species 3'-20':	Canopy Closure:						Percent of Invasive Cover per Plot (all layers):	Plot Successional Stage:
	C	N	E	S	W	%		
	Y	Y	N	Y	Y	80	90%	Mature

List of Understory Species 0'-3':	Understory Cover 3'-20':						List of Major Invasive Species per Plot (All Layers):
Deertongue	C	N	E	S	W	%	
	N	N	Y	N	N	20	Japanese stiltgrass, Oriental bittersweet, Multiflora rose

		Herbaceous & Woody Cover 0'-3':						HABITAT: What species present?
Rare, etc. Species?	No							
Specimen Trees?	No	C	N	E	S	W	%	muskrat
Historic Sites?	No	Y	Y	Y	Y	Y	100	Habitat size, location, configuration:
Disease?	No							open field near contiguous forest
Insects/Infestation?	No	Downed Woody Debris:						
Exotic Plants?	No	C	N	E	S	W	%	Wildlife cover/food/water?
Leaf litter?	Light	N	Y	N	N	N	20	yes/yes/yes
Downed woody debris:	Light							Stand corridor/patch? patch

FUNCTION: Where is stand in relation to sensitive areas on site?

Comments:

Japanese stitlgrass everywhere

FOREST STAND DELINEATION
Field Sampling Data Sheet

Property: Atkisson Dam | **Prepared By: DRC/CO**
Owner: APG | **Stand #:5** | **Plot #: 1**
Forest Cover Type: Silver Maple/ Black Willow | **Date: 06/02/20**
Plot Size 1/10 Acre (37.5' radius):

Basal Area in Square Feet per Acre: 50

SIZE CLASS OF TREES >20' HEIGHT WITHIN SAMPLE PLOT

TREE SPECIES	Number of Trees 2-5.9" dbh			Number of Trees 6-11.9" dbh			Number of Trees 12-19.9" dbh			Number of Trees 20-29.9" dbh			Number of Trees >30" dbh			Average Tree Height (ft)	
Crown Position	Dom	CoD	Other	Dom	CoD	Other	Dom	CoD	Other	Dom	CoD	Other	Dom	CoD	Other		Total
1 Silver Maple										1							1
2 Black Willow			1			3											4
3																	0
4																	0
5																	0
6																	0
7																	0
8																	0
9																	0
Total Number of Trees per Size Class	1			3			0			1			0				5
Number & Size of Standing Dead Trees																	0

List of Woody Plant Species 3'-20':

Canopy Closure:

C	N	E	S	W	%
Y	Y	N	Y	Y	80

Percent of Invasive Cover per Plot (all layers): 60%

Plot Successional Stage: Mature

List of Understory Species 0'-3':
Common jewelweed, Japanese stiltgrass,Canadian wood nettle, Posion ivy, Common reed grass, Arrow-leaved tearthumb, Creeping bentgrass

Understory Cover 3'-20':

C	N	E	S	W	%
N	Y	N	N	N	20

List of Major Invasive Species per Plot (All Layers):
Mile-a-minute, Japanese hops, Japanese stiltgrass, Common reed

Rare, etc. Species?	No
Specimen Trees?	No
Historic Sites?	No
Disease?	No
Insects/Infestation?	No
Exotic Plants?	No
Leaf litter?	Light
Downed woody debris:	Light

Herbaceous & Woody Cover 0'-3':

C	N	E	S	W	%
Y	Y	Y	Y	Y	100

Downed Woody Debris:

C	N	E	S	W	%
N	N	N	Y	N	20

HABITAT: What species present?

Habitat size, location, configuration:

Wildlife cover/food/water?
yes/yes/yes

Stand corridor/patch?

FUNCTION: Where is stand in relation to sensitive areas on site?

Comments:
Dense groundcover of grasses

FOREST STAND DELINEATION
Field Sampling Data Sheet

Property:Atkisson Dam	**Prepared By: DRC/LJ**	
Owner: APG	**Stand #:5**	**Plot #: 2**
Forest Cover Type: Silver Maple	**Date: 06/02/20**	
Plot Size: 1/10 Acre (37.5' radius)		

Basal Area in Square Feet per Acre: 70

SIZE CLASS OF TREES >20' HEIGHT WITHIN SAMPLE PLOT

TREE SPECIES	Number of Trees 2-5.9" dbh			Number of Trees 6-11.9" dbh			Number of Trees 12-19.9" dbh			Number of Trees 20-29.9" dbh			Number of Trees >30" dbh			Average Tree Height (ft)	
Crown Position	Dom	CoD	Other	Dom	CoD	Other	Dom	CoD	Other	Dom	CoD	Other	Dom	CoD	Other		Total
1 Silver Maple	1			3			2			1							7
2 Norway Maple						4			1								5
3 Black Willow									1								1
4 Black Locust			1														1
5																	0
6																	0
7																	0
8																	0
9																	0
Total Number of Trees per Size Class	2			7			4			1			0				
Number & Size of Standing Dead Trees																	0

List of Woody Plant Species 3'-20':
Norway maple, Black locust

Canopy Closure:

C	N	E	S	W	%
Y	Y	Y	Y	Y	100

Percent of Invasive Cover per Plot (all layers): 50%

Plot Successional Stage: Mature

List of Understory Species 0'-3':
Common jewelweed, Garlic mustard, Japanese knotweed, Multiflora rose

Understory Cover 3'-20':

C	N	E	S	W	%
N	N	N	Y	Y	40

List of Major Invasive Species per Plot (All Layers):
Japanes stiltgrass, Multiflora rose, Japamese knotweed, Japanese hops, Garlic mustard

Rare, etc. Species?	No
Specimen Trees?	No
Historic Sites?	No
Disease?	No
Insects/Infestation?	No
Exotic Plants?	No
Leaf litter?	Moderate
Downed woody debris:	Moderate/Heavy

Herbaceous & Woody Cover 0'-3':

C	N	E	S	W	%
Y	Y	Y	Y	N	80

Downed Woody Debris:

C	N	E	S	W	%
Y	Y	N	Y	Y	80

HABITAT: What species present?

Habitat size, location, configuration:

Wildlife cover/food/water?
yes/yes/yes

Stand corridor/patch?

FUNCTION: Where is stand in relation to sensitive areas on site?

Comments:

FOREST STAND DELINEATION
Field Sampling Data Sheet

Property: Atkisson Dam | **Prepared By: DRC/CO**
Owner: APG | **Stand #:6** | **Plot #: 1**
Forest Cover Type: Oak Hickory | **Date: 6/02/20**
Plot Size 1/10 Acre (37.5' radius):

Basal Area in Square Feet per Acre: 70

SIZE CLASS OF TREES >20' HEIGHT WITHIN SAMPLE PLOT

TREE SPECIES	Number of Trees 2-5.9" dbh			Number of Trees 6-11.9" dbh			Number of Trees 12-19.9" dbh			Number of Trees 20-29.9" dbh			Number of Trees >30" dbh			Average Tree Height (ft)	
Crown Position	Dom	CoD	Other	Dom	CoD	Other	Dom	CoD	Other	Dom	CoD	Other	Dom	CoD	Other		Total
1 Northern Red Oak								1						1			2
2 American Beech			4			3											7
3 Mockernut Hickory					3												3
4 Tulip Poplar									1								1
5 Red Maple			1			1											2
6																	0
7																	0
8																	0
9																	0
Total Number of Trees per Size Class	5			7			2			0			1				
Number & Size of Standing Dead Trees							1										1

List of Woody Plant Species 3'-20':

Canopy Closure:

C	N	E	S	W	%
Y	Y	Y	Y	Y	100

Percent of Invasive Cover per Plot (all layers): 10%

Plot Successional Stage: Mature

List of Understory Species 0'-3':
Christmas fern, Mayapple, New York fern, Wineberry, Wild yam, Northern spicebush, Posion ivy, Indian cucumber, White wood aster

Understory Cover 3'-20':

C	N	E	S	W	%
Y	Y	N	Y	N	60

List of Major Invasive Species per Plot (All Layers):
Japanese honeysuckle, English ivy, Oriental bittersweet

Rare, etc. Species?	No
Specimen Trees?	Yes
Historic Sites?	No
Disease?	No
Insects/Infestation?	No
Exotic Plants?	No
Leaf litter?	Heavy
Downed woody debris:	Moderate

Herbaceous & Woody Cover 0'-3':

C	N	E	S	W	%
Y	Y	Y	Y	Y	100

Downed Woody Debris:

C	N	E	S	W	%
Y	Y	Y	Y	Y	100

HABITAT: What species present? deer

Habitat size, location, configuration: continuous forest on slope towards creek

Wildlife cover/food/water? Yes/yes/yes

Stand corridor/patch? corridor

FUNCTION: Where is stand in relation to sensitive areas on site?

Comments:

small-whorled pogonia habitat

FOREST STAND DELINEATION
Field Sampling Data Sheet

Property: Atkisson Dam | **Prepared By: DRC/CO**
Owner: APG | **Stand #:7** | **Plot #: 1**
Forest Cover Type: Tulip Poplar | **Date: 06/02/20**
Plot Size 1/10 Acre (37.5' radius):

Basal Area in Square Feet per Acre: 140

SIZE CLASS OF TREES >20' HEIGHT WITHIN SAMPLE PLOT

TREE SPECIES	Number of Trees 2-5.9" dbh			Number of Trees 6-11.9" dbh			Number of Trees 12-19.9" dbh			Number of Trees 20-29.9" dbh			Number of Trees >30" dbh			Average Tree Height (ft)	
Crown Position	Dom	CoD	Other	Dom	CoD	Other	Dom	CoD	Other	Dom	CoD	Other	Dom	CoD	Other		Total
1 Tulip Poplar				5			13										18
2 American Beech			2														2
3 Black Gum			1														1
4 Flowering Dogwood			1														1
5 Red Maple			1														1
6																	0
7																	0
8																	0
9																	0
Total Number of Trees per Size Class	5			5			13			0			0				
Number & Size of Standing Dead Trees																	0

List of Woody Plant Species 3'-20':

Canopy Closure:

C	N	E	S	W	%
Y	Y	Y	Y	Y	100

Percent of Invasive Cover per Plot (all layers): 40%

Plot Successional Stage: Mature

List of Understory Species 0'-3':
Northern spicebush, Wineberry, American holly, Deertongue

Understory Cover 3'-20':

C	N	E	S	W	%
N	Y	N	N	Y	40

List of Major Invasive Species per Plot (All Layers):
Multiflora rose, Japanese honeysuckle, Oriental bittersweet, Japanese Stiltgrass, Chinese bush clover, English ivy

Rare, etc. Species?	No
Specimen Trees?	No
Historic Sites?	No
Disease?	No
Insects/Infestation?	No
Exotic Plants?	No
Leaf litter?	Moderate
Downed woody debris:	Moderate

Herbaceous & Woody Cover 0'-3':

C	N	E	S	W	%
Y	Y	Y	Y	Y	100

Downed Woody Debris:

C	N	E	S	W	%
N	Y	N	N	Y	40

HABITAT: What species present? Deer

Habitat size, location, configuration: contринguous forest on hill sloped to creek

Wildlife cover/food/water? Yes/Yes/Yes

Stand corridor/patch? corridor

FUNCTION: Where is stand in relation to sensitive areas on site?

Comments:

Moderate invasive groundcover

FOREST STAND DELINEATION
Field Sampling Data Sheet

Property: Atkisson Dam	**Prepared By: DRC/CO**	
Owner: APG	**Stand #:7**	**Plot #: 2**
Forest Cover Type: Tulip Poplar	**Date: 06/02/20**	
Plot Size 1/10 Acre (37.5' radius):		

Basal Area in Square Feet per Acre: 70

SIZE CLASS OF TREES >20' HEIGHT WITHIN SAMPLE PLOT

TREE SPECIES	Number of Trees 2-5.9" dbh			Number of Trees 6-11.9" dbh			Number of Trees 12-19.9" dbh			Number of Trees 20-29.9" dbh			Number of Trees >30" dbh			Average Tree Height (ft)	
Crown Position	Dom	CoD	Other	Dom	CoD	Other	Dom	CoD	Other	Dom	CoD	Other	Dom	CoD	Other		Total
1 Tulip Poplar			1	3			7										11
2 Red Maple			2														2
3 Black Gum			1														1
4																	0
5																	0
6																	0
7																	0
8																	0
9																	0
Total Number of Trees per Size Class	4			3			7			0			0				
Number & Size of Standing Dead Trees							1										1

List of Woody Plant Species 3'-20':
Northern Spicebush

Canopy Closure:

C	N	E	S	W	%
Y	Y	Y	Y	Y	100

Percent of Invasive Cover per Plot (all layers): 70%

Plot Successional Stage: Mature

List of Understory Species 0'-3':
Wineberry, Hog peanut, Northern Spicebush, Posion ivy, Skunk cabbage, Pin oak, Enchanter's nightshade, Cleavers

Understory Cover 3'-20':

C	N	E	S	W	%
Y	Y	Y	N	N	60

List of Major Invasive Species per Plot (All Layers):
Oriental bittersweet Multiflora rose, Japanese stiltgrass, English ivy

Rare, etc. Species?	No
Specimen Trees?	No
Historic Sites?	No
Disease?	No
Insects/Infestation?	No
Exotic Plants?	No
Leaf litter?	Light
Downed woody debris:	Light

Herbaceous & Woody Cover 0'-3':

C	N	E	S	W	%
Y	Y	Y	Y	Y	100

Downed Woody Debris:

C	N	E	S	W	%
N	Y	N	N	N	20

HABITAT: What species present?
Deer

Habitat size, location, configuration:
Contiguous forest, slight slope to trail

Wildlife cover/food/water?
Yes/Yes/Yes

Stand corridor/patch? corridor

FUNCTION: Where is stand in relation to sensitive areas on site?

Comments:

Dense invasive groudcover
Little to no understory

FOREST STAND DELINEATION
Field Sampling Data Sheet

Property: Atkisson Dam	**Prepared By: DRC/CO/LJ**
Owner: APG	**Stand #:7** **Plot #: 3**
Forest Cover Type: Oak/Hickory	**Date: 6/02/20**
Plot Size 1/10 Acre (37.5' radius):	

Basal Area in Square Feet per Acre: 50	SIZE CLASS OF TREES >20' HEIGHT WITHIN SAMPLE PLOT															
TREE SPECIES	**Number of Trees 2-5.9" dbh**			**Number of Trees 6-11.9" dbh**			**Number of Trees 12-19.9" dbh**			**Number of Trees 20-29.9" dbh**			**Number of Trees >30" dbh**			**Average Tree Height (ft)**	
Crown Position	Dom	CoD	Other	Dom	CoD	Other	Dom	CoD	Other	Dom	CoD	Other	Dom	CoD	Other		Total
1 Sassafras			1						1								2
2 Red Maple			3			1			3								7
3 American Beech			4			2											6
4 Flowering Dogwood			4														4
5 Tulip Poplar	1									1							2
6																	0
7																	0
8																	0
9																	0
Total Number of Trees per Size Class	13			3			4			1			0				
Number & Size of Standing Dead Trees																	0

List of Woody Plant Species 3'-20':
Northern Spiecbush, Flowering Dogwood, Red maple, Sassafras, Japanese honeysuckle, Blackhaw

Canopy Closure:

C	N	E	S	W	%
Y	Y	Y	Y	Y	100

Percent of Invasive Cover per Plot (all layers): %

Plot Successional Stage: Late-mature

List of Understory Species 0'-3':
Autumn-olive, Northern spicebush, Japanese stiltgrass, Oriental bittersweet, Japanese honeysuckle, Multiflora rose, Wineberry, Japanese barberry, Christmas fern

Understory Cover 3'-20':

C	N	E	S	W	%
N	Y	N	N	Y	40

List of Major Invasive Species per Plot (All Layers):
Chinese privet, English ivy, Japanese honeysuckle, Wineberry, Multiflora rose, Japanese stiltgrass, Garlic mustard, Japanese barberry

Rare, etc. Species?	No
Specimen Trees?	No
Historic Sites?	No
Disease?	No
Insects/Infestation?	No
Exotic Plants?	No
Leaf litter?	Moderate
Downed woody debris:	Moderate

Herbaceous & Woody Cover 0'-3':

C	N	E	S	W	%
Y	Y	Y	Y	Y	100

Downed Woody Debris:

C	N	E	S	W	%
N	Y	N	N	N	20

HABITAT: What species present?
deer, american toad, downy woodpecker, chipmunk

Habitat size, location, configuration:

Wildlife cover/food/water?
yes/yes/yes

Stand corridor/patch? corridor

FUNCTION: Where is stand in relation to sensitive areas on site?

Comments:

FOREST STAND DELINEATION
Field Sampling Data Sheet

Property: Atkisson Dam	**Prepared By: DRC/CO**
Owner: APG	**Stand #:7** **Plot #:4**
Forest Cover Type: Tulip Poplar	**Date: 06/02/20**
Plot Size 1/10 Acre (37.5' radius):	

Basal Area in Square Feet per Acre: 100	SIZE CLASS OF TREES >20' HEIGHT WITHIN SAMPLE PLOT															
TREE SPECIES	Number of Trees 2-5.9" dbh			Number of Trees 6-11.9" dbh			Number of Trees 12-19.9" dbh			Number of Trees 20-29.9" dbh			Number of Trees >30" dbh			Average Tree Height (ft)	
Crown Position	Dom	CoD	Other	Dom	CoD	Other	Dom	CoD	Other	Dom	CoD	Other	Dom	CoD	Other		Total
1 Tulip Poplar							1			3							4
2 Red Maple						4											4
3 Black Oak												1			0		1
4 American Beech			6														6
5																	0
6																	0
7																	0
8																	0
9																	0
Total Number of Trees per Size Class	6			4			1			4			0				
Number & Size of Standing Dead Trees				1													1

List of Woody Plant Species 3'-20':
American beech

Canopy Closure:

C	N	E	S	W	%
Y	Y	Y	Y	Y	100

Percent of Invasive Cover per Plot (all layers):

Plot Successional Stage: Late

List of Understory Species 0'-3':
Poison ivy, Oriental bittersweet, Christmas fern, Southern grape fern, Chinese privet, Jack-in-the puplit, Japanese honeysuckle, Japanese barberry, Burning bush

Understory Cover 3'-20':

C	N	E	S	W	%
Y	Y	Y	Y	Y	100

List of Major Invasive Species per Plot (All Layers):
Japanese honeysuckle, Japanese barberry, Oriental bittersweet, Chinese privet, Burning bush

Rare, etc. Species?	No
Specimen Trees?	No
Historic Sites?	No
Disease?	No
Insects/Infestation?	No
Exotic Plants?	No
Leaf litter?	Moderate
Downed woody debris:	Light

Herbaceous & Woody Cover 0'-3':

C	N	E	S	W	%
Y	Y	Y	Y	Y	100

Downed Woody Debris:

C	N	E	S	W	%
N	Y	N	N	N	20

HABITAT: What species present?

Habitat size, location, configuration:

Wildlife cover/food/water?
yes/yes/yes

Stand corridor/patch?

FUNCTION: Where is stand in relation to sensitive areas on site?

Comments:
Dense understory of American beech

Stand of slopes above Winters Run/Atkisson Reservoir

FOREST STAND DELINEATION
Field Sampling Data Sheet

Property: Atkisson Dam — **Prepared By: DRC/CO**
Owner: APG — **Stand #:7** — **Plot #: 5**
Forest Cover Type: Tulip Poplar — **Date: 6/02/20**
Plot Size 1/10 Acre (37.5' radius):

Basal Area in Square Feet per Acre: 140

SIZE CLASS OF TREES >20' HEIGHT WITHIN SAMPLE PLOT

TREE SPECIES	Number of Trees 2-5.9" dbh			Number of Trees 6-11.9" dbh			Number of Trees 12-19.9" dbh			Number of Trees 20-29.9" dbh			Number of Trees >30" dbh			Average Tree Height (ft)	
Crown Position	Dom	CoD	Other	Dom	CoD	Other	Dom	CoD	Other	Dom	CoD	Other	Dom	CoD	Other		Total
1 Tulip Poplar				1			1			1							3
2 American Beech						1			5								6
3																	0
4																	0
5																	0
6																	0
7																	0
8																	0
9																	0
Total Number of Trees per Size Class	0			2			6			1							
Number & Size of Standing Dead Trees																	0

List of Woody Plant Species 3'-20':
Northern Spicebush, American beech

Canopy Closure:

C	N	E	S	W	%
Y	Y	Y	Y	Y	100

Percent of Invasive Cover per Plot (all layers):

Plot Successional Stage: Late/Mature

List of Understory Species 0'-3':
White wood aster, Oak fern, Maidenhair fern, Japanese barberry, Indian cucumber root, Wild ginger, New York fern, Bloodroot, Mockernut hickory, Mayapple, Virignia

Understory Cover 3'-20':

C	N	E	S	W	%
N	N	N	N	Y	20

List of Major Invasive Species per Plot (All Layers):
Oriental bittersweet, Japanese barberry, Chinese privet , Japanees stiltgrass

Rare, etc. Species?	No
Specimen Trees?	No
Historic Sites?	No
Disease?	No
Insects/Infestation?	No
Exotic Plants?	No
Leaf litter?	Moderate/Heavy
Downed woody debris:	Moderate

Herbaceous & Woody Cover 0'-3':

C	N	E	S	W	%
Y	Y	Y	Y	Y	100

Downed Woody Debris:

C	N	E	S	W	%
N	Y	Y	N	N	40

HABITAT: What species present?

Habitat size, location, configuration:

Wildlife cover/food/water? yes/yes/yes

Stand corridor/patch? corridor

FUNCTION: Where is stand in relation to sensitive areas on site?

Comments:
Very sparse understory

FOREST STAND DELINEATION
Field Sampling Data Sheet

Property: Atkisson Dam	**Prepared By: DRC/CO/LJ**
Owner: APG	**Stand #:7** **Plot #: 6**
Forest Cover Type: Tulip Poplar	**Date: 06/02/20**
Plot Size 1/10 Acre (37.5' radius):	

Basal Area in Square Feet per Acre: 140	SIZE CLASS OF TREES >20' HEIGHT WITHIN SAMPLE PLOT																
TREE SPECIES	Number of Trees 2-5.9" dbh			Number of Trees 6-11.9" dbh			Number of Trees 12-19.9" dbh			Number of Trees 20-29.9" dbh			Number of Trees >30" dbh			Average Tree Height (ft)	
Crown Position	Dom	CoD	Other	Dom	CoD	Other	Dom	CoD	Other	Dom	CoD	Other	Dom	CoD	Other		Total
1 Tulip Poplar							2										2
2 American Beech			2			1			1								4
3 Pignut Hickory									2			1					3
4 Northern Red Oak									1								1
5																	0
6																	0
7																	0
8																	0
9																	0
Total Number of Trees per Size Class	2			1			6			1			0				
Number & Size of Standing Dead Trees																	0

List of Woody Plant Species 3'-20':	Canopy Closure:						Percent of Invasive Cover per Plot (all layers):	Plot Successional Stage:
American beech, wineberry	C	N	E	S	W	%		
	Y	Y	Y	Y	Y	100	50%	Late/Mature

List of Understory Species 0'-3':	Understory Cover 3'-20':						List of Major Invasive Species per Plot (All Layers):
Christmas fern, Whorled loostrife, Maple-leaf viburnum, New York fern, Oak fern	C	N	E	S	W	%	
	Y	Y	Y	N	N	60	Oriental bittersweet, Japanese barberry, Multiflora rose, wineberry

		Herbaceous & Woody Cover 0'-3':						HABITAT: What species present?
Rare, etc. Species?	No							
Specimen Trees?	No	C	N	E	S	W	%	
Historic Sites?	No	Y	Y	Y	Y	Y	100	Habitat size, location, configuration:
Disease?	No							
Insects/Infestation?	No	Downed Woody Debris:						
Exotic Plants?	No	C	N	E	S	W	%	Wildlife cover/food/water?
Leaf litter?	Moderate/Heavy	Y	N	N	N	N	20	
Downed woody debris:	Moderate							Stand corridor/patch?

FUNCTION: Where is stand in relation to sensitive areas on site?

Comments:

FOREST STAND DELINEATION
Field Sampling Data Sheet

Property: Atkisson Dam | **Prepared By: DRC/CO**
Owner: APG | **Stand #:7** | **Plot #: 7**
Forest Cover Type: Tulip Poplar | **Date: 06/02/20**
Plot Size 1/10 Acre (37.5' radius):

Basal Area in Square Feet per Acre: 110

SIZE CLASS OF TREES >20' HEIGHT WITHIN SAMPLE PLOT

TREE SPECIES	Number of Trees 2-5.9" dbh			Number of Trees 6-11.9" dbh			Number of Trees 12-19.9" dbh			Number of Trees 20-29.9" dbh			Number of Trees >30" dbh			Average Tree Height (ft)	
Crown Position	Dom	CoD	Other	Dom	CoD	Other	Dom	CoD	Other	Dom	CoD	Other	Dom	CoD	Other		Total
1 Tulip Poplar							2			2							4
2 Northern Red Oak						1											1
3 American Beech						3			1								4
4																	0
5																	0
6																	0
7																	0
8																	0
9																	0
Total Number of Trees per Size Class				4			3			2							
Number & Size of Standing Dead Trees																	0

List of Woody Plant Species 3'-20':
Northern spicebush, Paw-paw

Canopy Closure:

C	N	E	S	W	%
Y	Y	Y	Y	Y	100

Percent of Invasive Cover per Plot (all layers): 50%

Plot Successional Stage: Mature

List of Understory Species 0'-3':
Paw-paw, Christmas fern, Multiflora rose, Japanese barberry, English ivy

Understory Cover 3'-20':

C	N	E	S	W	%
Y	Y	Y	Y	Y	100

List of Major Invasive Species per Plot (All Layers):
Multiflora rose, English Ivy, Japanese Barberry

Rare, etc. Species?	No
Specimen Trees?	No
Historic Sites?	No
Disease?	No
Insects/Infestation?	No
Exotic Plants?	No
Leaf litter?	Light
Downed woody debris:	Heavy/Moderate

Herbaceous & Woody Cover 0'-3':

C	N	E	S	W	%
Y	Y	Y	Y	Y	100

Downed Woody Debris:

C	N	E	S	W	%
N	Y	Y	Y	Y	80

HABITAT: What species present?
American Bald Eagle

Habitat size, location, configuration:

Wildlife cover/food/water?
yes/yes/yes

Stand corridor/patch? corridor

FUNCTION: Where is stand in relation to sensitive areas on site?

Comments:
Dense overstory of Northern spicebush and Paw-paw

FOREST STAND DELINEATION
Field Sampling Data Sheet

Property: Atkisson Dam | **Prepared By: DRC/CO**
Owner: APG | **Stand #:7** | **Plot #: 8**
Forest Cover Type: Tulip Poplar | **Date: 06/02/20**
Plot Size: 1/10 Acre (37.5' radius)

Basal Area in Square Feet per Acre: 40	SIZE CLASS OF TREES >20' HEIGHT WITHIN SAMPLE PLOT																
TREE SPECIES	Number of Trees 2-5.9" dbh			Number of Trees 6-11.9" dbh			Number of Trees 12-19.9" dbh			Number of Trees 20-29.9" dbh			Number of Trees >30" dbh			Average Tree Height (ft)	
Crown Position	Dom	CoD	Other	Dom	CoD	Other	Dom	CoD	Other	Dom	CoD	Other	Dom	CoD	Other		Total
1 Tulip Poplar										4							4
2 American Beech						1											1
3 Red Maple						2											2
4 White Oak									1								1
5 Northern Red Oak												1					1
6																	0
7																	0
8																	0
9																	0
Total Number of Trees per Size Class				3			1			5							
Number & Size of Standing Dead Trees				1													1

List of Woody Plant Species 3'-20':
Northern spicebush, Japanese barberry

Canopy Closure:					
C	N	E	S	W	%
Y	Y	Y	Y	Y	100

Percent of Invasive Cover per Plot (all layers): 50%

Plot Successional Stage: Mature

List of Understory Species 0'-3':
Northern spicebush, Oriental bittersweet, Christmas fern, Mayapple, Green ash, Bloodroot, Oak fern, White wood aster, Multiflora rose, Japanese barberry, Southern grape

Understory Cover 3'-20':					
C	N	E	S	W	%
Y	Y	Y	Y	Y	100

List of Major Invasive Species per Plot (All Layers):
Orienal bittersweet, Multiflora rose, Common privet, Japanese barberry

Rare, etc. Species?	No
Specimen Trees?	No
Historic Sites?	No
Disease?	No
Insects/Infestation?	No
Exotic Plants?	No
Leaf litter?	Moderate/heavy
Downed woody debris:	Moderate

Herbaceous & Woody Cover 0'-3':					
C	N	E	S	W	%
Y	Y	Y	Y	Y	100

Downed Woody Debris:					
C	N	E	S	W	%
N	Y	N	Y	Y	60

HABITAT: What species present?

Habitat size, location, configuration:

Wildlife cover/food/water?
yes/yes/yes

Stand corridor/patch? corridor

FUNCTION: Where is stand in relation to sensitive areas on site?

Comments:

APPENDIX B

Forest Stand Summary Sheets

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FOREST STAND DELINEATION - FOREST STAND SUMMARY SHEET

Project Name:Atkisson Dam **Prepared By:** LEJ/DRC

Owner: APG

Location: Atkisson Reservoir **Date: 3/24/21**

Stand Variable	**Stand # 1**	**Stand #2**	**Stand # 3**	**Stand #4**
1. Dominant species/ Codominant species	Northern red oak and white oak	Tulip poplar	Silver maple	Silver maple
2. Successional stage	Late	Mature	Mature	Mature
3. Basal area in s.f. per acre	135	60	70	65
4. Size class of dominant species	20-29.9"	20-29.9"	12-19.9"	6-11.9"
5. Percent of canopy closure	100%	60%	60%	80%
6. Average number of tree species per plot	5	3	3	3.5
7. Common understory species 3' to 20' tall	American beech, Northern spicebush, and pignut hickory	Apple tree, green ash, and sycamore	Northern spicebush	Northern Spicebush
8. Percent of understory cover 3' to 20' tall	100%	60%	100%	20%
9. Number of woody plant species 3' to 20' tall	3	4	4	4.5
10. Common understory species 0' to 3' tall	Oriental bittersweet, Japanese honeysuckle, Multiflora rose	Wineberry and Christmas fern	Virginia creeper, Christmas fern, enchanter's nightshade, New York fern, poison ivy, fox grape, and wineberry	Deertongue, wingstem, stout wood reed, lizard's tail, skunk cabbage, and rens fern
11. Percent of herbaceous & woody plant cover 0' to 3' tall	100%	100%	100%	100%
12. List of major invasive plant species & percent of cover	15%, Bush honeysuckle, winberry, multiflora rose, Japanese barberry, and oriental bittersweet	60%, multiflora rose, garlic mustard, Japanese honeysuckle, Japanese stiltgrass, and English ivy	95%, Japanese honeysuckle, oriental bittersweet, Japanese stiltgrass, garlic mustard, multiflora rose, and autumn-olive	90%, Japanese stiltgrass, Japanese hops, garlic mustard, ground ivy, mile-a-minute, oriental bittersweet, and multiflora rose
13. Number of standing dead trees >6" dbh per acre	0	1	1	0
14. Comments				
15. Priority (1,2,3)	1	1	1	2

FOREST STAND DELINEATION - FOREST STAND SUMMARY SHEET

Project Name:Atkisson Dam **Prepared By:** LEJ/DRC

Owner: APG

Location: Atkisson Reservoir **Date: 3/24/21**

Stand Variable	**Stand # 5**	**Stand #6**	**Stand # 7**	**Stand #**
1. Dominant species/ Codominant species	Silver maple and black willow	Northern red oak and mockernut hickory	Tulip poplar	
2. Successional stage	Mature	Mature	Mature	
3. Basal area in s.f. per acre	60	70	99	
4. Size class of dominant species	20-29.9"	6-11.9"	12-19.9"	
5. Percent of canopy closure	80%	100	100%	
6. Average number of tree species per plot	3	3	3.9	
7. Common understory species 3' to 20' tall	Norway maple and black locust	Northern spicebush	American holly, mockernut hickory, flowering dogwood, american beech, sassafras, red maple, blackhaw, and paw-paw	
8. Percent of understory cover 3' to 20' tall	30%	30%	70%	
9. Number of woody plant species 3' to 20' tall	4	5	13	
10. Common understory species 0' to 3' tall	Common jewelweed, Japanese stiltgrass, Canada wood nettle, poison ivy, and common reed grass	Christmas fern, mayapple, New York fern, wineberry, wild yam, northern spicebush, poison ivy, Indian cucumber, and white wood aster	Northern spicebush, American holly, deetongue, posion ivy, skunk cabbage, pin oak, enchanter's nightshade, cleavers, sweet joe-pye weed, Christmas fern,and maidenhair fern	
11. Percent of herbaceous & woody plant cover 0' to 3' tall	90%	100%	100%	
12. List of major invasive plant species & percent of cover	50%, Japanese stiltgrass, common reed, garlic mustard, multiflora rose, and Japanese knotweed	10%, Oriental bitterweet, English ivy, and Japanese honeysuckle	70%, Oriental bittersweet, English ivy, Japanese honeysuckle, multiflora rose, Japanese barberry, common privet, Chinese privet, Japenese stiltgrass, wineberry, and burning bush	
13. Number of standing dead trees ≥6" dbh per acre	0	1	0.375	
14. Comments				
15. Priority (1,2,3)	2	1	1	

APPENDIX C

Forest Stand Mapping

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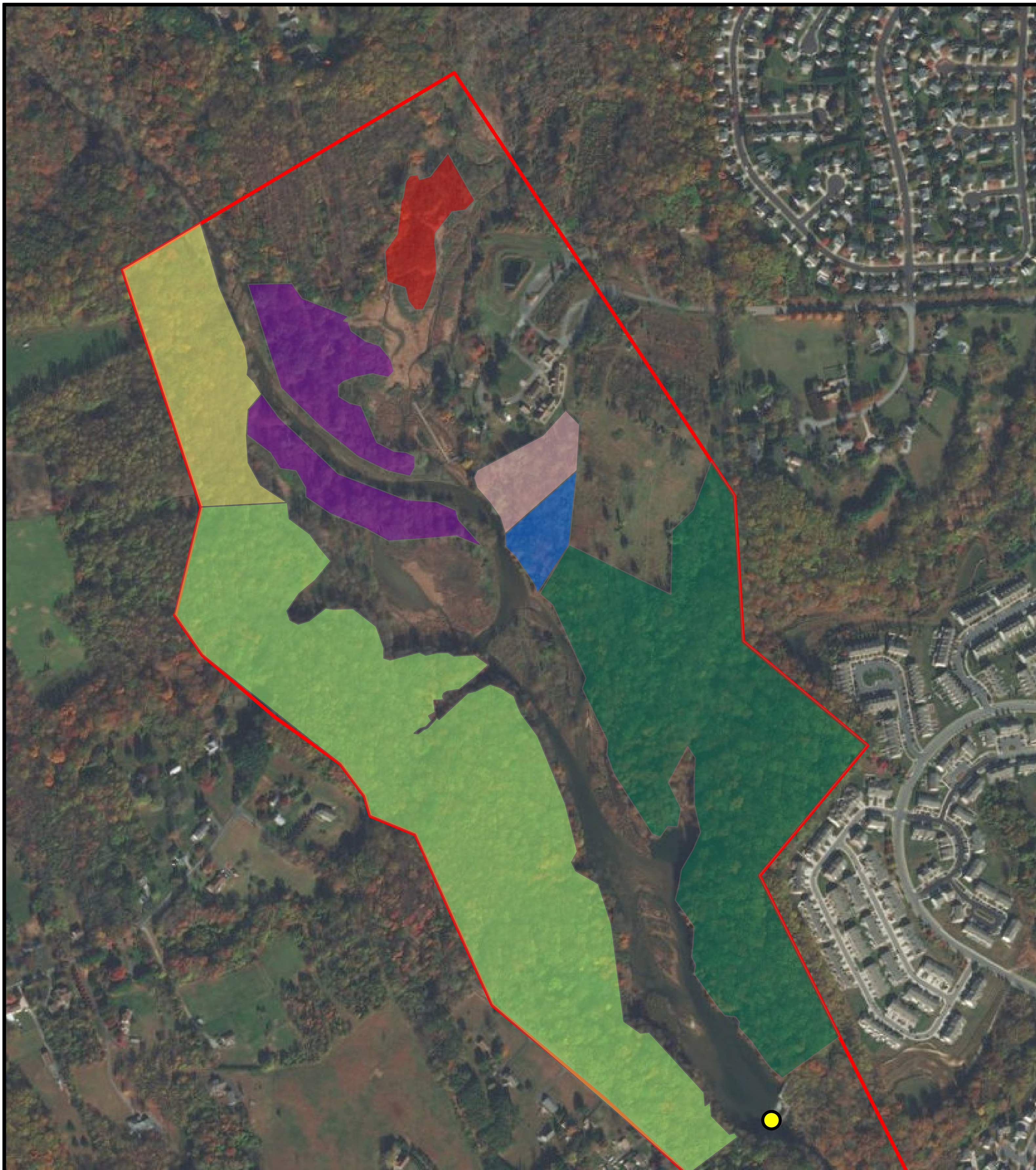

Atkisson Dam Forest Stands 2020

Stand 1
Stand 2
Stand 3
Stand 4
Stand 5
Stand 6
Stand 7
Site Extent
Atkisson Dam

N

0 1 inch equals 577 feet 1,020
Feet

Appendix E: Record of Non-Applicability (RONA)

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Air Emissions Calculations and Record of Non-Applicability
for the
Removal of Atkisson Dam and Van Bibber Weir
U.S. Army Garrison Aberdeen Proving Ground

Table of Contents for the Supporting Documentation and Emissions Estimates

List of Tables

1 Introduction

Aberdeen Proving Ground (APG) has considered all foreseeable direct and indirect sources of air emissions associated with the Proposed Action. Direct emissions are emissions that are caused or initiated by a federal action and occur at the same time and place as the action. Indirect emissions are reasonably foreseeable emissions that are caused by the action but might occur later in time and/or be farther removed in distance from the action itself, and that the federal agency can practicably control.

2 Project Description and Assumptions

Project-related direct emissions would result from the deconstruction of the Atkisson dam and the Van Bibber weir. Emissions would be generated from off-road construction equipment associated with dam removal and on-road haul trucks that transport the debris for disposal. The dam would be deconstructed over a period of approximately 9 months, while the weir would take approximately 6 months. Deconstruction of both structures would require a 500-horsepower (HP) diesel-fueled track-hoe equipped with a hoe-ram to demolish the concrete infrastructure. Concrete debris would be loaded by a 500-HP diesel-fueled tracked excavator into a 500-HP diesel-fueled off-road articulating haul truck, which would move and stockpile the debris to a nearby staging area. A 400-500-HP diesel-fueled front-end loader would be used to transfer the stockpiled debris into diesel-fueled on-road haul trucks equipped with 20-cubic yard trailers. The on-road haul trucks would transport to debris from the Atkisson dam removal to a location within APG that is approximately 10 miles from the Atkisson dam, or approximately 5 miles from the Van Bibber weir. A portable generator would be used to provide electricity to an on-site temporary work trailer. Approximately 10 workers would support the deconstruction efforts and would commute to and from the worksite in their personal gasoline-powered light duty vehicles.

For the Atkisson dam, the volume of debris to be generated is estimated at approximately 15,391 cubic yards, which is the volume of concrete reportedly used to create the dam. For the Van Bibber weir, the volume of debris to be generated is based on the approximate size of the weir at 410 feet long, 14 feet high, and 1.5 feet wide, which is equal to approximately 319 cubic yards of material.

The emissions estimate for on-road haul trucks assumes each truck would transport 20 cubic yards of debris and travel 20 miles round trip for Atkisson debris, and 10 miles round trip for Van Bibber debris. The number of haul trips was increased by 20% to account for potential variability in debris volumes.

3 Region of Influence

The Region of Influence (ROI) for air quality impacts is Harford County, Maryland. This ROI was selected because it represents the geographic area that would be reasonably impacted by the Proposed Action. The USEPA identified Harford County as a marginal non-attainment area for the 8-hour ozone (O3) National Ambient Air Quality Standard (NAAQS) (USEPA, 2022).

The following sections describe the direct emissions anticipated from implementing the Proposed

Action. Indirect emissions are not anticipated from the Proposed Action. Additionally, no further Proposed Action emissions would be generated following deconstruction of the dam and weir.

4 Emission Factors

Under the Proposed Action, potential air quality impacts from construction activities would occur from: 1) combustion emissions due to the use of fossil-fuel-powered equipment and vehicles, and 2) particulate emissions from fugitive dust generated during ground-disturbing activities.

Emissions factors for year 2023 were used, because construction activities are anticipated to start and finish in 2023. The emission estimates were based on the use of the construction equipment typically involved in dam deconstruction (American Rivers, 2022) (US DOI, 2012). Emission factors were obtained for from the *Off-Road – Model Mobile Source Emission Factors* (SCAB Fleet) for year 2023 by the California South Coast Air Quality Management District (SCAQMD, 2022) and the US Air Force Air Emissions Guide for Air Force Mobile Sources for Maryland for year 2023 (AFCEC, 2020).

5 Construction Emissions

This section presents the equations and assumptions used to estimate the Proposed Action construction emissions. Emissions factors for year 2023 were used because construction activities are anticipated to start and finish in 2023. Should construction activities occur after 2023, fewer emissions would be anticipated because emission factors typically decrease over time as new and more efficient equipment is brought to market.

5.1 Off-Road Heavy Duty Construction Equipment

Table 1 presents the anticipated off-road diesel-fuel heavy duty construction equipment and its time in use at each site. Each site would have its own set of the same equipment; thus, total days in use is calculated by adding equipment days in use for Atkisson dam, plus days in use for equipment at Van Bibber dam.

Table 1. Off-Road Heavy Duty Construction Equipment Use

Construction Equipment Type	Days in Use (8 hours per day)		Total days of use in 2023
	Atkisson Dam	Van Bibber Weir	
Excavators, hoe ram (500 hp)	274	183	457
Excavators, to load debris (500 hp)	274	183	457
Off-road 6-wheeled articulating haul truck, 40-ton, rubber-tired loader (500 hp)	274	183	457
Loader, to put stockpile debris into on-road dump trailer (400-500 hp)	274	183	457
Generator, composite (for office trailer)	274	183	457

Notes: *Days in use was converted to business days for the construction equipment emissions calculations. For example: 1 month = approximately 22 days.*

To determine the off-road heavy duty construction equipment emissions in tons per year, the following equation was used.

$$\mathbf{TPY_p = (T_h \times E_{fp} \times N \times D)/C}$$

Where: TPY_p = Tons Per Year of Pollutant
T_h = Time (hours per day of operation)
E_{fp} = Emissions Factor for the given pollutant (information from *SCAQMD, 2020*)
N = Number of pieces of equipment
D = Days of use of equipment
C = Conversion from lbs to tons

A sample calculation for construction equipment for CO from the use of an excavator is depicted as follows:

$$TPY_{CO} = (T_h \times E_{CO} \times N \times D)/C$$
$$TPY_{CO} = (8 \times 0.452 \times 1 \times 457)/2000$$
$$TPY_{CO} = (1{,}652.5)/2000$$
$$TPY_{CO} = 0.83$$

5.2 On-Road Haul Truck Emissions

Emissions from on-road haul trucks sed to transport debris from the site to APG are estimated for this analysis. Emission factors specific to Maryland for emission year 2023 were used for heavy duty diesel-fueled vehicles (HDDVs) (AFCEC, 2020). HDDV emissions were based on the number of trips needed to dispose of debris generated at each site (Table 2).

Table 2. HDDV Use Estimates

Item	Number of Truck Trips		
	Atkisson dam	Van Bibber weir	Total
Number of heavy duty vehicles(1)	923	19	943
Round-trip miles per vehicle	20	10	--
Total miles	18,469	191	18,661

Note:
1. On-road haul truck estimated to hold approximately 20 cubic yards of debris per load.

HDDV emissions were calculated using the following equation:

$$\mathbf{TPY_P = (ME \times EF_P)/C}$$

Where: TPY_P = Tons Per Year of Pollutant
ME = Miles per vehicle: number of truck trips x miles per round trip
EF_P = Emission Factor for the given pollutant (lbs/mile)
C = Conversion from lbs to tons

A sample calculation for CO emissions from HDDVs is provided below:

$$\mathbf{TPY_{CO} = (ME \times EF_{CO})/C}$$

$$TPY_{CO} = (18{,}661 \times 0.00275)/2{,}000$$

$$TPY_{CO} = 51.38/2{,}000$$

$$TPY_{CO} = 0.026$$

5.3 Surface Disturbance (Fugitive Dust)

Deconstructing the Atkisson dam and the Van Bibber weir could disturb dry sediment and expose soil. This disturbance could cause fugitive dust (particulate matter) to be release to the air. Particulates are a primary air pollutant of concern from construction projects that disturb ground coverings. Particulate emissions can be estimated from the amount of ground surface exposed, the type and intensity of activity, soil type and conditions, wind speed, and dust control measures used.

The following assumptions were used to calculate particulate matter emissions during construction. Construction activities at Atkisson dam and Van Bibber weir could each disturb approximately 0.5 acre of ground, for a total of 1 acre, during the year 2023 construction period. It is also assumed that particulate emissions would be limited by implementing construction best management practices (water- or chemical-based dust suppression) would be implemented to reduce fugitive dust generation and further prevent dust from becoming airborne.

Total suspended particulates were calculated using the emission factor for heavy construction activity operations from "AP-42, Compilation for Air Pollutant Emission Factors" (USEPA, 1995).

The quantity of dust emissions from construction operations is proportional to the area of land being worked and the type of construction activity. The following equation was used to estimate particulate emissions (from USEPA, 1995).

$$\mathbf{E_{10} = (acres \times EF \times CF \times PM_{10})\ /C}$$

$$\mathbf{E_{2.5} = E_{10} \times PM_{2.5}}$$

$$\mathbf{E_{total} = E_{10} + E_{2.5}}$$

Where: E_{total} = Tons per year of total Particulate Matter

E_{10} = Tons per year of PM_{10}

$E_{2.5}$ = Tons per year of $PM_{2.5}$

Area to be disturbed = 1 acre

EF = 80 lbs TSP/acre

TSP = Total Suspended Particulates

CF = Capture Fraction

CF = 0.5

PM = Particulate matter; specific for PM_{10} and $PM_{2.5}$

PM_{10} = 0.45 lbs/TSP

$PM_{2.5}$ = 0.15 lbs/PM_{10} lbs

C = Conversion from lbs to tons

Thus, PM emissions from surface disturbance for the Proposed Action are:

$$E_{10} = (\text{acres x EF x CF x } PM_{10})/C$$
$$E_{10} = (1 \text{ x } 80 \text{ x } 0.5 \text{ x } 0.45)/2{,}000$$
$$E_{10} = 1.8/2{,}000$$
$$E_{10} = 0.009$$

$$E_{2.5} = E_{10} \text{ x } PM_{2.5}$$
$$E_{2.5} = 0.009 \text{ x } 0.15$$
$$E_{2.5} = 0.00135$$

$$E_{total} = E_{10} + E_{2.5}$$
$$E_{total} = 0.0090 + 0.00135$$
$$E_{total} = 0.0135 \text{ tons}$$

5.4 Construction Worker Vehicle Emissions

Emissions from construction workers' vehicles during the construction are estimated for this analysis. Emission factors specific to Maryland for emission year 2023 were used for light duty gasoline-fueled vehicles (LDGVs) (AFCEC, 2020).

For construction workers' vehicle emissions, it was assumed there would be 10 LDGVs, each traveling a total of 50-miles per day for 274 days, and anticipating the probability of some workers driving together, a commuting factor of 0.6 (shared vehicles). This is equivalent to a total of 82,200 miles traveled for the project (10 vehicles * 274 days * 60 miles * 0.6).

LDGV emissions were calculated using the following equation:

$$\mathbf{TPY_P = (ME \text{ x } EF_P \text{ x } W)/C}$$

Where: TPY_P = Tons Per Year of Pollutant

ME = Miles per Vehicle: number of trips x miles x commuting factor/trip x days

W = Number of Workers

EF_P = Emission Factor for the given pollutant (lbs/mile)

C = Conversion from lbs to tons

A sample calculation for CO emissions from construction workers' vehicles is provided below:

$$\mathbf{TPY_{CO} = (ME \text{ x } EF_{CO} \text{ x } W)/C}$$
$$TPY_{CO} = (274 \text{ x } 0.005979 \text{ x } 50 \text{ x } 10 \text{ x } 0.6)/2{,}000$$
$$TPY_{CO} = 591/2{,}000$$
$$TPY_{CO} = 0.29$$

6 Total Emissions

The Proposed Action total construction emissions are presented in Table 3. The Proposed Action emissions estimates are below the Clean Air Act General Conformity *de minimis* threshold values. Therefore, a full Conformity Determination is not required.

Table 3. Proposed Action Total Construction Emissions

	Total Construction Emissions (tpy)					
Criteria Pollutant:	**CO**	**VOC**	**NOx**	**SO_2**	**PM_{10}**	**$PM_{2.5}$**
Off-Road Heavy Duty Construction Equipment	3.886	0.848	4.006	0.018	0.147	0.002
On-Road Haul Trucks	0.026	0.006	0.069	0.000	0.002	--
Particulate Matter Emissions	--	--	--	--	0.009	0.001
Workers, Light-Duty Construction Vehicle Emissions (2023)	0.296	0.020	0.021	0.000	0.001	0.001
Total Construction Emissions	**4.207**	**0.874**	**4.096**	**0.019**	**0.159**	**0.004**
General Conformity *de minimis* threshold (tpy)	100.00	100.00	100.00	100.00	100.00	100.00

7 References

AFCEC. (2020). *Emission Estimation Method for Hauling Excavation Materials and Construction Supplies: United States Air Force (USAF) Institute for Environment, Safety and Occupational Health Risk Analysis (IERA) Air Emissions Inventory Guidance Document for Mobile Sourc.* San Antonio: US Air Force Civil Engineer Center.

American Rivers. (2022, January 19). *How Dams are Removed.* Retrieved from American Rivers: https://www.americanrivers.org/threats-solutions/restoring-damaged-rivers/how-dams-are-removed/

SCAQMD. (2022). *Off-Road - Model Mobile Source Emission Factors for Year 2023.* Diamond Bar: California South Coast Air Quality Management District.

US DOI. (2012). *Klamath Facilities Removal, Final Environmental Impact Statement/Environmental Impact Report. December.* Sacremento: U.S. Department of the Interior, California Department of Fish & Game.

USEPA. (1995). *Compilation of Air Pollutant Emission Factors, AP-42, 5th edition, Vol. I: Stationary Point and Area Sources. January.* Washington, D.C.: US Environmental Protection Agency.

USEPA. (2022, January 19). *Green Book.* Retrieved from EPA: https://www3.epa.gov/airquality/greenbook/anayo_md.html

Record of Non-Applicability
In Accordance with the Clean Air Act – General Conformity Rule for the
Removal of Atkisson Dam and Van Bibber Weir
U.S. Army Garrison Aberdeen Proving Ground

The US Army Garrison Aberdeen Proving Ground proposes to deconstruct the Atkisson dam and the Van Bibber weir in Harford County, Maryland.

General Conformity under the Clean Air Act, Section 176 has been evaluated according to the requirements of Title 40 of the Code of Federal Regulations Part 93, Subpart B. The requirements of this rule are not applicable to the action because:

> *The maximum total annual direct emissions from the Proposed Action have been estimated at 4.2 tons per year (tpy) of carbon monoxide (CO), 0.874 tpy of volatile organic compounds (VOCs; ozone precursor), 4.09 tpy of nitrogen oxides (NOx), 0.019 tpy of sulfur dioxide (SO_2), and 0.16 tpy of particulate matter ($PM_{2.5+10}$). These levels are below the 100 tpy General Conformity de minimis threshold values for CO, VOCs, NOx, SO_2, and $PM_{2.5+10}$, established by 40 CFR 93.153(b) for the Metropolitan Baltimore Intrastate Air Quality Control Region.*

Supporting documentation and emission estimates:

[X] Are Attached

[X] Appear in the National Environmental Policy Act Documentation

[ ] Other

______________________________ __________________

Johnny M. Casiano — Date
Colonel, U.S. Army
U.S. Army Garrison
Aberdeen Proving Ground, MD

Appendix F: Information for Planning and Consultation (IPaC) Report

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United States Department of the Interior

FISH AND WILDLIFE SERVICE
Chesapeake Bay Ecological Services Field Office
177 Admiral Cochrane Drive
Annapolis, MD 21401-7307
Phone: (410) 573-4599 Fax: (410) 266-9127
http://www.fws.gov/chesapeakebay/
http://www.fws.gov/chesapeakebay/endsppweb/ProjectReview/Index.html

In Reply Refer To: November 09, 2021
Consultation Code: 05E2CB00-2021-SLI-1979
Event Code: 05E2CB00-2022-E-00724
Project Name: Atkisson Dam and Van Bibber Weir Removal

Subject: Updated list of threatened and endangered species that may occur in your proposed project location or may be affected by your proposed project

To Whom It May Concern:

The enclosed species list identifies threatened, endangered, proposed and candidate species, as well as proposed and final designated critical habitat, that may occur within the boundary of your proposed project and/or may be affected by your proposed project. This species list fulfills the requirements of the U.S. Fish and Wildlife Service (Service) under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 *et seq.*).

New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list. Please feel free to contact us if you need more current information or assistance regarding the potential impacts to federally proposed, listed, and candidate species and federally designated and proposed critical habitat. Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the Act, the accuracy of this species list should be verified after 90 days. This verification can be completed formally or informally as desired. The Service recommends that verification be completed by visiting the ECOS-IPaC website at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested through the ECOS-IPaC system by completing the same process used to receive the enclosed list.

The purpose of the Act is to provide a means whereby threatened and endangered species and the ecosystems upon which they depend may be conserved. Under sections 7(a)(1) and 7(a)(2) of the Act and its implementing regulations (50 CFR 402 *et seq.*), Federal agencies are required to utilize their authorities to carry out programs for the conservation of threatened and endangered species and to determine whether projects may affect threatened and endangered species and/or designated critical habitat.

A Biological Assessment is required for construction projects (or other undertakings having similar physical impacts) that are major Federal actions significantly affecting the quality of the human environment as defined in the National Environmental Policy Act (42 U.S.C. 4332(2)(c)). For projects other than major construction activities, the Service suggests that a biological evaluation similar to a Biological Assessment be prepared to determine whether the project may affect listed or proposed species and/or designated or proposed critical habitat. Recommended contents of a Biological Assessment are described at 50 CFR 402.12.

If a Federal agency determines, based on the Biological Assessment or biological evaluation, that listed species and/or designated critical habitat may be affected by the proposed project, the agency is required to consult with the Service pursuant to 50 CFR 402. In addition, the Service recommends that candidate species, proposed species and proposed critical habitat be addressed within the consultation. More information on the regulations and procedures for section 7 consultation, including the role of permit or license applicants, can be found in the "Endangered Species Consultation Handbook" at:

http://www.fws.gov/endangered/esa-library/pdf/TOC-GLOS.PDF

Please be aware that bald and golden eagles are protected under the Bald and Golden Eagle Protection Act (16 U.S.C. 668 *et seq.*), and projects affecting these species may require development of an eagle conservation plan (http://www.fws.gov/windenergy/eagle_guidance.html). Additionally, wind energy projects should follow the wind energy guidelines (http://www.fws.gov/windenergy/) for minimizing impacts to migratory birds and bats.

Guidance for minimizing impacts to migratory birds for projects including communications towers (e.g., cellular, digital television, radio, and emergency broadcast) can be found at: http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/towers.htm; http://www.towerkill.com; and http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/comtow.html.

We appreciate your concern for threatened and endangered species. The Service encourages Federal agencies to include conservation of threatened and endangered species into their project planning to further the purposes of the Act. Please include the Consultation Tracking Number in the header of this letter with any request for consultation or correspondence about your project that you submit to our office.

Attachment(s):

- Official Species List
- USFWS National Wildlife Refuges and Fish Hatcheries
- Wetlands

Official Species List

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

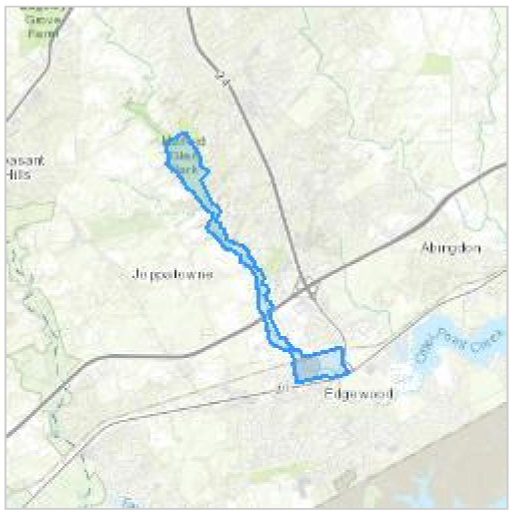
Chesapeake Bay Ecological Services Field Office
177 Admiral Cochrane Drive
Annapolis, MD 21401-7307
(410) 573-4599

Project Summary

Consultation Code: 05E2CB00-2021-SLI-1979
Event Code: Some(05E2CB00-2022-E-00724)
Project Name: Atkisson Dam and Van Bibber Weir Removal
Project Type: DAM
Project Description: The proposed project will remove, either partially or completely, Atkisson Dam and Van Bibber Weir and several buildings associated with the weir. These structures are located in Harford County, Maryland and removal of the structures is anticipated within the next 5 years.

Project Location:

Approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/@39.46307444999999,-76.32707630398163,14z



Counties: Harford County, Maryland

Endangered Species Act Species

There is a total of 2 threatened, endangered, or candidate species on this species list.

Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species. Note that 2 of these species should be considered only under certain conditions.

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries[1], as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

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1. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

Mammals

NAME	STATUS
Northern Long-eared Bat *Myotis septentrionalis*	Threatened

No critical habitat has been designated for this species.
This species only needs to be considered under the following conditions:

- Projects with a federal nexus that have tree clearing = to or > 15 acres: 1. REQUEST A SPECIES LIST 2. NEXT STEP: EVALUATE DETERMINATION KEYS 3. SELECT EVALUATE under the Northern Long-Eared Bat (NLEB) Consultation and 4(d) Rule Consistency key

Species profile: https://ecos.fws.gov/ecp/species/9045

Insects

NAME	STATUS
Monarch Butterfly *Danaus plexippus*	Candidate

No critical habitat has been designated for this species.
This species only needs to be considered under the following conditions:

- The monarch is a candidate species and not yet listed or proposed for listing. There are generally no section 7 requirements for candidate species (FAQ found here: https://www.fws.gov/savethemonarch/FAQ-Section7.html).

Species profile: https://ecos.fws.gov/ecp/species/9743

Critical habitats

THERE ARE NO CRITICAL HABITATS WITHIN YOUR PROJECT AREA UNDER THIS OFFICE'S JURISDICTION.

USFWS National Wildlife Refuge Lands And Fish Hatcheries

Any activity proposed on lands managed by the National Wildlife Refuge system must undergo a 'Compatibility Determination' conducted by the Refuge. Please contact the individual Refuges to discuss any questions or concerns.

THERE ARE NO REFUGE LANDS OR FISH HATCHERIES WITHIN YOUR PROJECT AREA.

Wetlands

Impacts to NWI wetlands and other aquatic habitats may be subject to regulation under Section 404 of the Clean Water Act, or other State/Federal statutes.

For more information please contact the Regulatory Program of the local U.S. Army Corps of Engineers District.

Please note that the NWI data being shown may be out of date. We are currently working to update our NWI data set. We recommend you verify these results with a site visit to determine the actual extent of wetlands on site.

LAKE

- L1UBHh
- L2ABHh
- L2EM2Fh
- L2UBHh

FRESHWATER POND

- PABF
- PUBFh
- PUBFx
- PUBH
- PUBHh

FRESHWATER EMERGENT WETLAND

- PEM1/FO1Ch
- PEM1/SS1C
- PEM1/SS1Ch
- PEM1/SS1E
- PEM1/SS1Eh
- PEM1A
- PEM1C
- PEM1Eh

FRESHWATER FORESTED/SHRUB WETLAND

- PFO1/SS1Ch
- PFO1A
- PFO1Ah
- PFO1C
- PFO1Ch
- PFO1E

- PSS1/EM1C
- PSS1C
- PFO/SS1A
- PSS1/EM5A

RIVERINE

- R2USA
- R2USC
- R4SBC
- R5UBH
- R2UBH
- R2UBHh
- R3UBH

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Chesapeake Bay Ecological Services Field Office
177 Admiral Cochrane Drive
Annapolis, MD 21401-7307
Phone: (410) 573-4599 Fax: (410) 266-9127
http://www.fws.gov/chesapeakebay/
http://www.fws.gov/chesapeakebay/endsppweb/ProjectReview/Index.html

In Reply Refer To: November 09, 2021
Consultation code: 05E2CB00-2021-TA-1979
Event Code: 05E2CB00-2022-E-00726
Project Name: Atkisson Dam and Van Bibber Weir Removal

Subject: Verification letter for the 'Atkisson Dam and Van Bibber Weir Removal' project under the January 5, 2016, Programmatic Biological Opinion on Final 4(d) Rule for the Northern Long-eared Bat and Activities Excepted from Take Prohibitions.

Dear Marisa Wetmore:

The U.S. Fish and Wildlife Service (Service) received on November 09, 2021 your effects determination for the 'Atkisson Dam and Van Bibber Weir Removal' (the Action) using the northern long-eared bat (*Myotis septentrionalis*) key within the Information for Planning and Consultation (IPaC) system. This IPaC key assists users in determining whether a Federal action is consistent with the activities analyzed in the Service's January 5, 2016, Programmatic Biological Opinion (PBO). The PBO addresses activities excepted from "take"[1] prohibitions applicable to the northern long-eared bat under the Endangered Species Act of 1973 (ESA) (87 Stat.884, as amended; 16 U.S.C. 1531 et seq.).

Based upon your IPaC submission, the Action is consistent with activities analyzed in the PBO. The Action may affect the northern long-eared bat; however, any take that may occur as a result of the Action is not prohibited under the ESA Section 4(d) rule adopted for this species at 50 CFR §17.40(o). Unless the Service advises you within 30 days of the date of this letter that your IPaC-assisted determination was incorrect, this letter verifies that the PBO satisfies and concludes your responsibilities for this Action under ESA Section 7(a)(2) with respect to the northern long-eared bat.

Please report to our office any changes to the information about the Action that you submitted in IPaC, the results of any bat surveys conducted in the Action area, and any dead, injured, or sick northern long-eared bats that are found during Action implementation. If the Action is not completed within one year of the date of this letter, you must update and resubmit the information required in the IPaC key.

This IPaC-assisted determination allows you to rely on the PBO for compliance with ESA Section 7(a)(2) only for the northern long-eared bat. It **does not** apply to the following ESA-protected species that also may occur in the Action area:

- Monarch Butterfly *Danaus plexippus* Candidate

If the Action may affect other federally listed species besides the northern long-eared bat, a proposed species, and/or designated critical habitat, additional consultation between you and this Service office is required. If the Action may disturb bald or golden eagles, additional coordination with the Service under the Bald and Golden Eagle Protection Act is recommended.

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[1]Take means to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct [ESA Section 3(19)].

Action Description
You provided to IPaC the following name and description for the subject Action.

1. Name

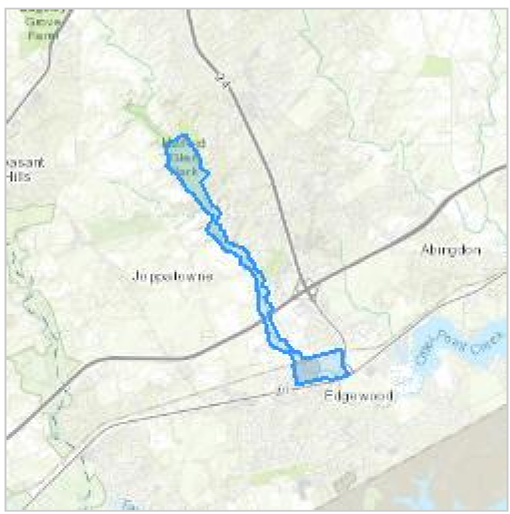
Atkisson Dam and Van Bibber Weir Removal

2. Description

The following description was provided for the project 'Atkisson Dam and Van Bibber Weir Removal':

> The proposed project will remove, either partially or completely, Atkisson Dam and Van Bibber Weir and several buildings associated with the weir. These structures are located in Harford County, Maryland and removal of the structures is anticipated within the next 5 years.

Approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/@39.46307444999999,-76.32707630398163,14z



Determination Key Result

This Federal Action may affect the northern long-eared bat in a manner consistent with the description of activities addressed by the Service’s PBO dated January 5, 2016. Any taking that may occur incidental to this Action is not prohibited under the final 4(d) rule at 50 CFR §17.40(o). Therefore, the PBO satisfies your responsibilities for this Action under ESA Section 7(a)(2) relative to the northern long-eared bat.

Determination Key Description: Northern Long-eared Bat 4(d) Rule

This key was last updated in IPaC on May 15, 2017. Keys are subject to periodic revision.

This key is intended for actions that may affect the threatened northern long-eared bat.

The purpose of the key for Federal actions is to assist determinations as to whether proposed actions are consistent with those analyzed in the Service’s PBO dated January 5, 2016.

Federal actions that may cause prohibited take of northern long-eared bats, affect ESA-listed species other than the northern long-eared bat, or affect any designated critical habitat, require ESA Section 7(a)(2) consultation in addition to the use of this key. Federal actions that may affect species proposed for listing or critical habitat proposed for designation may require a conference under ESA Section 7(a)(4).

Determination Key Result

This project may affect the threatened Northern long-eared bat; therefore, consultation with the Service pursuant to Section 7(a)(2) of the Endangered Species Act of 1973 (87 Stat.884, as amended; 16 U.S.C. 1531 et seq.) is required. However, based on the information you provided, this project may rely on the Service's January 5, 2016, *Programmatic Biological Opinion on Final 4(d) Rule for the Northern Long-Eared Bat and Activities Excepted from Take Prohibitions* to fulfill its Section 7(a)(2) consultation obligation.

Qualification Interview

1. Is the action authorized, funded, or being carried out by a Federal agency?

   Yes

2. Have you determined that the proposed action will have "no effect" on the northern long-eared bat? (If you are unsure select "No")

   No

3. Will your activity purposefully **Take** northern long-eared bats?

   No

4. [Semantic] Is the project action area located wholly outside the White-nose Syndrome Zone?

   Automatically answered
   No

5. Have you contacted the appropriate agency to determine if your project is near a known hibernaculum or maternity roost tree?

   Location information for northern long-eared bat hibernacula is generally kept in state Natural Heritage Inventory databases – the availability of this data varies state-by-state. Many states provide online access to their data, either directly by providing maps or by providing the opportunity to make a data request. In some cases, to protect those resources, access to the information may be limited. A web page with links to state Natural Heritage Inventory databases and other sources of information on the locations of northern long-eared bat roost trees and hibernacula is available at www.fws.gov/midwest/endangered/mammals/nleb/nhisites.html.

   Yes

6. Will the action affect a cave or mine where northern long-eared bats are known to hibernate (i.e., hibernaculum) or could it alter the entrance or the environment (physical or other alteration) of a hibernaculum?

   No

7. Will the action involve Tree Removal?

   No

Project Questionnaire

If the project includes forest conversion, report the appropriate acreages below. Otherwise, type '0' in questions 1-3.

1. Estimated total acres of forest conversion:

0

2. If known, estimated acres of forest conversion from April 1 to October 31

0

3. If known, estimated acres of forest conversion from June 1 to July 31

0

If the project includes timber harvest, report the appropriate acreages below. Otherwise, type '0' in questions 4-6.

4. Estimated total acres of timber harvest

0

5. If known, estimated acres of timber harvest from April 1 to October 31

0

6. If known, estimated acres of timber harvest from June 1 to July 31

0

If the project includes prescribed fire, report the appropriate acreages below. Otherwise, type '0' in questions 7-9.

7. Estimated total acres of prescribed fire

0

8. If known, estimated acres of prescribed fire from April 1 to October 31

0

9. If known, estimated acres of prescribed fire from June 1 to July 31

0

If the project includes new wind turbines, report the megawatts of wind capacity below. Otherwise, type '0' in question 10.

10. What is the estimated wind capacity (in megawatts) of the new turbine(s)?

0

IPaC **U.S. Fish & Wildlife Service**

IPaC resource list

This report is an automatically generated list of species and other resources such as critical habitat (collectively referred to as *trust resources*) under the U.S. Fish and Wildlife Service's (USFWS) jurisdiction that are known or expected to be on or near the project area referenced below. The list may also include trust resources that occur outside of the project area, but that could potentially be directly or indirectly affected by activities in the project area. However, determining the likelihood and extent of effects a project may have on trust resources typically requires gathering additional site-specific (e.g., vegetation/species surveys) and project-specific (e.g., magnitude and timing of proposed activities) information.

Below is a summary of the project information you provided and contact information for the USFWS office(s) with jurisdiction in the defined project area. Please read the introduction to each section that follows (Endangered Species, Migratory Birds, USFWS Facilities, and NWI Wetlands) for additional information applicable to the trust resources addressed in that section.

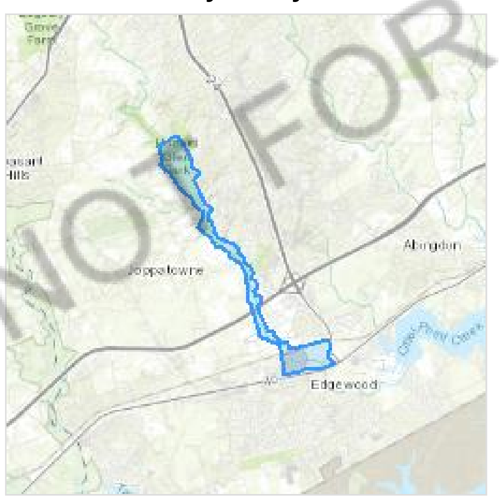
Project information

NAME

Atkisson Dam and Van Bibber Weir Removal

LOCATION

Harford County, Maryland



DESCRIPTION

Some(The proposed project will remove, either partially or completely, Atkisson Dam and Van Bibber Weir and several buildings associated with the weir. These structures are located in Harford County, Maryland and removal of the structures is anticipated within the next 5 years.)

Local office

Chesapeake Bay Ecological Services Field Office

(410) 573-4599
(410) 266-9127

177 Admiral Cochrane Drive
Annapolis, MD 21401-7307

http://www.fws.gov/chesapeakebay/
http://www.fws.gov/chesapeakebay/endsppweb/ProjectReview/Index.html

Endangered species

This resource list is for informational purposes only and does not constitute an analysis of project level impacts.

The primary information used to generate this list is the known or expected range of each species. Additional areas of influence (AOI) for species are also considered. An AOI includes areas outside of the species range if the species could be indirectly affected by activities in that area (e.g., placing a dam upstream of a fish population even if that fish does not occur at the dam site, may indirectly impact the species by reducing or eliminating water flow downstream). Because species can move, and site conditions can change, the species on this list are not guaranteed to be found on or near the project area. To fully determine any potential effects to species, additional site-specific and project-specific information is often required.

Section 7 of the Endangered Species Act **requires** Federal agencies to "request of the Secretary information whether any species which is listed or proposed to be listed may be present in the area of such proposed action" for any project that is conducted, permitted, funded, or licensed by any Federal agency. A letter from the local office and a species list which fulfills this requirement can **only** be obtained by requesting an official species list from either the Regulatory Review section in IPaC (see directions below) or from the local field office directly.

For project evaluations that require USFWS concurrence/review, please return to the IPaC website and request an official species list by doing the following:

1. Log in to IPaC.
2. Go to your My Projects list.
3. Click PROJECT HOME for this project.
4. Click REQUEST SPECIES LIST.

Listed species[1] and their critical habitats are managed by the Ecological Services Program of the U.S. Fish and Wildlife Service (USFWS) and the fisheries division of the National Oceanic and Atmospheric Administration (NOAA Fisheries[2]).

Species and critical habitats under the sole responsibility of NOAA Fisheries are **not** shown on this list. Please contact NOAA Fisheries for species under their jurisdiction.

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1. Species listed under the Endangered Species Act are threatened or endangered; IPaC also shows species that are candidates, or proposed, for listing. See the listing status page for more information. IPaC only shows species that are regulated by USFWS (see FAQ).
2. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

The following species are potentially affected by activities in this location:

Mammals

NAME	STATUS

Northern Long-eared Bat Myotis septentrionalis	Threatened

Wherever found

This species only needs to be considered if the following condition applies:

- Projects with a federal nexus that have tree clearing = to or > 15 acres: 1. REQUEST A SPECIES LIST 2. NEXT STEP: EVALUATE DETERMINATION KEYS 3. SELECT EVALUATE under the Northern Long-Eared Bat (NLEB) Consultation and 4(d) Rule Consistency key

No critical habitat has been designated for this species.
https://ecos.fws.gov/ecp/species/9045

Insects

NAME	STATUS
Monarch Butterfly Danaus plexippus	Candidate

Wherever found

This species only needs to be considered if the following condition applies:

- The monarch is a candidate species and not yet listed or proposed for listing. There are generally no section 7 requirements for candidate species (FAQ found here: https://www.fws.gov/savethemonarch/FAQ-Section7.html).

No critical habitat has been designated for this species.
https://ecos.fws.gov/ecp/species/9743

Critical habitats

Potential effects to critical habitat(s) in this location must be analyzed along with the endangered species themselves.

THERE ARE NO CRITICAL HABITATS AT THIS LOCATION.

Migratory birds

Certain birds are protected under the Migratory Bird Treaty Act[1] and the Bald and Golden Eagle Protection Act[2].

Any person or organization who plans or conducts activities that may result in impacts to migratory birds, eagles, and their habitats should follow appropriate regulations and consider implementing appropriate conservation measures, as described below.

1. The Migratory Birds Treaty Act of 1918.
2. The Bald and Golden Eagle Protection Act of 1940.

Additional information can be found using the following links:

- Birds of Conservation Concern http://www.fws.gov/birds/management/managed-species/birds-of-conservation-concern.php
- Measures for avoiding and minimizing impacts to birds http://www.fws.gov/birds/management/project-assessment-tools-and-guidance/conservation-measures.php
- Nationwide conservation measures for birds http://www.fws.gov/migratorybirds/pdf/management/nationwidestandardconservationmeasures.pdf

The birds listed below are birds of particular concern either because they occur on the USFWS Birds of Conservation Concern (BCC) list or warrant special attention in your project location. To learn more about the levels of concern for birds on your list and how this list is generated, see the FAQ below. This is not a list of every bird you may find in this location, nor a guarantee that every bird on this list will be found in your project area. To see exact locations of where birders and the general public have sighted birds in and around your project area, visit the E-bird data mapping tool (Tip: enter your location, desired date range and a species on your list). For projects that occur off the Atlantic Coast, additional maps and models detailing the relative occurrence and abundance of bird species on your list are available. Links to additional information about Atlantic Coast birds, and other important information about your migratory bird list, including how to properly interpret and use your migratory bird report, can be found below.

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to migratory birds on your list, click on the PROBABILITY OF PRESENCE SUMMARY at the top of your list to see when these birds are most likely to be present and breeding in your project area.

NAME	BREEDING SEASON (IF A BREEDING SEASON IS INDICATED FOR A BIRD ON YOUR LIST, THE BIRD MAY BREED IN YOUR PROJECT AREA SOMETIME WITHIN THE TIMEFRAME SPECIFIED, WHICH IS A VERY LIBERAL ESTIMATE OF THE DATES INSIDE WHICH THE BIRD BREEDS ACROSS ITS ENTIRE RANGE. "BREEDS ELSEWHERE" INDICATES THAT THE BIRD DOES NOT LIKELY BREED IN YOUR PROJECT AREA.)
Bald Eagle Haliaeetus leucocephalus This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities. https://ecos.fws.gov/ecp/species/1626	Breeds Sep 1 to Aug 31

Blue-winged Warbler Vermivora pinus
This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA
Breeds May 1 to Jun 30

Bobolink Dolichonyx oryzivorus
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
Breeds May 20 to Jul 31

Canada Warbler Cardellina canadensis
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
Breeds May 20 to Aug 10

Cerulean Warbler Dendroica cerulea
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/2974
Breeds Apr 28 to Jul 20

Golden Eagle Aquila chrysaetos
This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.
https://ecos.fws.gov/ecp/species/1680
Breeds elsewhere

Kentucky Warbler Oporornis formosus
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
Breeds Apr 20 to Aug 20

Lesser Yellowlegs Tringa flavipes
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/9679
Breeds elsewhere

Prairie Warbler Dendroica discolor
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
Breeds May 1 to Jul 31

Prothonotary Warbler Protonotaria citrea
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
Breeds Apr 1 to Jul 31

Red-headed Woodpecker Melanerpes erythrocephalus
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
Breeds May 10 to Sep 10

Rusty Blackbird *Euphagus carolinus* — Breeds elsewhere

This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA

Wood Thrush *Hylocichla mustelina* — Breeds May 10 to Aug 31

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Probability of Presence Summary

The graphs below provide our best understanding of when birds of concern are most likely to be present in your project area. This information can be used to tailor and schedule your project activities to avoid or minimize impacts to birds. Please make sure you read and understand the FAQ "Proper Interpretation and Use of Your Migratory Bird Report" before using or attempting to interpret this report.

Probability of Presence (■)

Each green bar represents the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during a particular week of the year. (A year is represented as 12 4-week months.) A taller bar indicates a higher probability of species presence. The survey effort (see below) can be used to establish a level of confidence in the presence score. One can have higher confidence in the presence score if the corresponding survey effort is also high.

How is the probability of presence score calculated? The calculation is done in three steps:

1. The probability of presence for each week is calculated as the number of survey events in the week where the species was detected divided by the total number of survey events for that week. For example, if in week 12 there were 20 survey events and the Spotted Towhee was found in 5 of them, the probability of presence of the Spotted Towhee in week 12 is 0.25.
2. To properly present the pattern of presence across the year, the relative probability of presence is calculated. This is the probability of presence divided by the maximum probability of presence across all weeks. For example, imagine the probability of presence in week 20 for the Spotted Towhee is 0.05, and that the probability of presence at week 12 (0.25) is the maximum of any week of the year. The relative probability of presence on week 12 is 0.25/0.25 = 1; at week 20 it is 0.05/0.25 = 0.2.
3. The relative probability of presence calculated in the previous step undergoes a statistical conversion so that all possible values fall between 0 and 10, inclusive. This is the probability of presence score.

To see a bar's probability of presence score, simply hover your mouse cursor over the bar.

Breeding Season (■)
Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.

Survey Effort (|)
Vertical black lines superimposed on probability of presence bars indicate the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps. The number of surveys is expressed as a range, for example, 33 to 64 surveys.

To see a bar's survey effort range, simply hover your mouse cursor over the bar.

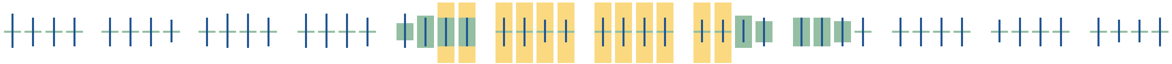
No Data (–)

A week is marked as having no data if there were no survey events for that week.

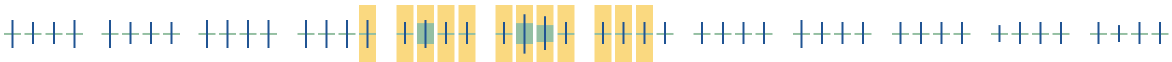
Survey Timeframe

Surveys from only the last 10 years are used in order to ensure delivery of currently relevant information. The exception to this is areas off the Atlantic coast, where bird returns are based on all years of available data, since data in these areas is currently much more sparse.

Canada Warbler
BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)

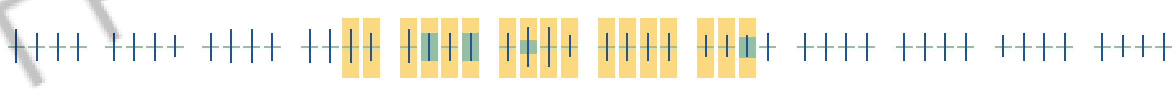


Cerulean Warbler
BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)



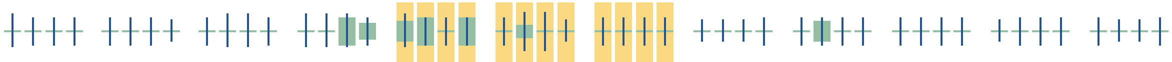
Golden Eagle
Non-BCC Vulnerable (This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.)

Kentucky Warbler
BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)

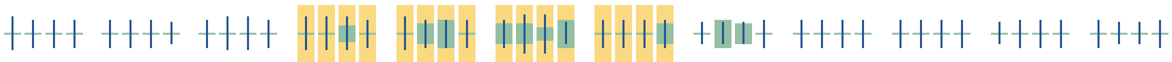


Lesser Yellowlegs
BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)

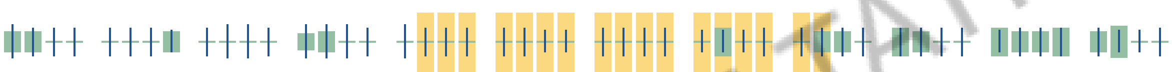
Prairie Warbler
BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)



Prothonotary Warbler
BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)



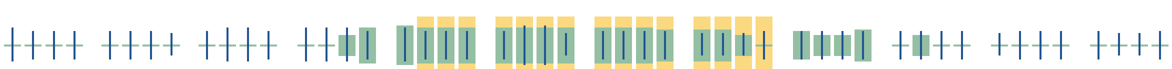
Red-headed Woodpecker
BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)



Rusty Blackbird
BCC - BCR (This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA)

SPECIES JAN FEB MAR APR MAY JUN JUL AUG SEP OCT NOV DEC

Wood Thrush
BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)



Tell me more about conservation measures I can implement to avoid or minimize impacts to migratory birds.

Nationwide Conservation Measures describes measures that can help avoid and minimize impacts to all birds at any location year round. Implementation of these measures is particularly important when birds are most likely to occur in the project area. When birds may be breeding in the area, identifying the locations of any active nests and avoiding their destruction is a very helpful impact minimization measure. To see when birds are most likely to occur and be breeding in your project area, view the Probability of Presence Summary. Additional measures or permits may be advisable depending on the type of activity you are conducting and the type of infrastructure or bird species present on your project site.

What does IPaC use to generate the migratory birds potentially occurring in my specified location?

The Migratory Bird Resource List is comprised of USFWS Birds of Conservation Concern (BCC) and other species that may warrant special attention in your project location.

The migratory bird list generated for your project is derived from data provided by the Avian Knowledge Network (AKN). The AKN data is based on a growing collection of survey, banding, and citizen science datasets and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) which your project intersects, and that have been identified as warranting special attention because they are a BCC species in that area, an eagle (Eagle Act requirements may apply), or a species that has a particular vulnerability to offshore activities or development.

Again, the Migratory Bird Resource list includes only a subset of birds that may occur in your project area. It is not representative of all birds that may occur in your project area. To get a list of all birds potentially present in your project area, please visit the AKN Phenology Tool.

What does IPaC use to generate the probability of presence graphs for the migratory birds potentially occurring in my specified location?

The probability of presence graphs associated with your migratory bird list are based on data provided by the Avian Knowledge Network (AKN). This data is derived from a growing collection of survey, banding, and citizen science datasets .

Probability of presence data is continuously being updated as new and better information becomes available. To learn more about how the probability of presence graphs are produced and how to interpret them, go the Probability of Presence Summary and then click on the "Tell me about these graphs" link.

How do I know if a bird is breeding, wintering, migrating or present year-round in my project area?

To see what part of a particular bird's range your project area falls within (i.e. breeding, wintering, migrating or year-round), you may refer to the following resources: The Cornell Lab of Ornithology All About Birds Bird Guide, or (if you are unsuccessful in locating the bird of interest there), the Cornell Lab of Ornithology Neotropical Birds guide. If a bird on your migratory bird species list has a breeding season associated with it, if that bird does occur in your project area, there may be nests present at some point within the timeframe specified. If "Breeds elsewhere" is indicated, then the bird likely does not breed in your project area.

What are the levels of concern for migratory birds?

Migratory birds delivered through IPaC fall into the following distinct categories of concern:

1. "BCC Rangewide" birds are Birds of Conservation Concern (BCC) that are of concern throughout their range anywhere within the USA (including Hawaii, the Pacific Islands, Puerto Rico, and the Virgin Islands);
2. "BCC - BCR" birds are BCCs that are of concern only in particular Bird Conservation Regions (BCRs) in the continental USA; and
3. "Non-BCC - Vulnerable" birds are not BCC species in your project area, but appear on your list either because of the Eagle Act requirements (for eagles) or (for non-eagles) potential susceptibilities in offshore areas from certain types of development or activities (e.g. offshore energy development or longline fishing).

Although it is important to try to avoid and minimize impacts to all birds, efforts should be made, in particular, to avoid and minimize impacts to the birds on this list, especially eagles and BCC species of rangewide concern. For more information on conservation measures you can implement to help avoid and minimize migratory bird impacts and requirements for eagles, please see the FAQs for these topics.

Details about birds that are potentially affected by offshore projects

For additional details about the relative occurrence and abundance of both individual bird species and groups of bird species within your project area off the Atlantic Coast, please visit the Northeast Ocean Data Portal. The Portal also offers data and information about other taxa besides birds that may be helpful to you in your project review. Alternately, you may download the bird model results files underlying the portal maps through the NOAA NCCOS Integrative Statistical Modeling and Predictive Mapping of Marine Bird Distributions and Abundance on the Atlantic Outer Continental Shelf project webpage.

Bird tracking data can also provide additional details about occurrence and habitat use throughout the year, including migration. Models relying on survey data may not include this information. For additional information on marine bird tracking data, see the Diving Bird Study and the nanotag studies or contact Caleb Spiegel or Pam Loring.

What if I have eagles on my list?

If your project has the potential to disturb or kill eagles, you may need to obtain a permit to avoid violating the Eagle Act should such impacts occur.

Proper Interpretation and Use of Your Migratory Bird Report

The migratory bird list generated is not a list of all birds in your project area, only a subset of birds of priority concern. To learn more about how your list is generated, and see options for identifying what other birds may be in your project area, please see the FAQ "What does IPaC use to generate the migratory birds potentially occurring in my specified location". Please be aware this report provides the "probability of presence" of birds within the 10 km grid cell(s) that overlap your project; not your exact project footprint. On the graphs provided, please also look carefully at the survey effort (indicated by the black vertical bar) and for the existence of the "no data" indicator (a red horizontal bar). A high survey effort is the key component. If the survey effort is high, then the probability of presence score can be viewed as more dependable. In contrast, a low survey effort bar or no data bar means a lack of data and, therefore, a lack of certainty about presence of the species. This list is not perfect; it is simply a starting point for identifying what birds of concern have the potential to be in your project area, when they might be there, and if they might be breeding (which means nests might be present). The list helps you know what to look for to confirm presence, and helps guide you in knowing when to implement conservation measures to avoid or minimize potential impacts from your project activities, should presence be confirmed. To learn more about conservation measures, visit the FAQ "Tell me about conservation measures I can implement to avoid or minimize impacts to migratory birds" at the bottom of your migratory bird trust resources page.

Facilities

National Wildlife Refuge lands

Any activity proposed on lands managed by the National Wildlife Refuge system must undergo a 'Compatibility Determination' conducted by the Refuge. Please contact the individual Refuges to discuss any questions or concerns.

THERE ARE NO REFUGE LANDS AT THIS LOCATION.

Fish hatcheries

THERE ARE NO FISH HATCHERIES AT THIS LOCATION.

Wetlands in the National Wetlands Inventory

Impacts to NWI wetlands and other aquatic habitats may be subject to regulation under Section 404 of the Clean Water Act, or other State/Federal statutes.

For more information please contact the Regulatory Program of the local U.S. Army Corps of Engineers District.

Please note that the NWI data being shown may be out of date. We are currently working to update our NWI data set. We recommend you verify these results with a site visit to determine the actual extent of wetlands on site.

This location overlaps the following wetlands:

FRESHWATER EMERGENT WETLAND

- PEM1Eh
- PEM1/SS1Eh
- PEM1A
- PEM1/FO1Ch
- PEM1/SS1C
- PEM1/SS1E
- PEM1C
- PEM1/SS1Ch

FRESHWATER FORESTED/SHRUB WETLAND

- PFO1C
- PFO1Ch
- PFO1A
- PSS1C
- PFO1Ah
- PFO1/SS1Ch
- PSS1/EM5A
- PFO/SS1A
- PFO1E
- PSS1/EM1C

FRESHWATER POND

- PUBHh
- PABF

- PUBH
- PUBFh
- PUBFx

LAKE

- L1UBHh
- L2EM2Fh
- L2ABHh
- L2UBHh

RIVERINE

- R2UBH
- R4SBC
- R2UBHh
- R3UBH
- R5UBH
- R2USA
- R2USC

A full description for each wetland code can be found at the National Wetlands Inventory website

Data limitations

The Service's objective of mapping wetlands and deepwater habitats is to produce reconnaissance level information on the location, type and size of these resources. The maps are prepared from the analysis of high altitude imagery. Wetlands are identified based on vegetation, visible hydrology and geography. A margin of error is inherent in the use of imagery; thus, detailed on-the-ground inspection of any particular site may result in revision of the wetland boundaries or classification established through image analysis.

The accuracy of image interpretation depends on the quality of the imagery, the experience of the image analysts, the amount and quality of the collateral data and the amount of ground truth verification work conducted. Metadata should be consulted to determine the date of the source imagery used and any mapping problems.

Wetlands or other mapped features may have changed since the date of the imagery or field work. There may be occasional differences in polygon boundaries or classifications between the information depicted on the map and the actual conditions on site.

Data exclusions

Certain wetland habitats are excluded from the National mapping program because of the limitations of aerial imagery as the primary data source used to detect wetlands. These habitats include seagrasses or submerged aquatic vegetation that are found in the intertidal and subtidal zones of estuaries and nearshore coastal waters. Some deepwater reef communities (coral or tuberficid worm reefs) have also been excluded from the inventory. These habitats, because of their depth, go undetected by aerial imagery.

Data precautions

Federal, state, and local regulatory agencies with jurisdiction over wetlands may define and describe wetlands in a different manner than that used in this inventory. There is no attempt, in either the design or products of this inventory, to define the limits of proprietary jurisdiction of any Federal, state, or local government or to establish the geographical scope of the regulatory programs of government agencies. Persons intending to engage in activities involving modifications within or adjacent to wetland areas should seek the advice of appropriate federal, state, or local agencies concerning specified agency regulatory programs and proprietary jurisdictions that may affect such activities.

Appendix G: Coastal Zone Management Act (CZMA) Federal Consistency Determination

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Coastal Zone Management Act

Federal Consistency Determination

Proposed Project Description and Site Location

Site Location and Details

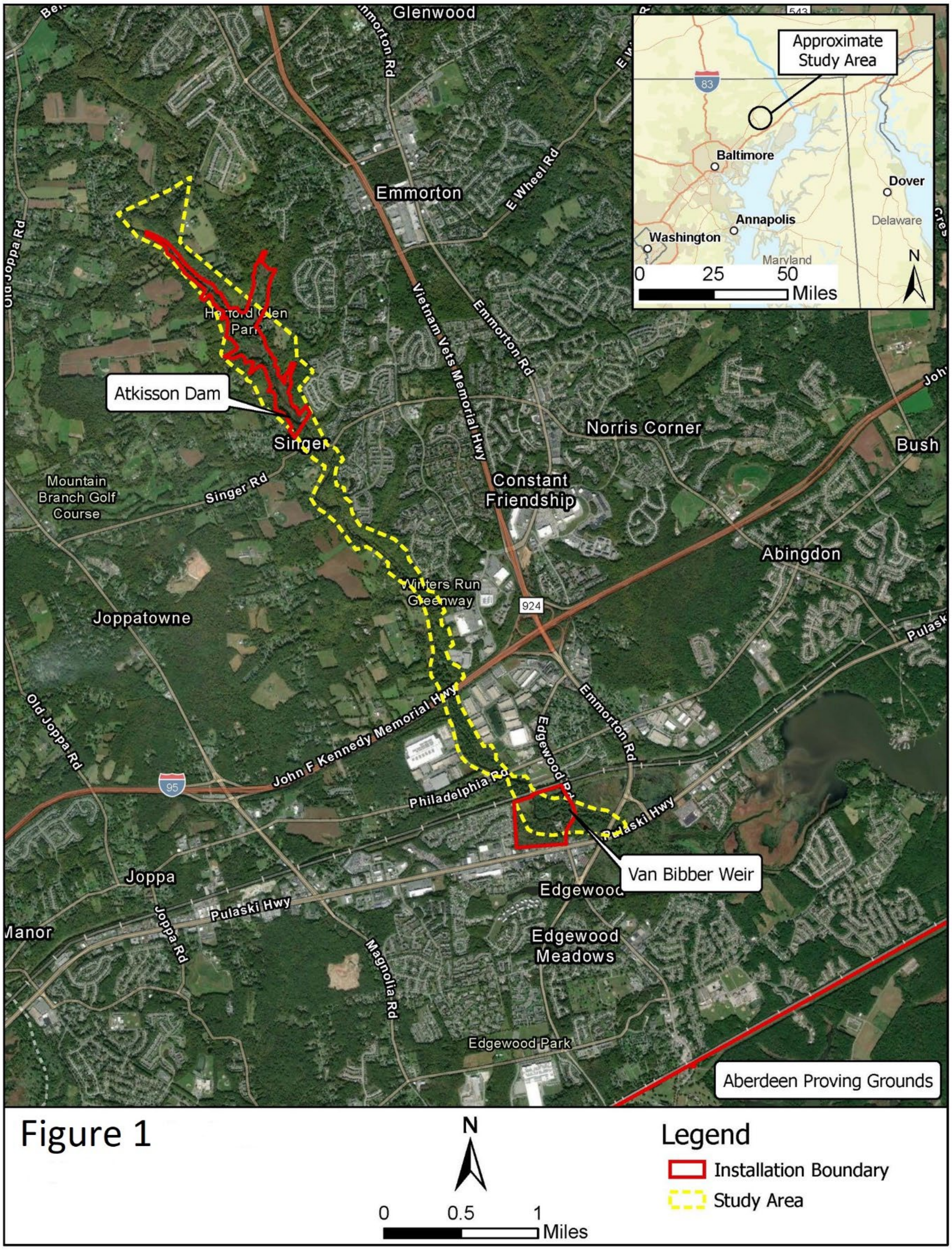
The United States Army Garrison (USAG) Aberdeen Proving Ground (APG) includes Atkisson Dam and Van Bibber Weir. Both Atkisson Dam and Van Bibber Weir are located along Winters Run in Harford County, Maryland (MD). Atkisson Dam and Van Bibber Weir are both located approximately 45 miles northeast of Baltimore, MD near the towns of Emmorton, MD, and Edgewood, MD, respectively (Figure 1).

Atkisson Dam was originally constructed in 1942 to impound water for Edgewood Arsenal operations. The construction of Atkisson Dam created a reservoir along Winters Run north of the dam, which has been used for recreational purposes in recent years. Atkisson Dam is approximately 6.25 miles north of APG-EA and is bordered to the east by Harford Glen, which is the property of the Harford County Department of Education. The Army has retained the property immediately surrounding the reservoir up to the 130-foot contour line.

Van Bibber Weir was originally constructed to provide water for APG - Edgewood Area (APG-EA). The Van Bibber Weir property also includes several water treatment plant buildings associated with the weir. Van Bibber Weir is located just north of Maryland Route 40, about 2.3 miles north of APG-EA, also along Winters Run.

Winters Run is an approximately 14.5-mile-long river that starts in the vicinity of Fallston, MD, and becomes Otter Point Creek south of the Van Bibber Weir. Otter Point Creek then drains into the Bush River, and eventually, the Chesapeake Bay.

Atkisson Dam is accessible via trails starting at the Harford Glen School on West Wheel Road. A chain-link fence and gates are in place to prevent access to the dam itself. Van Bibber Weir is accessible via and entrance and exit road off of Edgewood Road. The weir property is surrounded by a chain-link fence and is gated to prevent unauthorized access to the facility.


Glenwood
Approximate Study Area
83
Baltimore
Dover
Annapolis
Washington
Delaware
Maryland
0 25 50 Miles
N
Emmorton
E Wheel Rd
Emmorton Rd
Vietnam Vets Memorial Hwy
Harford Glen Park
Atkisson Dam
Singer
Singer Rd
Mountain Branch Golf Course
Norris Corner
Constant Friendship
Bush
Abingdon
Winters Run Greenway
924
Joppatowne
Old Joppa Rd
John F Kennedy Memorial Hwy
95
Edgewood Rd
Philadelphia Rd
Pulaski Hwy
Van Bibber Weir
Joppa
Joppa Rd
Manor
Edgewood
Edgewood Meadows
Magnolia Rd
Edgewood Park
Aberdeen Proving Grounds
Figure 1
N
0 0.5 1 Miles
Legend
Installation Boundary
Study Area

Proposed Project Description

The Proposed Action is the full or partial removal of the Atkisson Dam and Van Bibber Weir and divestment of the associated property. Several courses of action to accomplish the Proposed Action are described below and will be evaluated in this EA. Course of Action 3 is the Preferred Alternative.

Course of Action 1: Quick Draw Down

This option would include draining the reservoir, excavating the sediment behind the dam, and removing the entire Atkisson Dam and Van Bibber Weir. The new channel and valley cross section would be in equilibrium with the current hydrology. During dewatering, current riverine flows would bypass the reservoir area. Low level control of the outlet works of the structure would be re-established to help regulate flows after drawdown. This alternative includes restoration of riverine channel and slopes. A containment area for transportation and dewatering the dredge spoils may be required.

A complete removal would be phased to gradually drain the reservoir; subsequently the remainder of the structure would be removed consistent with a detailed deconstruction plan. Even with a complete dam removal, it is possible that a portion of the foundation sill would be left in place as a channel elevation control to prevent excessive incising of the channel or as part of other mitigation measures, such as wetland mitigation and enhancement. Similar to a partial removal, sediment management, restoration and water quality protection and monitoring plans would all be required.

Course of Action 2: Slow Draw Down and Leave Accumulated Sediments in Place

This option would include draining the reservoir incrementally by systematically removing portions of the dam, maximizing sediment retention and stabilization, and removing the majority of Atkisson Dam and Van Bibber Weir. The new channel and valley cross section would be in equilibrium with the current hydrology. During drawdown, the old blow-off conduit could be re-established. A plan for protection and monitoring of downstream water quality during breaching and restoration would likely be a requirement of any permits and CWA Section 401 certification issued for this project. A partial dam breach that retains at least a portion of the existing structure could also maintain historic features, which could minimize any adverse effect to historic properties.

This alternative would also include replanting along stream banks in order to stabilize the banks but would not include measures to retain and protect the existing wetlands.

Course of Action 3: Slow Draw Down, Leave Accumulated Sediment in Place, and Retain Wetlands

This option would include draining the reservoir incrementally by systematically removing portions of the dam, allowing the sediment to compact in order to maximize sediment retention and stabilization. This course of action (COA) would also include removing the majority of Atkisson Dam and Van Bibber Weir. The new channel and valley cross section would be in equilibrium with the current hydrology. The new system would utilize a weir box structure, cofferdam system and continued assessment for controlling the water flow. During drawdown, the old blow-off conduit could be re-established. A plan for protection and monitoring of downstream water quality during breaching and restoration would likely be a requirement of any permits and CWA Section 401 certification issued for this project. A partial dam breach that retains at least a portion of the existing structure could also maintain historic features as an historic resource.

This alternative would also include replanting and incorporating protective measures to stabilize sediment and stream banks and retain existing wetlands to the extent practicable. However, there is the potential for wetland loss or conversion due to changes in hydrology.

Public Participation

The Draft EA will be released for a 30-day public review and comment period. A notice of availability (NOA) will be published in *The Aegis* and *The Baltimore Sun* and the Draft EA will be published and available for review at the Harford County Public Library, Edgewood Branch, at 629 Edgewood Road, Edgewood, MD 21040. The Final EA and, if warranted, a Finding of No Significant Impact (FNSI), will also be made available to the public upon request, once complete.

Agency Consultations

APG has initiated consultation with U.S. Fish and Wildlife Service, NOAA Fisheries Service, NOAA National Marine Fisheries Service, Maryland Department of Natural Resources, Maryland Department of the Environment,and Maryland Historic Trust. Copies of these correspondenceswill be provided in Appendix A of the Draft and Final EA. Additionally, APG will submit the Draft EA to the Maryland State Clearinghouse for review.

References

U.S. Army Garrison Aberdeen Proving Ground. 1998. Draft Atkisson Dam and Reservoir Feasibility Report and Integrated Environmental Assessment. April 1998.

U.S. Army Garrison Aberdeen Proving Ground. 2014. Final Aberdeen Proving Ground Real Property Master Plan Programmatic Environmental Assessment. October 2014.

U.S. Army Garrison Aberdeen Proving Ground. 2017. Final Water Supply and Treatment for Aberdeen Proving Ground – Aberdeen Area, Maryland. September 2017.

U.S. Army Garrison Aberdeen Proving Ground. 2019. *Integrated Natural Resources Management Plan*. Updated March 2019.

Basis for Determination

Enforceable Policy	Relevant to Project	Not Relevant to Project	Impact to Resources
Core Policies			
Quality of Life Policies	X	Quality of Life Policies 3, 4, 7, 8, 9, 10, and 11 are not applicable to the proposed project.	Policy 1 – Air Quality – Air pollutant emissions would be below General Conformity *de minimis* thresholds for all criteria pollutants for the continuation of mission and maintenance activities. Policy 2 – Noise – Estimated noise levels for the nearest residential receptors would be less than 64 dBA for all deconstruction activities. The closest sensitive receptor to the dam would be the Harford Glen School about 0.6 miles northwest of the dam, and the closest sensitive receptor to the weir would be the Milan School about 0.35 miles southwest of the weir. Policy 5 – Natural Character & Scenic Value of Rivers and Waterways – Removal of the dam and weir would aim to return Winters Run and Otter Point Creek to their natural state, which would enhance the natural character and scenic value of the waterways. Policy 6 – Natural Flow of Scenic & Wild Rivers – Removal of the dam and weir would remove impediments to the natural flow of Winters Run and Otter Point Creek.
Waste & Debris Management		Waste & Debris Management Policies 1 and 2 are not applicable to the proposed project.	Removal of the dam and weir would be consistent with all Waste & Debris Management Policies.

Water Resources Protection & Management	X	Water Resources Protection & Management Policies 1, 3, and 4 through 12 are not applicable to the proposed project.	Policy 2 – Protection of Designated Uses – Winters Run and Otter Point Creek are both Use I waterways and would be maintained as such after deconstruction. The Tier II Otter Point Catchment is also within the study area, and all anti-degradation measures would be taken during the course of the project in order to maintain the water quality within the Tier II waters.
Flood Hazards & Community Resilience		Flood Hazard & Community Resilience Policies1, 2 and 3 are not applicable to the proposed project.	Removal of the dam and weir would be consistent with all Flood Hazards & Community Resilience Policies.
Coastal Resources			
1. The Chesapeake and Atlantic Coastal Bays Critical Area	X	Critical Area Policies 3, 4, 6, 7, 8, 10 through 16, 18 through 29 are not applicable to the proposed project.	Policy 1 – Scope of the Buffer – As the Van Bibber Weir is within the current boundary of the Critical Area, APG would coordinate project activities with the Critical Area Commission. Policy 2 – Buffer Disturbance – The removal of the weir, while in the critical area buffer, would serve to minimize future impacts to water flow and wildlife habitat. Policy 5 – Restrictions on Stream Alterations – Removal of the weir would better facilitate movement of fish within Winters Run and Otter Point Creek. Policy 9 – Time of Year Restrictions for Construction in Streams – Dam and weir removal would be conducted outside of the March 1 and May 15 window. Policy 17 – Buffer Management Plan – A buffer management plan would be developed in coordination with the Critical Area Commission for any activity within the Critical Area.

Enforceable Policy	Relevant to Project	Not Relevant to Project	Impact to Resources
2. Tidal Wetlands	X		Removal of the Van Bibber Weir would be expected to have minor adverse impacts to tidal wetlands due to increased sediment loads and debris from behind the weir. Consideration would be taken to mitigate any downstream impacts.
3. Non-tidal Wetlands	X		Removal of Atkisson Dam and Van Bibber Weir would be expected to have long-term minor adverse impacts to non-tidal wetlands. Approximately 20 acres of non-tidal wetlands have the potential to be impacted by the removal of the dam and weir; however, the preferred alternative would allow existing wetlands to remain within the study area. Any impacts to non-tidal wetlands would be avoided or minimized to the extent feasible.
4. Forests		X	No adverse impacts to forest resources are expected from the removal of the dam and weir.
5. Historical and Archaeological Sites	X		Removal of Atkisson Dam and Van Bibber Weir would avoid all known cultural resources and archaeological sites and would also implement an inadvertent discovery plan. The Maryland

Enforceable Policy	Relevant to Project	Not Relevant to Project	Impact to Resources
			Historic Trust State Historic Preservation Office (SHPO) concurred that removal of the dam and weir would have no adverse impact on cultural resources and sites.
6. Living Aquatic Resources	X	Living Aquatic Resources Policies 1 through 4, 6, 7, and 9 through 14 are not applicable to the proposed project.	Policy 5 – Time-of-Year Restrictions for Construction in Non-Tidal Waters – The appropriate time of year restrictions would be observed to avoid impacts to fish spawning. Policy 8 - Protection & Management of Submerged Aquatic Vegetation – Submerged Aquatic Vegetation will not be removed as a result of the proposed project.
C. Coastal Uses			
1. Mineral Extraction		X	Removal of the dam and weir would not involve any mineral extraction.
2. Electrical Generation and Transmission		X	Removal of the dam and weir would not involve electrical generation and/or transmission.
3. Tidal Shore Erosion Control		X	Removal of the dam and weir would not involve any tidal shore erosion control.
4. Oil and Natural Gas Facilities		X	Removal of the dam and weir would not involve any oil and natural gas facilities.
5. Dredging and Disposal of Dredged Material		X	Removal of the dam and weir would not involve any dredging or disposal of dredged material.
6. Navigation		X	Removal of the dam and weir would not involve navigation.
7. Transportation		X	Removal of the dam and weir would not involve transportation.
8. Agriculture		X	Removal of the dam and weir would not involve agriculture.
9. Development		X	Removal of the dam and weir would not involve any development.
10. Sewage Treatment		X	Removal of the dam and weir would not involve any sewage treatment.

Appendix H: Finding of No Practicable Alternative (FONPA)

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DRAFT FINDING OF NO PRACTICABLE ALTERNATIVE
FOR THE REMOVAL OF ATKISSON DAM AND VAN BIBBER WEIR AT
U.S. ARMY GARRISON ABERDEEN PROVING GROUND

1.0 Introduction

Atkisson Dam and Reservoir are located along Winters Run near the Emmorton community in Harford County, Maryland. The dam is approximately 6.25 miles north of Aberdeen Proving Ground – Edgewood Area (APG-EA) and is bordered to the east by Harford Glen, which is the property of the Harford County Department of Education. The Army has retained the property immediately surrounding the reservoir up to the 130-foot contour line. Van Bibber Weir is located just north of Maryland Route 40, about 2.3 miles north of APG-EA, also along Winters Run. Winters Run is a tributary of Otter Point Creek, which flows to the Bush River, a tributary of the Chesapeake Bay.

Aberdeen Proving Ground (APG) proposes to fully or partially remove the Atkisson Dam and Van Bibber Weir, and to divest itself of the associated property. Several courses of action (COAs) to accomplish the Proposed Action are described in Section 3.0 below.

Under Executive Order (EO) 11988, Floodplain Management, federal agencies must find that there is no practicable alternative to development within the 100-year floodplain. Under EO 11990, Protection of Wetlands, federal agencies must avoid undertaking new construction located in wetlands unless the head of the agency finds that there is no practicable alternative to such construction. Further, APG must take all practicable measures to minimize harm to or within floodplains and wetlands. APG has determined that elements of the Proposed Action have the potential to cause adverse impacts to wetlands and floodplains along Winters Run.

This preliminary finding incorporates the analysis and conclusions of the September 2022 Draft Environmental Assessment (EA) for the Removal of Atkisson Dam and Van Bibber Weir at U.S. Army Garrison Aberdeen Proving Ground. It is being made available to the public with the Draft EA, in accordance with both EOs.

2.0 Notice of Wetland and Floodplain Involvement

EO 11988 requires that each federal agency, to the extent permitted by law, "shall take action to reduce the risk of flood loss, to minimize the impact of floods on human safety, health and welfare, and to restore and preserve the natural and beneficial values served by floodplains in carrying out its responsibilities for (1) acquiring, managing, and disposing of Federal lands, and facilities; (2) providing Federally undertaken, financed, or assisted construction and improvements; and (3) conducting Federal activities and programs affecting land use, including but not limited to water and related land resources planning, regulating, and licensing activities." The term "floodplains" means "the lowland and relatively flat areas adjoining inland and coastal waters including floodprone areas of offshore islands, including at a minimum, that area subject to a one percent or greater chance of flooding in any given year."

EO 11990 requires that each federal agency, to the extent permitted by law, "shall avoid undertaking or providing assistance for new construction located in wetlands unless the head of the agency finds: (1) that there is no practicable alternative to such construction; and, (2) that the proposed action includes all practicable measures to minimize harm to wetlands which may result from such use." The term "wetlands" means "those areas that are inundated by surface or ground water with a frequency sufficient to support and under normal circumstances does or would support a prevalence of vegetative or aquatic life that requires saturated or seasonally saturated soil conditions for growth and reproduction."

As it involves dam and weir removal, the Proposed Action would be expected to cause impacts to wetlands and floodplains along Winters Run due to changes in hydrology. Changes in hydrology could alter the extent of floodplains, causing impacts to their ability to slow floodwaters or provide erosion control. These hydrological changes could also impact wetlands via the loss or degradation of their natural functional benefits such as water storage, infiltration, and filtration. These impacts extend to the intrinsic value of these resources, or the benefits associated with their use, such as wildlife habitat, recreation, and aesthetic enjoyment.

3.0 Description of the Proposed Action and Discussion of Alternatives

The Proposed Action is the full or partial removal of the Atkisson Dam and Van Bibber Weir and divestment of the associated property. Several COAs were identified to accomplish the Proposed Action, and several alternatives were screened from further consideration.

Alternatives Selection Criteria

APG screened two alternatives from further consideration based on the criteria that they were not feasible, did not meet the purpose of the Proposed Action, or had the potential for significant impacts to habitats within Winters Run.

The first alternative screened from consideration was to repair or replace Atkisson Dam. Under this alternative, the Army did not believe it could accomplish the proposed purpose to excess and transfer the property to another entity with a repaired or replaced dam, as it is unlikely that an entity could be identified that would be willing to assume the associated liability and cost for ongoing maintenance of the dam. For this reason, it was eliminated from further consideration.

The second alternative screened from consideration was to do a quick drawdown of the dam and to passively release accumulated sediments. This option is similar to the Proposed Action's COA 1, but it includes passively releasing the accumulated sediment, which could have impacts to various resources including water quality, biological receptors, and wetland resources. Based on these potential impacts, this alternative was eliminated from further consideration.

Alternatives Subject to Further Analysis

Based on the selection criteria analysis described above, APG determined that there were three COAs that would meet its purpose of and need for the Proposed Action. These three COAs, as well as the No Action Alternative, were carried forward for detailed analysis.

- COA 1: Quick Drawdown
    - This option would include draining the reservoir, excavating the sediment behind the dam, and removing the entire Atkisson Dam and Van Bibber Weir. This alternative includes restoration of riverine channel and slopes. A complete removal would be phased to gradually drain the reservoir; subsequently the remainder of the structure would be removed consistent with a detailed deconstruction plan.
- COA 2: Slow Drawdown and Leave Accumulated Sediments in Place
    - This option would include draining the reservoir incrementally by systematically removing portions of the dam, maximizing sediment retention and stabilization, and removing the majority of Atkisson Dam and Van Bibber Weir. This alternative would also include replanting along stream banks in order to stabilize the banks but would not include measures to retain and protect the existing wetlands.
- COA 3: Slow Drawdown, Leave Accumulated Sediments in Place, and Retain Wetlands
    - This option would include draining the reservoir incrementally by systematically removing portions of the dam, allowing the sediment to compact in order to maximize sediment retention and stabilization. This COA would include removing the majority of Atkisson Dam and Van Bibber Weir. This alternative would also include replanting and incorporating protective measures to stabilize sediment and stream banks and retain existing wetlands to the extent practicable; however, there is the potential for wetland loss or conversion due to changes in hydrology.

No Action Alternative

Under the No Action Alternative, APG would leave the Atkisson Dam and Van Bibber Weir in place as they are and both would continue to accumulate sediment upstream, further endangering the structures. This alternative would continue to degrade the existing aquatic habitat. The associated liability and hazard to property and human health would also continue. This condition would limit the ability of the Army to excess the property and find a new owner. As the Army would retain ownership of the Atkisson Dam and Van Bibber Weir under the No Action Alternative, an Emergency Action Plan (EAP) would need to be developed, in accordance with Army Regulation (AR) 420-1, *Army Facilities Management*. The No Action Alternative does not meet APG's purpose and need, but it was carried forward for analysis in the EA in accordance with National Environmental Policy Act (NEPA) requirements to provide a baseline against which impacts of the Proposed Action could be measured. Because it does not meet the purpose of and need for the Proposed Action, this alternative is not "practicable" within the meaning of EO 11990.

Preferred Alternative

The Preferred Alternative would be COA 3, which would remove Atkisson Dam and Van Bibber Weir using a slow drawdown with accumulated sediments left in place and measures undertaken to retain existing wetlands upstream of the dam. Under this COA, measures would be taken to try to retain existing wetlands to the extent practicable.

This alternative meets the purpose of and need for the Proposed Action, and is one of three practicable alternatives under EO 11990. All three practicable alternatives have the potential for some level of adverse wetland and floodplain impacts; however, the preferred alternative would take measures to minimize wetland impacts.

Impacts and Mitigation Measures

Field investigations conducted in support of the NEPA analysis for this Proposed Action documented approximately 20 acres of wetlands along Winters Run that could be impacted by the removal of Atkisson Dam and Van Bibber Weir. The Proposed Action may permanently alter the boundaries of these 20 acres of wetlands. This total wetland impact could be minimized if APG selects the Preferred Alternative and implements mitigation measures to stabilize and retain wetlands upstream of the dam. The specific mitigation measures would be determined when specific dam removal plans are developed. No temporary wetland impacts would be anticipated.

No operational or dam removal activities would encroach upon the upstream wetlands or their associated buffers. Therefore, any adverse impacts on these wetlands would be due to hydrologic changes associated with the releasing of impounded water behind Atkisson Dam.

The study area for the Proposed Action includes portions of the 100- and 500-year floodplains. The Proposed Action has the potential to result in more frequent/severe downstream flooding, which would be considered a long-term, minor adverse impact if using a slow drawdown (COAs 2 or 3). This may necessitate the need for enlargement of downstream structures including bridges, culverts, and easements. A Dam Safety Permit through the Maryland Department of the Environment (MDE) demonstrating that the removal will not adversely affect downstream flooding during the 2-, 10-, and 100-year storms, or that necessary permissions/easements have been obtained may be required. Hydrology and hydraulic modeling may also be required to support a dam safety permit.

Some dam removal activities may take place within the floodplains, but these would be temporary and would not cause any long-term adverse impacts.

EO 11990 requires that the proposed action include "all practicable measures to minimize harm to wetland[s]." Prior to implementing projects impacting wetlands or floodplains, the contractor would obtain coverage under applicable permits issued by USACE in accordance with the Clean Water Act (CWA). Adherence to avoidance, mitigation, and compensation measures specified in the permits would be required. These include all practicable measures available to ensure that wetland and floodplain impacts are mitigated to the extent possible.

Additionally, Environmental Protection Measures (EPMs), Regulatory Compliance Measures (RCMs), and Best Management Practices (BMPs) would be incorporated into the Proposed Action to avoid or minimize impacts on these wetland and floodplain resources and are collectively described, as follows:

- Obtain and adhere to appropriate permits from the MDE and USACE to comply with Sections 404/401 of the CWA and comply with all BMPs established throughout this consultation process.
- Obtain a Maryland General Permit for Stormwater Associated with Construction Activity to manage stormwater associated with implementation of the Proposed Action. APG would prepare and adhere to a state-approved Erosion and Sediment Control Plan and would meet the requirements of the federal National Pollutant Discharge Elimination System program. APG would also maintain water quality through compliance with existing total maximum daily loads.
- Comply with Maryland Tier II Antidegradation Review policies.
- Comply with Maryland's Erosion and Sediment Control Regulations, Stormwater Management Regulations, the Maryland Stormwater Management and Erosion & Sediment Control Guidelines for State and Federal Projects, and associated technical memoranda.
- Submit a Federal Consistency Determination to the Maryland Department of Natural Resources (MDNR) for review and concurrence.
- Establish construction staging areas at least 100 feet away from surface water resources.

The above steps would be implemented as "mitigation by design" and are a proactive means of minimizing environmental impacts.

These EPMs, RCMs, BMPs, and recommended mitigation measures would minimize impacts to wetlands and floodplains associated with the removal of Atkisson Dam and Van Bibber Weir. These measures represent all practicable measures to minimize harm to wetlands and floodplains.

4.0 Finding

During development of COAs for the removal of Atkisson Dam and Van Bibber Weir, APG considered alternatives for dam and weir removal that would minimize impacts to wetlands and floodplains. APG's preferred alternative involves measures to retain wetlands to the extent practicable.

APG has made, and will continue to make, efforts to remove the dam and weir in such a manner that would minimize impacts to wetlands and other regulated waters while still addressing the operational needs and safety requirements of these areas. Due to the nature of dam removal projects and the hydrologic changes that can occur as part of these projects, it was determined that complete avoidance of wetland impacts may not feasible. As such, APG has determined there are no practicable alternatives to avoiding all wetland impacts during the removal of Atkisson Dam and Van Bibber Weir.

Following a thorough evaluation of alternate plans that would satisfy the purpose of and need for the Proposed Action, I find that there is no practicable alternative to elements of the Proposed Action impacting wetlands. Therefore, APG will ensure that all practicable measures to minimize harm to wetlands are incorporated into the Proposed Action.

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Date

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