

Alvin R. Bush Dam Master Plan



July 2022





**Alvin R. Bush Dam
Master Plan
Clinton County, Pennsylvania**

For:

Alvin R. Bush Dam
3848 Kettle Creek Road
Renovo, PA 17764-0094

Prepared by:

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ALVIN R. BUSH DAM MASTER PLAN

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FINDING OF NO SIGNIFICANT IMPACT

Environmental Assessment for the Alvin R. Bush Dam 2022 Master Plan

Clinton County, Pennsylvania

In accordance with the National Environmental Policy Act of 1969 (NEPA), including guidelines in 33 Code of Federal Regulations (CFR), Part 230 (Procedures for Implementing NEPA), the Baltimore District of the U.S. Army Corps of Engineers (USACE), has assessed the potential impacts of the 2022 Alvin R. Bush Dam Master Plan (hereafter, "2022 Master Plan"). The Alvin R. Bush Dam Project was authorized and constructed for the primary purposes of flood risk management along the West Branch Susquehanna River. Secondary uses of the project lands and waters include recreation and environmental stewardship of natural and cultural resources. Implementation of the 2022 Master Plan and proposed land use changes must recognize and be compatible with the primary project missions of flood risk management and recreation.

The Master Plan will provide guidance for stewardship of natural resources and management for long-term public access to, and use of, the natural resources at Alvin R. Bush Dam, including the land classification of the USACE-managed lands. Land classifications are established in the Master Plan and are fundamental to project land management. Land classifications (see Table S-1) provide for development and resource management consistent with authorized purposes and other federal laws. The Master Plan provides a comprehensive description of Alvin R. Bush Dam (also, "the project"), a discussion of factors influencing resource management and development, new resource management objectives, a synopsis of public involvement and input into the planning process, descriptions of existing development, and considerations of future development activities.

Under the No Action Alternative, USACE would take no action and continue the operation and management of the project as outlined in the 1964 Master Plan. No new resource analysis or land reclassifications would occur.

The Proposed Action includes adopting the 2022 Master Plan to reflect changes in land management classifications, land uses, USACE regulations and guidance that have occurred since the 1964 Master Plan, and coordination with the public. The 2022 Master Plan refines land classifications to meet authorized project purposes and current resource objectives. This includes a mix of natural resource and recreation management objectives that are compatible with regional goals established by stakeholders and USACE during the master planning process, recognize outdoor recreation trends, and are responsive to public comment. The purpose of the action is to update the Alvin R. Bush Dam Master Plan. The action is needed as required by Engineer Regulation (ER) 1130-2-550 and Engineering Pamphlet (EP) 1130-2-550. The 2022 Master Plan is intended to serve as a comprehensive land and recreation management plan for the next 15 to 25 years and is needed to update the

Alvin R. Bush Dam Master Plan in accordance with January 2013 updates to ER and EP 1130-2-550.

Table S-1 identifies the required land and water surface classification changes associated with the Proposed Action.

Table S-1: Proposed Changes to Land Classifications at Alvin R. Bush Dam.

Classification	1964 Master Plan (acres)	2022 Master Plan (acres)	Description*
Project Operations	194.2	173.7	Lands are associated with the dam and spillway structures that are operated and maintained for fulfilling the flood risk management mission of the project. The Project Operations land classification was updated to include a section of the dam and spillway previously classified as intensive recreation. Although the mission-support areas of the project have not changed since the 1964 Master Plan, the land fitting the new criteria totals 173.7 acres (land providing direct support to the operations of the project's primary mission). One future project associated with this land classification is the stabilization of the spillway wall between the spillway crest and operations access road bridge. The stone wall has eroded over time, and continued erosion would negatively impact the spillway and Kettle Creek Road. The contract for construction will likely be awarded in fiscal year (FY) 2023, with construction likely to begin in FY 2024. Dates are dependent on receipt of sufficient funding. Construction could take several years.
Intensive Recreation	141	0	This land classification was included in the 1964 Master Plan; however, it is not included in the 2022 Master Plan due to changes in USACE policies. The High Density Recreation land classification (below) includes Intensive Recreation management considerations.
High Density Recreation	0	173.9	Lands are currently developed for High Density recreational activities and include boat launches, day-use areas, and campgrounds. The new criteria for this land classification includes areas developed specifically to support intensive recreational activities. This land classification has been developed to support concentrated visitation and use of the recreational facilities they host.

Classification	1964 Master Plan (acres)	2022 Master Plan (acres)	Description*
			<p>The High Density recreation area includes areas supporting the Upper Campground (e.g., access roads), the Kettle Creek State Park Administrative Complex, and the Day Use Area. Planned improvements by Kettle Creek State Park to the Upper Campground will likely fall entirely outside USACE-owned lands, with the exception of proposed improvements to an alternate access road to convert it to the main access road.</p>
Multiple Resource Management Land			
Low Density Recreation	0	719.6	<p>Management of this land classification calls for maintaining a healthy, ecologically adapted vegetative cover to reduce erosion and improve aesthetics, while also supporting low-impact recreational opportunities such as bank fishing, hunting, hiking, wildlife viewing, and for access to the shoreline. Hunting is allowed in select areas that are a reasonable and safe distance from High Density Recreational areas, dam operations, and adjacent residential properties. The new land classification criteria include areas where vegetation and wildlife management may be a secondary use, but where recreation is considered the predominant use.</p> <p>Future plans for existing low density recreation lands include improvements to parking areas near Walters Run and the Equestrian Campground, restroom facility upgrades, wayside exhibits and interpretive signage near the Equestrian Campground, improved access to Kettle Creek for wildlife viewing and fishing access, and continued wildlife habitat improvement work intended to enhance wildlife viewing opportunities.</p>
Wildlife and Forest Management	772	0	<p>This land classification was included in the 1964 Master Plan. Per new guidance, this has been reclassified as two separate subclassifications under the Multiple Resource Management Land classification: Wildlife Management and Vegetative Management. However, it is not included as a land classification in the 2022 Master Plan. The Multiple Resource Management Land classification allows for the designation of the predominant use, with the understanding</p>

Classification	1964 Master Plan (acres)	2022 Master Plan (acres)	Description*
			that other compatible uses may also occur on these lands. These lands have been reclassified to the predominant use of Low Density Recreation (above), which includes wildlife management.
Water Surface			
Conservation Pool	166	0	This land classification was included in the 1964 Master Plan; however, is not included in the 2022 Master Plan due to a change in land classification designations. The Water Surface classification now contains four sub classifications: "Designated No-Wake," "Restricted," "Fish and Wildlife Sanctuary" and "Open Recreation." Only two of the sub-classifications are applicable to Kettle Creek Reservoir: The Restricted and Open Recreation Area subclassifications.
Restricted	0	0.2	Restricted water surface includes those areas where recreational boating is prohibited or restricted for project operations, safety, and security purposes. The Restricted water surface at Kettle Creek Reservoir includes a small area around the dam and intake tower. This area is normally marked with standard USCG regulatory buoys stating that boats are excluded from the area. Physical barriers may be in place on the water. This change reflects new classification criteria and no actual change in water use. This area includes the vicinity of the intake tower, spillway, and outfall.
Open Recreation Area	0	160.8	Open Recreation area includes all water surface areas available for year-round or seasonal water-based recreational use. This change reflects new classification criteria and no actual change in water use. This area includes all water surface area other than "Restricted."
Designated No-Wake	0	0	Kettle Creek Reservoir only permits electric or non-motored vessels that are not likely to produce any appreciable wake. Therefore, a "No Wake" land classification was not necessary.
Total	1,273.2*	1,228*	

*Mapping for the Master Plan update has been compiled using the best information available and is believed to be accurate. Prior land classification acres are based on original acquisition real estate deed records and mapping completed for the 1964 Master Plan. Due to improved

mapping technologies, minor discrepancies exist when comparing prior and proposed land classification acreages. Discrepancies were primarily encountered between the prior land classification of Wildlife and Forest Management and the proposed land classification of Multiple Resource Management- Low Density Recreation.

USACE selected the Proposed Action because it would meet regional goals associated with good stewardship of land and water resources, meet regional recreation goals, and allow for continued use and development of project lands without violating national policies or public laws.

USACE used the Environmental Assessment (EA) and comments received from other agencies to determine whether the Proposed Action requires the preparation of an Environmental Impact Statement (EIS). This included assessment of environmental, social, and economic factors that are relevant to the recommended alternative considered in this assessment. The EA determined negligible impacts would occur to the following resources: air quality, greenhouse gasses and climate, noise, geology, cultural resources, groundwater, utilities, socioeconomics and environmental justice, and traffic and transportation (see Section 3.6 of the EA). No impacts are anticipated on water and biological resources from the implementation of the Proposed Action. Minor impacts could occur to water resources, and minor to moderate impacts could occur to soils and biological resources, during construction of future master planning projects (See Section 3 of the EA). Efforts would be made to reduce adverse impacts by using standard construction best management practices (BMPs) to reduce disturbance, soil erosion, and sedimentation into adjacent surface waters and wetlands. Construction and operations of future master planning projects would use BMPs associated with prevention of impacts to sensitive species recommended during future separate environmental review of projects proposed in the 2022 Master Plan. These may include removal of vegetation outside of nesting seasons for bird species of conservation concern discussed in Section 3.4 (April 10 – June 31), removal of trees greater than 5 inches in diameter that could serve as roosting habitats for bat species outside of the roosting season (April 1 to November 15), and establishment of buffer areas to protect northeastern bulrush habitat as discussed in Section 3.4. Construction of future master planning projects near active bald eagle nests would also maintain a buffer of at least 660 feet (200 meters) between project activities and the nest. If activity is closer than 660 feet, all construction activities within 660 feet of the nest would occur outside of the nesting season (January 1 to July 31 in Pennsylvania).

The Master Plan revision would result in beneficial impacts to land use and recreation. The new land classifications maintain high density and low density recreational areas and identify recreation as the primary land use in these areas. The classifications allow for future high- and low- density recreational development as appropriate in these land classification areas.

Conclusion

All applicable laws, executive orders, regulations, and local government plans were considered in the evaluation of alternatives. Based on this report, the reviews by other federal, state and local agencies, Tribes, input of the public, and the review of my staff, it is my determination that the Proposed Action alternative would not cause significant adverse effects on the quality of the human environment; therefore, preparation of an Environmental Impact Statement is not required.

Date

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COL, U.S. Army
Commander and District Engineer

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1 INTRODUCTION

1.1 PROJECT AUTHORIZATION

The Alvin R. Bush Dam was authorized by the Flood Control Act of 1954, in accordance with House Document 29, 84th Congress, 1st Session. Construction of the dam was initiated in 1959 and the dam was operationally complete on 18 January 1962. Originally named Kettle Creek Reservoir, the name of the project was changed to Alvin R. Bush Dam on 21 April 1962 (as approved by Public Law 87-434, 76 Stat. 54), after former representative Alvin R. Bush who had been a long-time advocate of flood risk management in Pennsylvania.

The Alvin R. Bush Dam project, along with several other West Branch projects, was originally proposed in a U.S. Army Corps of Engineers (USACE) report dated 1941, which prompted the investigations of topography, hydrology, geology, and flood damages and benefits of the projects. The findings of the investigations along with recommendations for the construction of four reservoir projects on the West Branch of the Susquehanna River were presented in a USACE report dated 25 June 1954. Three of the presented reservoir projects, including Alvin R. Bush Dam, Curwensville Dam, and Foster Joseph Sayers Dams were constructed by USACE. The fourth project, George B. Stevenson Dam, was constructed by the Commonwealth of Pennsylvania; however, all four projects are regulated by USACE during high water conditions as part of the West Branch flood risk management system.

Alvin R. Bush Dam is a multipurpose water resources project constructed and operated by USACE, Baltimore District. The dam and associated infrastructure, as well as all land acquired for the Alvin R. Bush Dam and the Kettle Creek Reservoir, are federally owned, and are administered by USACE. The project is located on Kettle Creek, upstream of the West Branch Susquehanna River in Clinton County, Pennsylvania.



Alvin R. Bush Dam. View from Observation Area.

1.2 PROJECT PURPOSE

The primary purpose of the Alvin R. Bush Dam project is to provide flood risk management to communities along the West Branch Susquehanna River including Renovo, Lock Haven, Jersey Shore, Williamsport, Milton, and Lewisburg. Reducing flows on Kettle Creek will result in the reduction of peak flows on the Susquehanna River at Williamsport, and as far down stream as Sunbury. Figure 1-1 is a regional map of the area.

The secondary project purposes associated with Kettle Creek Reservoir, which is formed by the Alvin R. Bush Dam, are recreation and environmental stewardship. Project lands not used for operation and maintenance of the Dam are leased to the Pennsylvania Department of Conservation and Natural Resources (DCNR) for the operation of Kettle Creek State Park (KCSP).



Alvin R. Bush Dam, High Water Mark on Dam Embankment

Although water quality is not one of the project's secondary purposes, water quality was considered in the operation of the project through the dilution of acid mine drainage on the West Branch Susquehanna River and occasionally for the mitigation of acid slug formation, or the potential sudden release of concentrated acidic water from mines, following a rain event; however, this has not been needed in recent years. The project also implements flow augmentation to support a healthy aquatic environment and fisheries downstream, especially during low flow periods.

1.3 PURPOSE AND SCOPE OF MASTER PLAN

The purpose of this document is to update the Alvin R. Bush Dam Master Plan ("Master Plan" or "MP") written in 1964. The Master Plan is the strategic land use management document that guides the comprehensive management and development of the recreational, natural, and cultural resources throughout the life of the project. It is the basic document guiding USACE responsibilities pursuant to federal laws to preserve, conserve, restore, maintain, and develop the project lands, waters, and associated resources.

This update to the Master Plan is required per Engineer Regulation (ER) 1130-2-550 "Recreation Operations and Maintenance Policies," and Engineering Pamphlet (EP) 1130-2-550 "Recreation Operations and Maintenance Guidance and Procedures." USACE is also

required to prepare the appropriate National Environmental Policy Act (NEPA), documentation to support the Master Plan.

This document presents an evaluation of the assets, needs, and potential uses of the Alvin R. Bush Dam and Kettle Creek Reservoir. This Master Plan reflects changes that have occurred to the project site, in the region, in recreation trends, and in USACE policy in the 57 years since the previous master plan was published. It provides a management framework that balances the stewardship of natural resources and provision of high-quality recreation activities with the primary project purpose of flood risk management. This Plan addresses expressed public interest in the overall stewardship and management of all project resources and includes graphics showing the most desirable and feasible enhancements to existing facilities, as well as locations and types of new facilities needed to meet the identified needs.

Implementation of the Master Plan must recognize and be compatible with the primary project mission of flood risk management and secondary project purposes of recreation and environmental stewardship.

The Master Plan update is a working document that will guide the use and development of the natural and constructed resources on USACE fee-owned lands for an estimated 15-25-year period (2022-2047). It is a dynamic and flexible tool designed to address changing conditions. The Master Plan focuses on carefully crafted, resource-specific goals and objectives.

It is important to note what the Master Plan does not address. Details of design, management and administration, and program implementation are not intended to be addressed within the scope of a master plan. Additionally, MPs are not intended to address the specifics of regional water quality, shoreline management, or water level management.

The master planning process encompassed a series of interrelated and overlapping tasks involving the examination and analysis of past, present, and future environmental, recreational, and socioeconomic conditions and trends. The master planning process uses a generalized conceptual framework, focused on four primary components as follows:

- Regional and ecosystem needs,
- Project resource capabilities and suitability,
- Expressed public interests that are compatible with Alvin R. Bush Dam and Kettle Creek Reservoir's authorized purposes, and
- Environmental sustainability elements.

The MP includes an environmental assessment (EA) and Finding of No Significant Impact (FONSI), which have been prepared in accordance with NEPA; regulations of the Council on Environmental Quality; and USACE regulations, including Engineer Regulation 200-2-2: Procedures for Implementing NEPA. The EA and FONSI are separate documents that provide an analysis of possible impacts associated with the Master Plan and can be found in Appendix E. The FONSI is also included at the front of this Master Plan.

1.4 DESCRIPTION OF PROJECT AND WATERSHED

The Alvin R. Bush Dam is located on Kettle Creek, about 8.4 miles upstream from the confluence of Kettle Creek with the West Branch Susquehanna River at Westport, Pennsylvania. Kettle Creek is a tributary of the West Branch Susquehanna River within the Susquehanna River Basin. The project is located in Clinton County within the Commonwealth of Pennsylvania, about ten miles west of Renovo, Pennsylvania (Figure 1-1).

The Alvin R. Bush Dam project maintains a conservation pool of approximately 159 acres including all lands in the vicinity up to elevation 841.0 feet Project Construction Datum (PCD). All elevations cited in this plan, unless otherwise noted, are referenced to the original PCD. In previous versions of the Alvin R. Bush Dam Water Control Manual, elevations were incorrectly referenced as National Geodetic Vertical Datum of 1929 (NGVD 29). In 2009, USACE began a Comprehensive Evaluation of Project Datums (CEPD). The CEPD effort was specifically intended to ensure that project elevations and datums are properly and accurately referenced to nationwide spatial reference systems used by other USACE Districts as well as federal, state, and local agencies. To that end, a new project benchmark was established and linked to the 1988 North American Vertical Datum (NAVD 88). To convert PCD elevation for Alvin R. Bush Dam and its physical components to NAVD 88, subtract 0.7 feet from the PCD elevation.

A total of 1,876 acres of land were acquired for the project, including 1,273 acres acquired in fee simple. The remaining 603 acres were acquired for flowage easements up to the maximum extent of the high flow pool at elevation 945 feet PCD. The reservoir is 2.2 river miles long during normal operations and approximately 9 river miles long at the spillway crest elevation. The area surrounding the project is characterized by steep, narrow, flat bottom valleys with well-wooded hills that rise 800 feet or more, to gently rolling plateau spurs. The hills are heavily forested, but the valleys are mostly in open land and generally used for farming. The lake and surrounding project lands are popular for boating, fishing, hunting, camping, and other outdoor recreation activities. Figure 1-2 shows a site map of the Alvin R. Bush Dam project area.

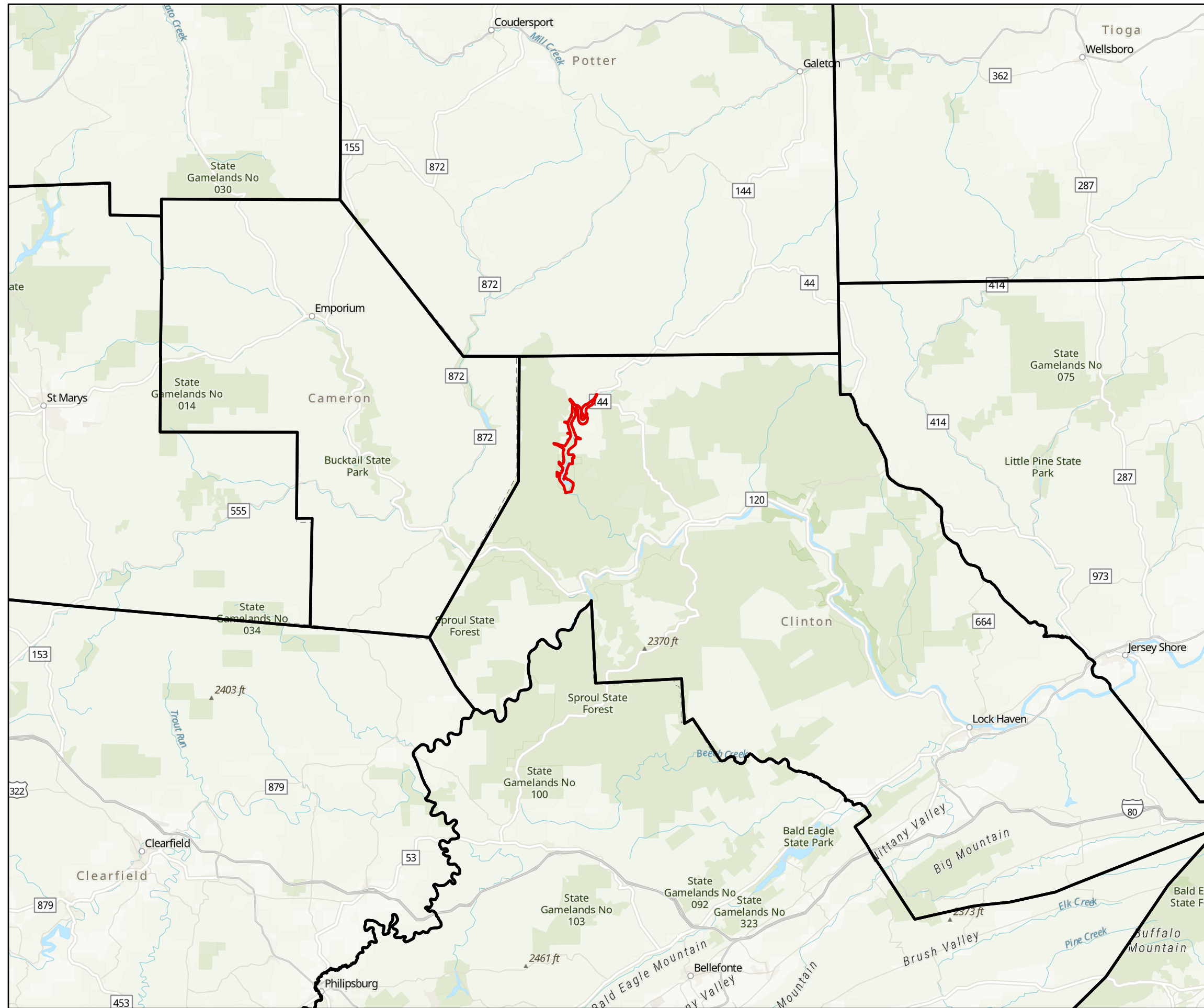


Kettle Creek Reservoir

The watershed above the dam site drains an area of approximately 226 square miles. The watershed is roughly rectangular in shape and averages about 8 miles in width and 28 miles in length. Elevations in the watershed range from 2,500 feet PCD at the northern edge of the watershed to 805 feet PCD in the channel at the bottom of the dam (USACE, 1998). The surrounding area is very sparsely populated and urban communities are small and scattered.

The dam is made of rolled earth fill with a concrete chute spillway in the right abutment. The outlet works consists of an intake structure, gate structure, transition section, tunnel, outlet structure, and outlet channel. Flow through the outlet works is controlled by three hydraulically operated slide gates.

Figure 1-1 Regional Vicinity

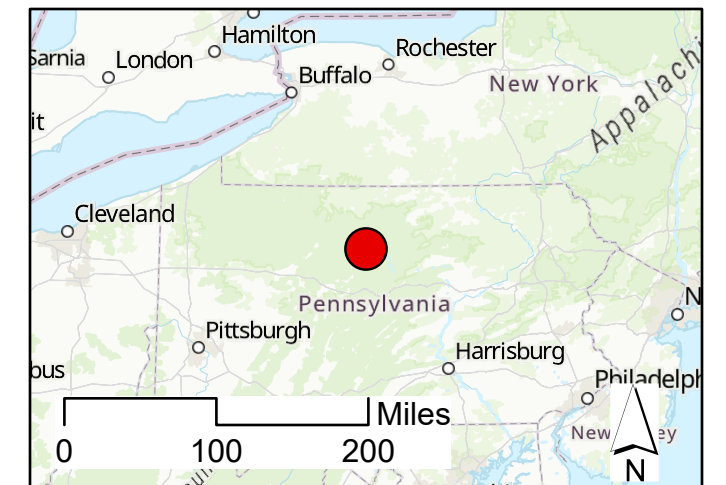


Alvin R. Bush
Master Plan Update

Regional Vicinity

Legend

- PA Counties
- Bush Study Area



Sources: Esri, HERE, Garmin, FAO, NOAA, USGS, © OpenStreetMap contributors, and the GIS User Community

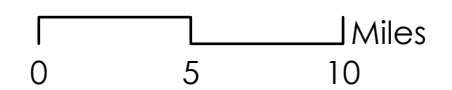
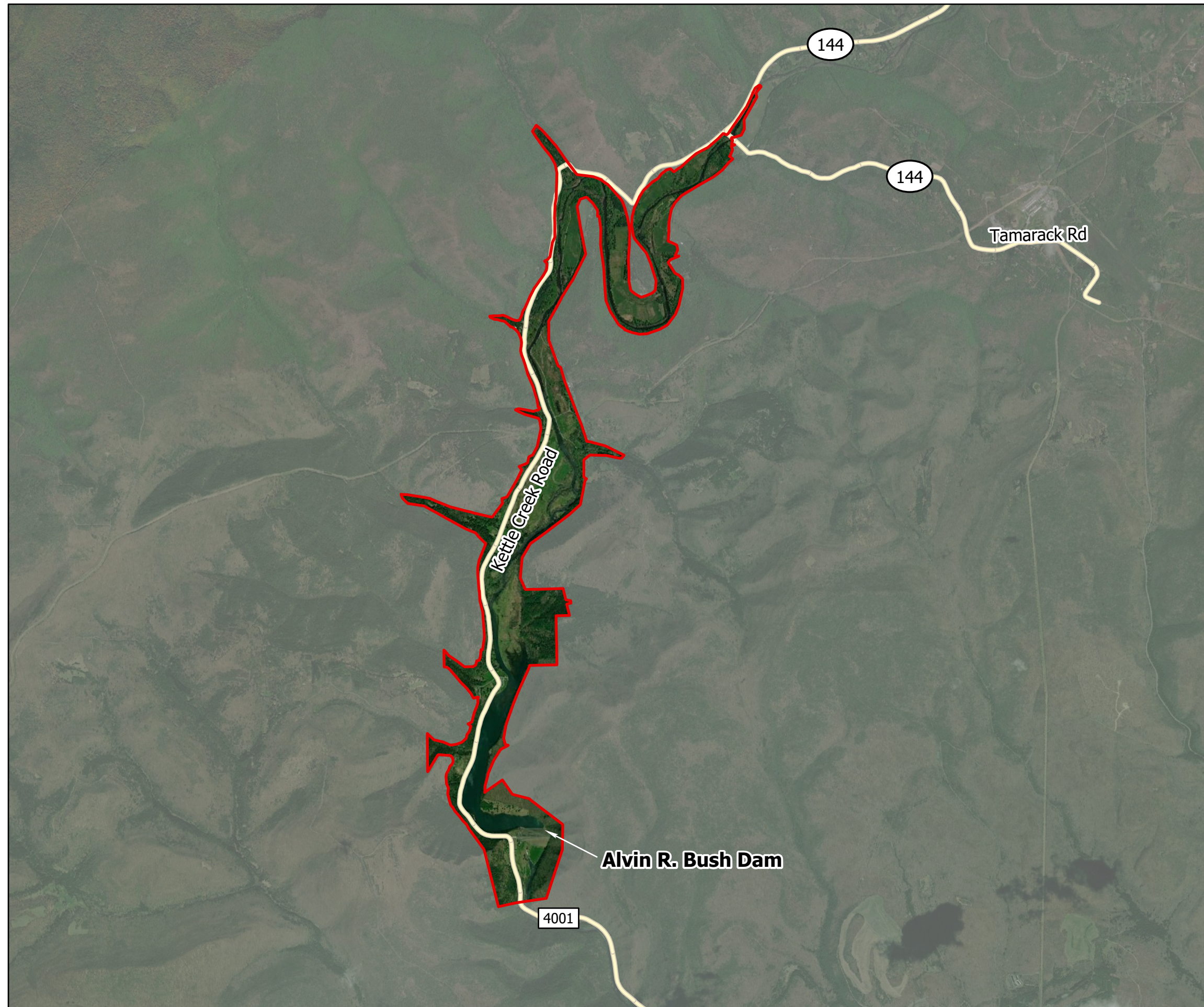


Figure 1-2 Site Vicinity



Alvin R. Bush
Master Plan Update

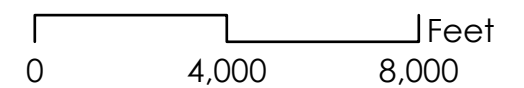
Site Vicinity

Legend

 Bush Study Area



Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community, Sources: Esri, HERE, Garmin, FAO, NOAA, USGS, © OpenStreetMap contributors, and the GIS User Community



1.5 DESCRIPTION OF THE RESERVOIR AND PROJECT STRUCTURES

The Alvin R. Bush Dam forms the Kettle Creek Reservoir. At the conservation pool level of 841 feet PCD, Kettle Creek Reservoir is 2.2 miles long, has a 4.5-mile long shoreline and a surface area of 159 acres. At this level, the reservoir stores 1,864 acre-feet of water. If the reservoir reaches the full flood control or spillway crest elevation (937 feet PCD), the reservoir surface area expands to 1,437 acres and stores approximately 75,000 acre-feet of water. The reservoir has a total storage capacity of 126,500 acre-feet at the top of dam, elevation 967.7 feet PCD. See Section 1.8, Table 1-1 for water storage capacity and related pertinent data at Alvin R. Bush Dam.



Kettle Creek Reservoir

1.5.1 Embankment/Dam

The Alvin R. Bush Dam is made of a rolled, earth-filled embankment and is approximately 165 feet above the streambed and 1,350 feet long. The base width is 850 feet, the top width is 25 feet, and the top elevation of the dam is 967.7 feet above PCD, which provides a freeboard of 5 feet above the spillway (USACE, 1964, 1987, 1998).

1.5.2. Spillway

The spillway is constructed in rock adjacent to the right abutment of the dam. The spillway consists of a converging chute with a concrete ogee structure and a crest length of 250 feet. The ogee is an overflow type of spillway. The spillway crest is at elevation 937.0 feet PCD, which is 96 feet above the conservation pool level. At design surcharge (elevation 963 feet PCD), the spillway capacity is 117,620 acre-feet. To date, the water level has not risen high enough for spillway flow to occur.

1.5.3. Flood Control Outlet Works

The outlet works consist of the following structures: a tower containing three hydraulically operated slide (flood) gates; a low flow bypass system that is connected to a 787 feet long horseshoe-shaped, concrete-lined tunnel; an outlet structure; and an outlet channel.

Intake transition: Concrete linings are provided for the sides and floor of the approach channel lining. The sidewall linings are flared to provide a transition from the rock cut to the trash rack entrance of the gate structure.

Gate Structure: The dry-well gate structure is in the upstream end of the outlet and is combined with the trash structure. Access to the gate operating chamber has been provided by a vertical tower extending from the substructure to the superstructure. A service bridge provides passage from the top of the dam to the superstructure. The principal structural features of the gate structure consist of a substructure, and intake tower, a superstructure, and a trash-rack structure. The substructure supports the intake tower and houses the hydraulically operated service slides gates and appurtenances. The superstructure or operating house surmounting the intake tower, is an octagonal reinforced concrete structure with a flat roof, an operating floor, and an elevator machinery floor.

A reinforced concrete trash structure is provided at the upstream end of the outlet works to catch trees and other large debris that could not pass through the gate openings. The structural elements consist of reinforced concrete training walls, horizontal concrete encased steel trash rack beams, vertical sloping concrete trash rack bars, dividing piers, a working platform, and a floor slab.

Tunnel: A 13-foot by 13-foot, concrete lined, horse-shoe shaped tunnel was driven through rock from the transition approach tunnel to the concrete outlet structure. The tunnel was driven through hard gray and red sandstone with some softer gray and red siltstone.

1.5.4. Flood Control Outlet Works Stilling Basin

This structure is located at the downstream end of the tunnel to prevent damage to the tunnel by erosion and to provide a transition from the outlet tunnel to the outlet channel. The structure consists of an anchored concrete wall lining and floor slab which were placed against a rock surface. Anchorage is proved through steel dowel bars grouted into drill holes in the rock.



Alvin R. Bush Dam Stilling Basin and Discharge Channel

1.5.5. Outlet Works Discharge Channel

The diverted flow of the river as well as the water released from the reservoir flows from the outlet structure through an outlet channel and is discharged into the natural river channel downstream from the dam. The tunnel and channel were designed so that the flow enters the river at a sufficient distance down-stream from the toe of the dam to prevent

scouring. The outlet channel was excavated in rock and overburden. It is 30 feet wide and has side slopes of four feet vertical to one foot horizontal in rock and one foot vertical to two feet horizontal in overburden. A 15-foot wide berm has been placed at the surface of the rock on both sides of the channel.

1.6 PROJECT ACCESS

Project access is through U.S. Highway 120, which runs between Ridgway, Pennsylvania on the west and Lock Haven, Pennsylvania on the east. Interstate 80 passes within 12 miles of Lock Haven and provides ready access to the area from the east and west. From U.S. Highway 120 at Westport, Kettle Creek Road runs northwesterly along Kettle Creek and along the west edge of the reservoir. To the north, the area is served by U.S. Highway 6, which runs east to west across the Commonwealth. From U.S. Highway 6 at Galeton, Pennsylvania, State Route 144 runs south to intersect Kettle Creek Road near the northern edge of the reservoir.

1.7 PERTINENT PRIOR REPORTS AND RELATED STUDIES

Listed below are the primary design documents and reports associated with the initial construction and land acquisition, as well as relevant related studies and reports to the Master Plan update. The references list found in Appendix B contains the full annotation for each report or study.

- Alvin R. Bush Dam Operation and Maintenance Manual, Dated 1962
- Alvin R. Bush Dam Master Plan, Dated 1964
- Alvin R. Bush Dam Master Manual, Dated 1969
- Alvin R. Bush Dam Potential Storage for Consumptive Use, Dated 1979
- Alvin R. Bush Dam Master Manual, Dated 1987
- Master Manual for Reservoir Regulation Susquehanna River Basin, Volume II- Lower Basin, Appendix A, Alvin R. Bush Dam, Dated 1998
- Kettle Creek State Park Management Plan, Dated 2018.

1.8 PERTINENT PROJECT INFORMATION

Table 1-1 below provides pertinent information regarding existing storage capacity at Alvin R. Bush Dam. Based on a collection of geographic information system (GIS) data for this Master Plan, the water surface acreage at lake elevation 841 feet PCD was established to be approximately 161 acres, which is slightly higher than the current acreage of 159 acres that was established through a hydrographic survey completed in 2000. Until a detailed land survey is completed to determine the impact (i.e., increase of acres) to the surrounding recreational land classifications, this Master Plan update will maintain the acres determined from the GIS data collected. Table 1-1 reflects the most up to date storages and acreages based on the 2000 hydrographic survey, while Table 1-2 is based on collected GIS data for the proposed land classifications. Section 4.2.1 discusses the prior land classifications and associated acreages.

Table 1-1: Water Storage Capacity and Related Pertinent Data at Alvin R. Bush Dam.

	Elevation (Feet PCD*)	Storage (Acre-feet)	Acres
Top of Dam	968	126,500	1,928
Maximum Pool (Design Surcharge)	963	117,620	1,848
Full Flood Control (Spillway Crest)	937	74,941	1,437
Conservation Pool	841	1,864	159
Inactive Pool (Dead Storage)	810	1	0.3

Source: Data based on 2000 hydrographic survey

Table 1-2 provides pertinent information regarding acreages by land classifications at the Alvin R. Bush Dam Project. Acreages were calculated by GIS data.

Table 1-2: Proposed Land Classifications at Alvin R. Bush Dam.

Land Classifications	Acres
Project Operations	173.7
High Density Recreation	173.9
Multiple Resource Management	
Low Density Recreation	719.6
Water Surface	
Restricted	0.2
Open Recreation	160.8
Total	1,228

Source: GIS analysis based on 1964 Master Plan maps and CENAB, Real Estate Division Documentation.

2 EXISTING CONDITIONS & ANALYSIS

2.1 PHYSIOGRAPHIC SETTING

2.1.1 Ecological Setting

The Alvin R. Bush Dam at Kettle Creek Reservoir is located within the U.S. Environmental Protection Agency's (USEPA) Unglaciated Allegheny High Plateau level IV ecoregion and the North Central Appalachian level III ecoregion covering a large portion of North-Central Pennsylvania (Woods, Omernik, and Brown 2003). The Unglaciated Allegheny High Plateau ecoregion is a deeply dissected, high relief, rugged area characterized by extensive forests, a short growing season, and nutrient poor soils. Topographical features include plateau remnants, rounded hills, narrow valleys, and numerous waterfalls. Oil wells are also common in this ecoregion as the area accounts for 50 percent of all Pennsylvania oil production (Woods, Omernik, and Brown 1999). The Leidy gas field, a source of natural gas, also lies within the Allegheny High Plateau ecoregion, with portions located in Clinton and Potter Counties (Harper 1990).

2.1.2 Climate

Kettle Creek Reservoir falls within the National Oceanic and Atmospheric Administration (NOAA) Climate Division 36-07 (NOAA n.d.). This area is characterized by a temperate climate, with average annual temperatures between 39- and 61-degrees Fahrenheit and an average annual precipitation of 39.7 inches. The greatest monthly precipitation occurs from June through September. Most snowfall in the area occurs between December and February, with the area receiving on average 32 inches of snowfall a year (U.S. Climate Data 2020).

2.1.3 Topography, Geology, and Soils

Kettle Creek Reservoir is located within the Deep Valleys Section of the Appalachian Plateaus Province, which is characterized by very deep, angular valleys with some broad to narrow uplands. The area is of moderate to very high relief, with a minimum elevation of 560 feet above sea level, and a maximum elevation of 2,560 feet above sea level. The underlying rock types include sandstone, siltstone, shale, and conglomerate. The Deep Valleys Section originated through fluvial erosion and periglacial mass wasting (Sevan 2000).

The Reservoir is in a narrow valley with steep slopes surrounded by high ridges. The surrounding slopes and ridges are heavily forested. The valley floor is moderately wooded and consists primarily of abandoned farms and pasture. The surrounding area is densely forested, mountainous, and scenic. The West Branch Valley, westward from Lock Haven to Emporium along U.S. Highway 120, has been designated the Bucktail Trail Scenic Byway (USACE 1964).

In the immediate area adjacent to Alvin R. Bush Dam and Kettle Creek Reservoir, soils are primarily mapped as belonging to the very steep, very to extremely stony Ungers-Meckesville complex, Hazleton-Laidig complex, and Leck Kill channery silt loam (UpF, HoF, and LmD) as well as very steep Hustontown silt loam (HuD), and Rock outcrop-Rubble land complex (RaF). Areas further north on the valley floor bordering Kettle Creek are mapped primarily as Barbour-Craigsville complex and Atkins silt loam (Bb and At), both of which are very gently sloping.

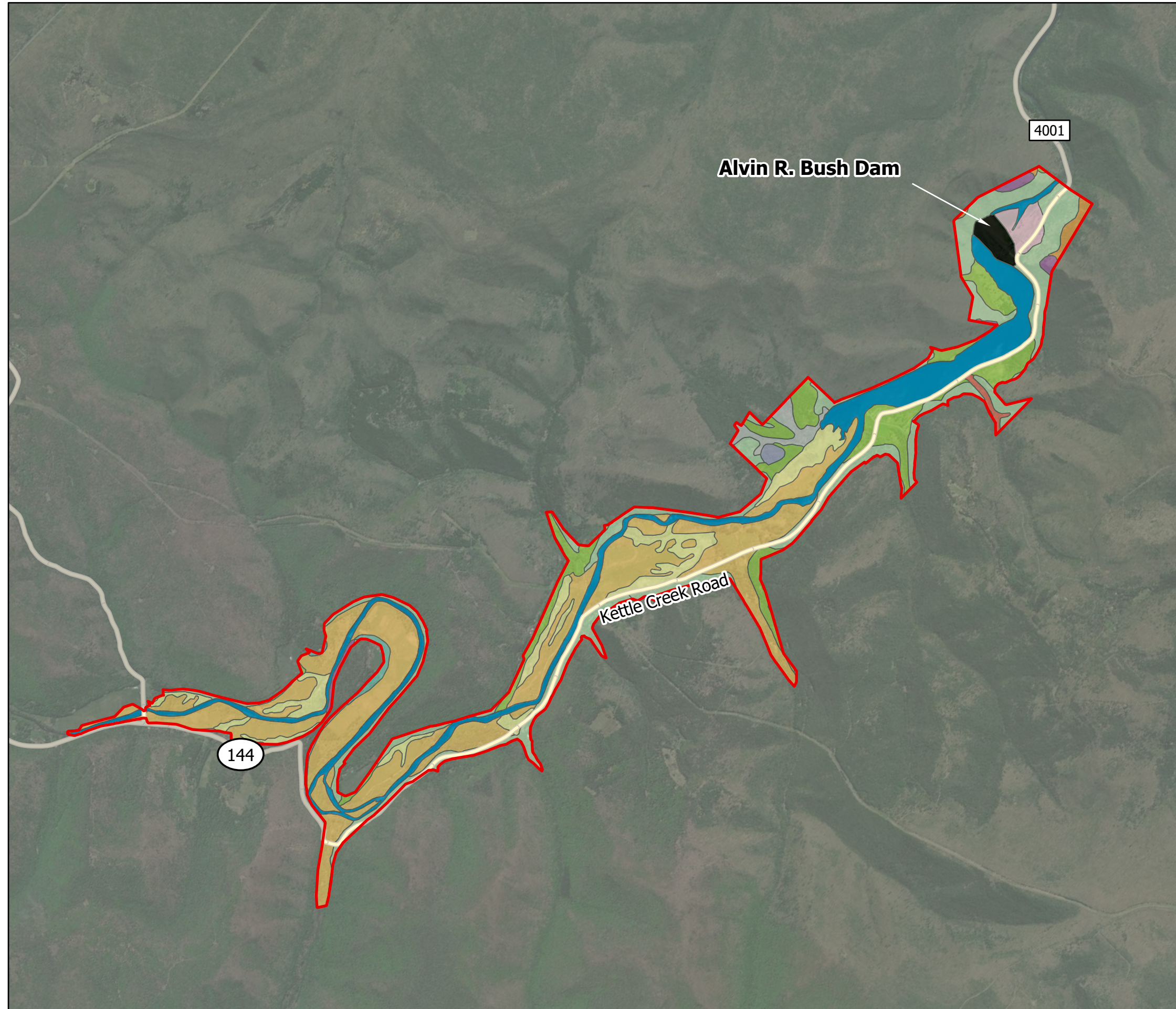
Additional soil types within the Alvin R. Bush Dam project boundary include the very steeply sloped and very stony Meckesville chanery loam (MhD), moderate to very steep Allegheny silt loam (AfD), slightly-sloped Ungers loam, Calvin channery silt loam, and Hustontown silt loam (UnB, CaB, and HuBf) and Craigs ville gravelly loam (Cr; See Figure 2-1; NRCS n.d.(b)).

Of the soils within the area of interest, 43.6 percent are considered Pennsylvania Farmland of Statewide importance, including At, Bb, CaB, and Cr. Additionally, 0.5 percent of soils in the area are categorized as Prime Farmland, including UnB and HuB (NRCS n.d.(a)).

Table 2-1. Soils at Alvin R. Bush Dam (NRCS, n.d.).

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI	Prime/Unique Farmland Status
AfD	Allegheny silt loam, 8 to 25 percent slopes	13.5	0.7%	Not Prime Farmland
At	Atkins silt loam, 0 to 3 percent slopes, frequently flooded	164.5	8.8%	Farmland of Statewide Importance
Bb	Barbour-Craigs ville complex	634.9	33.9%	Farmland of Statewide Importance
CaB	Calvin channery silt loam, 3 to 8 percent slopes	7.4	0.4%	Farmland of Statewide Importance
Cr	Craigs ville gravelly loam	9.0	0.5%	Farmland of Statewide Importance
DAM	Dam	25.8	1.4%	n/a
HoF	Hazleton-Laidig complex, 25 to 50 percent slopes, extremely stony	14.8	0.8%	Not Prime Farmland
HuB	Hustontown silt loam, 3 to 8 percent slopes	0.3	0.0%	All areas are prime farmland
HuD	Hustontown silt loam, 15 to 25 percent slopes	225.4	12.0%	Not Prime Farmland
LmD	Leck kill channery silt loam, 8 to 25 percent slopes, very stony	30.8	1.6%	Not Prime Farmland
MhD	Meckesville chanery loam, 8 to 25 percent slopes, very stony	30.5	1.6%	Not Prime Farmland
RaF	Rock outcrop-Rubble land complex, 50 to 90 percent slopes	18.8	1.0%	Not Prime Farmland
UnB	Ungers loam, 3 to 8 percent slopes	9.6	0.5%	All areas are prime farmland
UpF	Ungers-Meckesville complex, 25 to 50 percent slopes, extremely stony	388.7	20.8%	Not Prime Farmland
W	Water	298.8	16.0%	n/a

Figure 2-1 Soils Analysis



Alvin R. Bush
Master Plan Update

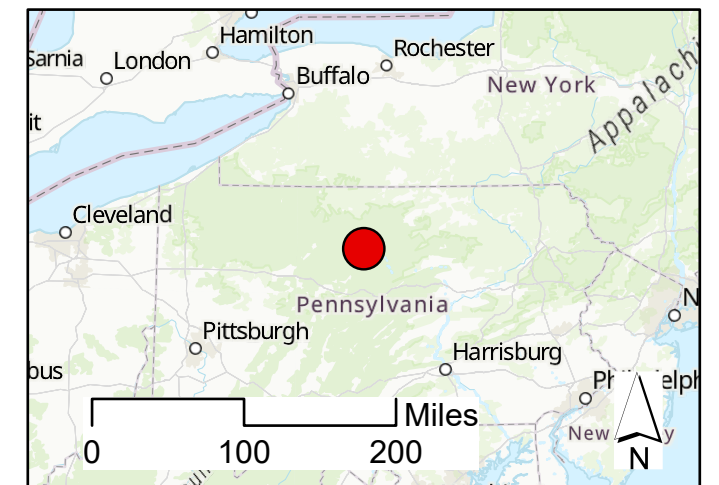
Soils Analysis

Legend

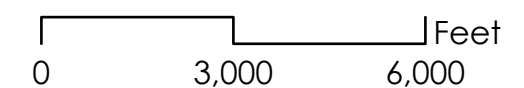
Bush Study Area

Soils

- AfD - Allegheny silt loam, 8 to 25% slopes
- At - Atkins silt loam, 0 to 3% slopes
- Bb - Barbour-Craigsville complex
- CaB - Calvin channery silt loam, 3 to 8% slopes
- Cr - Craigsville gravelly loam
- Alvin R. Bush Dam
- HoF - Hazelton-Laidig complex, 25 to 50% slopes, extremely stony
- HuB - Hustontown silt loam, 3 to 8% slopes
- HuD - Hustontown silt loam, 15 to 25% slopes
- LmD - Leck kill channery silt loam, 8 to 25% slopes, very stony
- MhD - Meckesville channery loam, 8 to 25% slopes, very stony
- RaF - Rock outcrop-Rubble land complex 50-90% slopes
- UnB - Ungers loam, 3 to 8% slopes
- UpF - Ungers-Meckesville complex, 25 to 50% slopes, extremely stony
- W- Water



Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community, Sources: Esri, HERE, Garmin, FAO, NOAA, USGS, © OpenStreetMap contributors, and the GIS User Community



Review by the Pennsylvania Department of Topographic and Geologic Survey identified two unique geologic features of special concern. These geoheritage sites include "The Bunk," which is an elongated knob-like feature, and "Oxbow Bend," the ancient Kettle Creek meander bend surrounding The Bunk (See Appendix G). Both features are located within project flowage easements.

2.1.4 Hydrology and Groundwater

The Bush Dam is located on Kettle Creek approximately 8.4 miles upstream of its confluence with the West Branch Susquehanna River at Westport, PA. Bush Dam controls approximately 226 square miles, or 92 percent of the Kettle Creek Watershed. Additional details on the drainage area controlled at Bush Dam can be found in Table 2-2 (USACE 1964).

The primary tributaries of Kettle Creek include Hammersly Fork and Little Kettle Creek (Google Maps 2020). There are two small dams upstream in the watershed; one is a 4-foot high water supply dam on Elk Lick Run and the other is the 15-foot high recreational Old Bull Dam on Kettle Creek. These have minimal storage and their effect on Alvin R. Bush Dam is negligible. There are no major water control structures on Kettle Creek downstream of the Bush Dam or on the West Branch Susquehanna River below the confluence with Kettle Creek. There is a 6-foot high recreation dam at KCSP just below the dam, but it does not affect the regulation of Bush Dam (USACE 1987).

2.1.5 Sedimentation and Shoreline Erosion

Two areas at the project have minor to severe erosion problems due to soil characteristics, steep topography, and land use-. The areas of erosion that affect operation and recreational use of the project are described in the following paragraphs.

Day Use/Boat Mooring Area: Minor erosion is occurring in the day use area along the lake shore, both at the boat mooring area where the bank height is close to the waterline, and on the taller north-east facing banks, located north of the boat ramp. Riprap has been used in the past to stabilize some areas of the northeast-facing banks, however other areas are unvegetated and continuing to erode.

Spillway wall between access road and spillway entrance: Many years of erosion have deteriorated the bedrock at the top of the western spillway wall between the operations access road bridge and spillway entrance. Continued erosion threatens the spillway and Kettle Creek Road. USACE is currently planning a project to stabilize the wall and the shoulder of Kettle Creek Road by constructing a concrete wall similar to a wall currently in place south of the access road bridge. The contract for construction will likely be awarded in FY 2023, with construction likely to begin in FY 2024. Dates are dependent on receipt of sufficient funding. Construction could take several years.

2.2 ECOREGION AND NATURAL RESOURCES ANALYSIS

2.2.1 Vegetation

According to the U.S. Forest Service (USFS), North Central Pennsylvania is characterized by more forest than any other cover type. The primary forest type is deciduous forests, with significant amounts of mixed and evergreen forests. Other major cover types include pasture/hay and cultivated crops. Nearly 50 percent of the forests in North Central Pennsylvania belong to the maple/beech/birch group. The primary species within this group include red maple (*Acer rubrum*), sugar maple (*A. saccharum*), and black cherry (*Prunus*

serotina). Other forest groups present in North Central Pennsylvania are oak/hickory, white pine/red pine/hemlock, and aspen/birch groups.

Between 2009 and 2014, North Central Pennsylvania gained approximately 40,000 acres of forest, but lost approximately 70,000 acres, primarily due to development and conversion to agriculture, for a net decrease in forest acres of 0.6 percent. While most of Pennsylvania's forests are privately owned, North Central Pennsylvania has more federal and state-owned forests than any other Pennsylvania Region as well as a high degree of forest connectivity. This is primarily due to the presence of the Allegheny National Forest, which covers approximately 513,000 acres of land (USFS 2017).

2.2.2 Wetlands

Braided channels can be found throughout the watershed as well as relatively small forested/scrub-shrub and emergent wetlands (USFWS 2020). Wetlands are common in the flat-bottom valley of the project area, mostly north of Kettle Creek Reservoir. A total of 56 freshwater emergent, freshwater forested/scrub shrub, and pond wetlands occur within the project area totaling approximately 60 acres, or 3 percent of the project's land area (Table 2-2; USFWS 2020, USACE n.d.).

Table 2-2. Wetland areas at Alvin R. Bush Dam (USFWS 2020).

Wetland Type	Acres	Percent of AOI
Freshwater Emergent Wetland	46.3	2.5%
Freshwater Forested/Shrub Wetland	11.8	0.6%
Freshwater Pond	1.8	0.1%
Total	59.9	3.2%
AOI	1,872.9	

2.2.3 Fish and Wildlife Resources

Kettle Creek Reservoir is remote and supports many habitat types including wetlands, grassy areas, fields, edges, and a variety of forest types, which attract several species of wildlife. Mammalian wildlife found on Reservoir lands include black bear (*Ursus americanus*), elk (*Cervus canadensis*), white-tailed deer (*Odocoileus virginianus*), bobcat (*Lynx rufus*), river otter (*Lontra canadensis*), fisher (*Pekania pennanti*), grey squirrel (*Sciurus carolinensis*) and groundhogs (*Marmota monax*).

Common avian species include a variety of waterfowl and wading birds, woodpeckers, and songbirds, as well as common game species including wild turkey (*Meleagris gallopavo*) and ruffed grouse (*Bonasa umbellus*).

Kettle Creek Reservoir is a popular trout and bass fishing area, and many other species of fish, including brown bullhead (*Ameiurus nebulosus*), sucker (Catostomidae), and many species of panfish, can be found in the reservoir (DCNR, 2018).



Elk



Black Bear



Bald Eagle

2.2.4 Threatened and Endangered Species

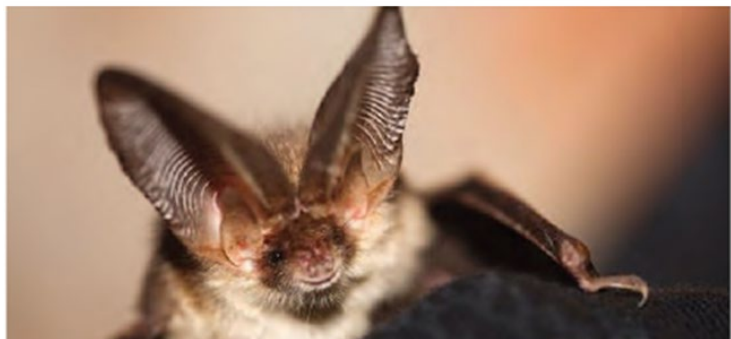
2.2.4.1 Federally listed species

As of 2021, 3 federally listed threatened or endangered species are known to exist within the project area, the Indiana bat (*Myotis sodalis*), the Northern long-eared bat (*Myotis septentrionalis*), and Northeastern bulrush (*Scirpus ancistrochaetus*) (Appendix E).

The Indiana bat is a small bat weighing only one-quarter of one ounce that was listed in 1967 and remains listed as federally endangered. Indiana bats hibernate in caves and mines in the winter. Summer Indiana bat habitat includes small to medium river and stream corridors with well-developed riparian woods, woodlots within 1 to 3 miles of small to medium rivers and streams, and upland forests. Major threats to their populations include winter disturbance of hibernacula, commercialization of caves, pesticides and other contaminants, summer habitat destruction and mortality due to the white-nose syndrome fungus (*Pseudogymnoascus destructans*; USFWS 2019).



Myotis sodalis, Indiana Bat



Myotis septentrionalis, Northern long-eared bat

Northern long-eared bats are medium sized bats (about 3-4 inches in length) associated with mature, interior forest environments. Unlike most other bats, Northern long-eared bats forage along wooded hillsides and ridgelines instead of above valley-bottom streams and riparian forest edges. Populations at northern long-eared bat hibernation sites (e.g, caves and mines) have declined by 99 percent since the discovery of white-nose syndrome and it is now listed as threatened throughout all of its range. Forest fragmentation and conversion are also major threats to the species due to its association with large blocks of mature forest (USFWS n.d.)

Northeastern bulrush is a leafy, perennial herb of the sedge family (Cyperaceae) approximately 80 to 120 centimeters in height. When flowering, it bears an inflorescence with distinctly arching rays and clusters of brown spikelets. Northeastern bulrush is found at the edge of natural ponds, wet depressions, or shallow sinkholes less than one acre in size. These wetlands primarily occur in low-lying areas within areas with hilly topography, and have seasonally variable water levels ranging from inundation to desiccation (USFWS n.d.)

2.2.4.2 Pennsylvania State Threatened & Endangered Species

According to the Pennsylvania Natural Heritage Program screening tool, the state threatened Allegheny woodrat (*Neotoma magister*) is known to occur in the project area (Appendix E).

The Allegheny woodrat is listed as threatened in Pennsylvania and vulnerable nationally. They are related to packrats found in the Western United States and can be distinguished from common Norway rats (also "brown rat"; *Rattus norvegicus*) based on their furred tail, larger ears and eyes, heavier head, and longer whiskers. Their preferred habitat includes extensive expanses of abundant, closely spaced surface rock surrounded by unfragmented forest. While they may be found in deciduous, coniferous, or mixed forests, mast-producing trees are important as a food source. Rocky areas are important habitat for Allegheny woodrats as they nest deep within rock outcrops, use rock crevices and protected ledges for storing food, and establish latrines on flat rock surfaces protected by an overhang. Several factors are thought to have contributed to the population's decline including the decline of the mast-producing trees, such as the American chestnut due to chestnut blight and oak trees due to gypsy moth infestations; infection by the racoon roundworm parasite (*Baylissacaris procyonis*). Other factors include predation pressure from increasing Great Horned Owl populations; competition with growing North American porcupine (*Erethizon dorsatum*) populations for habitat; and forest fragmentation. Populations in some of the Allegheny woodrat's range, including North Central Pennsylvania, are thought to be relatively healthy (Butchkowski 2014).

2.2.5 Other Protected Species

Bald eagles (*Haliaeetus leucocephalus*), a previously federally and state-listed endangered species, were removed from the federal list in August 2007 and Pennsylvania's list in 2013. Although this species is not listed as an endangered or threatened species, it is protected under the Bald and Golden Eagle Protection Act, as noted by the United States Fish and Wildlife Service (USFWS) in Appendix E. According to Cornell Lab of Ornithology's eBird.org (n.d.) and KCSP staff, both immature and adult bald eagles were sighted at Kettle Creek Reservoir during the 2020 breeding season.

The timber rattlesnake (*Crotalus horridus*) is a state protected species in Pennsylvania. Killing of timber rattlesnakes is prohibited by the Pennsylvania Fish and Boat Commission (PFBC). Timber rattlesnakes are large snakes of the pit viper family that can be identified by their "V"-shaped dark bands on a grey, yellow, black, or brown body. In Pennsylvania, timber rattlesnakes are typically found at elevations greater than 1,800 feet. They prefer southern-

facing upland forested areas with talus slopes, rocky ledges and outcrops, and boulder fields, which are used for basking (thermoregulation), and dens. Threats to timber rattlesnake populations include human activities related to habitat alteration, overhunting and poaching (Urban, 2014).

2.2.6 Invasive Species

Invasive species are defined as non-native species whose introduction into an ecosystem is likely to cause environmental, human, or economic harm. Non-native species may not be affected by existing predators, disease, or other limiting factors in their introduced range and therefore may thrive and outcompete native species. Non-native invasive species are therefore often difficult and expensive to control. Alvin R. Bush Dam, Kettle Creek Reservoir, and associated lands are experiencing several terrestrial invasive species, some of which are actively managed by KCSP staff. No aquatic invasive species are documented within the Reservoir. Some of the invasive and nuisance species found at the project area are described in the paragraphs below.

2.2.6.1 Plants

Several non-native invasive plant species can be found on project lands, including Japanese knotweed (*Polygonum cuspidatum*), reed canary grass (*Phalaris arundinacea*), autumn olive (*Elaeagnus umbellata*), multiflora rose (*Rosa multiflora*), garlic mustard (*Alliaria petiolata*), and Japanese barberry (*Berberis thunbergii*). KCSP operators actively manage many of these species, including Japanese knotweed, reed canary grass, autumn olive, and multiflora rose, in recreation areas. Autumn olive, multiflora rose, and reed canary grass are currently being treated with herbicides in a proposed wildlife viewing field located across Kettle Creek Road from the Equestrian Trailhead, and native shrubs are being planted in their place.

2.2.6.2 Insects

Currently, the project area has few problems with nonnative invasive insect pests; however invasive insects have been damaging in the past and are likely to cause damage in the future. The emerald ash borer (*Agilus planipennis Fairmarie*), for example, was destructive for many years at the project area before the host species' (ash; *Fraxinus* spp.) populations became too low to support emerald ash borer populations. Invasive insect pests found in surrounding regions that may affect the project area in the future include the hemlock wooly adelgid (*Adelges tsugae*) and the spotted lanternfly (*Lycorma delicatula*).

2.2.6.3 Birds

Both invasive and native nuisance bird species are present in the project area. The European starling (*Sturnus vulgaris*) was introduced to Central Park, New York City in 1890 and is now a common resident of both urban and rural areas in the United States. European starlings outcompete native cavity nesting species by evicting birds occupying a cavity and using it for their own nests (USDA APHIS 2017). Starlings are present in the project area but are not actively managed.

Canada geese (*Branta canadensis*) are common along both North American coastlines and throughout the central and lower United States and may exist in resident or migratory populations. Large populations of resident Canada geese can become a nuisance for many reasons, including causing damage to lawns, marshes, and cropland through overgrazing (USDA APHIS 2011). Canada geese have been historically problematic at the project area and have caused elevated *E. coli* levels in the lake. KCSP conducts nonlethal population control including harassment and egg addling.

2.2.7 Water Quality

The watershed controlled by the Alvin R. Bush Dam is approximately 95 percent forested, and nearly all the forested lands are state forests, with a small amount of farming in the basin (USACE 1964). Sedimentation is, however, an issue within the lake. The watershed receives 40 inches of precipitation, and 25 to 50 inches of snow on average annually, depending on elevation. The water quality of Kettle Creek Reservoir is generally very good; however, some concerns exist. These include a buildup of submerged aquatic vegetation and heavy sedimentation, both of which create problems for boaters in the summer, and phosphate concentrations consistently higher than USEPA water quality maximum levels.

Water quality is not a specific authorized project purpose for Alvin R. Bush Dam; however, downstream water quality is influenced in two ways. First, acid mine drainage introduced to West Branch Susquehanna River is diluted by water released from Bush Dam. Historically, dam releases were deliberately made for the purpose of mitigating acid slug formation; however, this has not been needed in recent years as the occurrence of acid slugs is less frequent. Second, flow augmentation from the Dam supports a healthy aquatic environment and fisheries downstream, especially during low flow periods (USACE 2019, DCNR 1996).

The Pennsylvania Department of Environmental Protection (PADEP) lists Kettle Creek Reservoir as "Impaired" for "Fish Consumption" and "Aquatic Life." Fish consumption is impaired from atmospheric deposition of mercury, and aquatic life is impaired by low dissolved oxygen from natural sources. Potential sources of contaminants or nutrient enrichments include a wastewater treatment facility at KCSP that has been cited for violations to biological oxygen demand, chlorine, fecal coliform, and total suspended solids and five active Marcellus Shale hydraulic fracturing wells within the watershed (USACE 2019).

2.3 CULTURAL RESOURCES

2.3.1 Prehistoric

General consensus places the first settlement of the Pennsylvania region during the Paleo-Indian Period (16,500 – 10,000 years Before Present (BP)), although the date of the first inhabitants is debated. Various studies have dated it to anywhere between 12,500 BP to as early as 16,500 BP (Carr and Moeller 2015). The prehistory of the Alvin Bush Dam project area generally conforms to that of the Mid-Atlantic region and is divided into three main time periods: Paleo-Indian (16,500 – 10,000 BP), Archaic (10,000 BP – 3,000 BP), and Woodland (3,000 BP – 400 BP) (USACE 2011). The periods are normally characterized in the archaeological record as changes in material culture, such as variations in stone tool assemblages or pottery.

The Paleoindian Period is typically characterized by the presence of fluted spear points. Population groups during this time generally practiced less sedentary subsistence patterns by moving around to areas with predictable food resources. Some evidence also points to Paleoindians preferring high quality stone to make their tools. Archaeologists tracing sources of this stone have documented a range of over 200 miles per year in movement (PHMC 2015).

The Archaic Period is divided into the Early (10,000 BP – 8500 BP), Middle (8500 BP – 5000 BP), and Late (5000 BP – 3800 BP) Periods, with a Transitional Period (3800 BP– 2800 BP) immediately preceding the Woodland Period. Population groups during this time practiced increased sedentary hunting and gathering routines, ultimately establishing base camps with special purpose camps located around them (GAI 2002:65). Base camps were typically located on broad terraces along major streams, with smaller satellite sites situated along tributaries. As

population increased through time, so did the utilization of locally available resources such as hickory, walnut, hazelnut, and acorn.

The Transitional Period represents the change from the Late Archaic to the Early Woodland, and is characterized by an increase in sedentism, intensification of food procurement and processing, and distinctive technological changes, such as rhyolite importation and the change to broad spear point types (USACE 1998:4). An increased use in steatite bowls is also noted during this period, indicating a desire to collect and store seasonally available foods (USACE 2011).

The Woodland Period is marked by the presence of pottery and can be divided into the Early (3000 BP – 2300 BP), Middle (2300 BP – 1000 BP), and Late (1000 BP– 400 BP) Periods. The frequency of upland sites increases during this time, as groups became increasingly more sedentary. Settlement continued to rely on more permanent base camps, with specialized camps for hunting or lithic collection and reduction. By the Late Woodland, there is an increased use and development of agricultural resources such as maize, squash, and beans (USACE 2011).

2.3.2 Historic

The first Europeans arriving in the area were met by the Delaware or Lenni Lenape Indians, who were previously in conflict with the Susquehannocks and the Iroquois Nations (Linn 1883). The Lock Haven area was inhabited by the Munsee division of the Delaware, who lived on Great Island and were prominent in Clinton County (Miller 1966).

Clinton County was purchased from the Iroquois by the Commonwealth in 1768 and was opened for purchase by settlers in 1769. The first European settler in Clinton County was Cleary Campbell, who arrived from the Juniata region (Linn 1883). In 1777, Indian and settler relations declined as British forces allied themselves with local Indian populations. By the end of 1778, the county had been vacated by almost every settler due to more frequent raids. It was not until 1783 that European settlement returned to its previous extent (Miller 1966).

Canal construction grew popular in Pennsylvania during the early to mid-1800s. By 1835, the West Branch Division of the Pennsylvania Canal had been constructed off the Susquehanna River at Northumberland and moved through present-day Lock Haven towards Farrandsville. Another important industry in this area during the 1800s was the collection and processing of timber. With the high demand for quality wood, the lumber trade thrived and by 1830 had become a prominent business. By 1860, Pennsylvania was the leading producer of timber (Miller 1966).

Beginning in the 1950s, large areas of the Kettle Creek floodplain were purchased by the federal government for the construction of the Kettle Creek Dam and Reservoir, now referred to as the Alvin R. Bush Dam.

2.3.3 Previous Investigations at the Lake

Ten cultural resources investigations have occurred at Alvin Bush Dam. Eight of these were part of National Historic Preservation Act (NHPA) compliance actions, while two were conducted as part of informant or amateur surveys. Table 2-3 lists known cultural resources investigations and their findings retrieved from the Pennsylvania Historical and Museum Commission's Cultural Resources Geographic Information System. To date, a majority of the federal property above the flood pool has not been archaeologically investigated.

Table 2-3. Previous Cultural Resource Investigations.

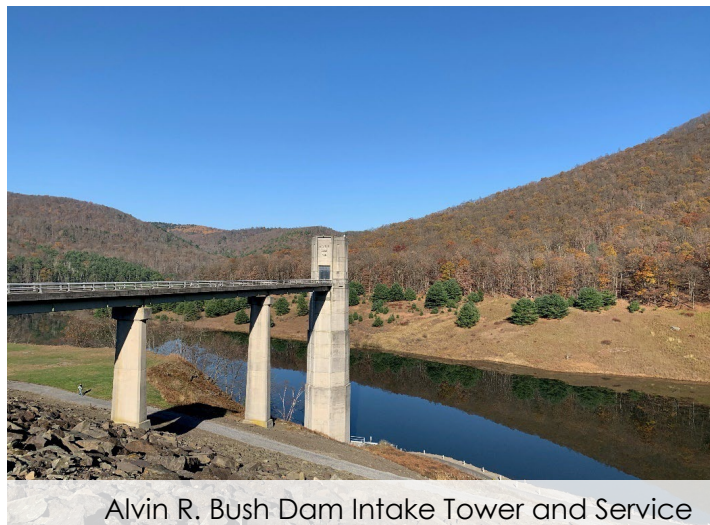
Date	Name	Surveyor(s)	Type	Results
1973	Charles Cross Collection	Charles Cross	Informant/Amateur survey	Documentation of sites 36CN88, 36CN89, 36CN90, 36CN91, 36CN92, and 36CN93
1985	Cultural Resources Survey for the Proposed Ohio Interstate Pipeline: Pennsylvania Segment, Docket No. CP84-318, ER No. 84-1506-042-B	Ecology and Environment, Inc.	Phase I NHPA compliance	No sites documented in Alvin Bush Dam
1990	Phase I Cultural Resources Report for Proposed Natural Gas Pipeline TL-400 Extension and TL-479 Extension (86 Miles) and Related Facilities in Pennsylvania	Bergman, Christopher et al.	Phase I NHPA compliance	Documentation of sites 36CN165 and 36CN199
1991	Addendum To: Phase I Cultural Resources Report for Proposed Natural Gas Pipeline TL-400, Extension 1, and TL-479, Extensions I and II, (86 Miles) and Related Facilities in Pennsylvania	Clifford, Laura	Phase I and II NHPA compliance	Continued documentation of sites 36CN165 and 36CN199 and Phase II evaluative testing
1992	Addendum To: Phase I Cultural Resources Report for Proposed Natural Gas Pipeline TL-400, Extension 1, and TL-479, Extensions I and II, (86 Miles) and Related Facilities in Pennsylvania	Clifford, Laura	Phase II NHPA compliance	Evaluative testing of sites 36CN165 and 36CN199
1994	Archaeological Excavations on Kettle Creek: Investigations at 36CN165 and 36CN199, Clinton County, Pennsylvania	Parsons Engineering Service	Phase III NHPA compliance	Data recovery of sites 36CN165 and 36CN199
1995	N/A	Unknown	Informant/Amateur survey	Documentation of site 36CN209
1997	Archaeological Evaluation along the Proposed Independence	R. Christopher Goodwin & Associates	Phase I NHPA compliance	No sites documented

Date	Name	Surveyor(s)	Type	Results
	Pipeline Corridor through Lawrence, Butler, Armstrong, Clarion, Jefferson, Clearfield, Elk, Forest, McKean, Cameron, Potter, and Clinton Counties, Pennsylvania			at Alvin Bush Dam
2010	Negative Survey Form for the Natural Gas Compressor Station Expansions Project	TRC Garrow and Associates, Inc.	Phase I NHPA compliance	No sites documented.
2017	Negative Survey Form for the Kettle Creek Restoration Project	Public Archaeology Facility	Phase I NHPA compliance	No sites documented

2.3.4 Recorded Cultural Resources

There are nine known archaeological sites within the Alvin R. Bush Dam project area. Six sites were documented through informant or amateur archaeological surveys and have not been assigned a cultural or chronological affiliation through laboratory analysis. One site was documented through an informant or amateur archaeological survey and featured Late Archaic through Woodland Period artifacts. The remaining two, sites 36CN165 and 36CN199, were documented as part of Section 106 compliance excavations (Bergman et al. 1991, Clifford 1991, Clifford 1992, and PES 1994). Both sites are multi-component habitation areas featuring prehistoric and historic assemblages. With exception to sites 36CN165 and 36CN199, none of the other archaeological sites have been determined eligible for listing in the National Register of Historic Places (NRHP).

Known architectural or above-ground resources are associated with the Alvin Bush Dam such as maintenance shops and garages, offices, the intake tower, spillway, and an earthen embankment. None of these have been evaluated to determine their eligibility for inclusion in the NRHP.



Alvin R. Bush Dam Intake Tower and Service

2.3.5 Long-Term Objectives for Cultural Resources

- Identify and inventory any historic properties within the project area as funds permit.
- Create and maintain a Cultural Resources Management Plan as needed and as funds permit.
- Maintain compliance with federal cultural resources laws, including but not limited to, Sections 106 and 110 of the NHPA and the Archaeological Resources Protection Act (ARPA) within project area lands.

- Prevent unauthorized or illegal excavation and removal of cultural resources within project area lands.
- Increase public awareness and education of regional history.

2.4 DEMOGRAPHIC AND ECONOMIC RESOURCES

2.4.1 Current Demographics, Economics, Trends and Analysis

The zone of interest (ZOI) for the socio-economic analysis of the Alvin R. Bush Dam Kettle Creek Reservoir consists of six Pennsylvania counties. The lake lies within Clinton County. Centre, Potter, Cameron, Tioga, and Lycoming are surrounding counties (USACE 1964).

2.4.2 Population

According to the 2019 American Community Survey (ACS) 5-year population estimate, the total population for the ZOI is 375,610, up from 373,862 in 2010. The population in the ZOI is approximately 3.0 percent of the total Pennsylvania population (12,801,989 people). From 2019 through 2030, the population in the ZOI is expected to increase to 412,940, an annual growth rate of 0.52 percent per year. Of the ZOI counties, only Cameron, which has the lowest population at 4,447, has a negative growth rate (-0.65%/year). Centre and Clinton Counties have the highest annual growth rates at 0.85 percent and 0.73 percent, respectively. Table 2-4 shows the population estimates and projections for the ZOI.

The distribution of the population among gender, as shown in Table 2.5, is approximately 50 percent female and 50 percent male within the ZOI, compared to 51 percent female and 49 percent male in all of Pennsylvania. Most counties within the ZOI have nearly equal male and female populations (+/- 1%); however, Centre County has a relatively large difference in gender populations with an approximately 47 percent female to 53 percent male population.

Figure 2-2 below shows the population age structure in Clinton County, the ZOI and Pennsylvania. The median ages in Clinton County and Pennsylvania are 38.6 years and 40.8 years, respectively, with ZOI median ages ranging from 32.3 years in Centre County to 52.0 years in Cameron County. The age structure is somewhat inverted for all three geographical areas (e.g., low birth rate and aging population), suggesting contraction of the population.

As shown in Figure 2-3, the majority of the ZOI population is white, with minority races making up 8.6 percent of the total population. Approximately 2.2 percent of the ZOI population identified as Hispanic or Latino (of any race), and 0.1 percent identified as American Indian of the Cherokee, Chippewa, Navajo, or Sioux tribal groupings (U.S. Census Bureau 2019).

2.4.3 Education and Employment

In the ZOI as of 2019, approximately 91.6 percent of the population aged 25 and older has obtained at least a high school diploma or equivalent. Approximately 15.0 percent have some college education but no degree, 8.8 percent have an Associate's degree, 17.7 percent have a Bachelor's degree, 13.0 percent have a Graduate degree or professional certification, 6.1 percent have a 9 to 12 grade education, and 2.3 percent have less than a 9th grade education.

The largest employment industry in the ZOI is educational services, and health care and social assistance at approximately 32.2 percent, followed by 11.9 percent in manufacturing, 11.1 percent in retail, and 9.0 percent in arts, entertainment, recreation, and accommodation and food services. All other industries make up 35.8 percent of employment. The civilian labor

force unemployment rate within the ZOI is 5.1 percent, which is similar to the 5.3 percent unemployment rate for all of Pennsylvania (U.S. Census Bureau 2019).

2.4.4 Households and Income

There were approximately 143,473 households in the ZOI and 5,053,106 in Pennsylvania as of 2019. The median household income in the ZOI (\$50,579) is lower than Pennsylvania overall (\$61,744). Of the ZOI counties, Cameron County has the lowest household income at \$41,165, and Centre County has the highest household income at \$60,403. Approximately 14.9 percent of persons living within the ZOI live below the poverty level, compared to 12.4 percent in all of Pennsylvania. Centre and Clinton Counties have the highest percentage of persons below the poverty level at 18.2 and 15.5 percent, respectively, while Cameron, Lycoming, Potter and Tioga Counties all have poverty rates between 13 and 15 percent.

Table 2-4. Population Estimates and 2030 Projections.

County	2010 Estimate		2019 Estimate		2030 Estimate		Growth rate
	Population	% of ZOI	Population	% of ZOI	Population	% of ZOI	
Pennsylvania	12,702,379	-	12,801,989	-	14,132,588	-	0.41%
Clinton	39,238	10.5%	38,362	10.2%	44,973	10.9%	0.73%
Centre	153,990	41.2%	162,385	43.2%	180,148	43.6%	0.85%
Potter	17,457	4.7%	16,526	4.4%	18,672	4.5%	0.35%
Cameron	5,085	1.4%	4,447	1.2%	4,422	1.1%	-0.65%
Tioga	41,981	11.2%	40,591	10.8%	44,136	10.7%	0.26%
Lycoming	116,111	31.1%	113,299	30.2%	120,589	29.2%	0.19%
ZOI Total	373,862	-	375,610	-	412,940	-	0.52%

Sources: US Census Bureau (2010 Census and 2019 Estimates); The Center for Rural Pennsylvania (2030 Estimates)

Table 2-5. Population Estimates by Gender.

County	Population (K)	
	Female	Male
Pennsylvania	6,529.0	6,273.0
Clinton	19.5	18.8
Centre	77.0	85.4
Potter	8.3	8.2
Cameron	2.2	2.2
Tioga	20.5	20.1
Lycoming	57.8	55.5
ZOI Total	185.2	190.4

Source: US Census Bureau (2019)

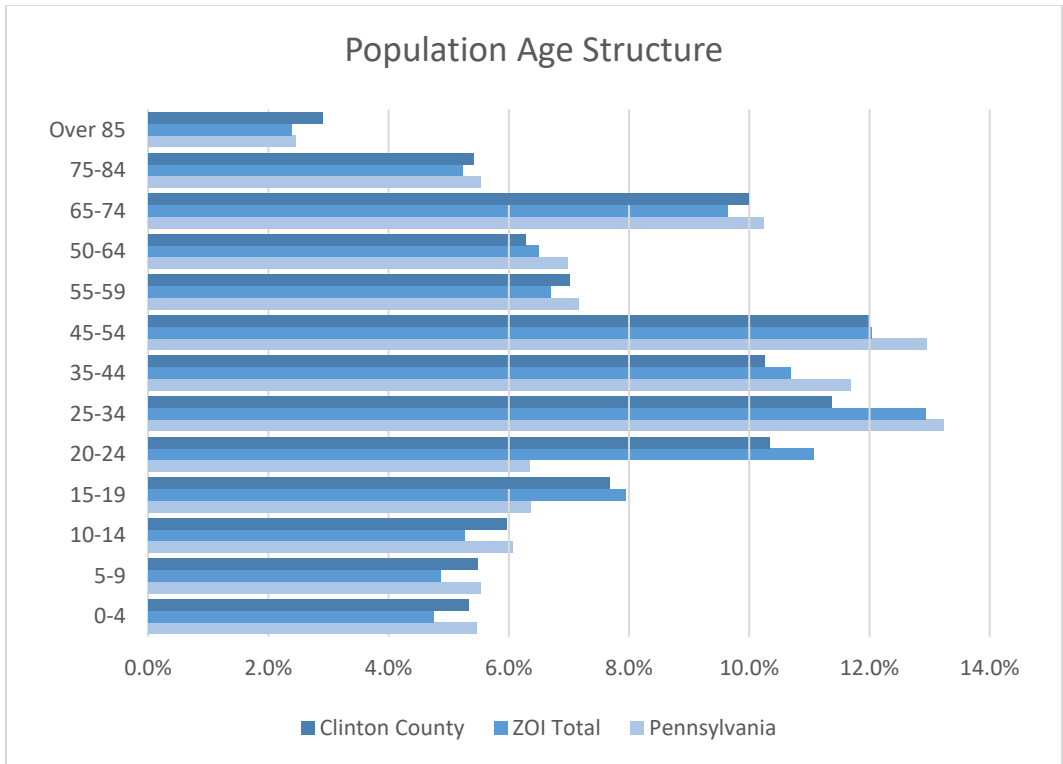


Figure 2-2. 2019 Percent of Population by Age Group in Clinton County, Zone of Interest, and State (U.S. Census, 2019)

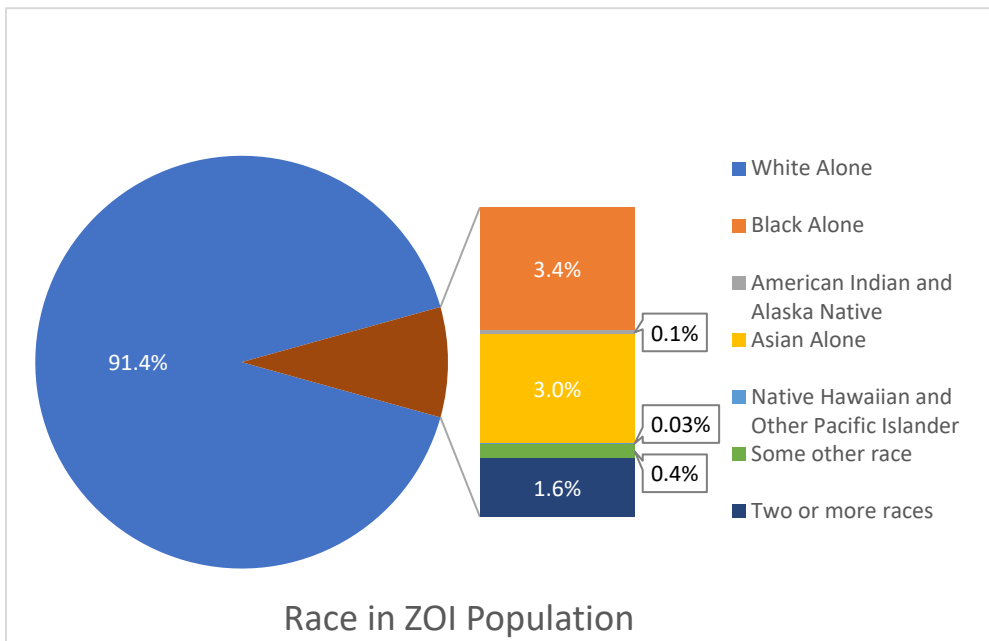


Figure 2-3. 2019 Population Percentages by Race (U.S. Census, 2019)

2.5 RECREATION FACILITIES, ACTIVITIES, AND NEEDS

2.5.1 Zone of Influence

The zone of influence for the recreation use analysis of the Alvin R. Bush Dam and Kettle Creek Reservoir, consists of six Pennsylvania counties. The reservoir lies within Clinton County. Centre, Potter, Cameron, Tioga, and Lycoming are adjacent counties (USACE 1964).

2.5.2 Visitation Profile

During the period between October 2017 and September 2020, there were over 200,000 visitors to KCSP. Attendance during 2018 and 2019 is representative of typical years that see averages of approximately 8,000 visitors during the fall and winter, and 30,000 visitors during the spring and summer. Visitation data for overnight guests was not collected in 2019, therefore, visitor estimates for 2019 presented in Figure 2-4 do not include overnight guests. Visits to many outdoor recreation areas across the United States increased substantially in the second half of FY 2020 because of social distancing behaviors associated with the COVID-19 pandemic. Kettle Creek's visitation records from March through October 2020 reflects this national trend (Figure 2-4).

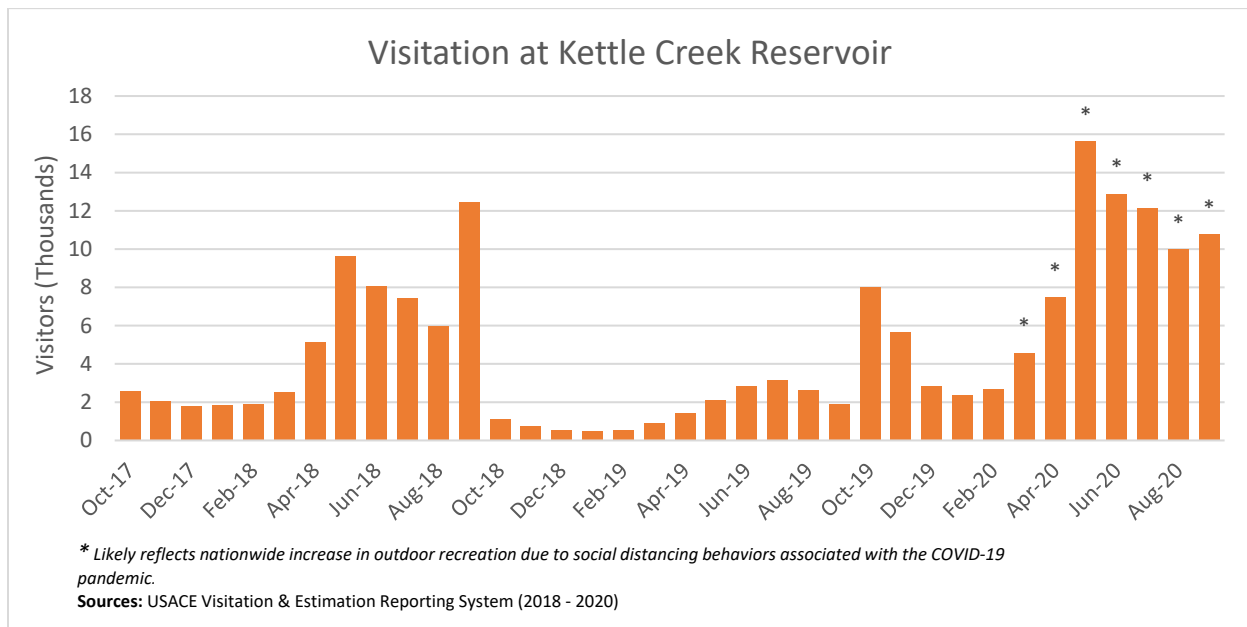


Figure 2-4. Visitation at Kettle Creek Reservoir for Fiscal Year 2018-2020.

According to a Visitor Use Monitoring (VUM) Report, the average distance visitors traveled to KCSP was 129.5 miles, and 82.4 percent of visitors traveled 50 miles or more (Mowen, A. et al 2013). According to recreation use estimates for 2020 collected through USACE's Visitor Estimation and Reporting System, the most popular recreational activities include camping, boating, fishing, sightseeing, picnicking, and hiking. These recreational activities are included in Figure 2-5, which shows the top 10 most popular recreational activities at KCSP based on the VUM survey. Visitors participating in the VUM survey were asked to identify all activities they had participated in ("Participation") as well as their primary activity for the trip ("Primary Activity"). Most recreational opportunities at the project area fall within KCSP.

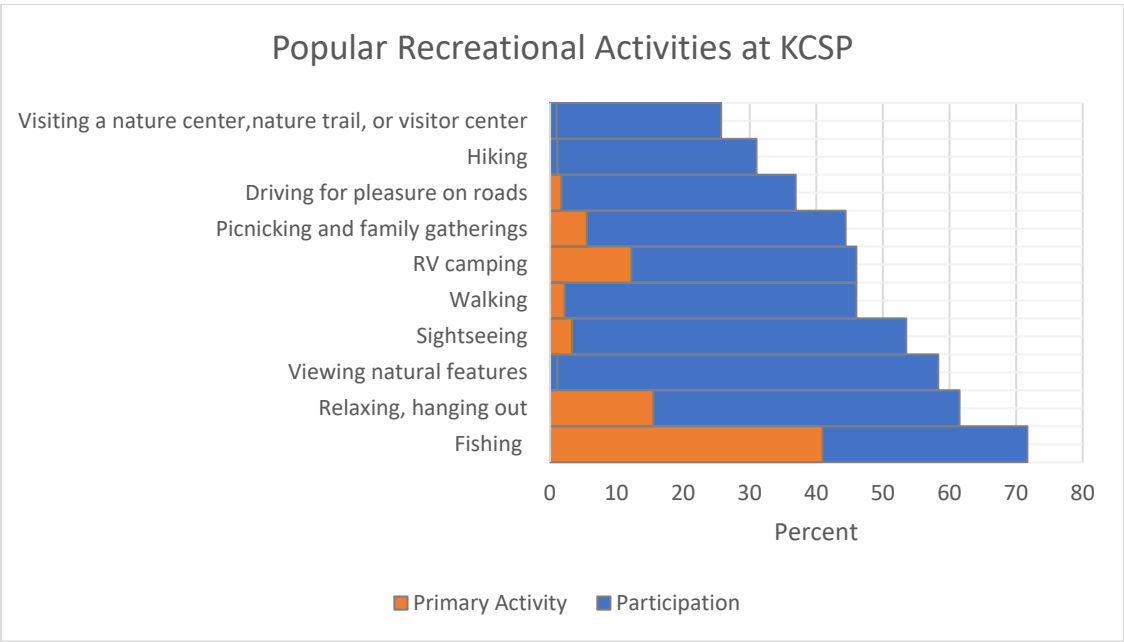


Figure 2-5. Popular Recreation Activities at KCSP.

2.5.3 Recreation Facilities

All reservoir lands held in fee are leased to DCNR and are designated for public use, except for areas required for operation and maintenance of the dam. The leased lands are utilized by DCNR for development, operation, and management as KCSP. DCNR, under this lease, has developed and continues to maintain and operate public recreational facilities, forest management practices, and fish and wildlife management programs (USACE 1964). A description of existing recreation facilities and activities on reservoir lands follows.

2.5.3.1 Boat Launch Area

Federal funding for construction of a boat launching ramp and docking area was included in the project construction costs (USACE 1964). The boat launch area is located near the day use area and currently consists of a boat ramp, three floating docks, and mooring spaces for 60 vessels. Dredging would improve navigable access around the boat launch; however, funding is not presently available for this effort. The mooring area is also experiencing mild erosion.



Kettle Creek State Park Docking Area

2.5.3.2 Reservoir Pool

The reservoir pool is maintained by USACE at elevation 841 NVGD 29 (USACE 1964). Recreation activities on the reservoir include non-motorized and electric motor boating (e.g., kayaking, canoeing and electric motorboats) and fishing (DCNR, 2018).

2.5.3.3 Fishing

Kettle Creek Reservoir is a popular trout and bass fishing area, and many other species of fish including brown bullhead, sucker, and many species of panfish can be found in the reservoir. Additionally, many of the tributary streams of Kettle Creek Reservoir are popular for native trout fishing. Rules governing fishing at KCSP are established by the PFBC, although DCNR (KCSP) may enforce PFBC rules. Fishing is based on established seasons.

Bass and panfish fishing are popular during summer months, with several bass fishing tournaments occurring throughout the summer. Trout, primarily rainbow trout (*Oncorhynchus mykiss*) and brown trout (*Salmo trutta*), are stocked for the winter season by PFBC and ice fishing is permitted, though ice thickness is not monitored (DCNR 2018). Abandoned mine drainage limits the fishing quality below the Lower Campground south of Summerson Run in Sproul State Forest.

2.5.3.4 Hunting

Much of the Reservoir lands are open to hunting, trapping, and hunting dog training during established seasons. Common game species include elk, white-tailed deer, ruffed grouse, eastern grey squirrel, black bear, and wild turkey (DCNR 2018). Ring-necked pheasants are a non-native game species stocked at KCSP by the Pennsylvania Game Commission (PGC).

Hunting in KCSP is subject to the rules and regulations established by the PGC, with some exceptions. For example, early Canada goose season starts at the beginning of September in Pennsylvania; however, Canada goose hunting is not permitted in KCSP until after Labor Day. Additionally, groundhog hunting is permissible in Pennsylvania but is not authorized in KCSP. Hunting at the Park is based on species-specific game hunting seasons.

Kettle Creek State Park is located within Pennsylvania's Elk Hunt Zone 14 (2020-2021 season; PGC 2020). Elk may be hunted at KCSP during archery, regular, and late seasons in the fall and winter. Archery and elk cow hunting began at the park in 2019. Commercial guided elk hunts are also now permitted at the Park.

2.5.3.5 Swimming Area (Beach and Bath House)

A swimming/beach area and bath house were established soon after construction of the project (USACE 1964), however both were closed and removed several years ago due to the disrepair of the beach house as well as consistently high *E. coli* levels. The high levels of *E. coli* were likely due to a large population of Canada geese residing in the beach and picnic areas. More recently, Canada goose populations have declined at KCSP due to consistent population control efforts (see Section 2.2.5.3); however, the Park has no plans to allow swimming or reconstruct a beach area in the future.

2.5.3.6 Picnic/Day Use Area

A picnic area is located below the KCSP main office on both sides of State Road (SR) 4001 near Bearfield Run. The picnic area includes 50 picnic tables, charcoal grills, drinking water, and sanitary facilities. Additionally, softball and volleyball and other large, open fields are located near the picnic area (DCNR 2018, USACE 1964). The picnic and day use areas are open year-round. The Pine Grove Picnic Area is located within USACE-owned property; however, the associated pavilion is located outside of USACE-property.



Kettle Creek State Park Day Use Area

2.5.3.7 Camping Area

Kettle Creek State Park manages three camping areas, one of which is located on USACE lands. The “Upper Campground” has 27 campsites which are accessed through USACE-owned land, but the campsites are located off USACE property and are open from the first week in April through the second week of October, after the Flaming Foliage Festival in nearby Renovo, PA. The “Lower Campground” has 41 sites, is located entirely off USACE land and is open through rifle season for white-tailed deer, which ends in the second week of December. Only the Equestrian Trailhead campground is located within USACE land and is open year-round. The Equestrian Trailhead campground contains fire rings and picnic tables scattered throughout the area but does not have a set number of camping sites.



Kettle Creek State Park Equestrian Trailhead
Campground

2.5.3.8 Hiking

Kettle Creek State Park has approximately 2 miles of trails located within the park boundaries. Most of the trails begin within the Park before continuing into Sproul State Forest. A new,

unnamed trail is located within USACE-owned land across Kettle Creek Road from the equestrian trailhead. Alice's Trail, which is located near the southern end of the project, cuts through a portion of the USACE dam operations land (DCNR 2018).

2.5.3.9 Equestrian Trailhead

A 22-mile long equestrian loop trail begins on reservoir lands near the intersection of Beaverdam Road and SR 4001 and travels through Sprout State Forest before returning to the trailhead. Equestrian camping is permitted in the trailhead field (DCNR 2018).

2.5.3.10 Winter Activities

In addition to ice fishing, winter activities on Reservoir lands include snowmobiling, cross-country skiing, and sledding and tobogganing. Several snowmobile trailhead access points are located within KCSP and continue into Sprout State Forest.

2.5.3.11 Special Events

Several special events are held throughout the year that attract visitors to KCSP and the surrounding area. For example, a birding festival is typically held in mid-May and features guided birding tours of the various habitat types in the project area, bird related crafts, and interpretive programming. Fishing-related special events include trout opening day, typically held in early to mid-April, as well as multiple bass fishing tournaments held throughout the summer months. Additionally, the Flaming Foliage Festival occurs in the nearby town of Renovo during the second week of October every year. While not a DCNR event, the Flaming Foliage Festival attracts many campers to KCSP.



Kettle Creek Reservoir

2.5.4 Recreation Analysis

The Alvin R. Bush Dam and Kettle Creek Reservoir are beneficial to the local economy through indirect job creation and local spending by visitors. The Kettle Creek Reservoir and State Park host many recreational activities, which draw over 68,000 visitors annually, on average. The VUM survey found that 86.6 percent of KCSP visitors spent money within 50 miles of the park (Mowen, A. et al 2013). The average visitor spent \$141.87 at locations that included gas stations, grocery stores, and restaurants or bars. Table 2-6 shows additional data related to visitor spending within 50 miles of the project area.

Table 2-6. Visitor Spending Data for Areas Within 50 miles of Project Area.

Economic Expenditure Item	Proportion of Visitors Spending in Each Category	Average Spent Among Visitors Spending in the Each Category
Motel, Lodge, Cabin, B&B, etc.	6.3%	\$152.20
Camping Fees	43.0%	\$95.49
Restaurants and Bars	30.6%	\$53.28
Groceries	57.0%	\$52.57
Gasoline and oil	52.7%	\$79.18
Outfitter Related Expenses	3.2%	\$29.83
Outdoor Recreation & Entertainment	2.7%	\$42.78
Sporting Goods	25.3%	\$27.60
Souvenirs, Clothing, Other Misc.	9.1%	\$29.47
Average, All Items		\$141.87

(Source: Mowen, A. *et al* 2013).

2.5.5 Recreational Carrying Capacity

Recreational carrying capacity generally refers to the maximum level of use of a recreation resource that does not exceed either the resource capacity or social capacity of that resource. Resource capacity refers to the level of use beyond which deterioration and degradation of natural resources and/or the physical environment occurs, while social capacity refers to overcrowding to the level of visitor dissatisfaction (URDC 1980).

Recreational carrying capacity was not studied in this Master Plan since recreation on USACE lands is managed by DCNR. However, use of the reservoir and adjacent USACE-lands is limited by KCSP resource capacity. For example, overnight use is limited by the number of campsites available, which includes 68 camping pads in the upper and lower campgrounds, plus additional parking and camping for horseback riders at the equestrian trailhead. Campsite use is regulated either by an online reservation system or permit requirement with associated fees. Day use is limited by the number of parking facilities and does not require permits or reservations except for the use of the Pine Grove Picnic Area pavilion. Use of Kettle Creek Reservoir by boaters may be limited by availability of parking facilities for boat trailers and by the number of mooring facilities. The mooring facilities, located at the northern end of the lake, can accommodate up to 60 vessels (DCNR 2021).

At this time there are no plans of actively limiting uses, and there is no evidence of facilities or natural resources being negatively impacted by overuse or overcrowding. Presently, DCNR manages recreation areas using historic visitation data combined with best professional judgement to address recreation areas considered to be overcrowded, overused, or underused. DCNR will continue to identify possible causes and effects to prevent overcrowding and overuse and apply appropriate best management practices including site management, regulating visitor behavior, and modifying visitor behavior.

2.6 REAL ESTATE AND ACQUISITION POLICY

Real Estate acquisition in the reservoir area includes 1,273 acres acquired in fee simple including all lands up to elevation 892 feet PCD. Between elevations 892 feet and 945 feet PCD, 603 acres were acquired for flowage easements. Elevation 945 PCD is 8 feet above spillway crest (USACE 1964, 1987). DCNR acquired fee title to all lands lying between the federally owned lands and Sproul State Forest, which extends from the dam to the head of the conservation pool, and now operates as KCSP.

KCSP also manages the recreational park as well as fish and wildlife management on 1,079 acres of federally owned lands leased by USACE to DCNR. These lands are inclusive of all project lands except for the dam, and operations and maintenance areas.

2.7 PERTINENT PUBLIC LAWS

Public Law 59-209, Antiquities Act, 1906. The first federal law established to protect what are now known as "cultural resources" on public lands. It provides a permit procedure for investigating "antiquities" and consists of two parts: An act for the Preservation of American Antiquities and Uniform Rules and Regulations.

Public Law 74-292 Historic Sites Act, 1935. Declares it to be a national policy to preserve for (in contrast to protecting from) the public, historic (including prehistoric) sites, buildings, and objects of national significance. This act provides both authorization and a directive for the Secretary of the Interior, through the National Park Service, to assume a position of national leadership in the field of protection, recovery, and interpretation of national archeological historic resources. It also establishes an "Advisory Board on National Parks; Historic Sites, Buildings, and Monuments, a committee of eleven experts appointed by the Secretary to recommend policies to the Department of the Interior".

Public Law 78-534, Flood Control Act, 1944. Section 4 of the act as last amended in 1962 by Section 207 of Public Law 87-874 authorizes USACE to construct, maintain, and operate public parks and recreational facilities in reservoir areas and to grant leases and licenses for lands, including facilities, preferably to federal, state or local governmental agencies.

Public Law 85-624, Fish and Wildlife Coordination Act, 1958. This act as amended in 1965 sets down the general policy that fish and wildlife conservation shall receive equal consideration with other project purposes and be coordinated with other features of water resource development programs. Opportunities for improving fish and wildlife resources and adverse effects on these resources shall be examined along with other purposes which might be served by water resources development.

Public Law 86-717, Forest Conservation, 1960. This act provides for the protection of forest and other vegetative cover for reservoir areas under the jurisdiction of the Secretary of the Army and the Chief of Engineers.

Public Law 87-874, Rivers and Harbors Act, 1962. This act authorizes the construction, repair, and preservation of certain public works on rivers and harbors for navigation, flood control, and for other purposes.

Public Law 88-578, Land and Water Conservation Fund Act, 1965. This act established a fund from which Congress can make appropriations for outdoor recreation. Section 2(2) makes

entrance and user fees at reservoirs possible by deleting the words "without charge" from Section 4 of the 1944 Flood Control Act as amended.

Public Law 89-272, Solid Waste Disposal Act, as amended by PL 94-580, dated October 1976. This act authorized a research and development program with respect to solid waste disposal.

Public Law 89-665, Historic Preservation Act of 1966. This act provides for: (1) an expanded National Register of significant sites and objects; (2) matching grants to states undertaking historic and archeological resource inventories; and (3) a program of grants-in aid to the National Trust for Historic Preservation; and (4) the establishment of an Advisory Council on Historic Preservation. Section 106 requires that the President's Advisory Council on Historic Preservation have an opportunity to comment on any undertaking which adversely affects properties listed, nominated, or considered important enough to be included on the National Register of Historic Places.

Public Law 89-80, Water Resources Planning Act, 1965. This act established the Water Resources Council and gives it the responsibility to encourage the development, conservation, and use of the Nation's water and related land resources on a coordinated and comprehensive basis. Title II of this act established the River Basin Commissions and stipulated their duties and authorities. The President of the United States signed the Susquehanna River Basin Compact into law on December 24, 1970, subsequent to its approval by Congress and the prior approval of the involved states. The Compact provided for the creation of a single administrative agency to coordinate water resources efforts and programs of federal, state, local and private interests in the basin.

Public Law 90-480, Architectural Barriers Act of 1969. This act ensures that certain buildings financed or leased by Federal agencies are constructed (or renovated) so that they will be accessible to the physically disabled.

Public Law 90-483, River and Harbor and Flood Control Act, Mitigation of Shore Damages, 1968. Section 210 restricted collection of entrance fees at USACE lakes and reservoirs to users of highly developed facilities requiring continuous presence of personnel.

Public Law 91-190, National Environmental Policy Act (NEPA), 1969. NEPA declared it a national policy to encourage productive and enjoyable harmony between man and his environment, and for other purposes. Specifically, it declared a "continuing policy of the Federal Government... to use all practicable means and measures...to foster and promote the general welfare, to create conditions under which man and nature can exist in productive harmony, and fulfill the social, economic, and other requirements of present and future generations of Americans." Section 102 authorized and directed that, to the fullest extent possible, the policies, regulations and public law of the United States shall be interpreted and administered in accordance with the policies of the Act.

Public Law 91-611, River and Harbor and Flood Control Act, 1970. Section 234 provides that persons designated by the Chief of Engineers shall have authority to issue a citation for violations of regulations and rules of the Secretary of the Army, published in the Code of Federal Regulations.

Public Law 92-347, Golden Eagle Passbook and Special Recreation User Fees. This act revises Public Law 88-578, the Public Land and Water Conservation Act of 1965, to require federal agencies to collect special recreation user fees from the use of specialized sites developed at federal expense and to prohibit the Corps of Engineers from collecting entrance fees to projects.

Public Law 92-463, Federal Advisory Committee Act. The Federal Advisory Committee Act became law in 1972 and is the legal foundation defining how federal advisory committees operate. The law has special emphasis on open meetings, chartering, public involvement, and reporting.

Public Law 92-500, Federal Water Pollution Control Act Amendments, 1972. The Federal Water Pollution Control Act of 1948 (PL 845, 80th Congress), as amended in 1956, 1961, 1965 and 1970 (PL 91 - 224), established the basic tenet of uniform State standards for water quality. Public Law 92-500 strongly affirms the federal interest in this area. "The objective of this act is to restore and maintain the chemical, physical and biological integrity of the Nation's waters."

Public Law 92-516, Federal Environmental Pesticide Control Act, 1972. This act completely revises the Federal Insecticide, Fungicide and Rodenticide Act. It provides for complete regulation of pesticides to include regulation, restrictions on use, actions within a single State, and strengthened enforcement.

Public Law 93-81, Collection of Fees for Use of Certain Outdoor Recreation Facilities, 1978. This act amends Section 4 of the Land and Water Conservation Act of 1965, as amended to require each federal agency to collect special recreation use fees for the use of sites, facilities, equipment, or services furnished at federal expense.

Public Law 93-112, Rehabilitation Act of 1973, as amended. The USACE responsibility to provide access to programs and activities for persons with disabilities is identified in the Rehabilitation Act of 1973 and its subsequent amendments, entitled the "Rehabilitation, Comprehensive Services and Development Disabilities Amendment of 1978."

Public Law 93-291, Archeological Conservation Act, 1974. The Secretary of the Interior shall coordinate all federal survey and recovery activities authorized under this expansion of the 1960 act. The Federal construction agency may transfer up to one percent of project funds to the Secretary with such transferred funds considered non-reimbursable project costs.

Public Law 93-303, Recreation Use Fees, 1974. This act amends Section 4 of the Land and Water Conservation Act of 1965, as amended, to establish less restricted criteria under which federal agencies may charge fees for the use of campgrounds developed and operated at federal areas under their control.

Public Law 93-523, Safe Drinking Water Act, 1974. The act assures that water supply systems serving the public meet minimum national standards for protection of public health. The act (1) authorizes the Environmental Protection Agency to establish federal standards for protection from all harmful contaminants, which standards would be applicable to all public water systems, and (2) establishes a joint federal-state system for assuring compliance with these standards and for protecting underground sources of drinking water.

Public Law 94-422, Amendment of the Land and Water Conservation Fund Act, 1965. Expands the role of the Advisory Council on Historic Preservation. Title 2 - Section 102a amends Section 106 of the Historical Preservation Act of 1966 to say that the Council can comment on activities which will have an adverse effect on sites either included in or eligible for inclusion in the NRHP.

Public Law 99-662, The Water Resources Development Act, 1986. Provides the conservation and development of water and related resources and the improvement and rehabilitation of the Nation's water resources infrastructure.

Public Law 101-336, Americans With Disabilities Act of 1990 (42 U.S. C 12, 101- 12, 213). The purpose of the Act was to extend the rights, privileges, and protection that had been made available to the disabled on federal projects for many years prior to the ADA, to the private sector.

Public Law 103-66, Section 500. Omnibus Budget Reconciliation Act of 1993. This act authorizes USACE to expand its recreation user fee program.

2.7.1 Executive Orders

Executive Order (EO) 11514, Protection and Enhancement of Environmental Quality – EO 11514 requires federal agencies to provide leadership in protecting and enhancing the quality of the Nation's environment to sustain and enrich human life.

EO 11593, Protection and Enhancement of Cultural Environment – EO 11593 requires federal agencies to administer the cultural properties under their control in a spirit of stewardship and trusteeship for future generations.

EO 11990, Protection of Wetlands – EO 11990 requires federal agencies to minimize the destruction, loss, or degradation of wetlands, and to preserve and enhance the natural and beneficial values of wetlands in executing federal projects.

EO 11988, Floodplain Management – This EO directs federal agencies to evaluate the potential impacts of proposed actions in floodplains. The operation and management of the existing project complies with EO 11988.

EO 12898, Environmental Justice – This EO directs federal agencies to achieve environmental justice to the greatest extent practicable and permitted by law, and consistent with the principles set forth in the report on the National Performance Review. Agencies are required to identify and address, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low-income populations.

EO 13045, Protection of Children from Health Risks & Safety Risks – This EO directs federal agencies to evaluate environmental health or safety risks that may disproportionately affect children.

EO 13112, Invasive Species – This EO directs federal agencies to evaluate the occurrence of invasive species, the prevention for the introduction of invasive species, and measures of their control to minimize the economic, ecological, and human health impacts.

EO 13175, Consultation and Coordination with Indian Tribal Governments – This EO reaffirms the federal government's commitment to tribal sovereignty, self-determination, and self-government by ensuring agencies consult with Indian tribes and respect tribal sovereignty as they develop policy on issues that impact Indian communities.

EO 13186, Migratory Bird Habitat Protection – Sections 3a and 3e of EO 13186 direct federal agencies to evaluate the impacts of their actions on migratory birds, with emphasis on species of concern, and inform the USFWS of potential negative impacts on migratory birds.

EO 13508, Chesapeake Bay Protection and Restoration – This EO directs federal agencies to implement best management practices to restore and maintain the health of the Chesapeake Bay.

2.7.2 State Laws

Commonwealth of Pennsylvania, Act 170 Wild Resource Conservation Act, 1982. This law was passed to protect endangered plants and animals.

Commonwealth of Pennsylvania, Environmental Stewardship and Watershed Protection Act, 1999. This law provides money to protect open space and critical habitat, conserve river resources, create greenways, build community parks, and enhance tourism.

Commonwealth of Pennsylvania, Clean Streams Law, 1937. This law provided Pennsylvania with the authority to protect streams from pollution. It prohibits littering or dumping that effects the waters and can fine up to \$10,000 for offenses.

Commonwealth of Pennsylvania, Article 1 Section 27 Environmental Rights Amendment, 1969. This article provides two rights to a clean environment for Pennsylvania's citizens: a right to clean air, pure water, and the preservation of the natural, scenic, historic, and aesthetic values of the environment; and a right to have public natural resources conserved and maintained by the Commonwealth for the benefit of present and future generations.

2.7.3 Management Plans

Pennsylvania Statewide Comprehensive Outdoor Recreation Plan (SCORP), 2020-2024. The 2020 – 2024 outdoor recreation plan is Pennsylvania's strategic plan for how outdoor recreation should meet the needs of the state's residents and visitors. A State's outdoor recreation plan must be updated every five years for states to remain eligible for the Federal Land and Water Conservation Fund. The 2020 – 2024 plan includes several goals, all of which center around a framework of five priorities, including health and wellness, recreation for all, sustainable systems, funding and economic development, and technology.

Kettle Creek State Park Resource Management Plan, 1996. The KCSP Resource Management Plan provides guidance and direction towards goals outlined in the Pennsylvania Constitution, Article 1, Section 27 to conserve and maintain Pennsylvania's natural resources for the benefit of all people. The Management Plan takes inventory of natural resources at KCPS, setting statewide and park-specific objectives, and provides management prescriptions.

Kettle Creek State Park Management Plan, 2018. The KCSP Management Plan is a working document that provides guidance and justification for making decisions that affect the park and its users. Updates occur periodically to certain sections of the plan, including land

acquisition, goals and objectives, facilities master plan, educational goals, and environmental problems.

3 RESOURCE OBJECTIVES

3.1 INTRODUCTION

The purpose of the plan is to establish the guideline for sustainable stewardship of natural and recreational resources managed directly and indirectly on USACE owned lands. The resource objectives and goals are consistent with the authorized project purposes, federal laws and directives, regional needs, and resource capabilities, and take public input into consideration. The Pennsylvania SCORP was considered as well. The goals presented in the plan express the overall desired end state of the cumulative land and recreation management programs at Alvin R. Bush Dam. The resource objectives specify task-oriented actions necessary to achieve the plan goals.

Overarching USACE management goals and environmental operating principles are presented in the following sections. Specific project wide and KCSP resource objectives are presented in Section 3.3.

3.2 MANAGEMENT GOALS

The following goals are the priorities for consideration when determining management objectives and development activities. Implementation of these goals is based upon time, workload, and budget. The objectives provided in this chapter are established to provide high levels of stewardship to USACE managed lands and resources, while still providing a high level of public service. These goals will be pursued using a variety of mechanisms such as: assistance from volunteer efforts, hired labor, contract labor, permit conditions, remediation, and special lease conditions. It is the intention of Alvin R. Bush Dam staff to provide a realistic approach to the management of all resources.

Project Management Goals:

- **Goal A** Provide the best management practices to respond to regional needs, resource capabilities and capacities, and expressed public interests consistent with authorized project purposes.
- **Goal B** Protect and manage project natural and cultural resources through sustainable environmental stewardship programs.
- **Goal C** Provide public outdoor recreation opportunities that support project purposes and public interests while sustaining project natural resources.
- **Goal D** Recognize the unique qualities, characteristics, and potentials of the project.
- **Goal E** Provide consistency and compatibility with national objectives and other state and regional goals and programs.

In addition to the goals, USACE management activities are guided by USACE-wide Environmental Operating Principles (EOPs) as follows:

- Strive to achieve environmental sustainability. An environment maintained in a healthy, diverse, and sustainable condition is necessary to support life.
- Proactively consider environmental consequences of USACE programs and act accordingly in all appropriate circumstances.
- Seek balance and synergy among human development activities and natural systems by designing economic and environmental solutions that support and reinforce one another.
- Continue to meet corporate responsibility and accountability under the law for activities and decisions under our control, which may impact human health and welfare and the continued viability of natural systems.
- Seek ways and means to assess and mitigate impacts to the environment. Consider the environment in employing a risk management and systems approach to the full life cycle of our projects and processes.
- Build and share an integrated scientific, economic, and social knowledge base that supports a greater understanding of the environment and impacts of our work in a collaborative manner.
- Employ an open, transparent process that respects the views of individuals and groups interested in USACE activities; listen to them actively and learn from their perspective in the search to find innovative win-win solutions to the nations' problems, that also protect and enhance the environment.

3.3 RESOURCE OBJECTIVES

Resource objectives are defined as clearly written statements that respond to identified issues and that specify measurable and attainable activities for resource development and management of the lands and waters under USACE jurisdiction. The objectives stated in this master plan support the Plan's goals, USACE EOPs, and applicable national performance measures.

The objectives in this master plan are intended to provide project benefits, meet public needs, and foster environmental sustainability for Alvin R. Bush Dam to the greatest extent possible.

3.3.1 Project-Wide Objectives

- Water quality objectives include low flow augmentation and compliance with the Commonwealth of Pennsylvania's water quality standards. Support downstream coldwater fishery during the summer by using fish gates to release cool water. Maintain a healthy downstream environment during low flow periods through the prescribed regulation for low flow augmentation.
- Maintain a stable lake level throughout the prime recreation season to support both in-lake and shoreline use.

3.3.2 Recreation Area Objectives

Recreation objectives are those associated with the DCNR managed outgrant areas within the KCSP. There are two categories of recreational uses within KCSP: land-based and water-based recreation. The resource management objectives below are found in the 2018 KCSP Management Plan:

- Manage recreational areas in ways that avoid over-use problems such as soil compaction, vegetation damage, and soil erosion and to rehabilitate those use areas that exhibit degradation from over-use.
- Manage the Canada goose population and continue participating in the "goose-away program."
- Manage the beaver population in the Day Use Area.
- Manage all rights-of-ways in a manner that maintains aesthetics and safety considerations using techniques that minimize disturbance to maintain as natural a setting as possible.
- Protect and enhance a diverse natural wildlife and plant population through appropriate habitat management practices.
- Enhance the fishery by maintaining the habitat through needed structure placement, monitoring and maintenance of siltation problems and through an active stocking program.
- Maintain the integrity and ensure protection of wetland areas.
- Monitor the Kettle Creek watershed for potential pollution from private interests north of the park.
- Manage invasive species, both aquatic and terrestrial, with a removal and maintenance program.
- Manage gypsy moth, emerald ash borer, hemlock woolly adelgid and other forest pests in cooperation with the Pennsylvania Bureau of State Parks Resource Management and Planning Division and the Bureau of Forestry forest pest management objectives.



4 LAND CLASSIFICATION

4.1 LAND ALLOCATION

All project lands, for USACE water resource development projects, are allocated by USACE into one of four categories, in accordance with the congressionally authorized purpose for which the project lands were acquired. There are four possible categories of allocation identified in USACE regulations including Operations, Recreation, Fish and Wildlife, and Mitigation. When Alvin R. Bush Dam and Kettle Creek Reservoir were established, the Operations, Recreation, and Fish and Wildlife land allocation categories applied to the project.

Operations includes lands required to operate the dam and accomplish the primary authorized purposes of the project. All areas held in fee, except for those areas required for operation and maintenance of the dam, were designated for the secondary project purpose of recreation and environmental stewardship, per the 1964 Master Plan. All such lands are leased to DCNR, for development, operation, and management of KCSP. Under this agreement, DCNR operates public recreational facilities and fish and wildlife management programs (USACE 1964).

4.2 LAND CLASSIFICATION

The objective of classifying project lands is to identify how a given parcel of land shall be used now and in the foreseeable future. Land classification is a central component of this plan, and once a particular classification is established, any significant change to that classification would require a formal process including public review and comment. According to the 1964 Master Plan, all federal lands in the project area, excepting those required for operation of the dam, are designated for recreation and priority one public use in accordance with the provisions in EM 1130-2-302.

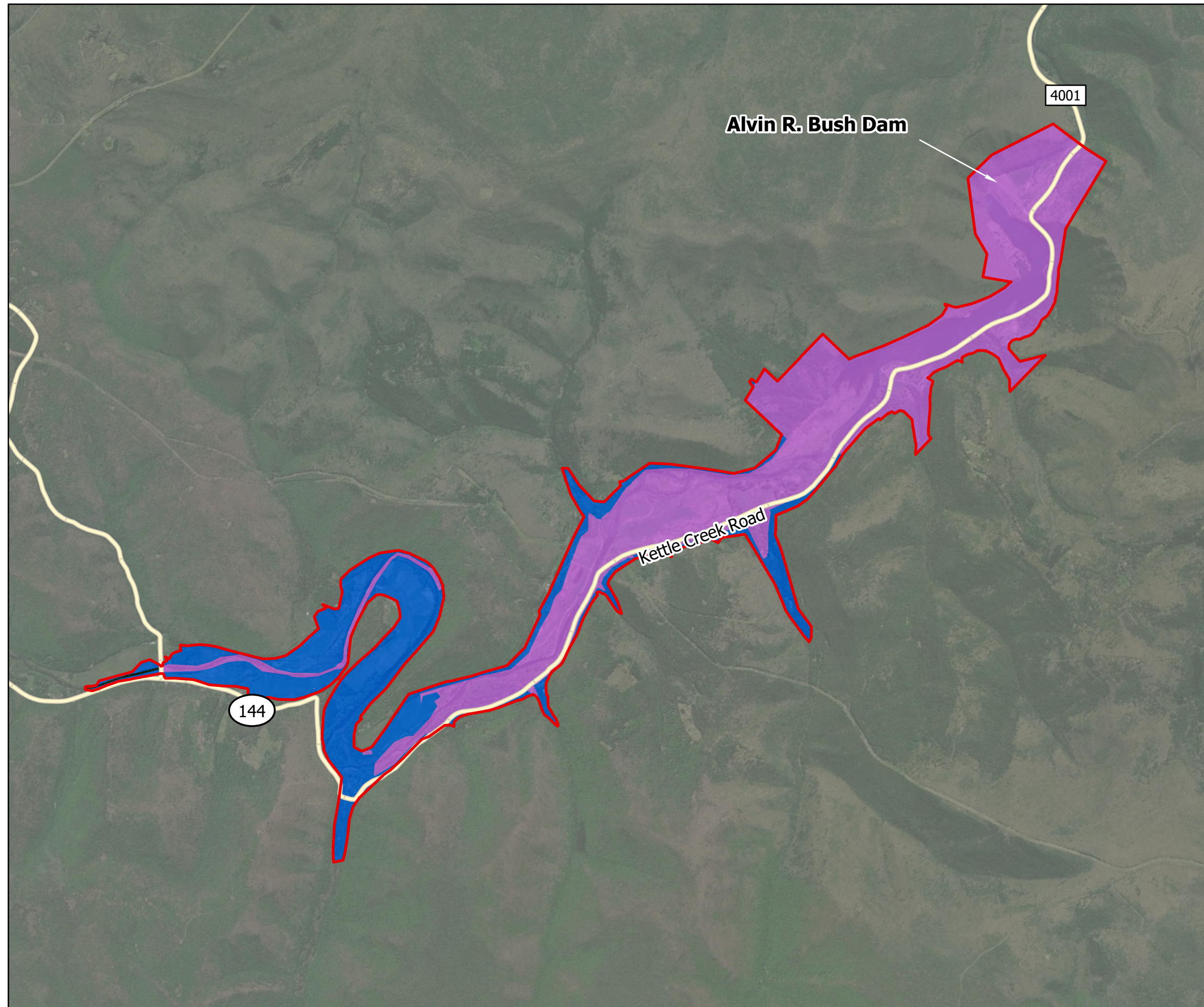
Land classifications were designated for any project parcel owned in fee by USACE. Figure 4-1 shows the total land acreages, either in fee or under easement, for the site. Lands held in easements are described in Section 4.3. Ongoing and planned management practices for each classification are outlined in Chapter 5 – Resource Plan.

4.2.1 Prior Land Classification

Land classification was completed when the project was originally constructed. The classification process refines the land allocations to fully utilize project lands and must consider public desires, legislative authority, regional and project specific resource requirements, and suitability.

The 1964 Alvin R. Bush Dam master plan land usage maps include criteria similar to the current land classification criteria. In the time since the earlier maps were published, surrounding land use, recreational opportunities, regional recreation trends, and land classifications have changed, thus classification revisions are necessary. Figure 4-2 shows a map of the prior land classifications. A summary of prior land classifications and newly proposed land classifications are provided in Table 4-1 below.




Figure 4-1 Real Estate



Alvin R. Bush
Master Plan Update

Real Estate

Legend

-  Bush Study Area
-  Easements
-  Fee Simple



Sources: Esri, Airbus DS, USGS, NGA, NASA, CGIAR, N Robinson, NCEAS, NLS, OS, NMA, Geodatastyrsen, Rijkswaterstaat, GSA, Geoland, FEMA, Intermap and the GIS user community, Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community, Sources: Esri, HERE, Garmin, FAO, NOAA, USGS, © OpenStreetMap contributors, and the GIS User

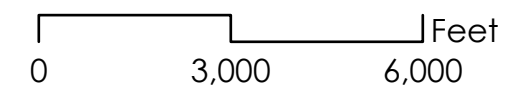
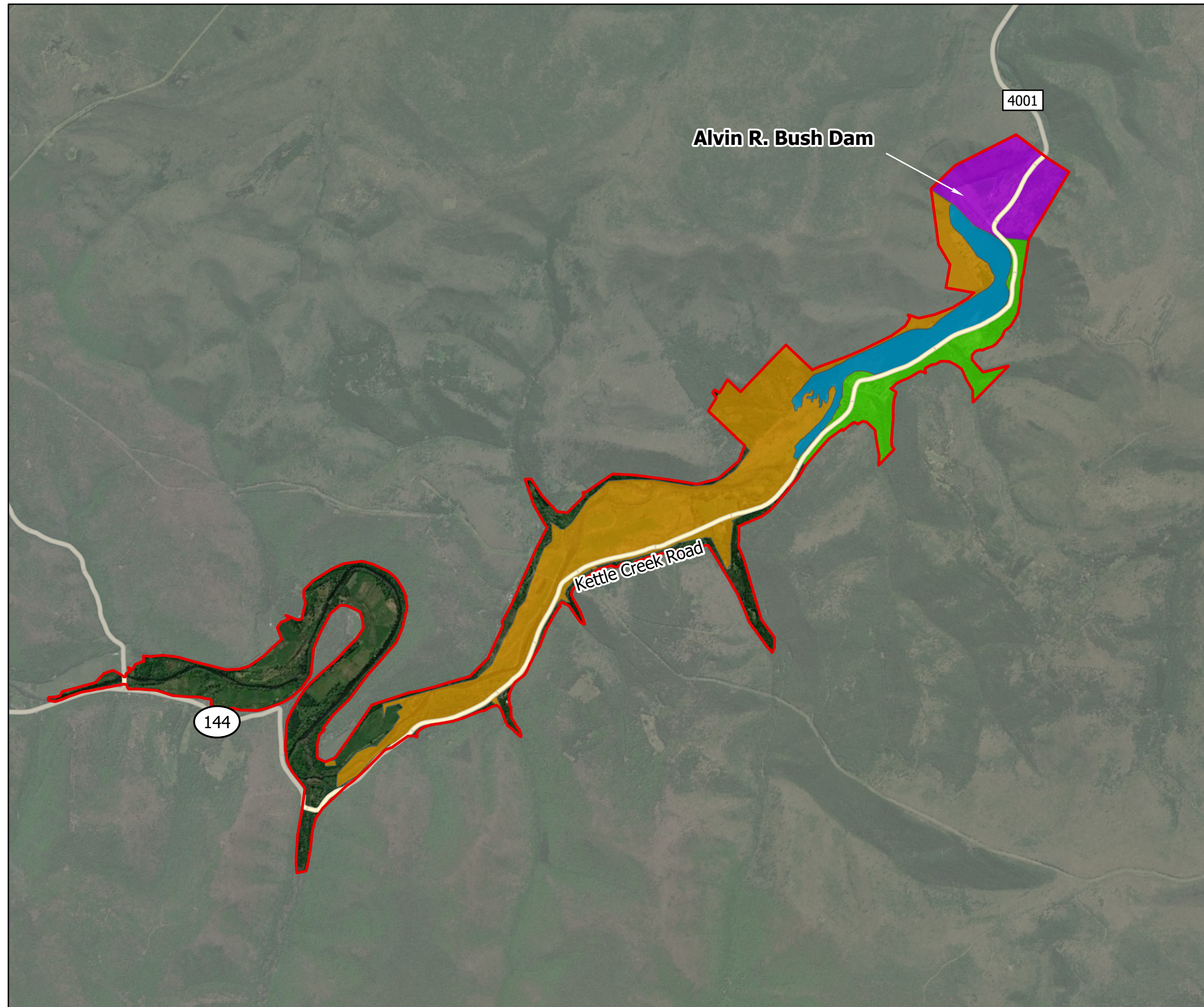


Figure 4-2 Prior Land Classifications



Alvin R. Bush
Master Plan Update

Prior Land Classifications

Legend

- Bush Study Area
- Prior Land Classifications**
- Conservation Pool
- Intensive Recreation
- Operations Area
- Wildlife and Forest Management



Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community, Sources: Esri, HERE, Garmin, FAO, NOAA, USGS, © OpenStreetMap contributors, and the GIS User Community

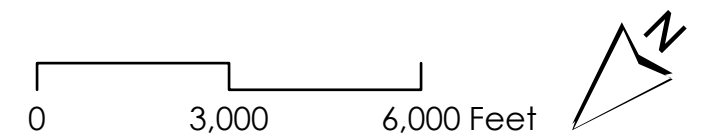


Table 4-1. Summary of Acreages for Prior Land Classifications and Current or Proposed Land Classifications.

Prior (1964) Land Classifications	Acres	Proposed Land Classifications	Acres
Project Operations	194.2	Project Operations	173.7
Intensive Recreation	141	High Density Recreation	173.9
Wildlife and Forest Management	772	Multiple Resource Management	
Conservation Pool	166	Low Density Recreation	719.6
Total	1,273.2*	Water Surface	
		Restricted	0.2
		Open Recreation	160.8
		Total	1,228*

**Mapping for the Master Plan update has been compiled using the best information available and is believed to be accurate. Prior land classification acres are based on original acquisition real estate deed records and mapping completed for the 1964 Master Plan. Due to improved mapping technologies, minor discrepancies exist when comparing prior and proposed land classification acreages. Discrepancies were primarily encountered between the prior land classification of Wildlife and Forest Management and the proposed land classification of Multiple Resource Management- Low Density Recreation.*

4.2.2 Proposed Land Classifications

Land classification indicates the primary use for which project lands are managed. There are 6 categories of classification identified in USACE regulation EP 1130-2-550, Chapter 3: Project Operations, High Density Recreation, Mitigation, Environmentally Sensitive Areas, Multiple Resource Management Lands (MRML), and Water Surface. Figure 4-3 shows the proposed land classifications at Alvin R. Bush Dam. The project does not have any lands classified as Mitigation or Environmentally Sensitive Areas.

Proposed land classifications were determined by identifying the prior land classifications in the 1964 Master Plan, evaluating the primary use the lands are managed for, and identifying the land classification that would apply to those areas.

4.2.2.1 Project Operations

This classification category includes all project land required for the structure, operation, administration, or maintenance of the project and that must be maintained to carry out the authorized purpose of flood risk management. Approximately 173.7 acres at Alvin R. Bush Dam are allocated to project operations, including the dam, control tower, operations offices, and maintenance facilities. Other operational units include the spillway, restricted access roads, and utility rights of way.

4.2.2.2 High Density Recreation

The High Density Recreation category includes lands developed for intensive recreational activities for the visiting public including the equestrian campground, KCSP offices, day use/picnic area, boat launch, and mooring areas. The two other campgrounds within KCSP are located outside of USACE-owned lands and are therefore not included in the scope of

this MP or within this land classification. This category includes approximately 173.9 acres of land.

4.2.2.3 Multiple Resource Management

This classification category identifies the predominant use of an area with the understanding that other compatible uses can occur within the area. This classification is divided into four sub-classifications identified as: Low Density Recreation, Vegetative Management, Wildlife Management, and Future or Inactive Recreation. There are 719.6 acres of land that are under this classification. The land classification maps (Figure 4-3) reflect the predominant sub-classification present in the project: Low Density Recreation.

The Low Density Recreation sub-classification covers lands with minimal development or infrastructure that support passive public recreation use, like fishing, hunting, wildlife viewing, or hiking. All federally-owned lands except those required for Project Operations are designated for recreational use (USACE, 1964). There are 719.6 acres of Low Density Recreation areas on project lands, which includes all federally owned lands not designated as Operations or High Density Recreation. Some areas of the project lands serve a major secondary role for vegetation and wildlife management and are described in Section 5.4.1.

4.2.2.4 Water Surface

In accordance with national USACE guidance set forth in EP 1130-2-550, the water surface of the lake at the conservation pool elevation may be classified using the following 4 classifications: Restricted, Designated No-Wake, Fish and Wildlife Sanctuary, or Open Recreation. At the Alvin R. Bush project only Restricted and Open Recreation Water Surface sub-classifications are present.

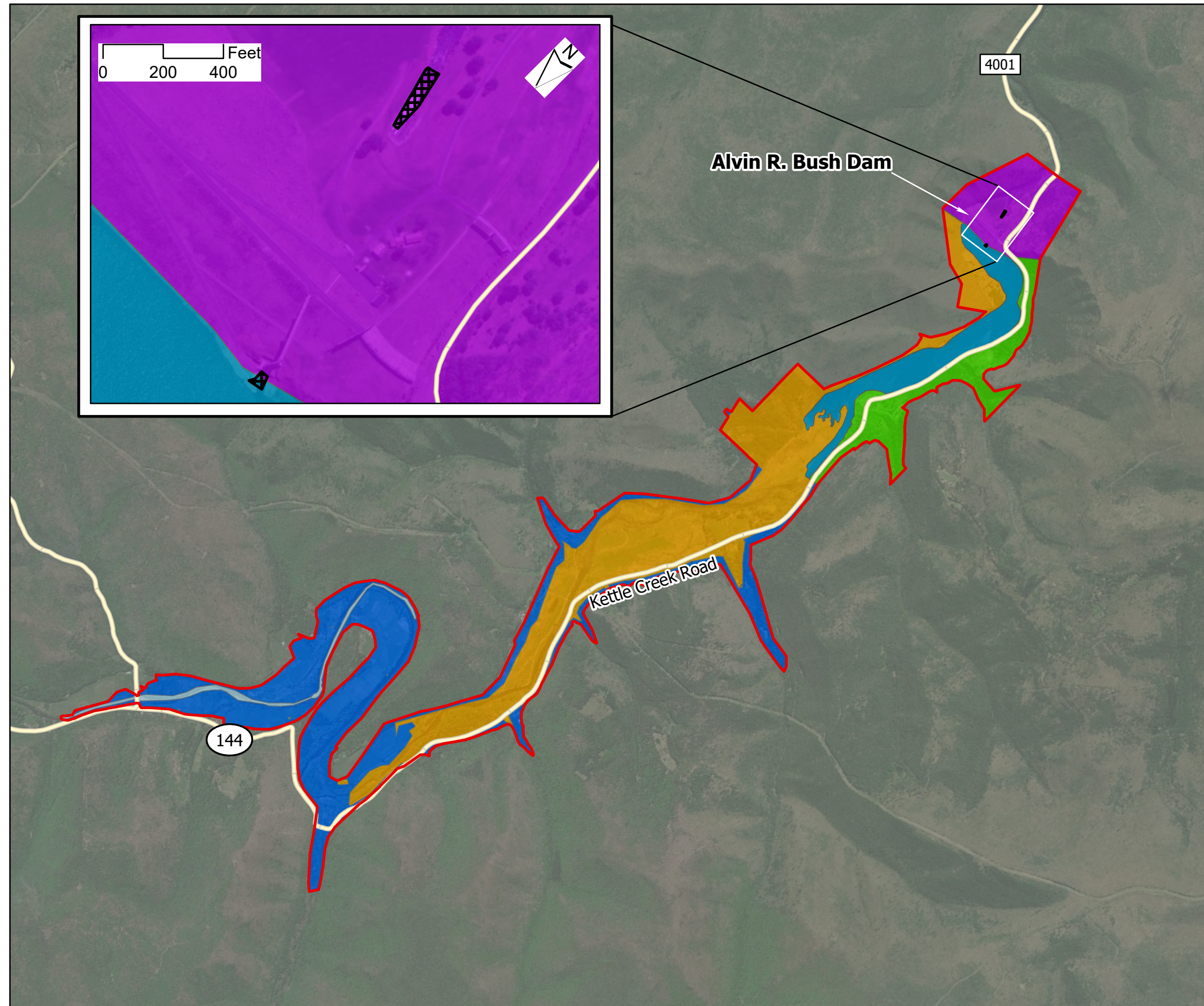
4.2.2.4.1 Restricted

Restricted water surface includes those areas where recreational boating is prohibited or restricted for project operations, safety, and security purposes. The Restricted water surface at Kettle Creek Reservoir includes a small area around the dam and intake tower and a small area around the stilling basin and drainage channel at the outlet structure. The total acreage of Restricted water surface is approximately 0.2 acres. These areas are marked with standard United States Coast Guard (USCG) regulatory buoys stating that boats are excluded from the area. In some instances, physical barriers may be in place on the water. Restricted areas at the project are marked by restricted signage on a cable and buoy at the intake and physical barriers and signage at the outlet structure.

4.2.2.4.2 Open Recreation

Open Recreation includes all water surface areas available for year-round or seasonal water-based recreational use. Apart from the Restricted area described above, the remaining water surface of approximately 160.8 acres at Kettle Creek Reservoir is designated as Open Recreation.









Figure 4-3 Proposed Land Classifications

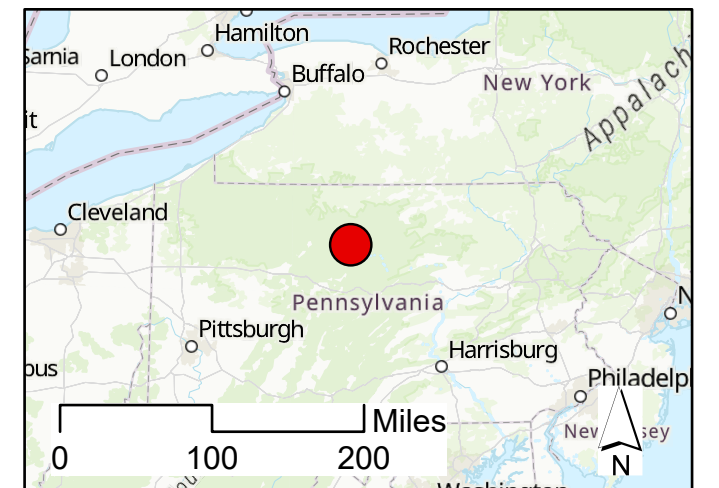


Alvin R. Bush
Master Plan Update

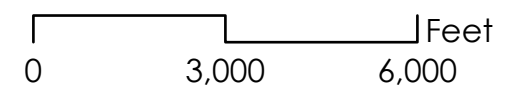
Proposed Land Classifications

Legend

-  Bush Study Area
-  Flowage Easement
-  River
- Proposed Land Classifications**
-  Project Operations
-  High Density Recreation
- Multiple Resource Management Lands**
-  Low Density Recreation
- Water Surface**
-  Open Recreation
-  Restricted Area



Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community, Sources: Esri, HERE, Garmin, FAO, NOAA, USGS, © OpenStreetMap contributors, and the GIS User Community



4.3 PROJECT EASEMENT LANDS

Easement lands include all lands for which USACE holds an easement interest but not fee title. Alvin R. Bush Dam holds flowage easement interests on 603 acres of land between elevations 892 feet and 945 feet PCD, which is 8 feet above the spillway crest. Flowage easements are easements purchased by USACE giving the right to temporarily flood private land during flood risk management operations. See Figure 4-3 for the locations of the flowage easements at the Alvin R. Bush Dam. No Operation or Conservation Easement classifications are designated in the project area.

USACE also maintains several outgrants in addition to the 1,079 acres out-leased to DCNR for operation of KCSP, as discussed in earlier chapters. These include a logging road outgrant to DCNR for access to Sproul State Forest, one outgrant for a gas pipeline, four outgrants for telephone communication lines and equipment, and one outgrant for electric lines. The outgrant agreements contain consent agreements for construction on property USACE holds in fee or easement, as applicable.

5 RESOURCE PLAN

5.1 RESOURCE PLAN OVERVIEW

This chapter sets forth a resource plan describing, in broad terms, how each land classification within the Master Plan will be managed. The management goals are included below and described in Section 3.2.

Project management goals:

- **Goal A** – Provide the best management practices to respond to regional needs, resource capabilities and capacities, and expressed public interests consistent with authorized project purposes.
- **Goal B** - Protect and manage project natural and cultural resources through sustainable environmental stewardship programs.
- **Goal C** – Provide public outdoor recreation opportunities that support project purposes and public interests while sustaining project natural resources.
- **Goal D** – Recognize the unique qualities, characteristics, and potentials of the Project.
- **Goal E** – Provide consistency and compatibility with national objectives and other state and regional goals and programs.

Management of lands, recreation facilities and related infrastructure must take into consideration the effects of pool fluctuations associated with the authorized flood risk management mission. Management actions are dependent on congressional appropriations, the financial capability of lessees and other key stakeholders, and the contributions of labor and other resources by volunteers. Table 5-1 lists the land classifications and applicable goals for each land classification at Alvin R. Bush Dam.

Table 5-1 Land Classification & Applicable Management Goals

Land Classification	Goals
Project Operations	A, E
High Density Recreation	A, B, C, D, E
Multiple Resource Management Lands for:	
• Low Density Recreation	A, B, C, E
Water Surface:	
• Restricted Area	A, E
• Open Recreation	A, C, E

5.2 PROJECT OPERATIONS

This land is associated with the dam and spillway structures that are operated and maintained for the purpose of fulfilling the flood risk management mission of Alvin R. Bush Dam. There are 173.7 acres of lands under this classification, all of which are managed by USACE.

Currently, the only future plans for lands within this classification are the stabilization of the spillway wall between the spillway crest and operations access road bridge. The stone wall in this area has eroded, and continued erosion may impact the spillway and Kettle Creek Road. The contract for construction will likely be awarded in FY 2023, with construction likely to begin in FY 2024. Dates are dependent on receipt of sufficient funding. Construction could take several years.

5.3 HIGH DENSITY RECREATION

Lands classified for High Density Recreation are currently developed for intensive recreational activities. Alvin R. Bush Dam has three distinct areas included in this classification. Depending on available space, funding, and public demand, lands classified for High Density Recreation may support additional outdoor recreation development. These areas include boat launches, day use areas, multi-use trails, and recreational fields. These areas have been developed to support concentrated visitation and use of the recreational facilities they host.

There are 173.9 High Density Recreation acres within project lands, all of which are leased to KCSP for recreational use. Thus, USACE does not provide direct maintenance within these areas, but does review requests and ensure compliance with applicable laws and regulations for proposed activities. USACE works with DCNR to ensure that the recreation areas are managed and operated in accordance with the goals and objectives prescribed in Chapter 3. A description of the amenities is provided as follows, along with a description of future plans within these areas.

5.3.1 Kettle Creek State Park Administrative Complex

The KCSP administrative area includes the State Park's offices, maintenance facility, a parking lot, restrooms, and an information kiosk. The offices are used daily by State Park staff and they are also where guests may check-in, receive information, or attend events hosted by the State Park. Behind the restroom facility is a telecommunications pad and pole leased to Bell Telephone. Renovations to the Administrative Complex were completed in 2003 and included improvements to the office, parking, and addition of the maintenance facility. No projects are currently proposed within the Administrative Complex.

5.3.2 Upper Campground Support Infrastructure

Kettle Creek State Park's Upper campground includes twelve 50 Amp electric campsites, fifteen non-electric camp sites, parking, a trail head, and amenities including water pumps, rustic restrooms, recycling and trash facilities, a playground, and a public phone. The campground access road is located within the USACE boundary, while the rest of the campground falls entirely within DCNR-owned lands.

Kettle Creek State Park plans to conduct several improvements to the Upper Campground, including adding a wastewater treatment system, upgrading the rustic restroom facilities to potentially include flush toilets and showers, the additions of a cabin colony and an amphitheater. Although final plans are not yet in place for these improvements, they may occur on and/or impact lands owned by USACE or be located entirely outside USACE-owned land.

The KCSP Facility Master Plan also includes proposed improvements to the alternate entrance road to the Upper Campground. The alternate entrance road is located within project lands

(see Figure 5-2) and is unpaved, overgrown, and difficult to access, especially by vehicles pulling large campers. During high water events, the main entrance to the Upper Campground can become inaccessible, making the alternate entrance road the only emergency evacuation route for the Upper Campground. This road may be improved and stabilized for use as the main campground entrance to allow for safe access and exit during high water events.

5.3.3 Day Use Area

The Day Use Area is below the park office along Bearfield Run and Kettle Creek Reservoir. The area encompasses several large, open fields with picnic tables, hot coal disposal, and potable water yard hydrants throughout. A parking lot and restroom facilities are on the east side of Kettle Creek Road. The area also includes a softball field, volleyball field, playgrounds, and a large memorial picnic pavilion with electric hook-up. The pavilion is only available on a first-come, first-serve basis. The Pine Grove Picnic Area, located near the parking lot, is available for reservations. Several possible new projects in the Day Use Area are proposed in the KCSP Facility Master Plan, including the following:

- Addition of a pavilion to the Pine Grove Picnic Area;
- Improved access and permanent mooring at the boat launch and mooring area; and
- Installation of a disc-golf course.

5.4 MULTIPLE RESOURCE MANAGEMENT LANDS

Multiple Resource Management Lands (MRML) are lands that serve multiple purposes, but are sub-classified and managed for a predominant use. The following paragraphs describe the various sub-classifications of these lands at Alvin R. Bush Dam, the number of acres in each sub-classification, and the management plan for these lands.

5.4.1 Low Density Recreation

Future management of these lands calls for maintaining a healthy, ecologically adapted vegetative cover to reduce erosion and improve aesthetics while also supporting low impact recreational opportunities. The public may use these lands for bank fishing, hiking, wildlife viewing, and for access to the shoreline. Hunting is allowed in select areas that are a reasonable and safe distance from High Density Recreational areas, dam operations, and adjacent residential properties. Alvin R. Bush Dam has a total of 719.6 acres in the MRML – Low Density Recreation classification, all leased to KCSP for recreational purposes. Thus, USACE does not provide direct maintenance within these areas, but does review requests and ensure compliance with applicable laws and regulations for proposed activities. USACE works with DCNR to ensure that the recreation areas are managed and operated in accordance with the goals and objectives prescribed in Chapter 3 of this Plan. A description of the amenities within these areas and any future improvements proposed by DCNR are included in the following sections.

5.4.1.1 North Forty Day Use Area

The North Forty Day Use Area encompasses the majority of MRLM – Low Density Recreation land classification and includes the Equestrian Campground and Trailhead and Wildlife Viewing Area, described below. The North Forty Day Use Area is open for fishing along Kettle Creek, hunting, wildlife viewing, and cross-country skiing (hunting is not permitted within the Equestrian Campground and Trailhead). Some trailheads for Sproul State Forest trails can be

accessed through this area. The North Forty Day Use Area is open year-round, however hunting and fishing seasons are set according to the DCNR, PGC, and PFBC. KCSP Facilities Master Plan includes the improvement of a parking area near Walters Run. Proposed plans for the Equestrian Campground and Trailhead and Wildlife Viewing Area are described below.

5.4.1.1.1 Equestrian Campground and Trailhead

An equestrian trail, 22 miles in length, starts at the Equestrian Campground and Trailhead Area and travels through Sproul State Forest. Overnight camping is open year-round at the Campground by permit only. Proposed future improvements to the Equestrian Campground and Trailhead include a restroom facility upgrade, wayside exhibits, interpretive signage, and improved parking.

5.4.1.1.2 Wildlife Viewing Area

A wildlife viewing area is located near the Equestrian Trailhead parking lot and from Kettle Creek Road east to Kettle Creek in the same vicinity. The KCSP Facility Master Plan includes plans to improve access to Kettle Creek for wildlife viewing and fishing access, and to expand wildlife habitat improvement work to include native habitat planting. Additionally, a short nature trail has recently been developed in this area to provide for additional access to Kettle Creek. Ongoing wildlife habitat improvement work in this area includes removal of invasive species and planting of native vegetation. This site is used for recreational activities including wildlife viewing and fishing access, therefore it is classified as Low Density Recreation. Wildlife habitat and vegetative management are secondary uses of this area.

5.5 WATER SURFACE

Per USACE policy set forth in EP 1130-2-550, the water surface of the lake at the conservation pool elevation may be classified as Restricted, Designated No-Wake, Fish and Wildlife Sanctuary, or Open Recreation. At the conservation pool elevation of 841 feet PCD, Kettle Creek Reservoir has a water surface area of 159 acres. The following water surface classifications are designated at Kettle Creek Reservoir.

5.5.1 Restricted

Restricted water surface includes those areas where recreational boating is prohibited or restricted for project operations, safety, and security purposes. The Restricted water surface at Kettle Creek Reservoir includes a small area around the dam and intake tower and an area at the outlet structure and stilling basin. The total acreage of Restricted water surface is approximately 0.2 acres.

5.5.2 Open Recreation

Open Recreation includes all water surface areas available for year-round or seasonal water-based recreational use. Except for the areas designated as Restricted, described in Section 5.5.1, the remaining water surface of approximately 160.8 acres at Kettle Creek Reservoir is designated as Open Recreation. Motorboats using the reservoir must display either a boat registration from any state, a launch or mooring permit from Pennsylvania State Parks, or a launch use permit from the PFBC.

A "No Wake" designation is available under the guidelines in EP 1130-2-550; however, Kettle Creek Reservoir is unique in that only electric or non-motorized vessels are permitted for use.

Electric-powered vessels, kayaks, canoes, and other non-motorized vessels are not likely to produce any appreciable wake, therefore a No Wake condition is an inherent characteristic of the Open Recreation land classification.

5.6 PROJECT EASEMENT LANDS

Future management of the approximate 603 acres of flowage easement lands includes routine inspection of these areas to ensure that the Government's rights specified in the easement deeds are protected. Placement of any structure that may interfere with the USACE flood risk management mission may be prohibited.

5.7 PROJECT IMPLEMENTATION PLAN

Except for the proposed spillway wall maintenance discussed in Section 5.2, all proposed projects occur on lands leased to and managed primarily by KCSP. Kettle Creek State Park manages future project development through their KCSP Facilities Master Plan, which is updated on a 3-year cycle. The implementation timeframe for KCSP projects discussed in this 2022 Master Plan are subject to funding and execution decisions made by DCNR, although USACE and DCNR coordinate to ensure compliance with applicable regulations and authorities.

Figure 5-1 Existing Features



Alvin R. Bush
Master Plan Update

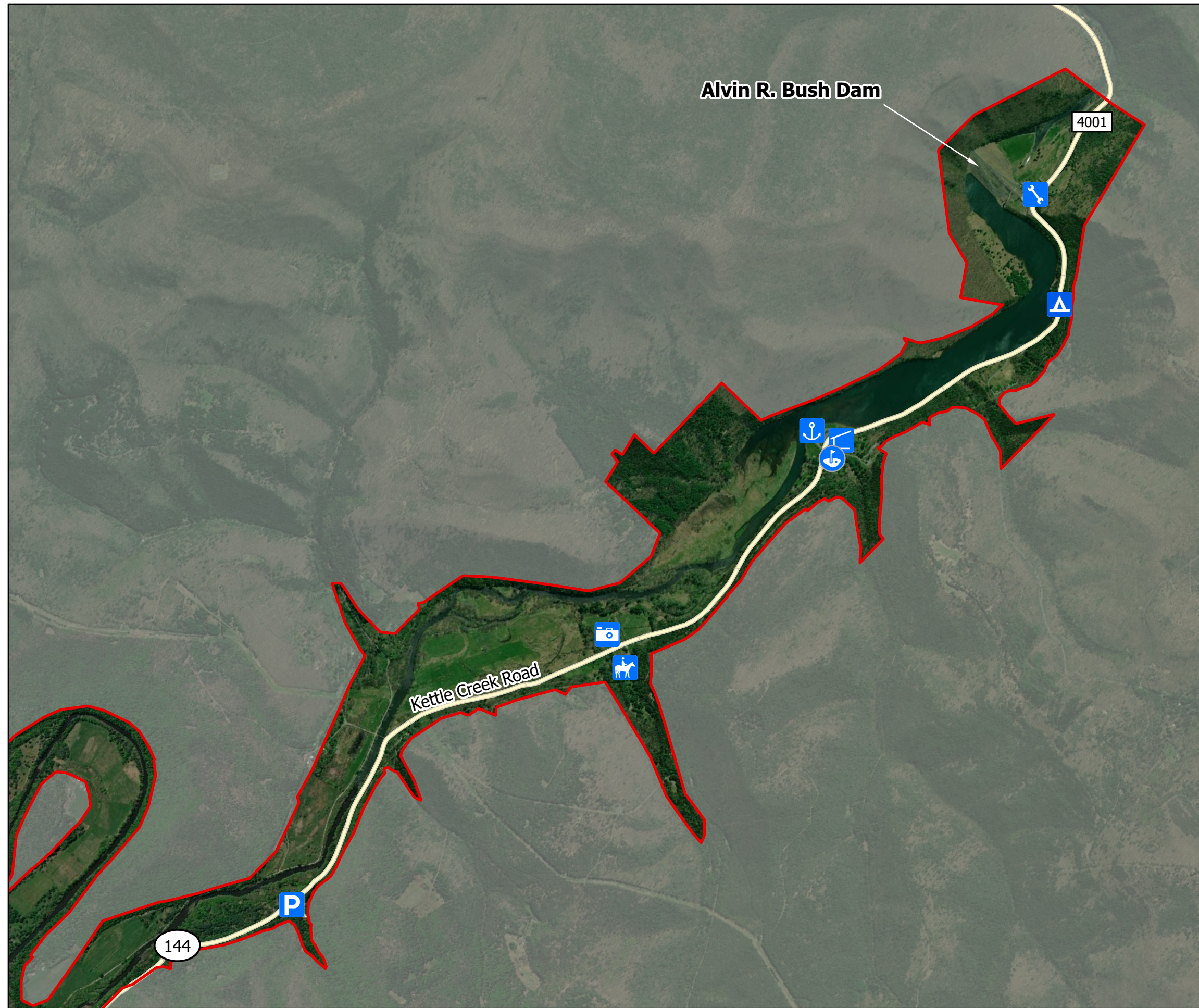
Existing Features

Legend

- Bush Study Area
- Existing Features**
- Alvin R. Bush Dam
- Administrative
- Bath, Toilet & Changing
- Boat Dock
- Campground Entrance
- Education
- Equestrian Trail
- Hiking
- Ice Skating
- Maintenance & Storage
- North 40 Day Use Area
- Overlook
- Parking
- Picnic Area
- Playground
- Recreation Field
- Shelters
- Snow Mobile Trail
- Water Distribution; Wastewater Treatment
- Existing Trails

Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community

Figure 5-2 Proposed Future Development

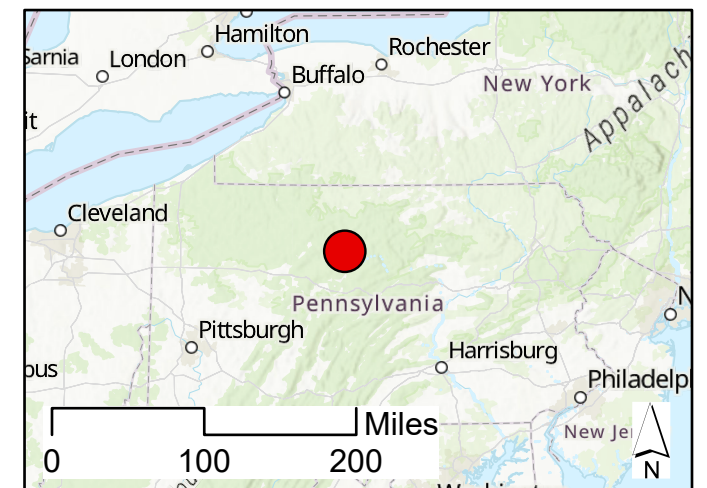


Alvin R. Bush
Master Plan Update

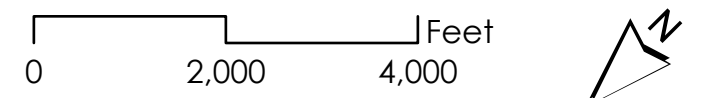
Proposed Future Development

Legend

-  Bush Study Area
-  Alternate Upper Campground Entrance
-  Equestrian Campground/ Trailhead Improvements
-  Future Disc Golf Area
-  Improve Parking Area
-  Mooring Area Improvements
-  Pavilion
-  Rock Wall Stabilization
-  Wildlife Viewing Area



Sources: Esri, Airbus DS, USGS, NGA, NASA, CGIAR, N Robinson, NCEAS, NLS, OS, NMA, Geodatastyrelsen, Rijkswaterstaat, GSA, Geoland, FEMA, Intermap and the GIS user community, Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community, Sources: Esri, HERE, Garmin, FAO, NOAA, USGS, © OpenStreetMap contributors, and the GIS User Community



6 SPECIAL TOPICS, ISSUES, CONSIDERATIONS

6.1 COMPETING INTERESTS ON NATURAL RESOURCES

Alvin R. Bush Dam's authorized purposes of flood risk management and recreation accommodate the needs of federal, state, and municipal users that have developed over time. The benefits provided by the project are critical to the local and regional economies and are of great interest to the public. Aside from operating the lake to meet the needs of those entities with contractual rights, there are many competing interests for the utilization of federal lands including recreational users, adjacent landowners, utility providers, and entities that provide and maintain public roads. A major challenge is balancing the interests of each of these groups to ensure that valid needs are met while simultaneously protecting natural and cultural resources. The purpose of this plan is to guide management into the foreseeable future to ensure the responsible stewardship and sustainability of the project's resources for the benefit of present and future generations.

6.2 NATURAL GAS UTILITIES

The project area was developed in 1950 to 1951 into a large natural gas-producing field, the Leidy gas storage field. The Leidy field was discovered on January 8, 1950, by the Leidy Prospecting company. Significant drilling activity followed the discovery in 1950, and much of the gas field was depleted by 1959 (Harper 1990). By the time the 1964 Master Plan was written, some natural gas still existed in the field, although further production on a large scale was deemed uneconomical. Today, the Project Area contains active natural gas infrastructure, including wells and pipelines, on leased areas originally acquired by the New York State Natural Gas Company.

6.3 CHESAPEAKE BAY TOTAL DAILY MAXIMUM LOAD AND WATERSHED IMPLEMENTATION PLAN

USACE is required to meet Total Maximum Daily Load (TMDL) requirements set by the EPA and handed down to states within the Chesapeake Bay Watershed. Through the USACE Chesapeake Bay Program, USACE initiated in the summer of 2020 a project to review potential stormwater management opportunities at multiple USACE project sites, including Alvin R. Bush Dam, to support the Chesapeake Bay TMDL compliance requirements detailed in the Pennsylvania Phase 3 Watershed Implementation Plan. Any potential to improve or implement stormwater management best management practices at the Project site will be documented in this effort and if necessary, coordinated with KCSP. The project will be complete in 2022.

6.4 ELK WATCHING AND HUNTING

Elk are native to the state of Pennsylvania but had become extirpated throughout their northeastern range by 1867. Elk found in the Alvin R. Bush Dam project area today are descendants of 177 elk reintroduced to Pennsylvania by the Pennsylvania Game Commission between 1913 and 1926. As of 2013, the state elk population was estimated to consist of 950 animals.

Elk prefer early successional and grassy habitats including forest clear cuts, revegetated strip mines, grassy meadows, and agricultural lands, and can also be found in open stream

bottoms. The Project Area has several open fields and stream bottoms that attract herds of elk each year and for this reason, this is a popular location for elk viewing, and more recently, elk hunting. Elk hunting was first allowed at KCSP in 2019 when it was opened to an archery and cow hunt program. In subsequent years, elk hunting at KCSP expanded to include a rifle season as well as commercial and guided hunts. Figure 6-1 is a map of the hunting boundaries within the project area and KCSP. Elk hunting at KCSP follows Pennsylvania Game Commission regulations. There are three elk seasons for which a limited number of licenses are distributed throughout 14 hunt zones each year. The Project Area falls within hunting zone 14, which awarded 15 licenses during the 2020 season.

6.5 SPECIAL EVENTS

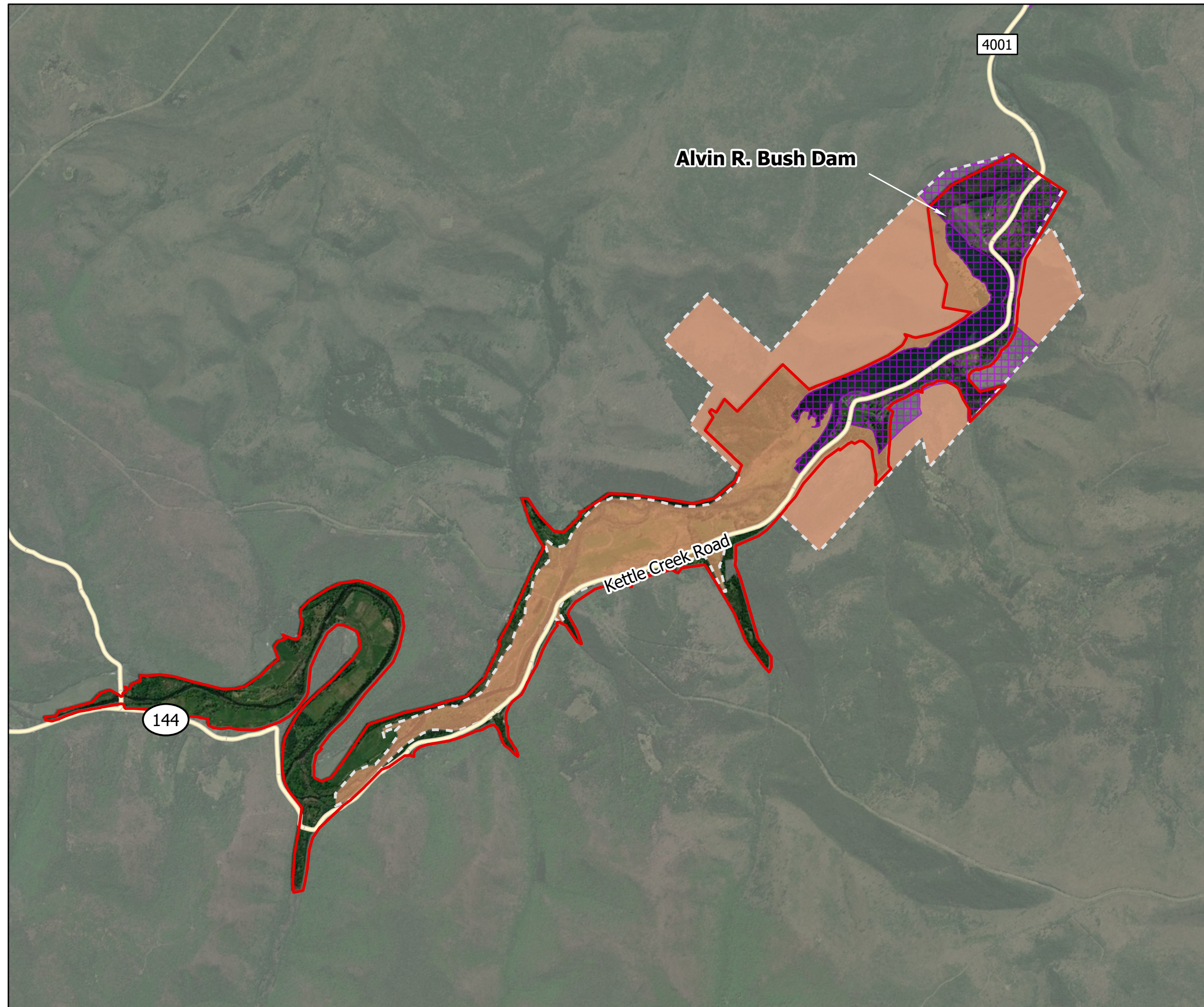
6.5.1 Fishing Tournaments

The Project Area is a popular local fishing spot for trout, bass, and panfish, and KCSP hosts four to five bass fishing tournaments each summer. The popularity of recreational fishing tournaments rapidly increased in the 1970s and 1980s. According to an article by Schramm and Hunt titled “Issues, Benefits, and Problems Associated with Inland Fishing Tournaments in the United States: A Survey of Fishery Agency Managers,” there are four overarching benefits of fishing tournaments, including: enhanced fishery management, increased popularity and interest in fishing, perceived positive economic value, and increased biological monitoring (Schramm, Jr., H. and Hunt, K. 2007). Enhanced fishery management occurs due to strengthening the positive relationship between the management team and the recreational fishers as well as promoting fishing as a valued activity on the site. Fishing tournaments increase the popularity and interest in fishing by recruiting new fishers in a fun, but also competitive atmosphere. Spectators at one tournament can come back as fishers at the next tournament. There is a perceived positive economic value for fishing tournaments. The idea of “pre-fishing” means that many fishers will come early and spend a few extra days at hotels or campsites, buy fishing supplies, and do other shopping activities. Tournaments also bring in spectators that participate in these economic activities. The final benefit of tournaments is secondary biological monitoring. Management teams can collect information on fish populations from observing what fish are being caught during the tournament.

6.5.2 Pennsylvania State Flaming Foliage Festival

The Pennsylvania State Flaming Foliage Festival is an annual festival timed with peak fall foliage colors each year. The event was started in 1949 and is held each year in the nearby town of Renovo during the second week of October. While the event does not take place directly in the Project Area, significant numbers of festival-goers camp at KCSP for the duration of the event and the park operates at or near capacity during this time.





Figure 6-1 Park and Hunting Boundaries



Alvin R. Bush
Master Plan Update

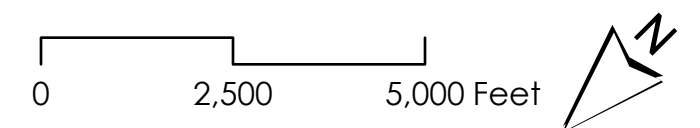
Park and Hunting Boundaries

Legend

-  Bush Study Area
-  Park Boundary
- Hunting Boundaries**
-  Hunting Allowed
-  No Hunting



Sources: Esri, Airbus DS, USGS, NGA, NASA, CGIAR, N Robinson, NCEAS, NLS, OS, NMA, Geodatastyrelsen, Rijkswaterstaat, GSA, Geoland, FEMA, Intermap and the GIS user community, Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community, Sources: Esri, HERE, Garmin, FAO, NOAA, USGS, © OpenStreetMap contributors, and the GIS User Community



7 PUBLIC AND AGENCY COORDINATION

USACE policy guidance in ER 1120-2-550, Change 7, January 30, 2013 and EP 1130-2-550, Change 5, January 30, 2013 requires thorough public involvement and agency coordination throughout the master plan revision process including any associated environmental assessment process. The following milestones provide a brief look at the overall process of revising the Alvin R. Bush Dam Master Plan:

- June 7, 2019, USACE published a Public Notice of Intent to Prepare an EA. No public comments were received.
- July 12, 2019, Local news website “LockHaven.com” published an article detailing the upcoming EA and master plan.
- July 15, 2019 and November 5 & 6, 2020, the planning team visited Alvin R. Bush Dam where initial introductions, site orientation, a site tour, and concept discussions took place; both during scoping and before drafting.
- March 22, 2022, Draft Master Plan & EA Submittal (Public Review). No public comments received.
- July 6, 2022, Final Master Plan and EA Submittal (FONSI signed).

Agency coordination was conducted by USACE with the USFWS through the Information, Planning, and Consultation online system to ensure compliance with Section 7 of the Endangered Species Act. A follow up letter requesting coordination was sent to USFWS on February 16, 2021. Coordination was also conducted with PGC, PFBC, DCNR, PADEP, Pennsylvania Department of Topographic and Geologic Survey, and USFWS through the Pennsylvania Natural Diversity Index website on February 16, 2021. Coordination correspondence is included in Appendix A of the EA.

8 SUMMARY OF RECOMMENDATIONS

8.1 SUMMARY OVERVIEW

The preparation of the Alvin R. Bush Dam Master Plan follows the USACE master planning guidance in ER 1130-2-550 and EP 1130-2-550, both updated 30 January 2013. Three major requirements set forth in the regulation and guidance include (1) the preparation of contemporary Resource Objectives, (2) Classification of project lands using the newly approved classification standards, and (3) the preparation of a Resource Plan describing in broad terms how the land in each of the land classifications will be managed into the foreseeable future. Additional important requirements include public involvement throughout the process, and consideration of regional recreation and natural resource management priorities identified by other federal, state, and municipal authorities. The study team followed this guidance to prepare a master plan that will meet the project's primary purpose of flood control and support the secondary purposes of recreation and environmental stewardship, as managed by DCNR through their operation of KCSP. Factors considered in the plan were identified through coordination with project representatives, USACE, DCNR, federal and state agencies, and the general public. This Master Plan will ensure the long-term sustainability of natural resources associated with Alvin R. Bush Dam and Kettle Creek Reservoir.

8.2 LAND RECLASSIFICATION

While changes in land classification at the project, as presented in Section 4, are indicative of future development initiatives at the lake, it should be noted that the majority of land classification changes at Alvin R. Bush Dam reflect classification criteria changes more than any planned development. A summary of land classification changes is provided in Table 8-1.

Table 8-1. Summary of Land Classification Changes

Prior Land Classifications	Acres	Current Land Classifications	Acres
Project Operations	194.2	Project Operations	173.7
Intensive Recreation	141	High Density Recreation	173.9
Wildlife and Forest Management	772	Multiple Resource Management	
Conservation Pool	166	Low Density Recreation	719.6
Total	1,273.2*	Water Surface	
		Restricted	0.2
		Open Recreation	160.8
		Total	1,228*

**Mapping for the Master Plan update has been compiled using the best information available and is believed to be accurate. Prior land classification acres are based on original acquisition real estate deed records and mapping completed for the 1964 Master Plan. Due to improved mapping technologies, minor discrepancies exist when comparing prior and proposed land classification acreages. Discrepancies were primarily encountered between the prior land*

classification of Wildlife and Forest Management and the proposed land classification of Multiple Resource Management- Low Density Recreation.

Land classification criteria is now more specific and conservative than previous versions of the Master Planning guidance. The new land classifications represent changes to descriptive language, rather than modification of land use at the site. For example, lands that would previously be classified as Wildlife and Forest Management may now be considered Multiple Resource Management: Future Recreation, Low Density Recreation, or Vegetative Management. The revised language does not indicate a reduction in areas actually managed for wildlife and forests; rather it recognizes that many areas on project lands may have multiple uses that encompass wildlife and forest management, as well as low density recreation and other uses. This nuance allows for the reclassification of undeveloped open space in the vegetative management category while identifying key areas to support low density recreation activities.

A key change in land classifications from the 1964 Master Plan to the 2022 Master plan is the identification of the Future Recreation subclassification under the Multiple Resource Management Land classification. The Future or Inactive Recreation subclassification refers to areas with site characteristics compatible with potential future recreational development or recreation areas that are closed. Until there is an opportunity to develop or reopen these areas, they are managed for multiple resources. These future recreation opportunities would be proposed and implemented by KCSP under the facility’s management plan. There are currently no specific areas identified for Future Recreation at the project, but there are areas under the Multiple Resource Management Land classification that may be targeted as opportunities in the mid- to long- range future management of the site.

A summary of land classification changes and justification is provided in Table 8-2.

Table 8-2. Summary of Land Classification Changes and Justifications

Classification	1964 Master Plan (acres)	2022 Master Plan (acres)	Description*
Project Operations	194.2	173.7	The Project Operations land classification was updated to include a section of the dam and spillway previously classified as intensive recreation. Although the mission-support areas of the project have not changed since the 1964 Master Plan, the land fitting the new criteria totals 173.7 acres (land providing direct support to the operations of the project’s primary mission).
Intensive Recreation	141	0	This land classification was included in the 1964 Master Plan; however, it is not included in the 2022 Master Plan due to changes in USACE policies. The High Density Recreation land classification (below) includes Intensive Recreation management considerations.

Classification	1964 Master Plan (acres)	2022 Master Plan (acres)	Description*
High Density Recreation	0	173.9	The new criteria for this land classification includes areas developed specifically to support intensive recreational activities. This land classification has been developed to support concentrated visitation and use of the recreational facilities they host.
Multiple Resource Management Land			
Low Density Recreation	0	719.6	The previous classification of low-intensity recreation is comparable to the intent of Low Density Recreation. Management of this land classification calls for maintaining a healthy, ecologically adapted vegetative cover to reduce erosion and improve aesthetics, while also supporting low-impact recreational opportunities such as bank fishing, hunting, hiking, wildlife viewing, and for access to the shoreline. The new land classification criteria include areas where vegetation and wildlife management may be secondary, to the predominant use of recreation..
Wildlife and Forest Management	772	0	This land classification was included in the 1964 Master Plan. These lands have been reclassified to the predominant use of Low Density Recreation subclassification (above), which includes wildlife management considerations.
Water Surface			
Conservation Pool	166	0	This land classification was included in the 1964 Master Plan; however, is not included in the 2022 Master Plan due to a change in land classification designations. The Water Surface classification now contains four sub classifications: "Designated No-Wake," "Restricted," "Fish and Wildlife Sanctuary" and "Open Recreation." Only two of the sub-classifications are applicable to Kettle Creek Reservoir: The Restricted and Open Recreation Area subclassifications.
Restricted	0	0.2	This change reflects new classification criteria: No actual change in water use will occur. This area includes the vicinity of the intake tower, the spillway, the outlet structure, and the stilling basin.

Classification	1964 Master Plan (acres)	2022 Master Plan (acres)	Description*
Open Recreation Area	0	160.8	This change reflects new classification criteria: No actual change in water use will occur. This area includes all remaining water surface area outside of the Restricted zones.
Designated No-Wake	0	0	Kettle Creek Reservoir only permits electric or non-motored vessels that are not likely to produce any appreciable wake. Therefore, a "No Wake" land classification was not necessary.
Total	1,273.2*	1,228*	

**Mapping for the Master Plan update has been compiled using the best information available and is believed to be accurate. Prior land classification acres are based on original acquisition real estate deed records and mapping completed for the 1964 Master Plan. Due to improved mapping technologies, minor discrepancies exist when comparing prior and proposed land classification acreages. Discrepancies were primarily encountered between the prior land classification of Wildlife and Forest Management and the proposed land classification of Multiple Resource Management- Low Density Recreation.*

9 APPENDIX

APPENDIX A: ACRONYMS AND ABBREVIATIONS

ACS	American Community Service
ARPA	Archaeological Resources Protection Act
BP	Before Present
CEPD	Comprehensive Evaluation of Project Datums
DCNR	Pennsylvania Department of Conservation and Natural Resources
EA	Environmental Assessment
EOP	Environmental Operating Principles
EP	Engineering Pamphlet
ER	Engineering Regulation
EO	Executive Order
FY	Fiscal Year
GIS	Geographic Information Systems
KCSP	Kettle Creek State Park
MP	Master Plan
MRML	Multiple Resource Management Lands
NAVD 88	1988 North American Vertical Datum
NEPA	National Environmental Policy Act
NGVD 29	National Geodetic Vertical Datum of 1929
NHPA	National Historic Preservation Act
NOAA	National Oceanic and Atmospheric Administration
NRHP	National Register of Historic Places
PADEP	Pennsylvania Department of Environmental Protection
PCD	Project Construction Datum
PFBC	Pennsylvania Fish and Boat Commission
PGC	Pennsylvania Game Commission

SCORP	Pennsylvania State Comprehensive Outdoor Recreation Plan
TMDL	Total Maximum Daily Load
USACE	U.S. Army Corps of Engineers
USEPA	U.S. Environmental Protection Agency
USFS	U.S. Forest Service
USFWS	United States Fish and Wildlife Service
USGS	United States Coast Guard
VUM	Visitor Use Monitoring
ZOI	Zone of Interest

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APPENDIX C: KICK-OFF MEETING MINUTES

KETTLE CREEK STATE PARK MP SITE VISIT- NOTES

DATE: 7/15/19

Attendees: Andy Hofmann- Operations FRM NRMS, Bob Gardner- Head Dam Operator, John Shearer- Asst. Dam Operator, Sarah Lindgren- Park Manager, and Brian Long

Ideas the Park is considering:

Boat Launch- Siltation and muck build up has occurred to the point where it is impacting the canoe/kayak launch site. Needs dredged.

-Only non-motorized watercraft allowed.e

The State Parks Regional Team will be coming down in August for a planning visit (ie. identify future projects for the park.)

- e The Park is exploring ways to provide current family oriented type of activities besides just fishing.e
- e Mooring and Launching area needs dredging by us or them (See photos on phone).e
- e Improve mooring area, by constructing mooring racks. Need funding, and needs to be done at low water.e
- e Would like to add boat trailer parking, and eliminate car parking, b/c no designated trailer parking exists at the park.e
- e Want to shrink the picnicking area. There is way too much picnicking area. The park would like to reduce the picnic area, remove some water fountains (there are way too many). And add family friendly disc golf course.e
- e The picnic grove is outdated, and does not get used much due to the risk of weather.e People now want pavilions. Park is thinking about constructing a pavilion or two on the ball field side of the road. They would create a new parking area for the pavilions along the dumpster road.e

Would like to have a watercraft (kayak) concession or manage kayak rentals out of the park.

Have trails for snowmobiling in the winter months.

***Invasive Species- See the invasive species management plan. Talk with Paul.

***Request visitation data for the park. New traffic counters recently installed, and for June 2019 estimated numbers around 11,000 visitors for the month.

Equestrian Camping Area (Further planning from the park to take place)-

- e The park is potentially considering getting rid of the equestrian camping area, and just having a day use area. But if they decide to keep the Equestrian Camping area they would plan to modify and improve the area.e
- e The park serves more as a trail head/camping area for horseback riders. The trail goes onto Forestry lands (miles and miles of trails on forestry lands).e
- e Bathroom really needs work.e

Bush Site Visit- 05-06 Nov 2020

Representatives of USACE Operations and Planning Divisions met with representatives from Alvin R. Bush Dam and Kettle Creek State Park (KCSP).

Objectives

- 1) Dam
 - a. Introductions with Dam Tenders
 - b. Get a tour of the dam
 - c. Ask questions on dam operations for that portion of the plan
 - d. Take photos.
- 2) Park
 - a. Meet with Park Managers
 - b. Tour the recreational areas and familiarize ourselves with recreation portion of the sites
 - c. Future needs for recreation
 - d. Photos

Meeting with Kettle Creek State Park Manager- 05 Nov 2020

****Notes gathered during meeting are in italics****

- a. Inventory of current KCSP facilities at the site (Facilities located within USACE land are those within the flood zone)
 - i. Camping - >40 sites
 1. Modern and rustic campsites, some with electric
 2. *Most of the campgrounds are located outside of the leased/outgrant zone. The equestrian campground is the only campground located within USACE land.*
 - ii. Boating- boat launch and boat mooring for 60 vessels at northern end of the lake. *Dredging is needed in the boat launch area since there are issues with access points for boats. There is some erosion in the boat launch and mooring area that needs to be addressed. However, funding is currently not available for dredging of area.*
 - iii. Equestrian trailhead- 22 miles long. *Just the trailhead is located within USACE land. The remainder of the trail is within the surrounding Sproul State Forest and is maintained by Sproul State Forest.*
 - iv. Picnic area. Pine Grove Picnic Area. *Located within USACE land. Pavilion may be located outside of USACE land.*
 - v. Fishing- 167-acre Kettle Creek Reservoir (trout and bass fishing).

1. Abandoned mine drainage limits fishing below the lower campground- *the lower campground is not located within USACE land.*
 2. *Fishing within the lake and river is different based on the PA Fish & Boat Commission rules.*
 3. *PA Fish & Boat commission does enforcement on lake and river, but KCSP will also do enforcement if needed. USACE would do enforcement during floods.*
- vi. *Hiking- 2 miles of trails are located within KCSP. Most of the trails begins within KCSP then go into Sproul State Forest. A new, unnamed trail, is located within USACE land, on other side of the main road across from equestrian campground. Alice's trail goes through some of the southernmost portion of USACE dam operations land.*
 - vii. *Hunting- park is open to hunting, trapping, and training of dogs during established seasons. Elk hunting season is currently open. There was question as to whether hunting is allowed within USACE land. Historically, hunting has been allowed within the permitted areas of the USACE land (not within day use or campground areas). Hunting areas are outlined on KCSP map.*
 - viii. *Winter activities: ice fishing, snowmobiling, cross-country skiing, sledding and tobogganing. Access to snowmobile trails located within KCSP then goes off into Sproul State Forest.*
- b. Distribution
 - c. *Which things are Seasonal vs. Open year-round? Campgrounds are seasonal. Day use areas are open year-round. Winter activities. Trails open. Hunting and fishing (seasonal based on regulations).*
 - d. *How is site managed? Who? How many? Follow-up with KCSP if needed for this information.*
 - e. Park Users
 - i. *Numbers/Popularity of the various recreational activities at the site- Andy receives numbers from KCSP. Follow-up and request numbers from Operations.*
 - ii. *Do you keep visitation records or do visitation surveys? Peak numbers when? Certain days? Certain times of year?*
 - iii. *Visitation near capacity for certain facilities? Certain things always full? Etc.*
 - f. Hunting
 - i. *Animals hunted- Groundhog hunting not allowed.*
 1. Deer
 2. Grouse
 3. Squirrel
 4. Bear
 5. Turkey
 6. Elk
 7. Pheasants
 - ii. *PA Game Commission sets rules for hunting but park has some specific limitations.*

- iii. Locations allowed specified on KCSP map.
- g. Fishing
 - i. How is stock? *Stocked heavily with trout, panfish, and bass by the PA Game commission*
 - ii. Quality of fish caught- *very good quality and good fishing.*
 - iii. Fish Structures? *NO.*
 - iv. Tournaments? *4-5 tournaments per year.*
- h. Species of Concern
 - i. Threatened and Endangered
 - 1. Habitat for Allegheny Woodrat but no confirmed sightings
 - ii. Invasive/nuisance
 - 1. Plants
 - a. Japanese knotweed – removal program
 - b. Reed canary grass - removal program
 - c. Autumn Olive – removal program
 - d. Multiflora Rose – removal program
 - e. Garlic mustard
 - f. Japanese barberry
 - 2. Insects
 - a. No spotted lanternfly
 - b. Emerald Ash borers have already decimated ash trees and have moved on
 - c. No hemlock wooly adelgid, but it is found nearby
 - 3. Birds
 - a. Geese –
 - i. Consistent efforts to addle geese
 - ii. Must use these efforts for 3 years before USFWS will give permit for take
- i. Cultural features (Environmentally sensitive areas)? *None that KCSP is aware of. A cemetery sign was noted near Leidy Bridge, but KCSP indicated that is located up the mountain (outside of USACE land).*
- j. Current Issues
 - i. Water Quality
 - 1. Water quality ever an issue for any type of recreational activity on site? *The beach was closed down years ago due to the disrepair of the beach house as well as high e.coli count in the water due to geese. Currently, geese populations are controlled through addling. The toilets within the day use area are regularly pumped.*
 - ii. Erosion problems?
 - 1. Bank stabilization- noted above under item a. ii.
- k. Future Opportunities/Development Ideas
 - i. Confirm if these future plans listed during last meeting with park manager in May 2019 have been completed or are still planned:

- Rental pavilion near the playground- *Has not been completed. KCSP would like a pavilion added in the picnic area near the lake, since current pavilion is located near the office and is not very visible.*
- Move the parking area- *not completed. May change the parking area to accommodate trailers.*
- Restructure the day use area- *not completed. Primarily the mooring area due to erosion and boat access concerns.*
- Redo the mooring area—dredging. *Not completed. An issue for all of the lakes. See above and item a. ii.*
- Construct a Disc Golf Course. *Not completed. Proposal has been written and is currently under review by the regional and state park offices.*
- Condense the picnicking area. *Currently working on proposal. Would like to remove the picnic area on the other side of the road, near the office, to accommodate emergency landing area.*
- Change the main entrance to above the high water mark. *Not completed. Main entrance to upper campground closes completely during floods and there is no secondary road access. Would like to build a secondary road to main road.*
- Create a wildlife viewing area- *Not completed. Elk viewing area proposed near the new unnamed trail. Would be located on USACE land. Would include a wildlife viewing blind across (allows visitors to sit in structure and view wildlife without being seeing by wildlife- one way glass).*

l. Send Appendices and Maps from Master Plan- *Request info from PADCNr (see below).*

m. Special Topics

- i. Any special topics? Special considerations? Big events?
- ii. *Events: birding festival in May draws up to 100 people. Fishing tournaments.*

-Received KCSP Facility master plan from Paul Zeph (PADCNr Planning Section Chief) on Aug 19. Any updates to this facility master plan? Is Paul Zeph still a good contact for state park data? *Yes, Paul Zeph still a good contact. Follow-up to find out if USACE can get a copy of the facility's Master plan, including currently planned and future projects.*

-Request resource management plans for KCSP from PADCNr.

-Is there an outgrant for timber sales? Are there any issues or concerns? There is no outgrant or selling of timber.

-Any data to share in addition to resource data, management plans: such as cultural, GIS shape files, mailing lists? *Follow-up with PADCNr.*

-Additional information/notes:

- *Visitors are primarily from Philadelphia and Harrisburg areas.*
- *Currently there are no kayak or canoe rentals on site. KCSP would like to add but no plans underway. Kayaks and canoes are owned by KCSP and used only for educational programs where visitors learn how to kayak or canoe with educators. These cannot be used for rental purposes.*

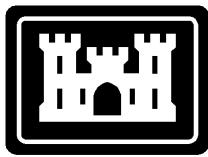
- *There is a gas well in the equestrian area. Andy sent out a letter to gas company during scoping. Dominion Gas well but was recently bought by another company. Area has largest storage basin of natural gas in the East coast. Follow-up: do we need to send a new letter to new company? Or at least make sure to add to stakeholder contacts, if not already added.*

Meeting with Dam Tender - Bob Gardner- 06 Nov 2020:

- a. Do you use the 1962 O&M manual? Any updates? *The O&M currently used in from 87'. Follow-up- need latest version. The regulation manual used is from 98'.*
- b. Design of Dam
 - iii. Explain design of dam. *The dam has three gates that flow into one main tunnel that runs under the earth dam. There are two spillways that take water from the top. A fish gate (12" pipe), takes flow from the bottom of the lake. Temperature of outflow can be somewhat regulated this way although temperature readings are not taken.*
 - iv. Hydropower? *No.*
 - v. *Designed for 100 yr floods.*
 - vi. *The minimum flow is 10 cfs. The dam has never had spillway flow. The elevation would need to be 947' to be overtop of spillway. Highest elevation recorded 923'*
 - vii. *The dam does not have water storage for Susquehanna River Basin commission.*
- c. Current Purposes
 - viii. Flood control on the West Branch Susquehanna River (primary purpose)
 - ix. Recreation (secondary purpose)
 - x. Any other use? *No other uses.*
- d. When do you do releases?
 - xi. Weather
 - 1. *More/less rain/no rain. Water releases to maintain flow and flood risk management. Depends on elevation.*
 - xii. Emergency
 - 1. *Hurricane or other flood release all for structural purposes. Water control (USACE) regulates and coordinates with other FRM projects if releases are needed during storms. There is a gage in town (Renovo) that tenders monitor. There is an upstream gage in Crawford, about 12 miles upstream of project.*
 - 2. *Drought? Lake really low? Water supply shortage? No water supply purpose.*
 - 3. *When elevation reaches 850', the road to the upper campground in KCSP floods. This happens around 2-3 times a year but did not occur this last year. When road floods PennDOT closes the road on the other end and USACE closes the main road near the dam. However, only PennDOT opens the road following a flood.*

- xiii. Seasonal height differences? *There are no seasonal differences. 841' is regular elevation. Currently at 842'.*
 - e. Regulation Problems- No.
 - f. Water Quality
 - xiv. Moderately alkaline with low conductance. *pH meter in Renovo. Typically high 6, low 7. Currently 7.3.*
 - xv. Creek and lake support natural and stocked fisheries.
 - xvi. Large volume released into West Branch due to sudden reservoir release or storms, may cause acid slug. (Still a concern?) *This is not an issue.*
 - xvii. ~~Four flood control reservoirs (Curwensville, Stevenson, Bush, and Sayers)~~ operated as a system to reduce acid slugs. *Curwensville has the greatest potential for creating acid slugs. Acid slugs are no longer an issue for Bush dam releases.*
 - g. Current Issues?
 - xviii. Erosion? *There is an erosion issue along the road at the top of the western spillway wall. The top of the wall has slowly eroded over the years. A stabilization project by USACE is planned. Construction is expected to occur in 2021. USACE is coordinating with PennDOT to stabilize the top of the wall and side of road. The stabilization project also includes rehab of the outlet structure. Follow-up if needed to gather specific details.*
 - h. Any planned maintenance projects to Operations lands? *See item g. above.*
 - i. Special Topics
 - xix. Any special topics? Special considerations? Big events?
 - o *Renovo Foliage festival draws a large crowd to the area every year.*

APPENDIX D: PUBLIC NOTICES AND PERTINENT NEWSPAPER ARTICLES



**US Army Corps
of Engineers**
Baltimore District

Operations Division

Public Notice

Alvin R. Bush Dam Project Master Plan Revision and Environmental Assessment

All Interested Parties: The U.S. Army Corps of Engineers, Baltimore District (USACE-Baltimore) is in the process of updating the Master Plan (MP) and preparing an Environmental Assessment (EA) for the Alvin R. Bush Project (ARB) located on Kettle Creek in Clinton County, Pennsylvania. The update of the plan will be in accordance with the National Environmental Policy Act of 1969, as amended, the January 2013 updates to the Engineer Regulation (ER) and Engineering Pamphlet (EP), and the November 2015 policy memorandum Revision to ER and EP 1130-2-550 Master Plans.



Photo: U.S Army Corps of Engineers

ARB was authorized by the Flood Control Act of 1954, and was constructed, and is managed, by USACE for the purposes of flood risk management, recreation, and environmental stewardship. This Master Plan considers all USACE-managed and maintained portions of land at ARB. It does not consider specific future development opportunities for leased areas, such as Kettle Creek State Park (Managed by Commonwealth of Pennsylvania Department of Conservation and Natural Resources).

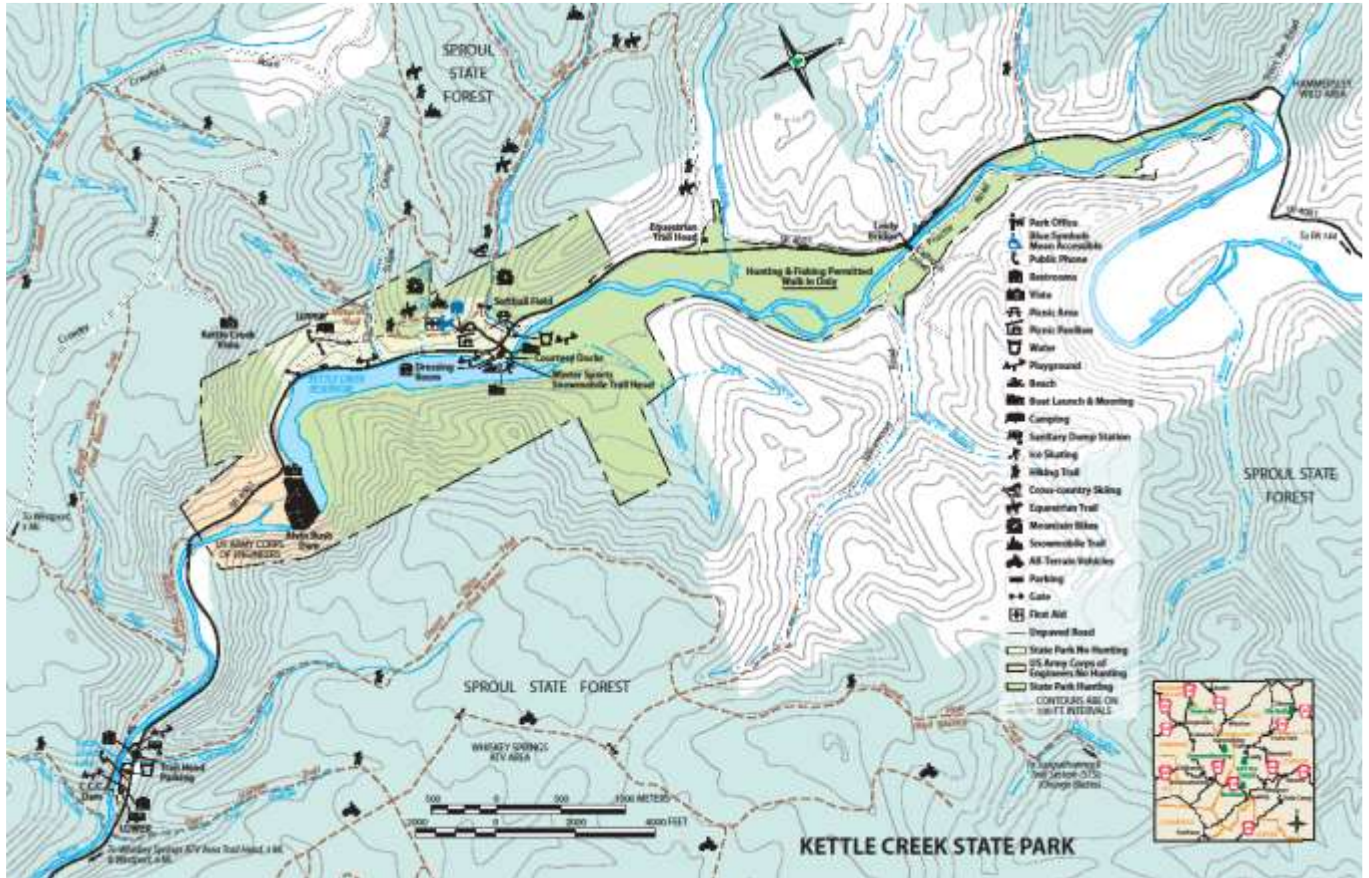
The draft MP supplement and EA are anticipated to be publicly released in spring 2020. The purpose of this notice is to inform the public of the initiation of the preparation of an EA for the ARB Project Master Plan. We request that federal and state agencies provide information concerning interests within your organization's area of responsibility or expertise, and the public provide information that may be pertinent to this assessment. The agencies and public can provide comments or information that may be pertinent to this assessment to the address listed below until July 7, 2019. A timely review of the enclosed map and a written response will be greatly appreciated and will assist us with preparation of the EA.

A public review meeting will be held after the initial public submittal to allow opportunity for the public to submit ideas, comments, and feedback on the Draft Master Plan and Draft EA. This public review meeting will be scheduled when the draft master plan and EA have been completed. An invite will be distributed in advance of the meeting indicating the location and time of the event. All updates regarding the Master Plan Update and public meetings may be found on the following site: <https://www.nab.usace.army.mil/ARB-Master-Plan-Revision/>.

If you would like to request a public scoping meeting to discuss the scope and intent of this project OR if you have any questions, please contact Natural Resource Management Specialist, Andy Hofmann at (410) 962-4370 or at Andrew.D.Hofmann@usace.army.mil by July 7, 2019.

Additionally, questions can be mailed to U.S. Army Corps of Engineers, Operations Division,
Subject: Alvin R. Bush Dam Project, 2 Hopkins Plaza, Baltimore, MD 21201.

Link: [Lake Master Plans](#).



U.S. Army Corps of Engineers

DEPARTMENT OF THE ARMY
U.S. Army Engineer District, Baltimore
Operations Division
2 Hopkins Plaza
Baltimore, Maryland 21201

Official Business

The Express

JUL 12, 2019

Army Corps begins Bush Dam master plan revision process

KETTLE CREEK — The U.S. Army Corps of Engineers has begun the process of updating the Master Plan and preparing an Environmental Assessment for the Alvin R. Bush Dam project in Clinton County.

All Army Corps dam projects have a master plan that serves as the project's guiding document for responsible decision making for a lifespan of 15 to 25 years. Master plans include land use classifications that govern the way land is managed and used at the project to provide good stewardship and outdoor recreation.

The Alvin R. Bush Dam Master Plan revision will consider all Army Corps managed and maintained portions of land at Alvin R. Bush Dam. The revision will not consider specific future development opportunities for leased areas, such as Kettle Creek State Park, which is managed by the Commonwealth of Pennsylvania's Department of Conservation and Natural Resources. The Master Plan revision will also not change the technical operations of the lake as related to its primary mission of flood risk management.

Alvin R. Bush Dam's last master plan revision was in 1964. The revision is part of an Army Corps-wide effort to bring master plans up to date across the country.

An Environmental Assessment (EA) is being prepared in accordance with National Environmental Policy Act (NEPA) guidelines. The Army Corps is requesting that federal and state agencies provide information that may be pertinent to this assessment.

The public can request a public scoping meeting to discuss the scope and intent of this project with the Army Corps. Questions, feedback and requests for a scoping meeting can be sent to Andy Hofmann at Andrew.d.Hofmann@usace.army.mil or (410) 962-4370 by July 13, 2019. Additionally, questions can be mailed to U.S. Army Corps of Engineers, Operations Division, Subject: Alvin R. Bush Dam Project, 2 Hopkins Plaza, Baltimore, MD 21201.

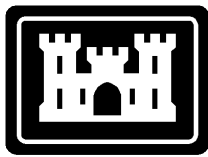
All updates regarding the Master Plan revision, future public meeting information and ways to submit comments or questions may be found on the following site: <https://www.nab.usace.army.mil/ARB-Master-Plan-Revision/>

The draft Master Plan and EA are anticipated to be publicly released in spring 2020. A public review meeting will be held during this time for the public to submit ideas, comments, and feedback on the draft Master Plan and draft EA. Details will be announced in advance of the meeting indicating the location and time.

The Alvin R. Bush Dam project has prevented an estimated \$272.3 million in flood damages for the local community since its construction was completed in 1962. Alvin R. Bush Dam is located in Clinton County on Kettle Creek approximately 8.4 miles above the mouth of the creek and about 15 miles above Renovo, Pennsylvania.

Alvin R. Bush Dam is an earth and rockfill dam structure. The project controls a drainage area of 226 square miles or about 92 percent of Kettle Creek. The project reduces flood heights of Kettle Creek below the dam and of the West Branch below the mouth of Kettle Creek.

The recreational facilities are operated and maintained by the Department of Conservation and Natural Resources of the Commonwealth of Pennsylvania. These recreation facilities include a 1,800-acre park with beach, boat launch, picnic areas and campgrounds.



**US Army Corps
of Engineers**
Baltimore District

Planning Division
Notice of Availability

22 March 2022

Alvin R. Bush Dam 2022 Master Plan and Environmental Assessment Notice of Availability

In accordance with the National Environmental Policy Act (NEPA) of 1969, as amended, the U.S. Army Corps of Engineers, Baltimore District (USACE) has prepared a draft environmental assessment (EA) to assess the impact of the implementation of the Alvin R. Bush Dam 2022 Master Plan (“2022 Master Plan”). The Alvin R. Bush Dam project is located on Kettle Creek in Clinton County, Pennsylvania.

The Proposed Action includes implementation of the 2022 Master Plan to reflect changes in land management classifications, land uses, USACE regulations and guidance that have occurred since the 1964 Master Plan was drafted. In compliance with NEPA, USACE has prepared a draft Master Plan and EA and evaluated potential effects of the 2022 Master Plan on the natural, cultural, and human environment. The EA determined negligible impacts would occur to the following resources: air quality, greenhouse gases and climate, noise, geology, cultural resources, groundwater, utilities, socioeconomics and environmental justice, and traffic and transportation. No impacts are anticipated on water and biological resources from implementation of the 2022 Master Plan. Implementation of the 2022 Master Plan would result in beneficial impacts to land use and recreation. The new land classifications maintain high density and low density recreation areas and identify recreation as the primary land use in these areas. These land classifications allow for future high- and low- density recreational development as appropriate in these areas. Based on the preliminary findings in the draft EA, USACE anticipates issuing a Finding of No Significant Impact (FONSI).

Projects that may be proposed at the Alvin R. Bush project in the future will be evaluated in compliance with this master plan; NEPA; USACE regulations, and other federal, state, and local policies and regulations.

USACE requests comments regarding the draft Master Plan and EA within thirty (30) days of the date of this notice. USACE will consider all comments received within the 30-day comment period in the preparation of the Final Master Plan and EA. A copy of the draft Master Plan and EA is available at the Renovo Library (Renovo, Pennsylvania). Additionally, the Draft Master Plan and EA can be found on the USACE Alvin R. Bush Dam website at: <https://www.nab.usace.army.mil/Missions/Dams-Recreation/Alvin-R-Bush/ARB-Master-Plan-Revision/>.

If you would like to request a public meeting to discuss the 2022 Master Plan and the associated environmental assessment or if you have any questions, please contact Vanessa Campbell, project Biologist, at (410) 962-6704 or at Vanessa.M.Campbell@usace.army.mil.

Individuals wishing to provide comments or request additional information may contact Mrs. Campbell at the email address above. Additionally, questions and/or comments can be submitted at the USACE Alvin R. Bush Dam website above or mailed to U.S. Army Corps of Engineers, Planning Division, Subject: Alvin R. Bush Dam, 2 Hopkins Plaza, Baltimore, MD 21201.

Daniel M. Bierly, P.E.
Chief, Civil Project Development Branch

DEPARTMENT OF THE ARMY
U.S. Army Engineer District, Baltimore
Planning Division
2 Hopkins Plaza
Baltimore, Maryland 21201

Official Business

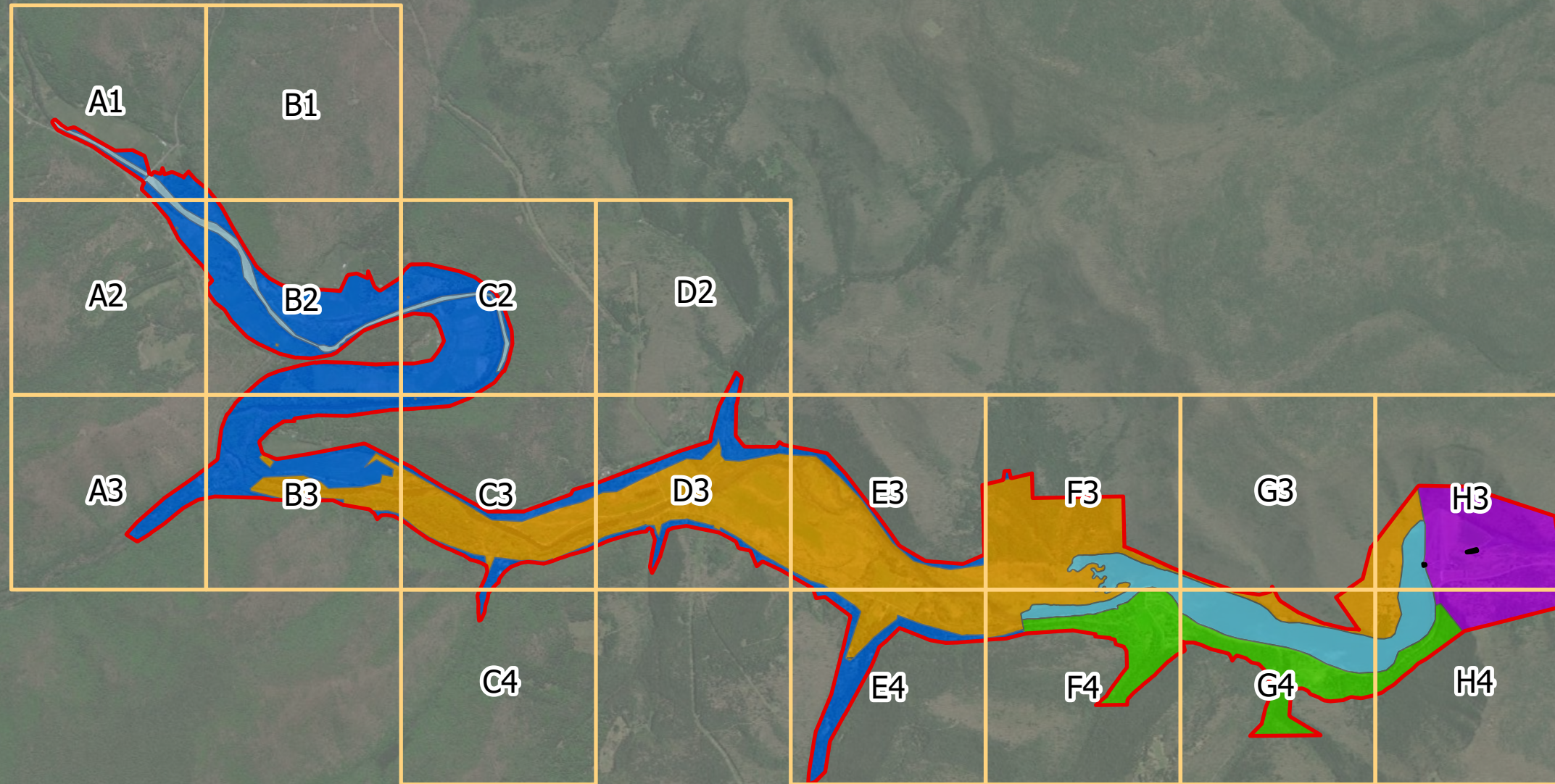
APPENDIX E: PUBLIC COMMENTS AND USACE RESPONSE

No public comments received

APPENDIX F: LAND CLASSIFICATION AND RECREATIONAL ASSET MAPS

Alvin R. Bush
Master Plan Update

Land Classification | Grid View



Legend

Bush Study Area

Restricted Area

Future Land Classification

Open Recreation

High Density Recreation

Project Operations

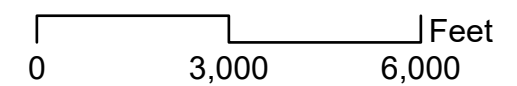
Low Density Recreation

Flowage Easement

River

* Mapping for the Master Plan update has been compiled using the best information available and is believed to be accurate. Prior land classification acres are based on original acquisition real estate deed records and mapping completed for the 1964 Master Plan. Due to improved technologies, minor discrepancies exist when comparing prior and proposed land classifications.




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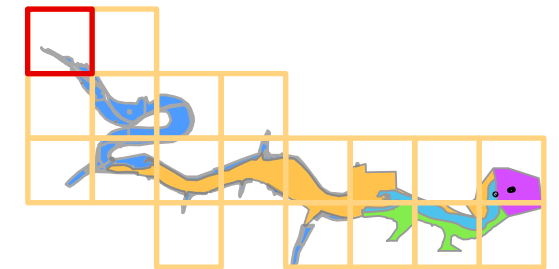


Alvin R. Bush
Master Plan Update

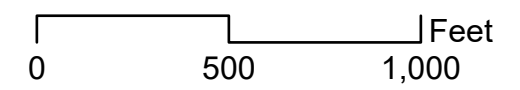
Land Classification | Grid View

Legend

-  Bush Study Area
-  Flowage Easement
-  River




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Alvin R. Bush
Master Plan Update

Land Classification | Grid View

Legend

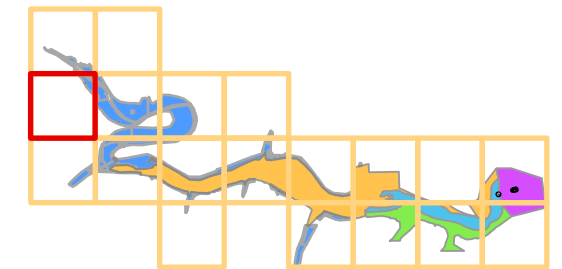
 Bush Study Area

Future Land Classification

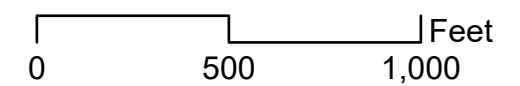
 Low Density Recreation

 Flowage Easement

 River






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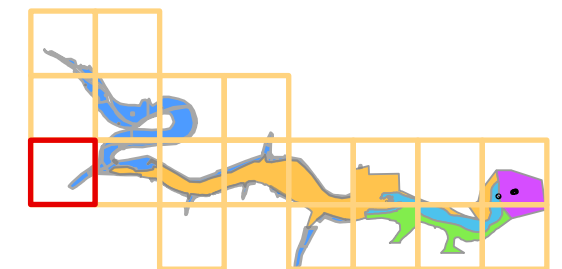


Alvin R. Bush
Master Plan Update

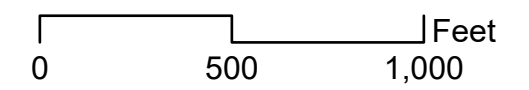
Land Classification | Grid View

Legend

-  Bush Study Area
-  Flowage Easement
-  River






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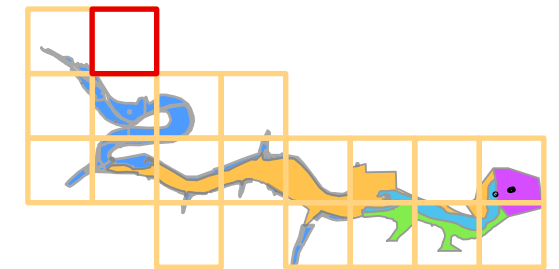
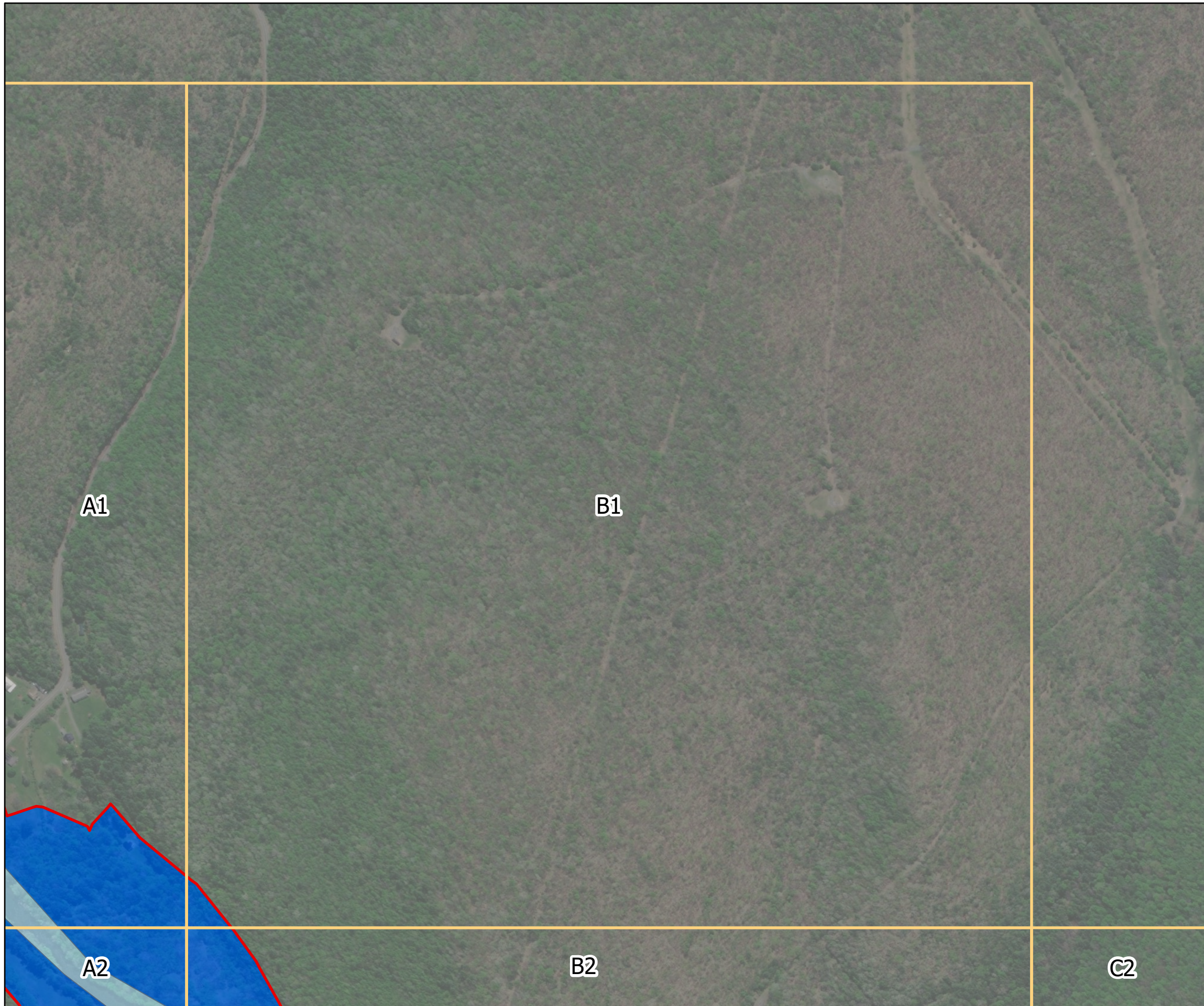


Alvin R. Bush
Master Plan Update

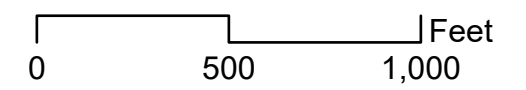
Land Classification | Grid View

Legend

-  Bush Study Area
-  Flowage Easement
-  River







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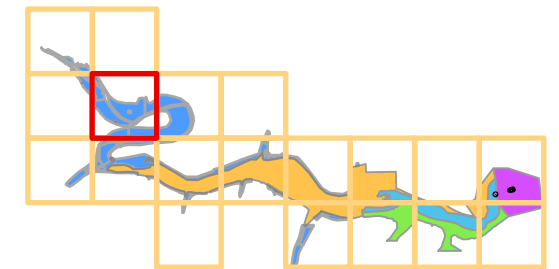


Alvin R. Bush
Master Plan Update

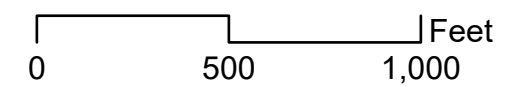
Land Classification | Grid View

Legend

-  Bush Study Area
- Future Land Classification**
-  Low Density Recreation
-  Flowage Easement
-  River



Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community, Sources: Esri, HERE, Garmin, FAO, NOAA, USGS, © OpenStreetMap contributors, and the GIS User Community



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Master Plan Update


Land Classification | Grid View

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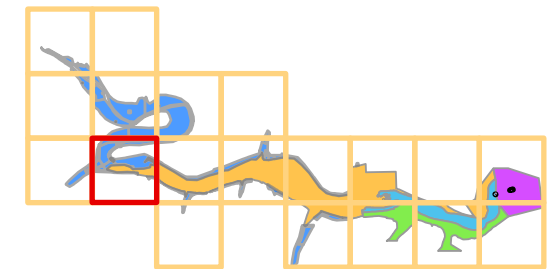
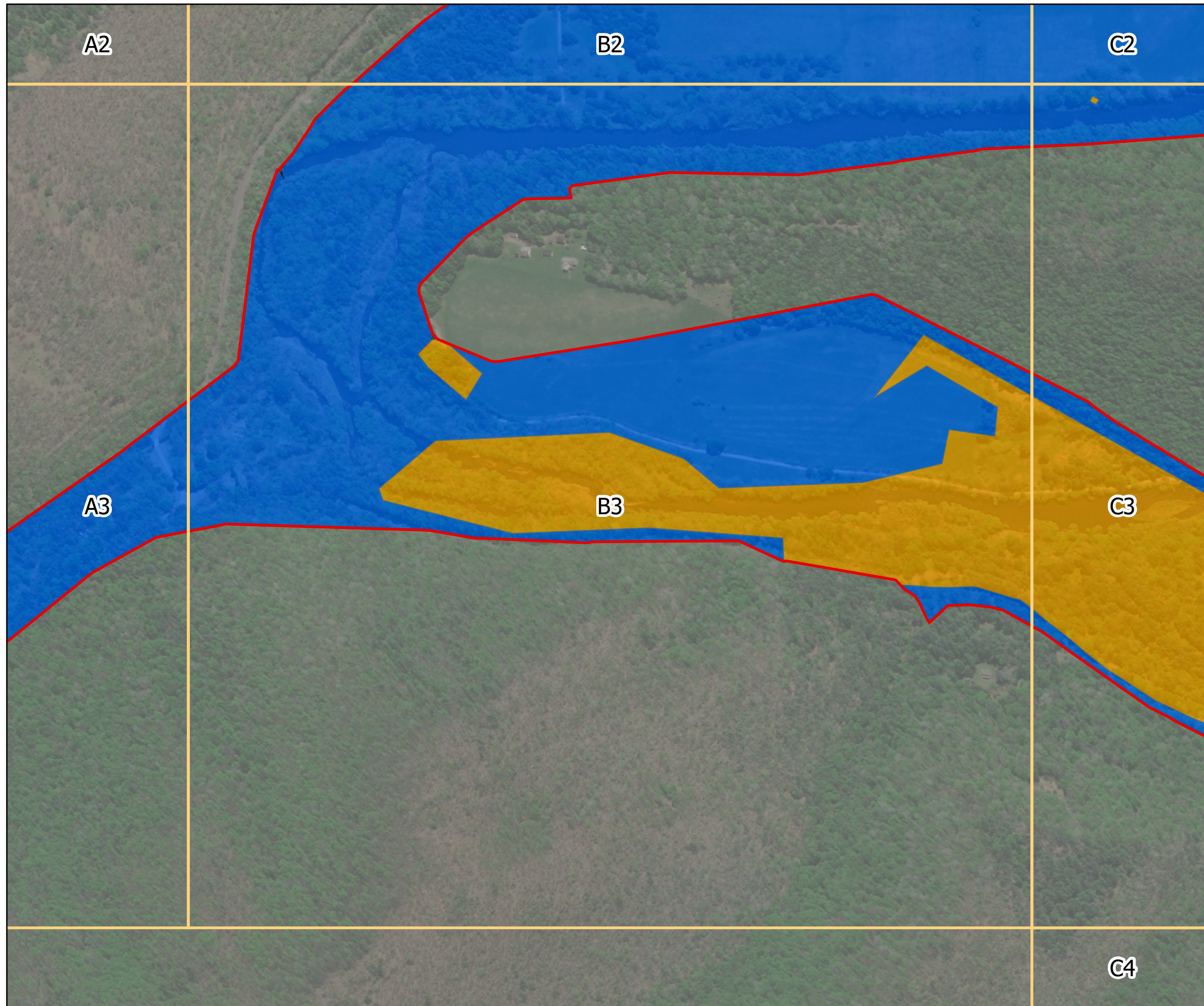
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Future Land Classification

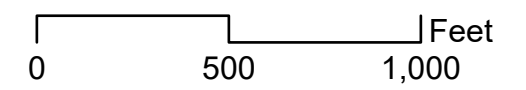
 Low Density Recreation

 Flowage Easement

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Land Classification | Grid View

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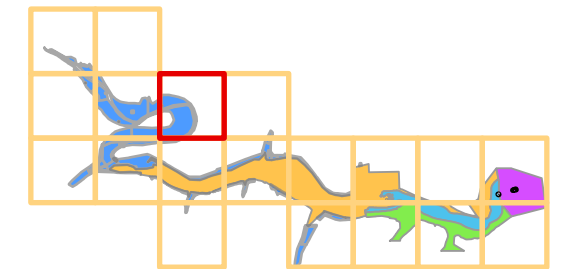
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Future Land Classification

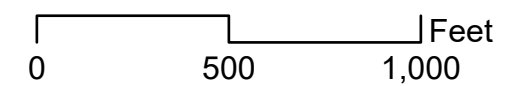
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 Flowage Easement

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

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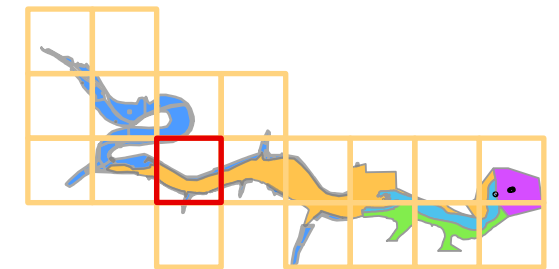
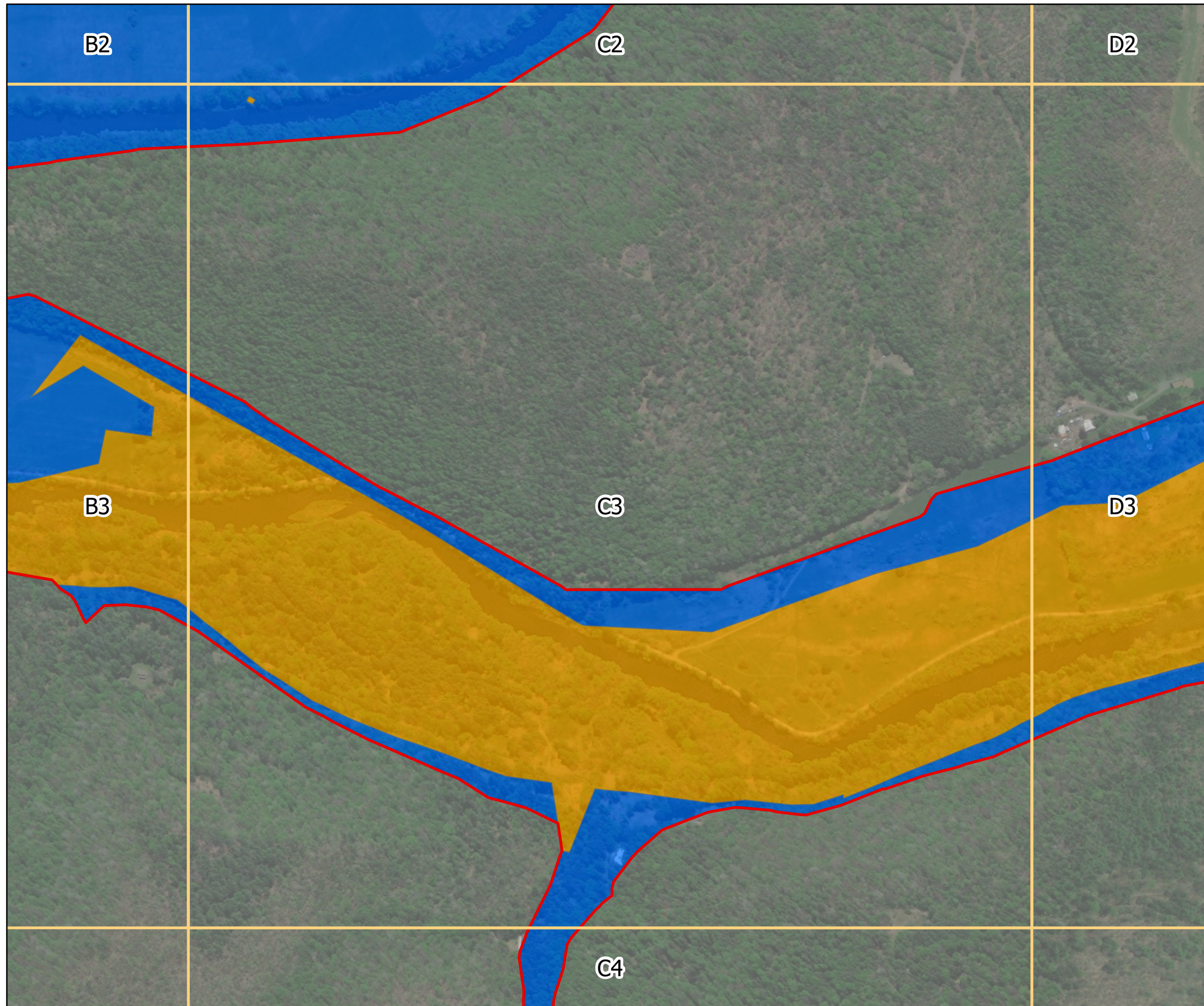


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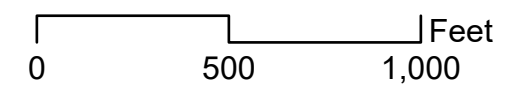
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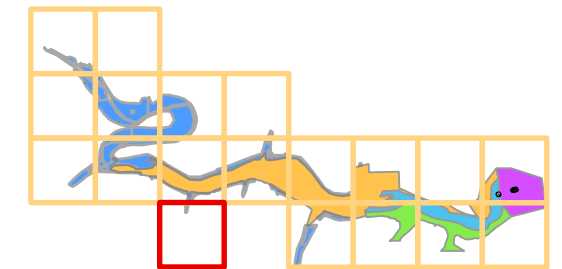
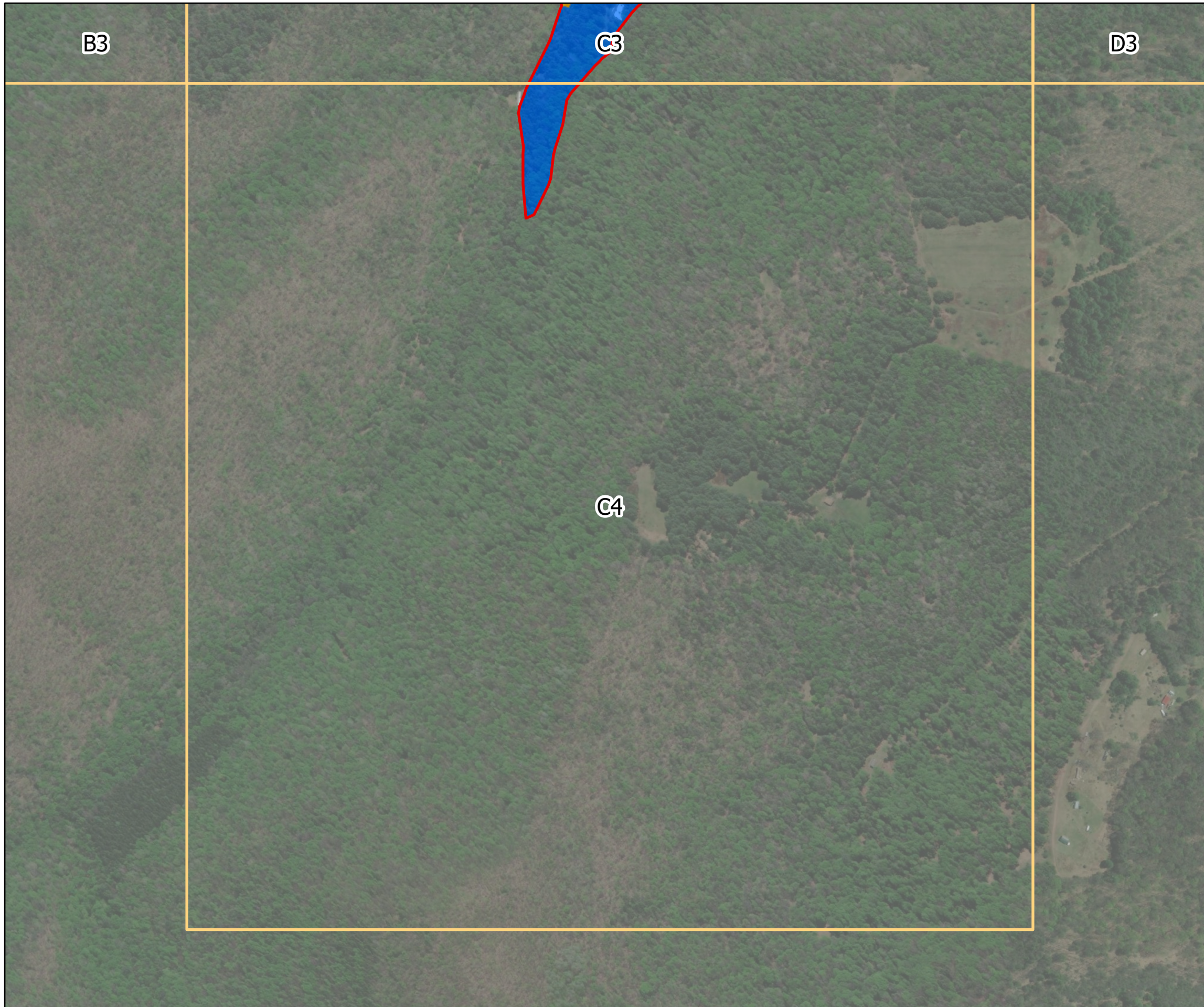
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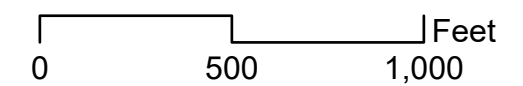
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
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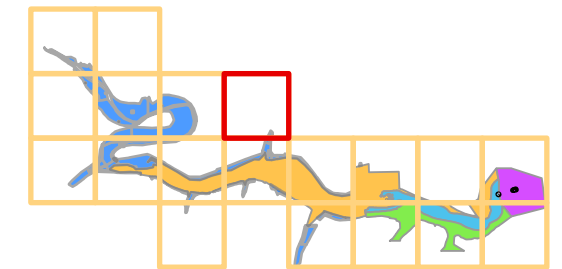
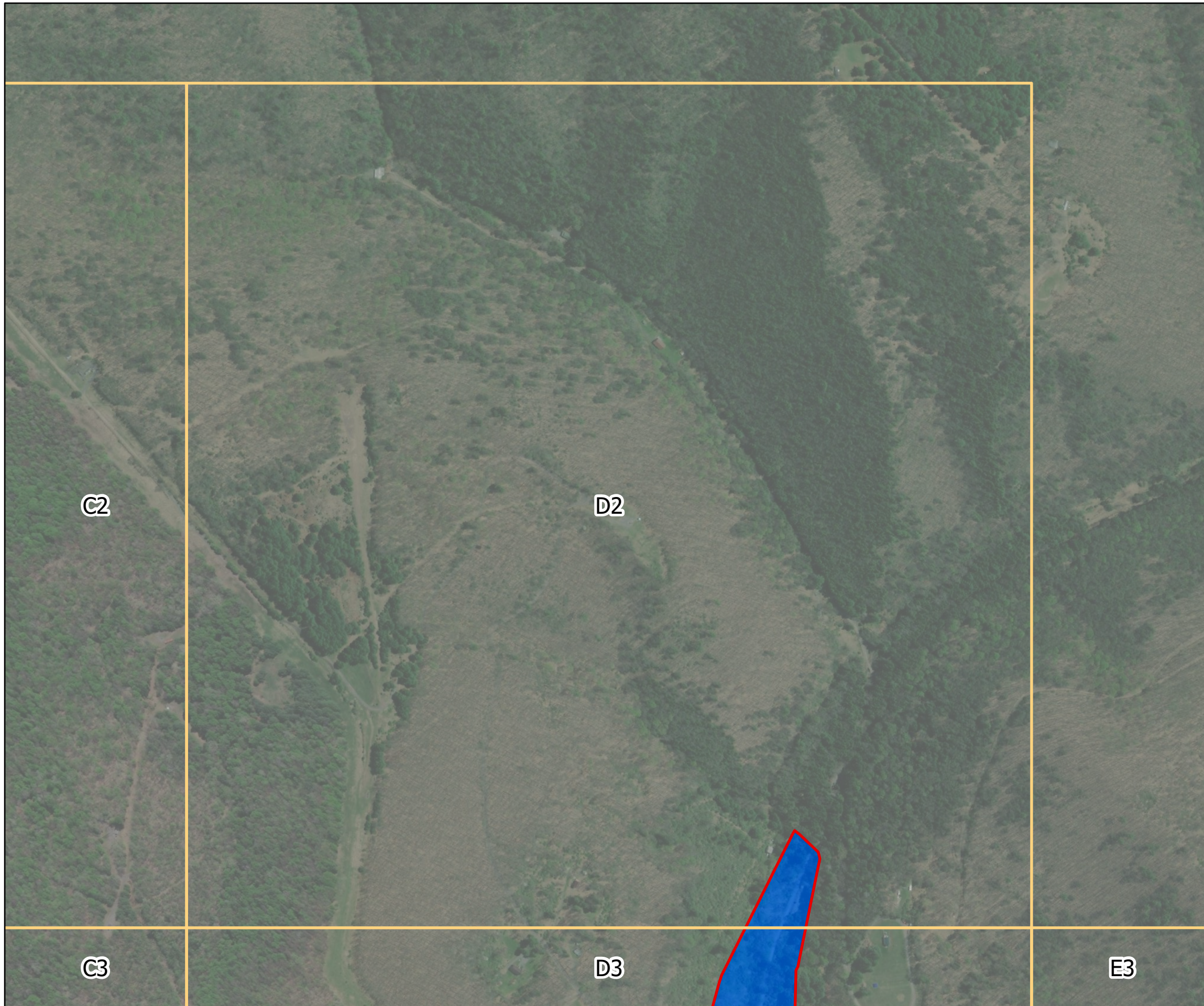


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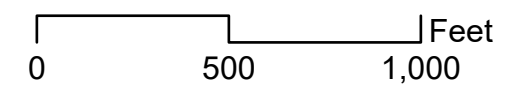
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

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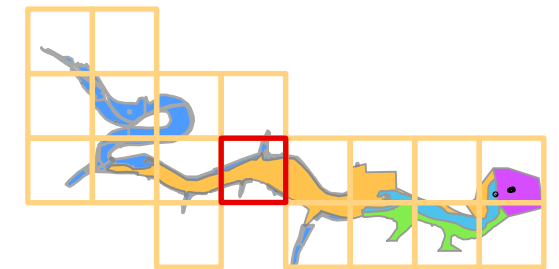
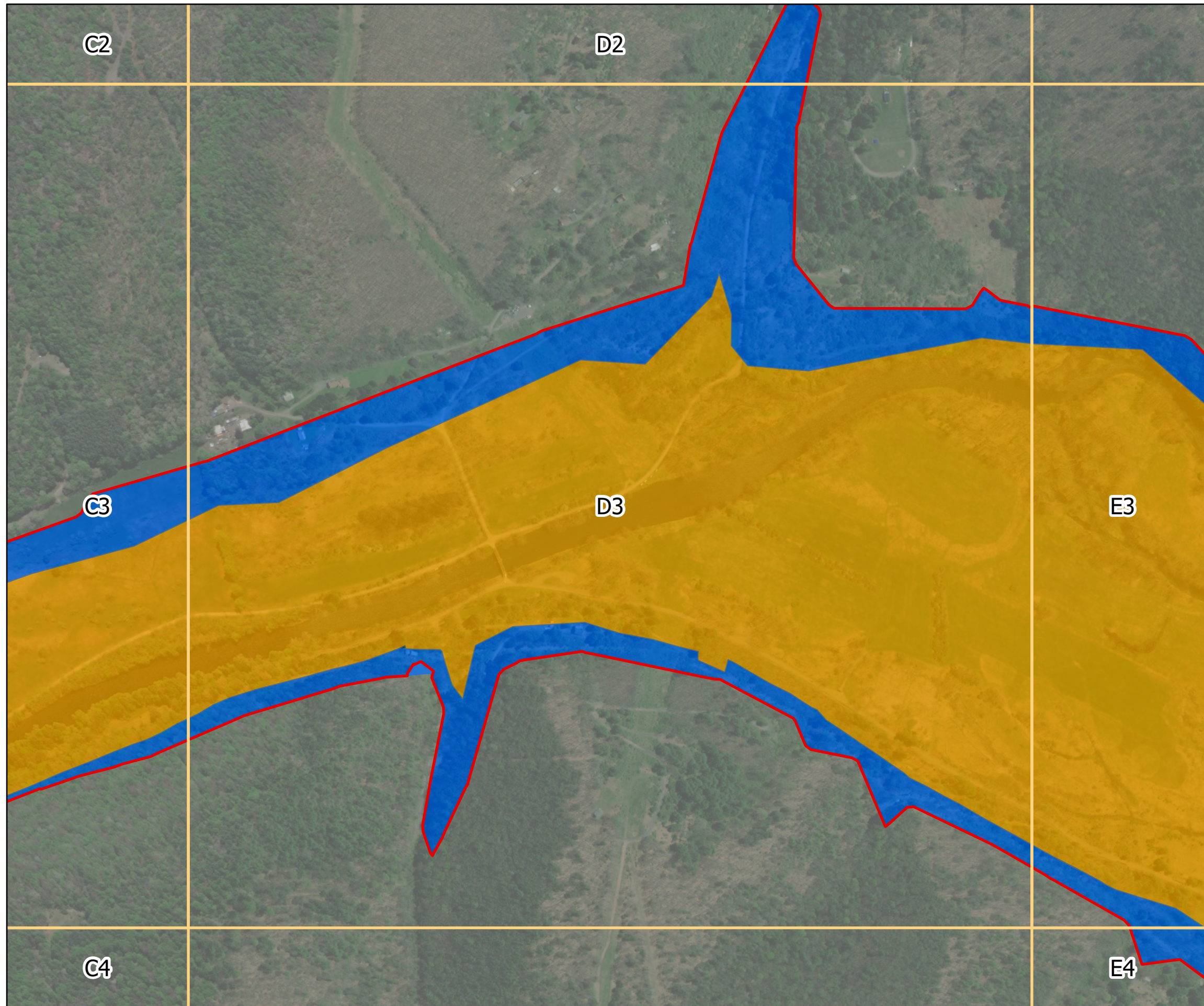


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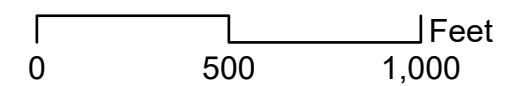
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Land Classification | Grid View

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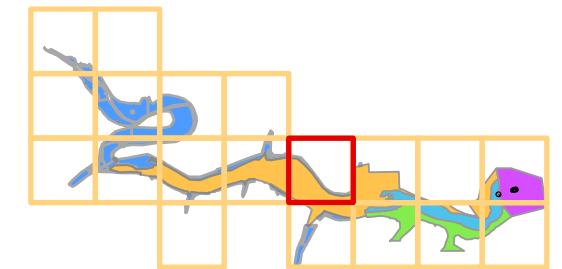
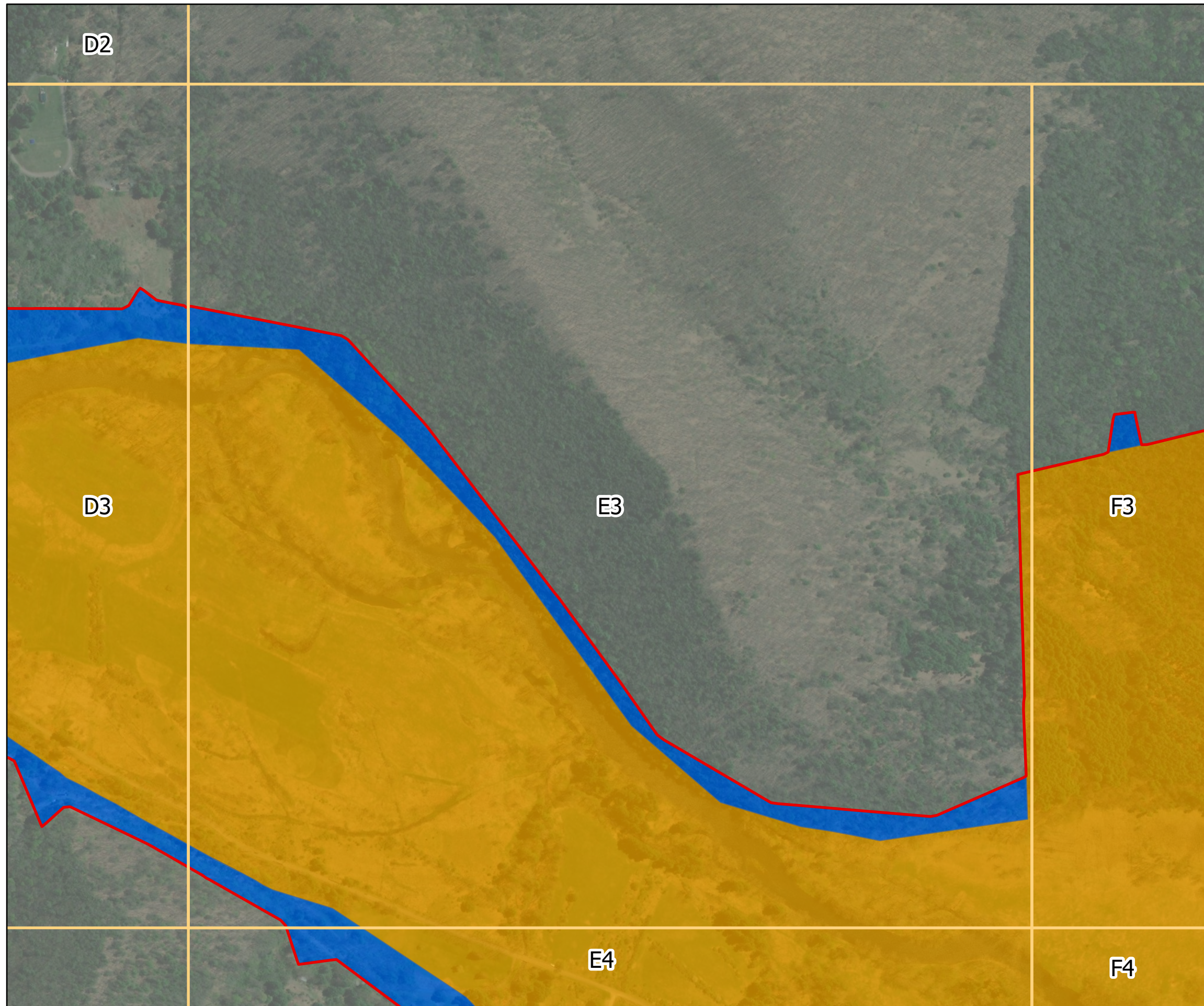
 Bush Study Area

Future Land Classification

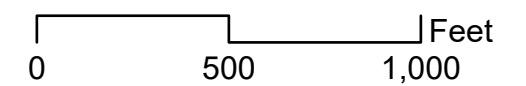
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




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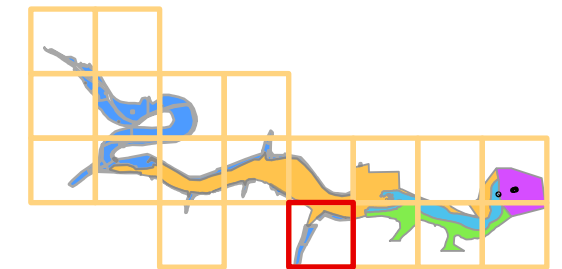
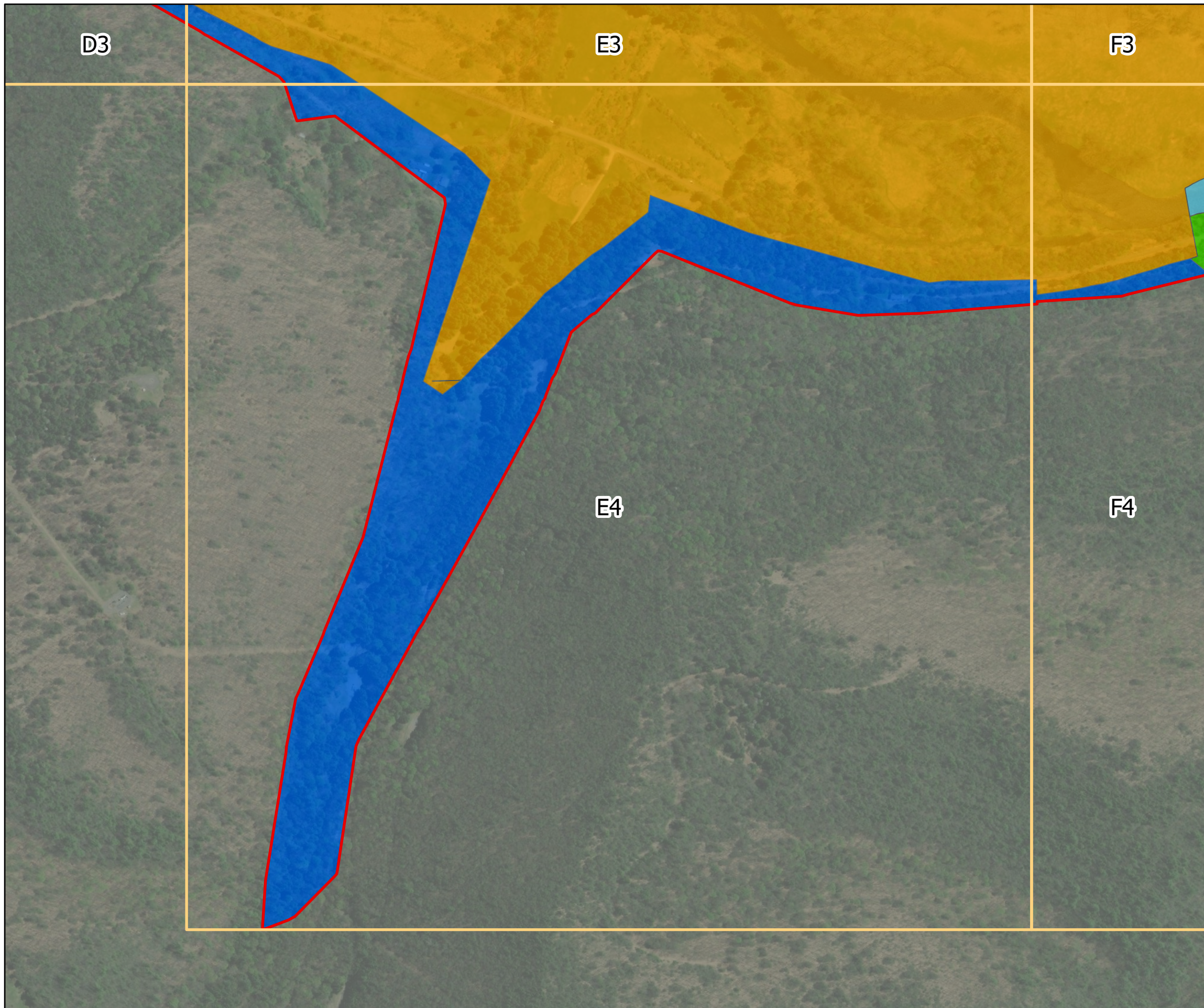


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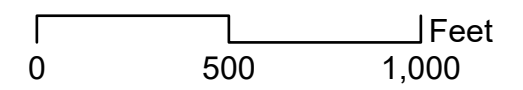
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




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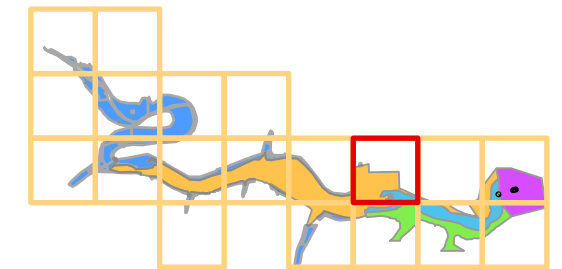
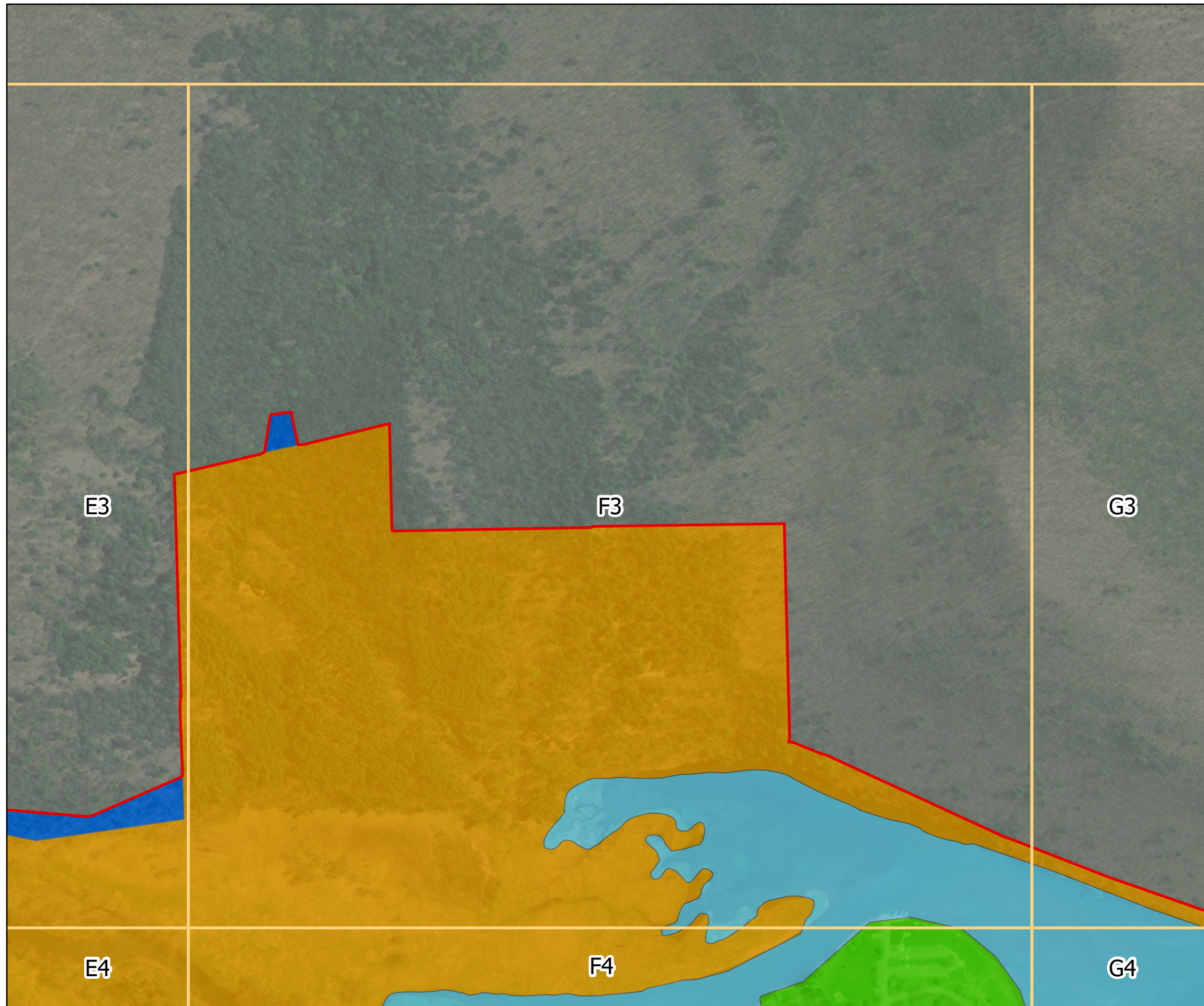


Alvin R. Bush Master Plan Update

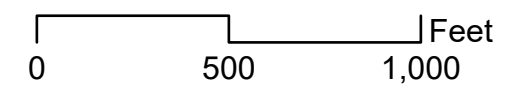
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
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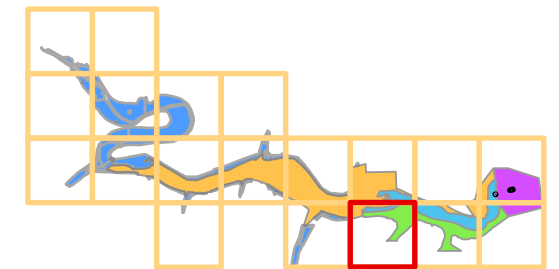
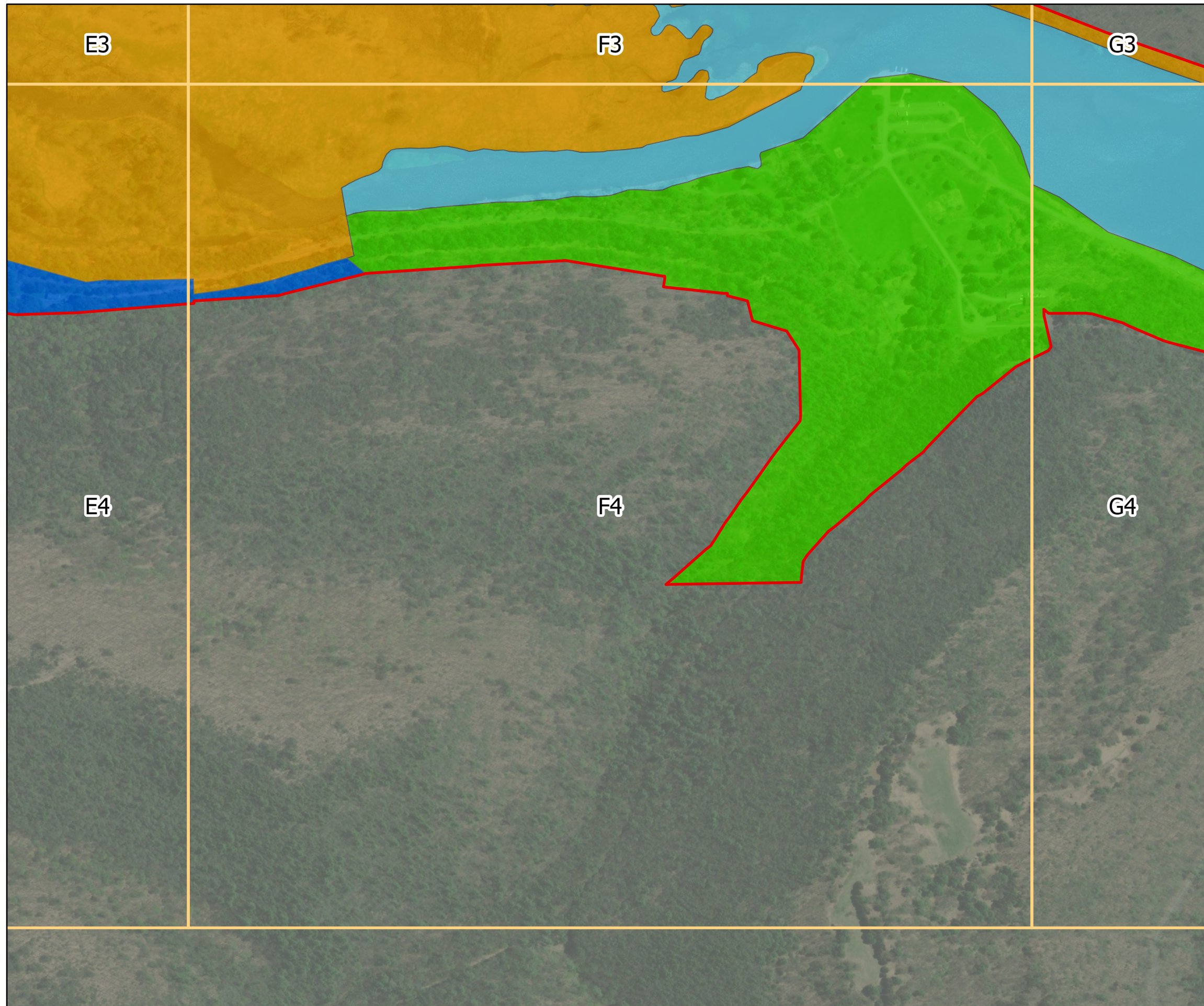


Alvin R. Bush
Master Plan Update

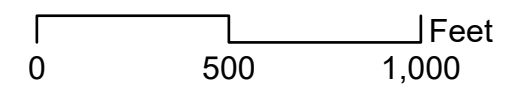
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




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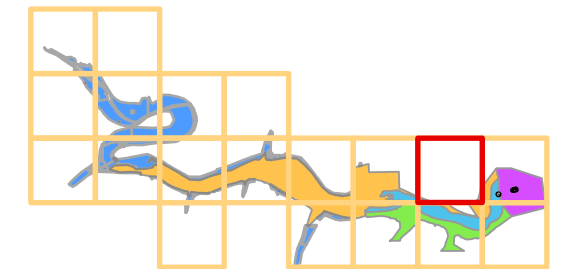
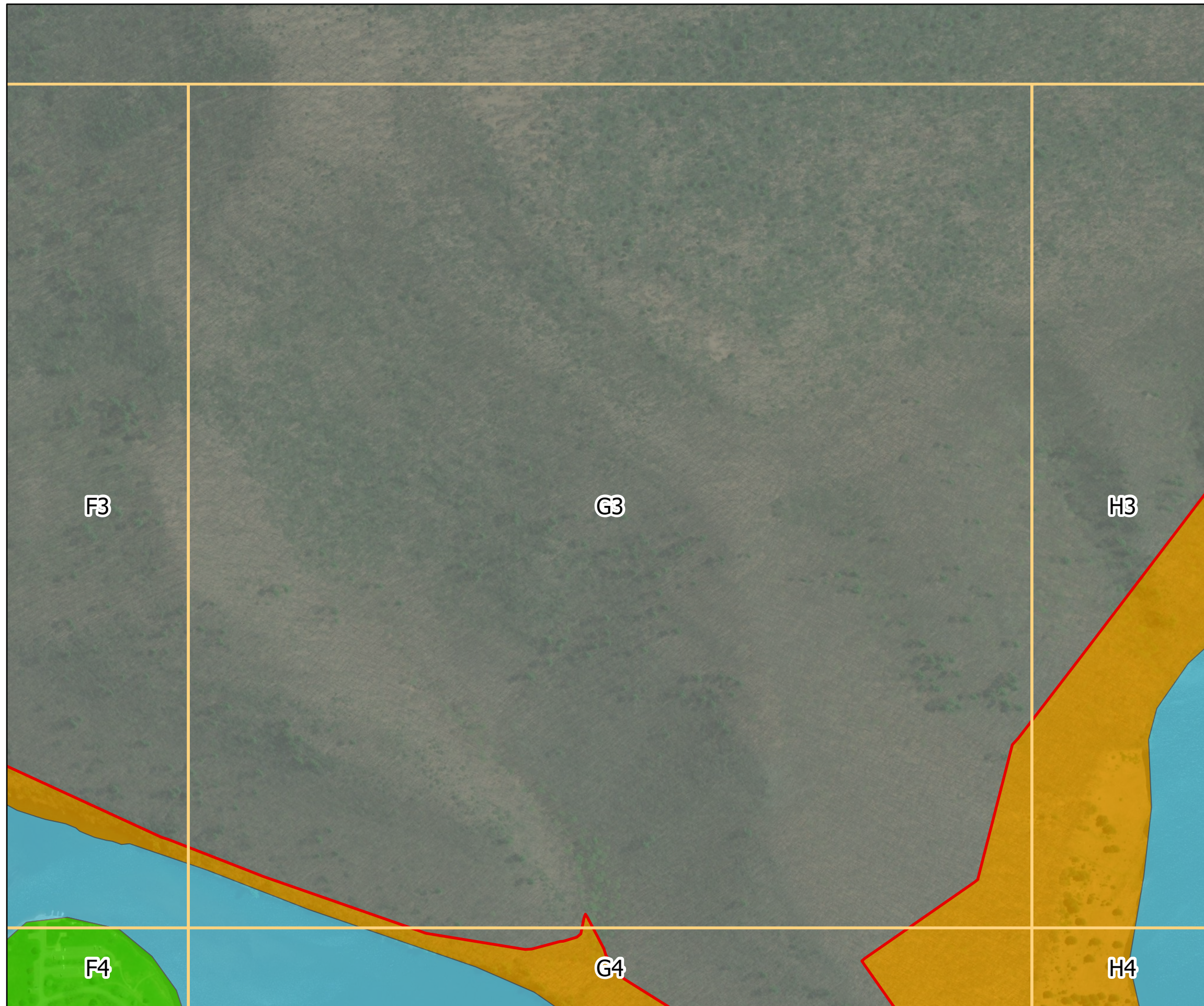


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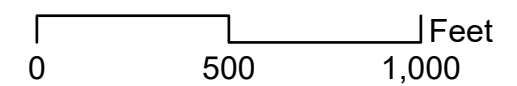
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




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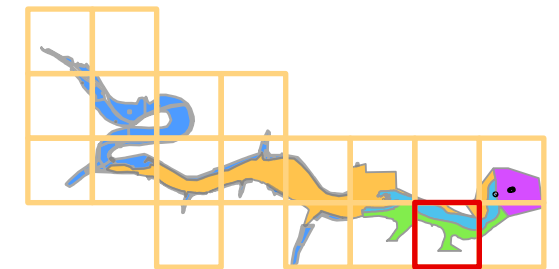
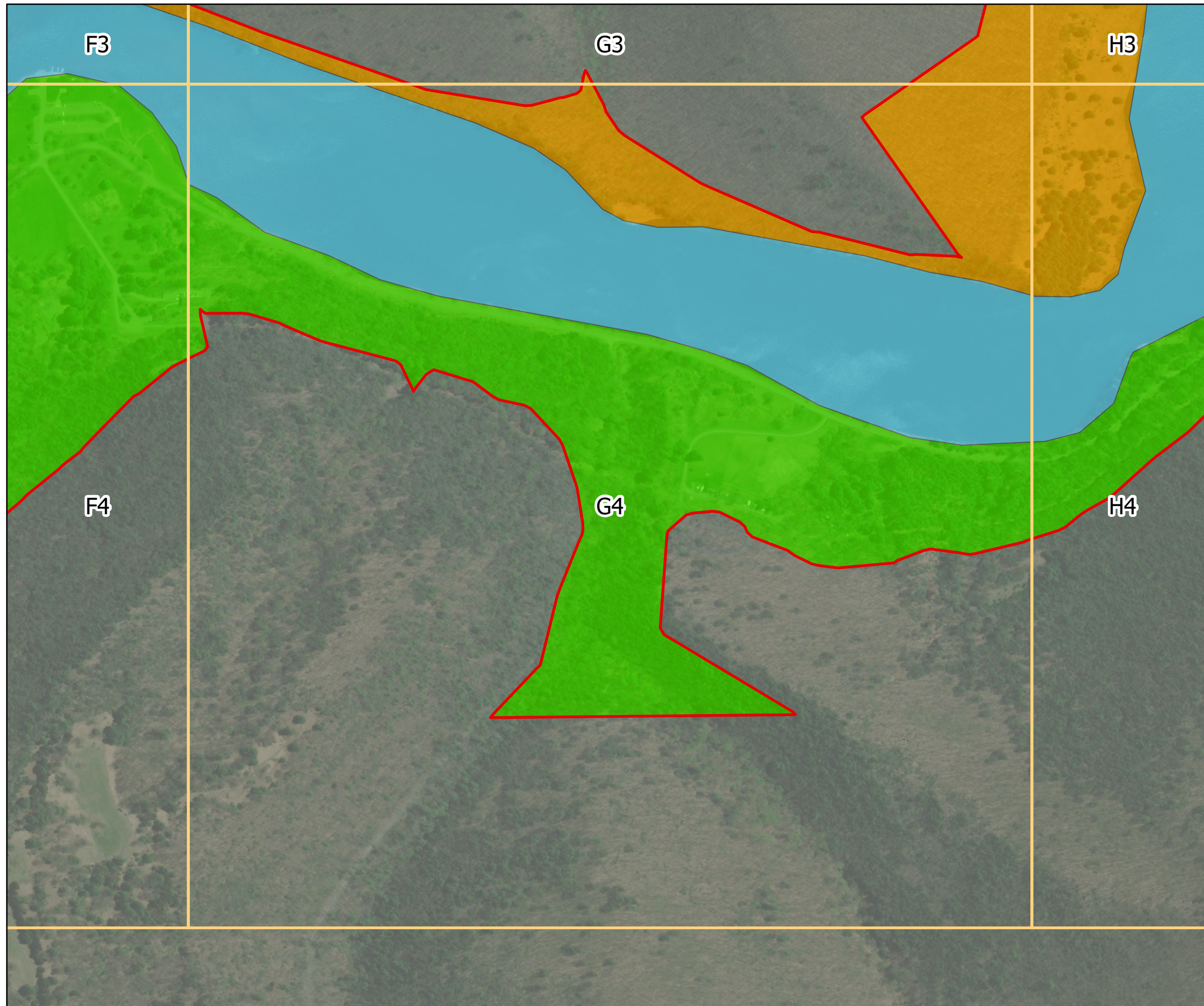


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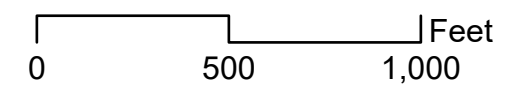
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Alvin R. Bush
Master Plan Update


Land Classification | Grid View

Legend

 Bush Study Area

 Restricted Area


Future Land Classification

 Open Recreation

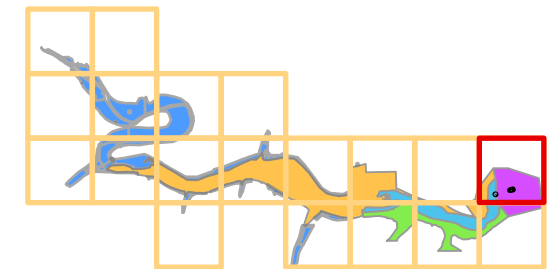
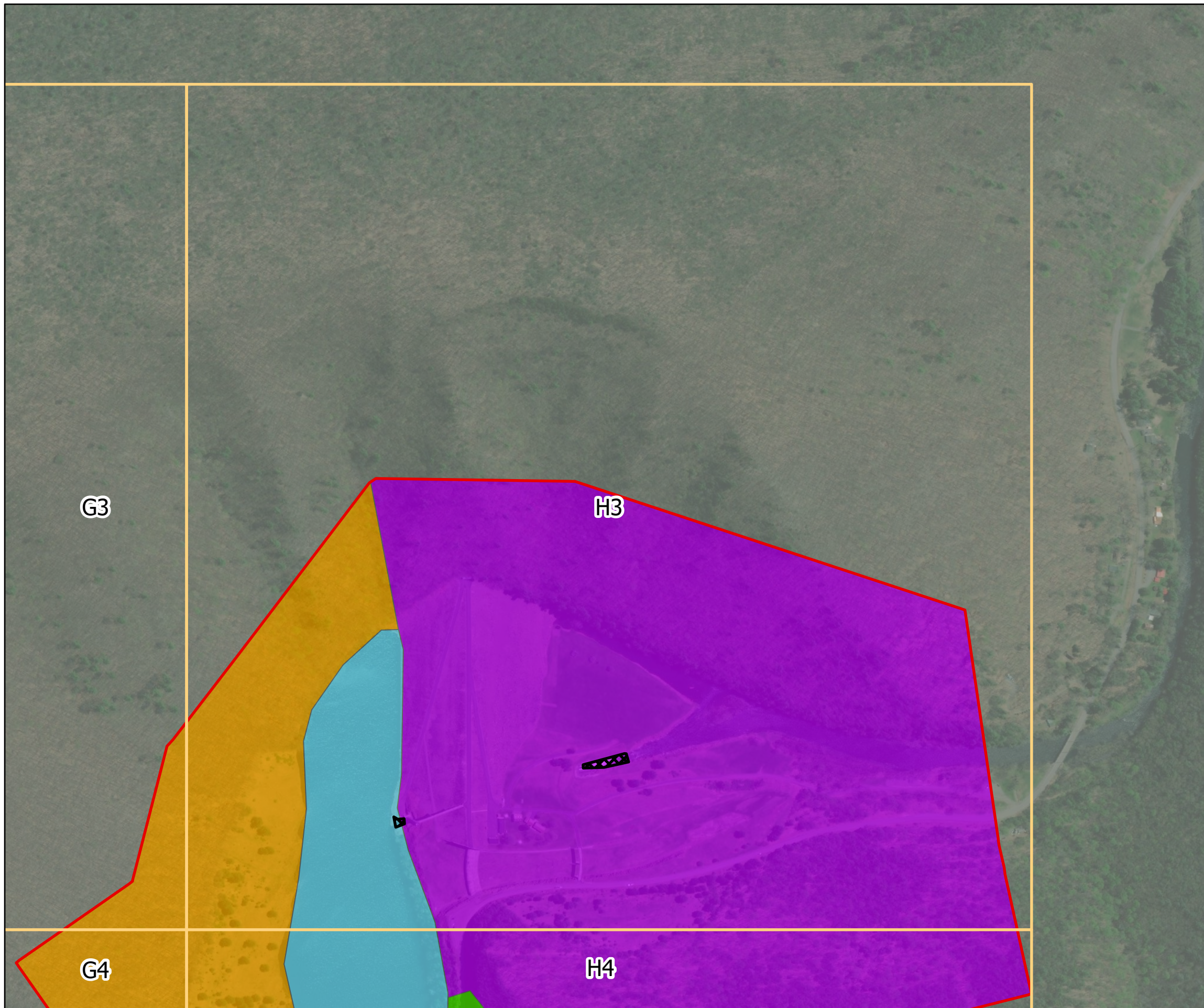
 High Density Recreation

 Project Operations

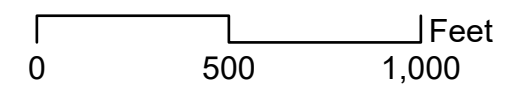
 Low Density Recreation

 Flowage Easement

 River



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Alvin R. Bush
Master Plan Update

Land Classification | Grid View

Legend

 Bush Study Area

Future Land Classification

 Open Recreation

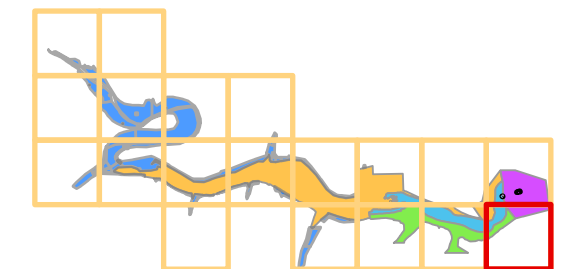
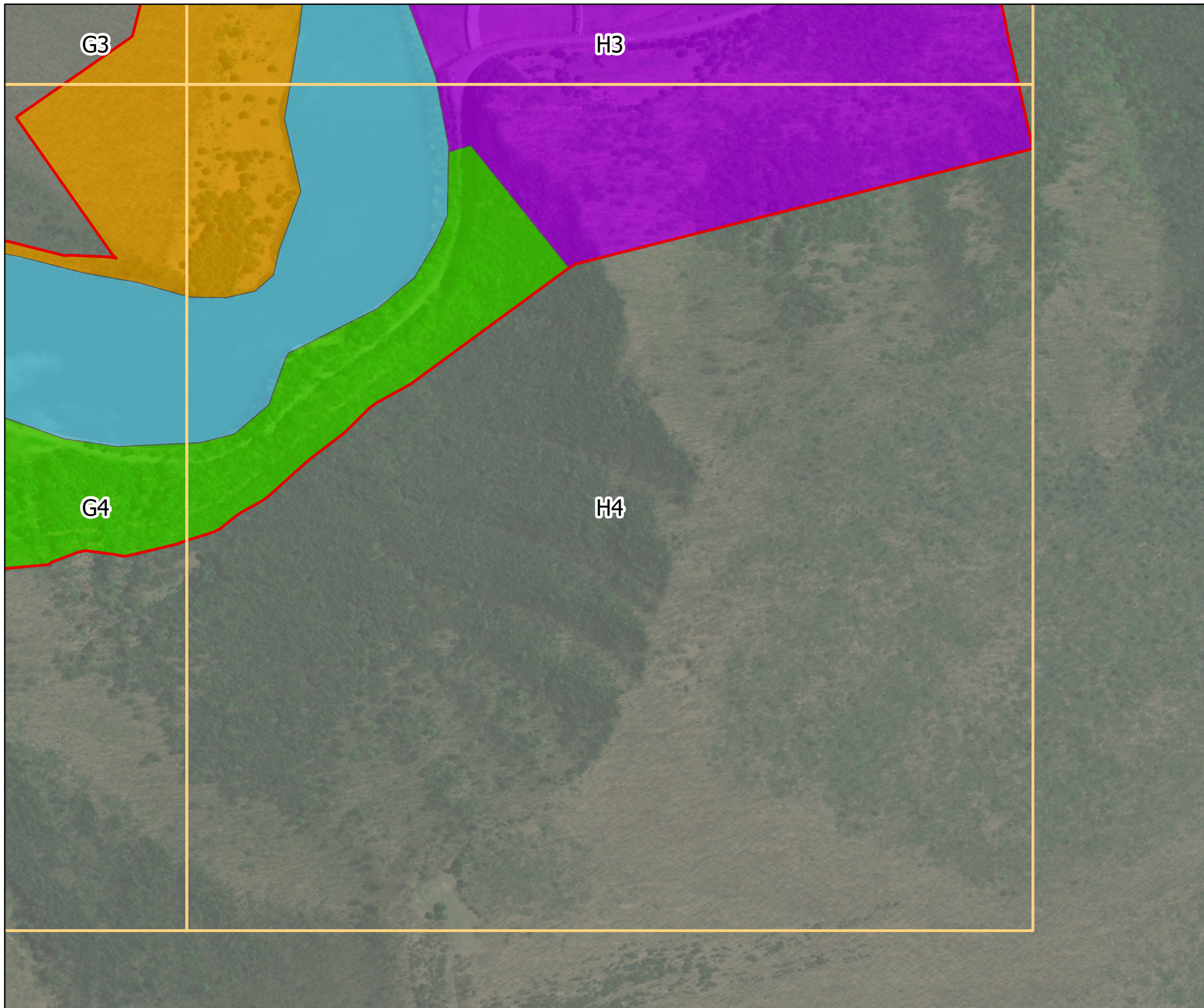
 High Density Recreation

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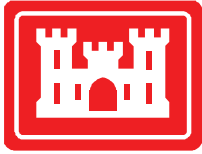


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APPENDIX G: NEPA DOCUMENTATION



**US Army Corps
of Engineers**
Baltimore District

**FINDING OF NO SIGNIFICANT IMPACT AND
ENVIRONMENTAL ASSESSMENT
FOR ALVIN R. BUSH DAM MASTER PLAN**

**ALVIN R. BUSH DAM AND KETTLE CREEK RESERVOIR
CLINTON COUNTY, PENNSYLVANIA**

July 2022

This Environmental Assessment follows 40 CFR Parts 1500-1508, National Environmental Policy Act Implementing Regulations dated 1978

***Prepared by:* U.S. Army Corps of Engineers, Baltimore District
2 Hopkins Plaza
Baltimore, Maryland 21201**

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FINDING OF NO SIGNIFICANT IMPACT

Environmental Assessment for the Alvin R. Bush Dam 2022 Master Plan

Clinton County, Pennsylvania

In accordance with the National Environmental Policy Act of 1969 (NEPA), including guidelines in 33 Code of Federal Regulations (CFR), Part 230 (Procedures for Implementing NEPA), the Baltimore District of the U.S. Army Corps of Engineers (USACE), has assessed the potential impacts of the 2022 Alvin R. Bush Dam Master Plan (hereafter, "2022 Master Plan"). The Alvin R. Bush Dam Project was authorized and constructed for the primary purposes of flood risk management along the West Branch Susquehanna River. Secondary uses of the project lands and waters include recreation and environmental stewardship of natural and cultural resources. Implementation of the 2022 Master Plan and proposed land use changes must recognize and be compatible with the primary project missions of flood risk management and recreation.

The Master Plan will provide guidance for stewardship of natural resources and management for long-term public access to, and use of, the natural resources at Alvin R. Bush Dam, including the land classification of the USACE-managed lands. Land classifications are established in the Master Plan and are fundamental to project land management. Land classifications (see Table S-1) provide for development and resource management consistent with authorized purposes and other federal laws. The Master Plan provides a comprehensive description of Alvin R. Bush Dam (also, "the project"), a discussion of factors influencing resource management and development, new resource management objectives, a synopsis of public involvement and input into the planning process, descriptions of existing development, and considerations of future development activities.

Under the No Action Alternative, USACE would take no action, and continue the operation and management of the project as outlined in the 1964 Master Plan. No new resource analysis or land reclassifications would occur.

The Proposed Action includes adopting the 2022 Master Plan to reflect changes in land management classifications, land uses, USACE regulations and guidance that have occurred since the 1964 Master Plan, and coordination with the public. The 2022 Master Plan refines land classifications to meet authorized project purposes and current resource objectives. This includes a mix of natural resource and recreation management objectives that are compatible with regional goals established by stakeholders and USACE during the master planning process, recognize outdoor recreation trends, and are responsive to public comment. The purpose of the action is to update the Alvin R. Bush Dam Master Plan. The action is needed as required by Engineer Regulation (ER) 1130-2-550 and Engineering Pamphlet (EP) 1130-2-550. The 2022 Master Plan is intended to serve as a comprehensive land and recreation management plan for the next 15 to 25 years and is needed to update the

Alvin R. Bush Dam Master Plan in accordance with January 2013 updates to ER and EP 1130-2-550.

Table S-1 identifies the required land and water surface classification changes associated with the Proposed Action.

Table S-1: Proposed Changes to Land Classifications at Alvin R. Bush Dam.

Classification	1964 Master Plan (acres)	2022 Master Plan (acres)	Description*
Project Operations	194.2	173.7	Lands are associated with the dam and spillway structures that are operated and maintained for fulfilling the flood risk management mission of the project. The Project Operations land classification was updated to include a section of the dam and spillway previously classified as intensive recreation. Although the mission-support areas of the project have not changed since the 1964 Master Plan, the land fitting the new criteria totals 173.7 acres (land providing direct support to the operations of the project's primary mission). One future project associated with this land classification is the stabilization of the spillway wall between the spillway crest and operations access road bridge. The stone wall has eroded over time, and continued erosion would negatively impact the spillway and Kettle Creek Road. The contract for construction will likely be awarded in FY 2023, with construction likely to begin in FY 2024. Dates are dependent on receipt of sufficient funding. Construction could take several years.
Intensive Recreation	141	0	This land classification was included in the 1964 Master Plan; however, it is not included in the 2022 Master Plan due to changes in USACE policies. The High Density Recreation land classification (below) includes Intensive Recreation management considerations.
High Density Recreation	0	173.9	Lands are currently developed for High Density recreational activities and include boat launches, day-use areas, and campgrounds. The new criteria for this land classification includes areas developed specifically to support intensive recreational activities. This land classification has been developed to support concentrated visitation and use of the recreational facilities they host.

Classification	1964 Master Plan (acres)	2022 Master Plan (acres)	Description*
			The High Density recreation area includes areas supporting the Upper Campground (e.g., access roads), the Kettle Creek State Park Administrative Complex, and the Day Use Area. Planned improvements by Kettle Creek State Park to the Upper Campground will likely fall entirely outside USACE-owned lands, with the exception of proposed improvements to an alternate access road to convert it to the main access road.
Multiple Resource Management Land			
Low Density Recreation	0	719.6	<p>Management of this land classification calls for maintaining a healthy, ecologically adapted vegetative cover to reduce erosion and improve aesthetics, while also supporting low-impact recreational opportunities such as bank fishing, hunting, hiking, wildlife viewing, and access to the shoreline. Hunting is allowed in select areas that are a reasonable and safe distance from High Density Recreational areas, dam operations, and adjacent residential properties. The new land classification criteria include areas where vegetation and wildlife management may be a secondary use, but where recreation is considered the predominant use.</p> <p>Future plans for existing low density recreation lands include improvements to parking areas near Walters Run and the Equestrian Campground, restroom facility upgrades, wayside exhibits and interpretive signage near the Equestrian Campground, improved access to Kettle Creek for wildlife viewing and fishing access, and continued wildlife habitat improvement work intended to enhance wildlife viewing opportunities.</p>
Wildlife and Forest Management	772	0	This land classification was included in the 1964 Master Plan. Per new guidance, this has been reclassified as two separate subclassifications under the Multiple Resource Management Land classification: Wildlife Management and Vegetative Management. However, it is not included as a land classification in the 2022 Master Plan. The Multiple Resource Management Land classification allows for the designation of the predominant use, with the understanding

Classification	1964 Master Plan (acres)	2022 Master Plan (acres)	Description*
			that other compatible uses may also occur on these lands. These lands have been reclassified to the predominant use of Low Density Recreation (above), which includes wildlife management.
Water Surface			
Conservation Pool	166	0	This land classification was included in the 1964 Master Plan; however, is not included in the 2022 Master Plan due to a change in land classification designations. The Water Surface classification now contains four sub classifications: "Designated No-Wake," "Restricted," "Fish and Wildlife Sanctuary" and "Open Recreation." Only two of the sub-classifications are applicable to Kettle Creek Reservoir: The Restricted and Open Recreation Area subclassifications.
Restricted	0	0.2	Restricted water surface includes those areas where recreational boating is prohibited or restricted for project operations, safety, and security purposes. The Restricted water surface at Kettle Creek Reservoir includes a small area around the dam and intake tower. This area is normally marked with standard USCG regulatory buoys stating that boats are excluded from the area. Physical barriers may be in place on the water. This change reflects new classification criteria and no actual change in water use. This area includes the vicinity of the intake tower, spillway, and outfall.
Open Recreation Area	0	160.8	Open Recreation area includes all water surface areas available for year-round or seasonal water-based recreational use. This change reflects new classification criteria and no actual change in water use. This area includes all water surface area other than "Restricted."
Designated No-Wake	0	0	Kettle Creek Reservoir only permits electric or non-motored vessels that are not likely to produce any appreciable wake. Therefore, a "No Wake" land classification was not necessary.
Total	1,273.2*	1,228*	

*Mapping for the Master Plan update has been compiled using the best information available and is believed to be accurate. Prior land classification acres are based on original acquisition real estate deed records and mapping completed for the 1964 Master Plan. Due to improved

mapping technologies, minor discrepancies exist when comparing prior and proposed land classification acreages. Discrepancies were primarily encountered between the prior land classification of Wildlife and Forest Management and the proposed land classification of Multiple Resource Management- Low Density Recreation.

USACE selected the Proposed Action because it would meet regional goals associated with good stewardship of land and water resources, meet regional recreation goals, and allow for continued use and development of project lands without violating national policies or public laws.

USACE used the Environmental Assessment (EA) and comments received from other agencies to determine whether the Proposed Action requires the preparation of an Environmental Impact Statement (EIS). This included assessment of environmental, social, and economic factors that are relevant to the recommended alternative considered in this assessment. The EA determined negligible impacts would occur to the following resources: air quality, greenhouse gasses and climate, noise, geology, cultural resources, groundwater, utilities, socioeconomics and environmental justice, and traffic and transportation (see Section 3.6 of the EA). No impacts are anticipated on water and biological resources from the implementation of the Proposed Action. Minor impacts could occur to water resources, and minor to moderate impacts could occur to soils and biological resources, during construction of future master planning projects (See Section 3 of the EA). Efforts would be made to reduce adverse impacts by using standard construction best management practices (BMPs) to reduce disturbance, soil erosion, and sedimentation into adjacent surface waters and wetlands. Construction and operations of future master planning projects would use BMPs associated with prevention of impacts to sensitive species recommended during future separate environmental review of projects proposed in the 2022 Master Plan. These may include removal of vegetation outside of nesting seasons for bird species of conservation concern discussed in Section 3.4 (April 10 – June 31), removal of trees greater than 5 inches in diameter that could serve as roosting habitats for bat species outside of the roosting season (April 1 to November 15), and establishment of buffer areas to protect northeastern bulrush habitat as discussed in Section 3.4. Construction of future master planning projects near active bald eagle nests would also maintain a buffer of at least 660 feet (200 meters) between project activities and the nest. If activity is closer than 660 feet, all construction activities within 660 feet of the nest would occur outside of the nesting season (January 1 to July 31 in Pennsylvania).

The Master Plan revision would result in beneficial impacts to land use and recreation. The new land classifications maintain high density and low density recreational areas and identify recreation as the primary land use in these areas. The classifications allow for future high- and low- density recreational development as appropriate in these land classification areas.

Conclusion

All applicable laws, executive orders, regulations, and local government plans were considered in the evaluation of alternatives. Based on this report, the reviews by other federal, state and local agencies, Tribes, input of the public, and the review of my staff, it is my determination that the Proposed Action alternative would not cause significant adverse effects on the quality of the human environment; therefore, preparation of an Environmental Impact Statement is not required.

Date

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ESTHER S. PINCHASIN
COL, U.S. Army
Commander and District Engineer

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ACRONYMS AND ABBREVIATIONS

Acronym	Definition
2022 Master Plan	2022 Alvin R. Bush Dam and Kettle Creek Reservoir Master Plan
BMPs	Best Management Practices
BOD	Biological Oxygen Demand
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
DCNR	Pennsylvania Department of Conservation and Natural Resources
EA	Environmental Assessment
EO	Executive Order
EP	Engineering Pamphlet
ER	Engineer Regulation
FEMA	Federal Emergency Management Agency
FIRM	Flood Insurance Rate Map
GIS	Geographical Information System
NEPA	National Environmental Policy Act
NFIP	National Flood Insurance Program
NOAA	National Oceanic and Atmospheric Administration
NPDES	National Pollution Discharge Elimination System
NRCS	Natural Resources Conservation Service
PADEP	Pennsylvania Department of Environmental Protection
PCD	Project Construction Datum
PDTGS	Pennsylvania Department of Topographic and Geologic Survey
PFBC	Pennsylvania Fish and Boat Commission
PGC	Pennsylvania Game Commission
Project	Alvin R. Bush Dam and Kettle Creek Reservoir Project
ROI	Region of Influence
SME	Subject Matter Expert
USACE	United States Army Corps of Engineers
USCG	United States Coast Guard
USEPA	United States Environmental Protection Agency
USFS	United States Forest Service
USFWS	United States Fish and Wildlife Service
VUM	Visitor Use Monitoring

1 INTRODUCTION

1.1 PROJECT BACKGROUND

The Alvin R. Bush Dam and Kettle Creek Reservoir Project (hereafter "project") was authorized and constructed under the Flood Control Act of 3 September 1954 for the purpose of controlling floods on Kettle Creek and West Branch Susquehanna River. Secondary uses of the project lands and waters include recreation and environmental stewardship of natural and cultural resources. The Master Plan for the project is the strategic land use management document that guides the comprehensive management and development actions related to project recreational, natural, and cultural resources throughout the life of the project. Implementation of the Master Plan and proposed land use changes must recognize and be compatible with the primary project mission of flood risk management.

The U.S. Army Corps of Engineers (USACE) produces and uses the Master Plan to guide the responsible stewardship of USACE-administered lands and resources for the benefit of present and future generations. The Master Plan presents an inventory and analysis of land resources, resource management objectives, land classifications, resource use plans for each land classification, current and projected park facility needs, an analysis of existing and anticipated resource use, and anticipated influences on overall project operation and management. Specific to the project, the Master Plan presents an evaluation of the assets, needs, and potential uses of the project reservoir and lands and provides direction for appropriate management, use, development, enhancement, protection, and conservation of the natural and man-made resources at the project. The Master Plan is guided by Engineer Regulation (ER) 1130-2-550 "Recreation Operations and Maintenance Policies," and Engineering Pamphlet (EP) 1130-2-550 "Recreation Operations and Maintenance Guidance and Procedures." Per guidance, USACE land classifications provide for development and resource management consistent with authorized purposes and other federal Laws.

USACE is proposing adoption of a new Master Plan at Alvin R. Bush Dam and Kettle Creek Reservoir to reflect changes that have occurred to the project, in the region, in recreation trends, and in USACE policy since the 1964 Master Plan was published. This Environmental Assessment (EA) considers the potential impacts to the natural and human environment from the implementation of the 2022 Alvin R. Bush Dam and Kettle Creek Reservoir Master Plan (hereafter "2022 Master Plan").

1.1.1 Project Location and Setting

Alvin R. Bush Dam is located on Kettle Creek in Clinton County, Pennsylvania, approximately 100 miles upstream of the confluence of the West Branch Susquehanna River and the Susquehanna River at Sunbury, Pennsylvania. The nearest town is Renovo, Pennsylvania, which is located approximately 14 miles southeast and downstream of the project.

All elevations cited in this EA, unless otherwise noted, are referenced to the original Project Construction Datum (PCD). The surface area of the lake is approximately 165 acres at the maintenance elevation of 842 feet PCD. Project lands (including the lake and surrounding property) occupy approximately 1,877 acres (approximately 1,273 acres acquired in fee and 603 flowage easement acres).

The project area is very remote and is characterized by narrow, flat bottom valleys with well-wooded hills that rise 800 feet or more to gently rolling plateau spurs. The hills are heavily

forested while the valleys are mostly open land. USACE leases all project lands acquired in fee to the Pennsylvania Department of Conservation and Natural Resources (DCNR) for the purposes of recreation, except for the Reservoir and Dam Operations lands. DCNR uses the leased land, along with additional acreage owned by DCNR, for the operation of Kettle Creek State Park.

1.1.2 Project History

The Kettle Creek Dam and Reservoir project was authorized by the Flood Control Act of 3 September 1954 in accordance with House Document 29, 84th Congress, 1st session, as a unit of the comprehensive flood control plan for the protection of communities in the West Branch Susquehanna River basin. Public Law 87-434, approved 21 April 1962 (76 Stat. 54), changed the name of Kettle Creek Dam to Alvin R. Bush Dam. This act affected the dam only, and the reservoir continues to be known as the Kettle Creek Reservoir.

The project was designed and constructed under the direction of USACE, Baltimore District. Construction of the dam and associated works began in May 1959 and the dam was operationally complete in January 1962.

The dam is constructed of rolled earth fill approximately 1,350 feet long and 165 feet high with a concrete chute spillway in the right abutment. It has a maximum base width of 850 feet and a top width of 25 feet. The outlet works consist of an intake structure, gate structure, transition section, tunnel, outlet structure, and outlet channel. Flow through the outlet works is controlled by three hydraulically operated slide gates. At spillway crest the reservoir inundates 1,430 acres and extends 8.8 miles upstream from the dam. The drainage area controlled by the dam is 226 square miles or 92 percent of the drainage area of Kettle Creek (USACE 1964).

1.2 PURPOSE AND NEED FOR THE ACTION

The purpose of the action is to update the Alvin R. Bush Dam Master Plan. The action is needed as required by ER and EP 1130-2-550. The 2022 Master Plan is intended to serve as a comprehensive land and recreation management plan for the next 15 to 25 years, which reflects changes that have occurred in outdoor recreation trends, regional land use, population, legislative requirements, USACE management policy, and wildlife habitat at the project since the previous 1964 Master Plan was completed.

1.3 SCOPE OF THE EA

USACE prepared this EA pursuant to the National Environmental Policy Act (NEPA), Council on Environmental Quality (CEQ) regulations (40 Code of Federal Regulations [CFR] 1500-1517) dated 1978, and the USACE implementing regulations, Policy and Procedures for Implementing NEPA, ER 200-2-2 (USACE 1988) to evaluate existing conditions and potential impacts of implementing the 2022 Master Plan. NEPA requires federal agencies to review potential environmental effects of federal actions that include the adoption of formal plans, such as master plans, approved by federal agencies upon which future agency actions will be based. Since the NEPA process for this action began in June 2019, this EA follows the NEPA regulations in place at that time and does not apply the NEPA regulations that became effective on September 14, 2020. See 40 C.F.R. 1506.13.

Alternatives considered within this EA focus on the proposed land classifications as presented in the 2022 Master Plan and the types of future development projects that could occur within

the land classifications. The EA does not consider implementation of specific projects identified within the 2022 Master Plan during the master planning process as those projects are conceptual in nature, nor does it consider specific future development opportunities for leased areas, such as Kettle Creek State Park. USACE would conduct further NEPA analysis on projects on USACE owned land identified within the 2022 Master Plan once funding is available and detailed project planning and design occur.

1.4 COORDINATION AND PUBLIC REVIEW

USACE coordinated with agencies, organizations, and members of the public with a potential interest in the Proposed Action during the development of the 2022 Master Plan and in preparation of this EA. Appendix A of this EA provides a record of public involvement and agency coordination related to this EA. Additionally, Appendix D and E of this Master Plan provide a record of coordination for the overall Master Plan with EA with project stakeholders, agencies, and the public.

A Public Notice indicating that USACE would be preparing an Environmental Assessment for the 2022 Master Plan was published on June 7, 2019, to the USACE web site and was distributed to project stakeholders, agencies, and the public. In addition, local news website "LockHaven.Com" published an article detailing the upcoming EA and Master Plan on July 12, 2019 (Appendix A of this EA). No public comments were received.

Agency coordination was conducted by USACE with the U.S. Fish and Wildlife Service (USFWS) through the Information, Planning, and Consultation (IPaC) online system to ensure compliance with Section 7 of the ESA. A follow up letter requesting coordination was sent to USFWS on February 16, 2021. Review was also performed by the Pennsylvania Game Commission (PGC), Pennsylvania Fish and Boat Commission (PFBC), DCNR, and Pennsylvania Department of Environment (PADEP), Pennsylvania Department of Topographic and Geologic Survey (PDTGS), and USFWS through the Pennsylvania Natural Diversity Index website on February 16, 2021. Coordination results can be found in Appendix A of this EA.

Information on the progress of the Master Plan and instructions on participating in the public comment process were published on the Project's web page:
<https://www.nab.usace.army.mil/Missions/Dams-Recreation/Alvin-R-Bush/ARB-Master-Plan-Revision/>

The 2022 Master Plan and EA were made available for public review for a period of 30 days beginning on March 22, 2022 and ending on April 20, 2022. No public comments received.

2 PROPOSED ACTION AND ALTERNATIVES

2.1 DEVELOPMENT OF ALTERNATIVES

USACE identified alternatives considered within this EA as a part of the master planning process. This Chapter describes the master planning process, screening criteria for alternative development, and the alternatives carried forth for detailed analysis within this EA.

2.1.1 Master Planning Process

USACE guidance recommends the establishment of resource goals and objectives for the purposes of development, conservation, and management of natural, cultural, and man-made resources at a project location. Goals describe the desired end state of overall management efforts, whereas objectives are concise statements describing measurable and attainable management activities that support the stated goals. Goals and objectives are hierarchical guidelines for obtaining maximum public benefits while minimizing adverse impacts on the human environment and are developed in accordance with 1) authorized project purposes, 2) applicable laws and regulations, 3) resource capabilities and suitability, 4) regional needs, 5) other governmental plans and programs, and 6) expressed public desires.

The 2022 Master Plan establishes the following management goals for Alvin R. Bush Dam and Kettle Creek Reservoir:

- **Goal A** – Provide the best management practices to respond to regional needs, resource capabilities and capacities, and expressed public interests consistent with authorized project purposes.
- **Goal B** – Protect and manage project natural and cultural resources through sustainable environmental stewardship programs.
- **Goal C** – Provide public outdoor recreation opportunities that support project purposes and public interests while sustaining project natural resources.
- **Goal D** – Recognize the unique qualities, characteristics, and potentials of the Project.
- **Goal E** – Provide consistency and compatibility with national objectives and other state and regional goals and programs.

2.1.2 Screening Criteria

For an alternative to be considered viable, it must be compatible with the primary project mission of flood risk management. In addition, the alternative must meet management goals and objectives and USACE-wide Environmental Operating Principles. Based on these criteria, this EA evaluates the No Action Alternative and the Proposed Action Alternative.

2.2 ALTERNATIVE 1: NO ACTION

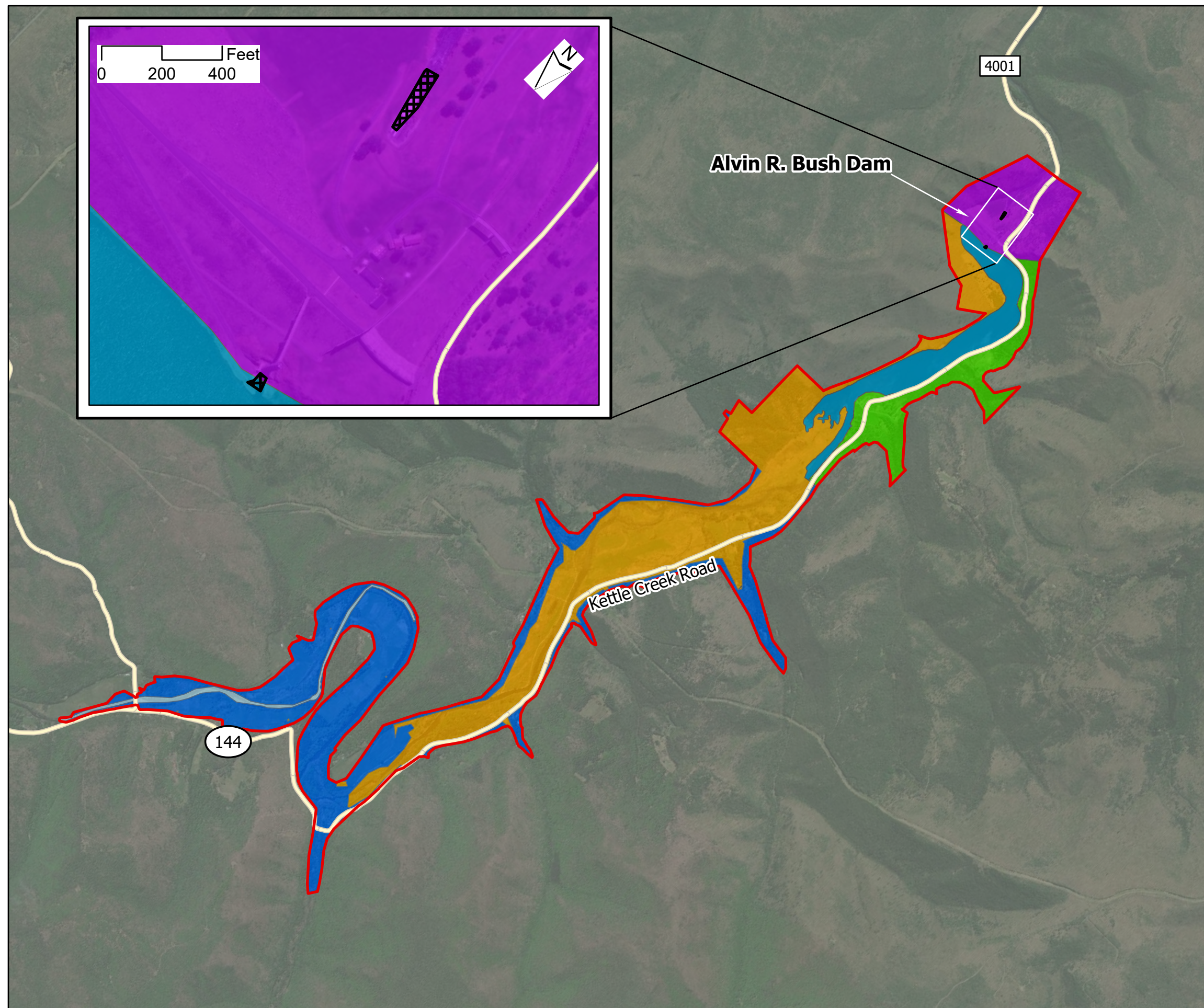
The No Action Alternative serves as a basis for comparison to the anticipated effects of the other action alternatives. Under the No Action Alternative, USACE would not adopt the 2022 Master Plan and continue the operation and management of the project as outlined in the 1964 Master Plan. No new land classifications would be designated. The No Action alternative would not meet the purpose and need for the action and would not be in compliance with current USACE regulations and guidance.

2.3 ALTERNATIVE 2: PROPOSED ACTION (PREFERRED ALTERNATIVE)

Under Alternative 2 or the Proposed Action Alternative, USACE would implement the 2022 Master Plan and associated changes in land management designations in compliance with

USACE regulations and guidance. This alternative would revise the land classifications to updated USACE standards and include resource objectives that reflect current and projected needs compatible with regional goals. Required changes associated with the Proposed Action include reclassifications of land, classification of the water surface, and adoption of new resource management and recreation objectives. Figure 2-1 depicts the proposed new land classifications within the 2022 Master Plan. Table 2-1 quantifies the proposed land and water surface reclassifications and provides a description of the land classification along with types of future projects that could occur within each land classification, as applicable. The Proposed Action would update the 2022 Master Plan to be compliant with ER and EP 1130-2-550 and would meet the goals and objectives outlined in the 2022 Master Plan. Therefore, this alternative is the Preferred Alternative and will be carried forward as the Proposed Action.

Figure 2-1 Proposed Land Classifications



Alvin R. Bush
Master Plan Update

Proposed Land Classifications

Legend

- Bush Study Area
- Flowage Easement
- River
- Proposed Land Classifications**
- Project Operations
- High Density Recreation
- Multiple Resource Management Lands**
- Low Density Recreation
- Water Surface**
- Open Recreation
- Restricted Area



Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community, Sources: Esri, HERE, Garmin, FAO, NOAA, USGS, © OpenStreetMap contributors, and the GIS User Community

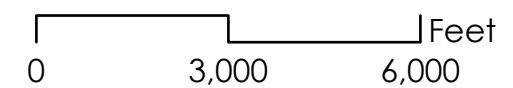


Table 2-1 Proposed Changes to Land Classifications at Alvin R. Bush Dam

Classification	1964 Master Plan (acres)	2022 Master Plan (acres)	Description*
Project Operations	194.2	173.7	<p>Lands are associated with the dam and spillway structures that are operated and maintained for fulfilling the flood risk management mission of the project. The Project Operations land classification was updated to include a section of the dam and spillway previously classified as intensive recreation. Although the mission-support areas of the project have not changed since the 1964 Master Plan, the land fitting the new criteria totals 173.7 acres (land providing direct support to the operations of the project's primary mission).</p> <p>One future project associated with this land classification is the stabilization of the spillway wall between the spillway crest and operations access road bridge. This project would be evaluated under a separate NEPA document. The stone wall has eroded over time, and continued erosion would negatively impact the spillway and Kettle Creek Road. The contract for construction will likely be awarded in FY 2023, with construction likely to begin in FY 2024. Dates are dependent on receipt of sufficient funding. Construction could take several years.</p>
Intensive Recreation	141	0	<p>This land classification was included in the 1964 Master Plan; however, it is not included in the 2022 Master Plan due to changes in USACE policies. The High Density Recreation land classification (below) includes Intensive Recreation management considerations.</p>
High Density Recreation	0	173.9	<p>Lands are currently developed for High Density recreational activities and include boat launches, day-use areas, and campgrounds. The new criteria for this land classification has a more conservative definition of recreation areas; those areas developed specifically to support recreation. This land classification has been developed to support concentrated visitation and use of the recreational facilities they host. The High Density recreation area includes areas supporting the Upper Campground (e.g., access roads), the Kettle Creek State</p>

Classification	1964 Master Plan (acres)	2022 Master Plan (acres)	Description*
			Park Administrative Complex, and the Day Use Area. Planned improvements by Kettle Creek State Park to the Upper Campground will likely fall entirely outside USACE-owned lands, with the exception of proposed improvements to an alternate access road to convert it to the main access road. This project would be evaluated under a separate NEPA document.
Multiple Resource Management Land			
Low Density Recreation	0	719.6	<p>Management of this land classification calls for maintaining a healthy, ecologically adapted vegetative cover to reduce erosion and improve aesthetics, while also supporting low-impact recreational opportunities such as bank fishing, hunting, hiking, wildlife viewing, and for access to the shoreline. Hunting is allowed in select areas that are a reasonable and safe distance from High Density Recreational areas, dam operations, and adjacent residential properties. The new land classification criteria include areas where vegetation and wildlife management may be secondary to the predominant use of recreation.</p> <p>Future plans for existing low density recreation lands include improvements to parking areas near Walters Run and the Equestrian Campground, restroom facility upgrades, wayside exhibits and interpretive signage near the Equestrian Campground, improved access to Kettle Creek for wildlife viewing and fishing access, and continued wildlife habitat improvement work intended to enhance wildlife viewing opportunities. These future plans/projects would be evaluated under separate NEPA documents.</p>
Wildlife and Forest Management	772	0	This land classification was included in the 1964 Master Plan. Per new guidance, this has been reclassified as two separate subclassifications under the Multiple Resource Management Land classification: Wildlife Management and Vegetative Management. However, neither of these classifications are included in the 2022 Master Plan. The Multiple Resource Management Land classification allows for the designation of the predominant use, with the understanding

Classification	1964 Master Plan (acres)	2022 Master Plan (acres)	Description*
			that other compatible uses may also occur on these lands. These lands have been reclassified to the predominant use of Low Density Recreation subclassification (above), which includes wildlife management considerations.
Water Surface			
Conservation Pool	166	0	This land classification was included in the 1964 Master Plan; however, is not included in the 2022 Master Plan due to a change in land classification designations. The Water Surface classification now contains four sub classifications: "Designated No-Wake," "Restricted," "Fish and Wildlife Sanctuary" and "Open Recreation." Only two of the sub-classifications are applicable to Kettle Creek Reservoir: The Restricted and Open Recreation Area subclassifications.
Restricted	0	0.2	Restricted water surface includes those areas where recreational boating is prohibited or restricted for project operations, safety, and security purposes. The Restricted water surface at Kettle Creek Reservoir includes a small area around the dam and intake tower. This area is normally marked with standard USCG regulatory buoys stating that boats are excluded from the area. Physical barriers may be in place on the water. This change reflects new classification criteria and no actual change in water use. This area includes the vicinity of the intake tower, spillway, and outfall.
Open Recreation Area	0	160.8	Open Recreation area includes all water surface areas available for year-round or seasonal water-based recreational use. This change reflects new classification criteria and no actual change in water use. This area includes all water surface area other than "Restricted."
Designated No-Wake	0	0	Kettle Creek Reservoir only permits electric or non-motored vessels that are not likely to produce any appreciable wake. Therefore, a "No Wake" land classification was not necessary.
Total	1,273.2**	1,228**	

** Specific projects mentioned within this land classification discussion have not been designed, funded, or approved. At such time that these projects or others move forward, additional NEPA compliance documentation will be undertaken as part of the planning process.*

***Mapping for the Master Plan update has been compiled using the best information available and is believed to be accurate. Prior land classification acres are based on original acquisition real estate deed records and mapping completed for the 1964 Master Plan. Due to improved mapping technologies, minor discrepancies exist when comparing prior and proposed land classification acreages. Discrepancies were primarily encountered between the prior land classification of Wildlife and Forest Management and the proposed land classification of Multiple Resource Management- Low Density Recreation.*

3 ENVIRONMENTAL SETTING AND CONSEQUENCES

3.1 INTRODUCTION

This chapter describes the natural and human environments that exist at the project and the potential impacts of the No Action Alternative and Proposed Action (Preferred Alternative), outlined in Chapter 2. The description of baseline data sources and an approach for analyzing impacts are discussed in Sections 3.1.1 and 3.1.2, respectively.

Several resources were determined not to be affected by the Proposed Action; therefore, a detailed analysis of these topics is not presented in this chapter. This chapter provides a discussion of resources analyzed within the EA, and justification for those resources dismissed from further analysis.

3.1.1 Description of Baseline Data and Data Sources

The EA used the following types of data to characterize the affected environment of the project:

- Geographical Information System (GIS), including waters and wetlands inventory, floodplain mapping, and vegetation;
- Aerial photography (ESRI, Google Earth);
- Regional and local reports: including Natural Resources Conservation Service (NRCS) Soil Surveys and previous studies conducted at the project;
- Agency databases including USFWS, the U.S. Environmental Protection Agency (USEPA), and Pennsylvania resource agencies;
- Information presented within the 2022 Master Plan; and
- Agency coordination

3.1.2 Approach for Analyzing Impacts

Impacts (consequence or effect) can either be beneficial or adverse and either directly related or indirectly related to the action. Direct effects are caused by the action and occur at the same time and place (40 CFR § 1508.8(a) (2019)). Indirect effects are caused by the action and are later in time or further removed in distance but are still reasonably foreseeable (40 CFR § 1508.8(b)(2019)). The alternatives may create temporary (less than 1 year), short-term (up to 3 years), long term (3 to 10 years), or permanent effects.

An impact is considered significant depending on the context in which the impact occurs and the intensity of the impact (40 CFR § 1508.27 (2019)). Context refers to the setting in which the impact occurs and may include society, the affected region, the affected interests, and the locality. Resource impacts can vary in degree or magnitude from a slightly noticeable change to a total change in the environment. This analysis classifies the intensity of impacts as beneficial, negligible, minor, moderate, or significant.

As stated in Section 1.3, Scope of the EA, the analysis focuses on the proposed land classifications as presented in the 2022 Master Plan and the types of future development projects that could occur within each land classification. Specific future projects within the 2022 Master Plan are qualitatively considered within this EA, as these projects are conceptual in nature. USACE would conduct further NEPA analysis on projects identified within the 2022 Master Plan once funding is available and detailed project plans and design are provided by DCNR and its partners.

3.1.3 Level of Resource Area Analysis

All potentially relevant resource areas were initially considered for analysis in this EA. Consistent with NEPA implementing regulations and guidance, USACE focused the analysis on topics with the greatest potential for environmental impacts. This sliding-scale approach is consistent with NEPA (40 CFR § 1502.2(b)(2019)), under which impacts, issues, and related regulatory requirements are investigated and addressed with a degree of effort commensurate with their importance. Some resource topics are limited in scope due to the lack of direct effect from the Proposed Action on the resource or because that resource is not located within the project. For example, the Kettle Creek Reservoir watershed does not have federally designated Wild or Scenic Rivers, so this resource is not included in the analysis.

In conducting this analysis, a qualified subject matter expert (SME) from USACE reviewed the potential direct and indirect effects of the No Action Alternative and the Proposed Action relative to each environmental and socioeconomic resource. The SME analyzed the existing conditions of each resource area within the Proposed Action's region of influence (ROI). Through this analysis, it was determined that, for several resource areas, negligible or no effects would occur. This included air quality, greenhouse gases and climate, noise, geology, groundwater, cultural resources, utilities, socioeconomics and environmental justice, and traffic and transportation. Therefore, these resources were eliminated from further analysis. Additional detail is provided in Section 3.6.

3.2 WATER RESOURCES

3.2.1 Affected Environment

3.2.1.1 Surface Waters and Wetlands

The Bush Dam is located on Kettle Creek approximately 8.4 miles upstream of its confluence with the West Branch Susquehanna River at Westport, PA. Bush Dam controls approximately 226 square miles, or 92 percent of the Kettle Creek Watershed. At the maintenance elevation of 842 feet PCD, Kettle Creek Reservoir has a surface area of 160 acres and contains 1,590 acre-feet of water (USACE 1964).

Kettle Creek's principal tributaries include Hammersly Fork and Little Kettle Creek. Upstream in the watershed are two small dams: one is a 4-foot high water supply dam on Elk Lick Run, and the other is the 15-foot high recreational Old Bull Dam on Kettle Creek. These have minimal storage and their effect on Bush Dam is negligible. There are no major water control structures on Kettle Creek downstream of the Bush Dam or on the West Branch Susquehanna River below the confluence with Kettle Creek. There is a 6-foot high recreation dam at Kettle Creek State Park just below the dam, but it does not affect the regulation of Bush Dam (USACE 1987).

Wetlands are common in the flat-bottom valley of the project area, mostly north of Kettle Creek Reservoir. A total of 56 freshwater emergent, freshwater forested/scrub shrub, and pond wetlands occur within the project area totaling approximately 60 acres, or 3 percent of the project's land area (Table 3-1; USFWS 2020, USACE n.d.).

Table 3-1. Project area wetlands.

Wetland Type	Acres	Percent of AOI
Freshwater Emergent Wetland	46.3	2.5%
Freshwater Forested/Shrub Wetland	11.8	0.6%
Freshwater Pond	1.8	0.1%
Total	59.9	3.2%
AOI	1872.9	

3.2.1.2 Water Quality

The watershed controlled by the Bush Dam is approximately 95 percent forested, and nearly all the forested lands are state forests, with a small amount of farming in the basin (USACE 1964). Sedimentation is, however, an issue within the lake. The watershed receives 40 inches of precipitation, and 25 to 50 inches of snow on average annually, depending on elevation. The water quality of Kettle Creek Reservoir is generally very good; however, some concerns exist. These include a buildup of submerged aquatic vegetation and heavy sedimentation, both of which create problems for boaters in the summer and phosphate concentrations consistently higher than U.S. Environmental Protection Agency water quality maximum levels.

Water quality is not a specifically authorized project purpose for Bush Dam; however, downstream water quality is influenced in two ways. First, acid mine drainage introduced to West Branch Susquehanna is diluted by water released from Bush Dam. Historically, dam releases were deliberately made for the purpose of mitigating acid slug formation, or the potential sudden release of concentrated acidic water from mines following a rain event. However, this has not been needed in recent years as the occurrence of acid slugs is less frequent. Second, flow augmentation from the Dam supports a healthy aquatic environment and fisheries downstream, especially during low flow periods (USACE 2019, DCNR 1996).

The Pennsylvania Department of Environmental Protection (PADEP) lists Kettle Creek Reservoir as “Impaired” for “Fish Consumption” and “Aquatic Life.” Fish consumption is impaired from atmospheric deposition of mercury, and aquatic life is impaired by low dissolved oxygen from natural sources. Potential sources of contaminants or nutrient enrichments include a wastewater treatment facility at Kettle Creek State Park that has been cited for violations to Biological Oxygen Demand (BOD), chlorine, fecal coliform, and total suspended solids and five active Marcellus Shale hydraulic fracturing wells within the watershed (USACE 2019).

3.2.1.3 Floodplains

Floodplains are areas of land adjacent to rivers and streams that convey overflows during flood events. The Federal Emergency Management Agency (FEMA) defines a floodplain as any land area susceptible to being inundated by water from any source (FEMA 2017). FEMA prepares Flood Insurance Rate Maps (FIRMs) that delineate flood hazard areas, such as floodplains, for communities. These maps are used to administer floodplain regulations and to reduce flood damage. Typically, these maps indicate the locations of 100-year floodplains, which are areas with a 1 percent chance of flooding occurring in any single year. Executive Order (EO) 11988, Floodplain Management, states that actions by federal agencies are to avoid to the extent possible the long- and short-term adverse impacts associated with the

occupancy and modification of floodplain development wherever there is a practicable alternative.

The National Flood Insurance Program (NFIP) requires local jurisdictions to issue permits for all development in the 100-year floodplain. Development is broadly defined to include any human-made change to land, including grading, filling, clearing, dredging, extraction, storage, subdivision of land, and construction and improvement of structures and buildings. For any development to take place, all necessary permits must be obtained, which may include federal, state, and local permits. To be properly permitted, proposed development may not increase flooding or create a dangerous situation during flooding, especially on another person's property. If a structure is involved, it must be constructed to minimize damage during flooding. The PADEP is responsible for issuing floodplain development permits in Pennsylvania.

The 100-year floodplain is primarily restricted to the immediate shores of Kettle Creek Reservoir and its tributaries. FEMA classifies this area as Zone A.

3.2.2 No Action – Environmental Consequences

Under the No Action Alternative, USACE would not implement the 2022 Master Plan and no new land classifications or future development projects within the proposed 2022 Master Plan would occur. The operation and management of Kettle Creek Reservoir and USACE lands would continue as outlined in the 1964 Master Plan. Although this alternative does not result in a 2022 Master Plan that meets current regulations and guidance, there would be no significant impacts to water resources on project lands.

3.2.3 Proposed Action – Environmental Consequences

The reclassifications required for the Proposed Action would not have impacts on water resources. Implementation of future master planning projects may result in negligible to minor adverse and beneficial water resource impacts. Table 3-2 summarizes potential effects to surface waters and wetlands from implementation of future master planning projects. These master planning projects are conceptual in nature and implementation of these would require further analysis under a separate NEPA document.

Table 3-2. Potential Water Resource Impacts from Implementation of Future Master Planning Projects

Classification	Potential for Impact
Project Operations	Minor impact. Construction and operations of future master planning projects (i.e., spillway wall construction) would use BMPs associated with prevention of erosion and control of stormwater runoff. This includes obtaining a National Pollution Discharge Elimination System (NPDES) permit for projects involving earth disturbances exceeding one acre. Surface waters and wetlands, if present, would be avoided or permitted through the Section 404 process. USACE would consider the presence of the 100-year floodplain in design and siting future master planning projects within floodplain areas.
Intensive Recreation	No impact. No impacts to water resources would occur from loss of this land classification.

Classification	Potential for Impact
High Density Recreation	<p>Minor impact. Future projects would occur within and adjacent to existing developed and intensively used areas, specifically to support recreation. Approximately 5,700 linear feet of streams exists within this land classification, and a majority of the area is classified in the FEMA Floodplain Zone A.</p> <p>Construction and operations of future master planning projects would use BMPs associated with prevention of erosion and control of stormwater runoff. This includes obtaining a National Pollution Discharge Elimination System (NPDES) permit for projects involving earth disturbances exceeding one acre. Surface waters and wetlands, if present, would be avoided or permitted through the Section 404 process. USACE would consider the presence of the 100-year floodplain in design and siting future master planning projects within floodplain areas.</p>
Low Density Recreation	<p>Minor impact. Future projects would have minor impacts on water resources, primarily resulting from construction of improved parking areas, restroom upgrades, exhibits and interpretive signing, and improvement of shoreline access trails. Designated trails and shoreline access points, however, would reduce erosion elsewhere at the project by establishing additional designated access points.</p> <p>Construction and operations of future master planning projects would use BMPs associated with prevention of erosion and control of stormwater runoff. This includes obtaining a National Pollution Discharge Elimination System (NPDES) permit for projects involving earth disturbances exceeding one acre. Surface waters and wetlands, if present, would be avoided or permitted through the Section 404 process. USACE would consider the presence of the 100-year floodplain in design and siting future master planning projects within floodplain areas.</p>
Wildlife and Forest Management	<p>No impact. No impacts to water resources would occur from loss of this land classification. Any wildlife or vegetation management currently taking place will continue to occur under the Low Density Recreation land classification.</p>
Conservation Pool	<p>No Impact. No impacts to water resources would occur from loss of this land classification.</p>
Restricted	<p>No Impact. No impacts to water resources would occur.</p>
Open Recreation Area	<p>No Impact. No change in water use is expected; therefore, no impact would occur.</p>

3.3. SOILS

3.3.1 Affected Environment

In the immediate area adjacent to Bush Dam and Kettle Creek reservoir, soils are primarily mapped as belonging to the very steep, very to extremely stony Ungers-Meckesville complex, Hazleton-Laidig complex, and Leck Kill channery silt loam (UpF, HoF, and LmD), which are well drained and have relatively low erodibility. Also present in this area are the very steep and moderately erodible and well drained, Hustontown silt loam (HuD) and the excessively drained, Rock outcrop-Rubble land complex (RaF). Areas further north on the valley floor

bordering Kettle Creek are mapped primarily as Barbour-Craigsville complex (well drained, low erodibility) and Atkins silt loam (Bb and At) (poorly drained), both of which are very gently sloping.

Additional soil types within the Bush Dam property lines include the very steeply sloped and very stony Meckesville channery loam (MhD), moderate to very steep Allegheny silt loam (AfD), slightly-sloped Ungers loam, Calvin channery silt loam, and Hustontown silt loam (UnB, CaB, and HuB) and Craigsville gravelly loam (Cr), which are well drained and low to moderately erodible (NRCS n.d.(b)).

Soils within the area of interest considered Pennsylvania Farmland of Statewide importance, including At, Bb, CaB, and Cr, total approximately 43.6 percent. Additionally, 0.5 percent of soils in the Area of Interest are categorized as Prime Farmland, including UnB and HuB (NRCS n.d.(a)).

3.3.2 No Action – Environmental Consequences

Under the No Action Alternative, USACE would not implement the 2022 Master Plan and no new land classifications or future development projects within the proposed 2022 Master Plan would occur. The operation and management of Kettle Creek Reservoir and USACE lands would continue as outlined in the 1964 Master Plan. Although this alternative does not result in a 2022 Master Plan that meets current regulations and guidance, there would be no significant impacts to soil resources on project lands.

3.3.3 Proposed Action – Environmental Consequences

The reclassifications required for the Proposed Action would result in potentially minor adverse resource impacts, primarily within the High Density Recreation land classification. Use within these areas could directly impact soils through compaction and increased erosion potential due to recreational use. Implementation of future master planning projects could result in minor, adverse impacts to soils. Table 3-3 summarizes potential effects to soil resources from the implementation of future master planning projects. These master planning projects are conceptual in nature and implementation would require further analysis under a separate NEPA document.

Table 3-3. Potential Soil Resource Impacts from Implementation of Future Master Planning Projects

Classification	Potential for Impact
Project Operations	Minor impact. Construction and operations of future master planning projects (i.e., spillway wall construction) would use BMPs associated with prevention of and control of erosion.
Intensive Recreation	No impact. No impacts to soil resources would occur from loss of this land classification.
High Density Recreation	Minor impact. Future projects would occur within and adjacent to existing developed and intensively used areas, specifically to support recreation. Activities from implementation of future development projects could result in the loss of soils. The Cr soil type found within this area is considered Pennsylvania Farmland of Statewide Importance. Potential impacts, however, would be concentrated within areas already developed intensively for

Classification	Potential for Impact
	recreation, and therefore no new losses to Farmland of Statewide importance are anticipated. Construction and operations of future master planning projects would use BMPs associated with prevention of and control of erosion. USACE would consider the potential for erosion and occurrence of Prime Farmland soils in design and siting future master planning projects.
Low Density Recreation	Minor Impact. Future projects would have minor impacts on soil resources, primarily resulting from improvements to parking areas, replacement of a restroom facility, installation of information kiosks and exhibits, and potential minor erosion due to trail use and access to shoreline areas. Designated trails and shoreline access points, however, would reduce erosion elsewhere at the project by concentrating designated access points. Likewise, improvements to parking areas is intended to concentrate parking and limit use of the roadside or other informal parking areas. Construction and operations of future master planning projects would use BMPs associated with prevention of and control of erosion. USACE would consider the potential for erosion and occurrence of Prime Farmland soils in design and siting future master planning projects
Wildlife Management	No impact. No impacts to soil resources would occur from loss of this land classification.
Conservation Pool	No Impact. No impacts to soil resources would occur from loss of this land classification.
Restricted	No Impact. No impacts to soil resources would occur.
Open Recreation Area	No Impact. No impacts to soil resources would occur.

3.4 BIOLOGICAL RESOURCES

3.4.1 Affected Environment

3.4.1.1 Vegetation

The Alvin R. Bush Dam project supports numerous types of vegetation and habitats, including wetlands, open water, grassy areas, fields, and a variety of forest types, including deciduous and evergreen forests. According to the U.S. Forest Service (USFS), North Central Pennsylvania is characterized by more forest than any other cover type. The primary forest type is deciduous forests, with significant amounts of mixed and evergreen forests. Other major cover types include pasture/hay and cultivated crops. Nearly 50 percent of the forests in North Central Pennsylvania belong to the maple/beech/birch group (50 percent of forests). The primary species within this group include red maple (*Acer rubrum*), sugar maple (*A. saccharum*), and black cherry (*Prunus serotina*). Other forest groups present in North Central Pennsylvania are oak/hickory, white pine/red pine/hemlock, and aspen/birch groups.

Between 2009 and 2014, North Central Pennsylvania gained approximately 40,000 acres of forest, but lost approximately 70,000 acres, primarily due to development and conversion to agriculture, for a net decrease in forest acres of 0.6 percent. While most Pennsylvania forests

are privately owned, North Central Pennsylvania has more federal and state-owned forests than any other Pennsylvania Region, as well as a high degree of forest connectivity. This is primarily due to the presence of the Allegheny National Forest, which covers approximately 513,000 acres of land (USFS 2017).

Three types of wetlands are present throughout the Project and include freshwater emergent, forested/shrub, and freshwater pond systems (USFWS 2020). Each wetland classification creates a unique ecosystem for specific types of wetland plants and wildlife. In addition, wetland vegetation provides several beneficial uses, which include enhancing water quality, filtering runoff, preventing localized erosion, and providing habitat and food sources for wildlife.

3.4.1.2 Wildlife and Fisheries

Kettle Creek Reservoir is remote and supports many habitat types, which attract several species of wildlife. Mammalian wildlife found on Reservoir lands include black bear (*Ursus americanus*), elk (*Cervus canadensis*), white-tailed deer (*Odocoileus virginianus*), bobcat (*Lynx rufus*), river otter (*Lontra canadensis*), fisher (*Pekania pennanti*), grey squirrel (*Sciurus carolinensis*) and groundhogs (*Marmota monax*). Common avian species include a variety of waterfowl and wading birds, woodpeckers, and songbirds, as well as common game species including wild turkey (*Meleagris gallopavo*) and ruffed grouse (*Bonasa umbellus*).

Bald eagles (*Haliaeetus leucocephalus*) were removed from the federal endangered species list in August 2007, and from Pennsylvania's list in 2013. Although this species is not listed as an endangered or threatened species, it is protected under the Bald and Golden Eagle Protection Act, as noted by the United States Fish and Wildlife Service (USFWS) in Appendix A of this EA. According to Cornell Lab of Ornithology's Ebird.org (n.d.), both immature and adult bald eagles were sited at Kettle Creek Reservoir during the 2020 breeding season. Bald eagle nests are observed within the project area each breeding season. Construction of future master planning projects near active bald eagle nests would maintain a buffer of at least 660 feet (200 meters) between project activities and the nest. If activity is closer than 660 feet, all construction activities within 660 feet of the nest would occur outside of the nesting season (January 1 to July 31 in Pennsylvania).

The timber rattlesnake (*Crotalus horridus*), which is spotted regularly on project lands is a state protected species in Pennsylvania. Killing of timber rattlesnakes is prohibited by PFBC. Timber rattlesnakes are large snakes of the pit viper family that can be identified by their "V"-shaped dark bands on a grey, yellow, black, or brown body. In Pennsylvania, timber rattlesnakes are typically found at elevations greater than 1800 feet. They prefer southern-facing upland forested areas with talus slopes, rocky ledges and outcrops, and boulder fields, which are used for basking (thermoregulation), and dens. Threats to timber rattlesnake populations include human activities related to habitat alteration, overhunting and poaching (Urban 2014).

Kettle Creek Reservoir is a popular trout and bass fishing area, and many other species of fish including brown bullhead (*Ameiurus nebulosus*), sucker (Catostomidae), and many species of panfish can be found in the reservoir (DCNR 2018).

3.4.1.3 Threatened and Endangered Species

3.4.1.3.1 Federally Listed Species

As of 2020, 3 federally listed threatened (FT) or endangered (FE) species are known to exist within the project impact area, the Indiana bat (*Myotis sodalis*), the Northern long-eared bat (*Myotis septentrionalis*), and northeastern bulrush (*Scirpus ancistrochaetus*) (Appendix A of this EA). Table 3-4 provides information on these species.

A review of the USFWS Information for Planning and Conservation database identified one species of migratory bird of conservation concern that have the potential to occur within the project area, other than the bald eagle previously mentioned: the black-capped chickadee (*Poecile atricapillus*). The Migratory Bird Treaty Act (MBTA) (16 U.S. Code 703-712) prohibits the take (harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect), or attempt to engage in any such conduct, of any migratory bird without authorization from the USFWS. Unintentional take includes disturbance to species and nests during ground-clearing activities, such as clearing, where unobserved nests of migratory birds could be located. The breeding season for black-capped chickadee is April 10 through July 31.

3.4.1.3.2 Pennsylvania state Threatened and Endangered Species

According to the Pennsylvania Natural Heritage Program screening tool, the state threatened Allegheny woodrat (*Neotoma magister*) is known to occur in the project area (See Appendix A of this EA).

The Allegheny woodrat is listed as threatened in Pennsylvania and vulnerable nationally. They are related to packrats found in the western United States and can be distinguished from common Norway rats based on their furred tail, larger ears and eyes, heavier head, and longer whiskers. Their preferred habitat includes extensive expanses of abundant, closely spaced surface rock surrounded by unfragmented forest. While they may be found in deciduous, coniferous, or mixed forests, mast-producing trees are important as a food source. Rocky areas are important habitat for Allegheny woodrats, as they nest deep within rock outcrops, use rock crevices and protected ledges for storing food, and establish latrines on flat rock surfaces protected by an overhang. Several factors are thought to have contributed to the population's decline, including the decline of the mast producing trees, such as the American chestnut due to chestnut blight and oak trees due to gypsy moth infestations; infection by the racoon roundworm parasite (*Baylissacaris procyonis*). Other factors include predation pressure from increasing great horned owl populations; competition with growing North American porcupine (*Erethizon dorsatum*) populations for habitat; and forest fragmentation. Populations in some of the Allegheny woodrat's range, including North Central Pennsylvania, are thought to be relatively healthy (Butchkowski 2014).

3.4.1.4 Invasive and Nuisance Species

Invasive species are defined as non-native species whose introduction into an ecosystem is likely to cause environmental, human, or economic harm. Non-native, or exotic, species may not be affected by existing predators, disease, or other limiting factors in their introduced range and therefore may thrive and outcompete native species. Non-native invasive species are therefore often difficult and expensive to control. Several terrestrial invasive and/or nuisance species can be found at the Alvin R. Bush Dam, Kettle

Creek Reservoir, and associated lands, some of which are actively managed by Kettle Creek State Park staff. No aquatic invasive species are documented within the Reservoir.

Table 3-4. Federally Protected Threatened and Endangered Species at Bush Dam.

Common Name	Status	Habitat	USFWS Coordination Results
Indiana Bat	FE	Hibernates during winter in caves or abandoned mines. Migrates to wooded areas in spring where it usually roosts under loose tree bark on dead or dying trees, typically greater than 5 inches at diameter breast height.	USFWS does not anticipate adverse effects to Indiana Bats.
Northern Long-Eared Bat (NLEB)	FT	Hibernates in high-humidity caves and mines. During the summer, forested areas, including riparian corridors, provide habitat (e.g., decaying trees, loose bark, tree snags and stumps) for roosting, feeding and maternity colonies.	The proposed action is consistent with the nationwide USFWS NLEB Programmatic Biological Opinion. The action may affect NLEB; however, any take that may occur as a result of the action is not prohibited under the ESA Section 4(d) rule (50 CFR 17.40(o)) because it is not located within 0.25 mile of a known northern long-eared bat hibernaculum or within 150 feet from a known, occupied maternity roost tree. Implementation of future master planning projects should reevaluate NLEB impacts.
Northeastern bulrush	FE	Typically found in ponds, wet depressions, shallow sinkholes, vernal pools, small emergent wetlands, or beaver-influenced wetlands. These wetlands are often located in forested areas and characterized by seasonally variable water levels.	The project is within the known range of the northeastern bulrush. Activities should avoid direct and indirect effects on wetland surface and groundwater recharge areas and include establishment of 300-foot wide upland buffer areas around wetlands, as well as 50-100-foot-wide buffers along waterways. Earth disturbance, spraying, and tree cutting activities should not occur in these buffers. If buffers cannot be established, potential project areas should be surveyed by a qualified botanist for species presence between June 1 and September 30, when the flowering/fruitleting culm is present.

Kettle Creek State Park staff are actively managing some species of invasive plants, including Japanese knotweed (*Polygonum cuspidatum*), reed canary grass (*Phalaris arundinacea*), autumn olive (*Elaeagnus umbellata*), and multiflora rose (*Rosa multiflora*). Other invasive plant species not actively managed include garlic mustard (*Alliaria petiolata*), and Japanese barberry (*Berberis thunbergii*). The project area has few problems with invasive insect pests. The emerald ash borer (*Agrilus planipennis* Fairmarie), for example, was destructive for many years at the project area before the host species' (ash; *Fraxinus* spp.) populations became too low to support emerald ash borer populations. Invasive insect pests found in surrounding regions and may affect the project area in the future include the hemlock wooly adelgid (*Adelges tsugae*) and the spotted lanternfly (*Lycorma delicatula*).

Kettle Creek State Park actively manages populations of native but nuisance resident Canada geese (*Branta canadensis*) populations through non-lethal control methods including harassment and egg addling. A large population of resident Canada geese at the park has led to elevated *E. coli* levels in the Reservoir, therefore they are a nuisance species in the project area.

3.4.2 No Action – Environmental Consequences

Under the No Action Alternative, USACE would not implement the 2022 Master Plan and no new land classifications or future development projects within the proposed 2022 Master Plan would occur. The operation and management of Kettle Creek Reservoir and USACE lands would continue as outlined in the 1964 Master Plan. Although this alternative does not result in a 2022 Master Plan that meets current regulations and guidance, there would be no significant impacts to vegetation resources on project lands.

3.4.3 Proposed Action – Environmental Consequences

The reclassifications required for the Proposed Action would not impact biological resources. No impacts to Threatened and Endangered species are anticipated from the Proposed Action. Minor, adverse indirect impacts to vegetation are anticipated from implementation of future master planning projects, under the High Density and Low Density Recreation land classifications. No adverse impacts to wildlife and fisheries are anticipated from the Proposed Action. Table 3-5 summarizes potential effects to biological resources from implementation of future master planning projects. These master planning projects are conceptual in nature and implementation would require further analysis under a separate NEPA document.

Table 3-5. Potential Biological Resource Impacts from Future Master Planning Projects

Classification	Potential for Impact
Project Operations	No impact. Construction and operations of future master planning projects (i.e., spillway wall construction) would use BMPs associated with prevention of impacts to sensitive species recommended during future separate environmental review of projects proposed in the 2022 Master Plan.
Intensive Recreation	No impact. No impacts to biological resources would occur from loss of this land classification.
High Density Recreation	Minor impact. Land use within these areas could directly impact vegetation and wildlife habitat from recreational development and use. Potential impacts, however, would be concentrated within

Classification	Potential for Impact
	<p>existing High Density Recreation areas. The master plan does not propose any loss of forest due to recreational development. While intensive use may increase the potential for invasive species introduction and spread, maintaining a High Density Recreation area focuses management and control of invasive species in higher-use areas which would have the greater potential for presence of invasive species.</p> <p>Construction and operations of future master planning projects would use any BMPs associated with prevention of impacts to sensitive species recommended during future separate environmental reviews of projects proposed in the 2022 Master Plan.</p>
Low Density Recreation	<p>Minor Impact. Future projects could have minor impacts on biological resources, primarily resulting from potential minor amounts of vegetation crushing or removal due to trail use, access to shoreline areas, and implementation of other proposed master planning projects in the area. Designated trails and shoreline access points, however, would reduce vegetation disturbance, habitat degradation, and spread of invasive species elsewhere at the project by establishing additional designated access points. Improvement of parking areas would concentrate parking and limit the amount of parking in non-designated areas. Construction and operations of future master planning projects would use any BMPs associated with prevention of impacts to sensitive species recommended during future separate environmental reviews of projects proposed in the 2022 Master Plan.</p>
Wildlife Management	<p>No impact. No impacts to biological resources would occur from loss of this land classification. Wildlife management will continue to occur on lands now classified as Low Density Recreation.</p>
Conservation Pool	<p>No Impact. No impacts to biological resources would occur from loss of this land classification.</p>
Restricted	<p>No Impact. No impacts to biological resources would occur.</p>
Open Recreation Area	<p>No Impact. No impacts to biological resources would occur.</p>

3.5 LAND USE AND RECREATION

3.5.1 Affected Environment

All reservoir lands held in fee are leased to the Pennsylvania DCNR, except for areas required for operation and maintenance of the dam, are designated for public use. The leased lands are utilized by DCNR for development, operation, and management as Kettle Creek State Park. DCNR, under this lease, has developed and continues to maintain and operate public recreational facilities, forest management practices, and fish and wildlife management programs (USACE 1964). Recreational opportunities provided by DCNR include non-motorized and electric motor boating, fishing, hunting, picnicking, camping, hiking, equestrian camping and hiking, winter activities (e.g., snowmobiling, cross-country skiing, sledding, ice fishing), and various special events.

According to a 2013 Visitor Use Monitoring (VUM) survey, the average distance visitors traveled to Kettle Creek State Park was 129.5 miles, and 82.4 percent of visitors traveled 50 miles or more. Visitors take part in a wide range of recreational activities. Fishing, relaxing, boating, socializing, viewing natural features, sightseeing, walking, hiking, camping, picnicking and family gatherings are among the most popular recreational activities at Kettle Creek State Park. All recreational facilities on project lands fall within and are operated and maintained by Kettle Creek State Park.

Existing recreational facilities include a Picnic/Day Use area with picnic tables, drinking water, sanitary facilities, and sports and open fields, a 60-boat mooring area, boat launch, three camping areas including one equestrian camping area, and approximately 2 miles of hiking trails.

3.5.2 No Action – Environmental Consequences

Under the No Action Alternative, USACE would not implement the 2022 Master Plan and no new land classifications or future development projects contained within the proposed 2022 Master Plan would occur. The operation and management of Kettle Creek Reservoir and USACE lands would continue as outlined in the 2022 Master Plan and there would be no short-, mid-, or long-range planning of future projects for recreational improvements and development at Kettle Creek Reservoir. Therefore, the No Action Alternative is anticipated to have minor impacts to land use and recreation.

3.5.3 Proposed Action – Environmental Consequences

The reclassifications required for the Proposed Action would result in beneficial impacts to land use and recreation. Table 3-6 summarizes potential effects to land use and recreation based on the proposed changes to land classifications.

Table 3-6. Potential Land Use and Recreation Impacts from Changes to Land Classifications

Classification	Potential for Impact
Project Operations	No Impact.
Intensive Recreation	No impact. No impacts to biological resources would occur from loss of this land classification.
High Density Recreation	Beneficial Impact. This land reclassification recognizes lands currently developed for intensive recreational activities. The reclassification maintains the existing consolidation of High Density Recreation to areas associated within and adjacent to existing developed and intensively used areas, specifically to support recreation. It optimizes the siting of future High Density Recreation master planning projects and leaves other acreage for other uses (e.g., low density recreation, etc.).
Low Density Recreation	Beneficial Impact. This land reclassification focuses on areas suitable for supporting low-impact and passive recreational opportunities such as bank fishing, hiking, wildlife viewing, and for access to the shoreline. The new land classification identifies recreation as a primary use; however, vegetation and wildlife management may also occur as important secondary uses throughout this classification.

Classification	Potential for Impact
Wildlife Management	No impact. This land classification was included in the 1964 Master Plan, however, it has been reclassified in the 2022 Master Plan. No impacts to land use or recreation would occur from loss of this land classification.
Conservation Pool	No Impact. This land classification was included in the 1964 Master Plan, however, it has been reclassified in the 2022 Master Plan. No impacts to land use and recreation resources would occur from loss of this land classification.
Restricted	Beneficial Impact. Restricted water surface includes those areas where recreational boating is prohibited or restricted for project operations, safety, and security purposes. This classification would aid in protecting recreational users on the lake.
Open Recreation Area	No Impact. Open Recreation areas include all water surface areas available for year-round or seasonal water-based recreational use. This change reflects new classification criteria and no actual change in water use; therefore, no impact would occur.

3.6 ADDITIONAL RESOURCES NOT ANALYZED IN THIS EA

Impacts on the following resources were determined to be negligible; therefore, these resources were not further analyzed in this EA.

3.6.1 Air Quality

Alvin R. Bush Dam and Kettle Creek Reservoir are in Clinton County, which meets attainment for all criteria pollutants, therefore the Clean Air Act's General Conformity Rule does not apply. See 40 C.F.R. 93.153(b) (conformity determinations required only in nonattainment or maintenance areas). Changes to land classifications under the Proposed Action would not affect air quality. Implementation of future master planning projects may generate temporary emissions from construction activities, including particulate matter and other criteria pollutants. Future development and increased recreational opportunities may also generate increased visitation and corresponding vehicle emissions. These impacts are outside the scope of this EA and will be evaluated under future EAs as funding becomes available to implement the future master planning projects. As a result, this resource is not further discussed in this EA.

3.6.2 Greenhouse Gases and Climate

The project area falls within the National Oceanic and Atmospheric Administration's (NOAA) Climate Division 36-07 (NOAA n.d.) and is characterized by a temperate climate with average annual high temperature of 61 degrees and average annual low of 39 degrees Fahrenheit (US Climate Data 2020). Changes to land classifications under the Proposed Action would not affect greenhouse gas emissions or climate. Potential greenhouse gas emissions and climate change impacts associated with the implementation of future master planning projects will be evaluated in future EAs associated with project development and are outside of the scope of this EA. As a result, this resource area is not further discussed in this EA.

3.6.3 Geology and Topography

The project falls within the Deep Valleys Section of the Appalachian Plateaus physiographic province, which is characterized by very deep, angular valleys with some broad to narrow uplands. PNDI review identified two unique geologic features of special concern. The geoheritage sites include "The Bunk," which is an elongated knob-like feature, and "Oxbow Bend," the ancient Kettle Creek meander bend surrounding The Bunk (See Appendix A of this EA). Both features are located in project flowage easements and neither will be affected by land reclassifications.

Changes to land classifications under the Proposed Action would not affect geology or topography. Construction activities associated with implementation of proposed future projects will be evaluated for impacts to geology and topography in future EAs specific to individual development projects. As a result, this resource area is not further discussed in this EA.

3.6.4 Groundwater

Changes to land classifications will not adversely affect the quality or availability of groundwater. Assessment of future master planning project's water use would be performed during detailed project-specific planning. As a result, this resource is not further discussed in this EA.

3.6.5 Noise

The project area is in a physical setting characterized as rural and very remote. In rural areas, most noise comes from transportation, and human and animal sources (Engineering Toolbox 2013). Changes to land classifications under the Proposed Action would not change the existing noise environment. Assessment of any future master planning project's impact on noise would be performed during detailed project-specific planning. As a result, this resource area is not further discussed in this EA.

3.6.6 Cultural Resources

There are no known historic structures or archaeological sites in the project boundary eligible for or listed in the National Register of Historic Places (NRHP). Structures present before the project were razed as part of dam construction. Known architectural or above-ground resources are associated with the Alvin Bush Dam such as maintenance shops and garages, offices, the intake tower, spillway, and an earthen embankment. They have not been evaluated to determine their eligibility for inclusion in the NRHP.

If specific project actions are proposed in the future, they will be subject to consultation and review under Section 106 of the NHPA. As a result, this resource area is not further discussed in this EA.

3.6.7 Utilities

Changes to land classifications under the Proposed Action would not affect utilities. An assessment of utilities associated with any future master planning projects would be performed during detailed project-specific planning. Therefore, utilities are not further discussed in this EA.

3.6.8 Hazardous Materials and Wastes

No known contaminated sites occur at the project area. Changes to land classifications

under the Proposed Action would not affect hazardous materials and wastes. An assessment of hazardous materials and wastes associated with any future master planning projects would be performed during detailed project-specific planning. As a result, this resource area is not further discussed in this EA.

3.6.9 Socioeconomics and Environmental Justice

The Proposed Action would not result in any appreciable effects to the local or regional socioeconomic environment. Changes to land classification would have no impact on socioeconomics or environmental justice. Impacts to socioeconomics and environmental justice associated with any future master planning projects would be performed during detailed project-specific planning. As a result, this resource area is not further discussed in this EA.

3.6.10 Traffic and Transportation

Changes to land classification would have no impact on traffic and transportation. Any temporary impacts from increased truck traffic during construction of future master planning projects would be assessed during detailed project-specific planning. As a result, this resource is not further discussed in this EA.

4 CUMULATIVE IMPACTS

As defined by CEQ, cumulative effects are those that “result from the incremental impact of the Proposed Action when added to other past, present, and reasonably foreseeable future actions, without regard to the agency (federal or non-federal) or individual who undertakes such other actions” (40 CFR 1508.7) (2019). Cumulative effects may accrue over time and/or in conjunction with other pre-existing effects from other activities in the area (40 CFR 1508.25); therefore, pre-existing impacts and multiple smaller impacts should also be considered.

NEPA regulations require the analysis of cumulative environmental effects of a Proposed Action, which may manifest only at the cumulative level. Cumulative effects can result from individually minor, but collectively significant, actions taking place over time. As noted above, cumulative effects are most likely to arise when a Proposed Action is related to other actions that could occur in the same location and at a similar time. The geographic scope or region of the cumulative effects analysis includes the county the project is located in (Clinton County) and its surrounding counties (Centre, Potter, Cameron, Tioga, and Lycoming counties). The temporal scope is 15 to 25-year timeframe.

The Proposed Action focuses solely on the implementation of the proposed land classifications presented in the 2022 Master Plan. This EA does not consider implementation of specific projects identified within the 2022 Master Plan during the master planning process, as those projects are conceptual in nature, nor does it consider specific future development opportunities for leased areas, such as Kettle Creek State Park. Projects identified during the master planning process within the 2022 Master Plan would require separate NEPA analyses prior to construction.

4.1. CURRENT AND REASONABLY FORESEEABLE PROJECTS WITHIN THE ROI

This section identifies reasonably foreseeable projects that may have cumulative, incremental impacts in conjunction with the Proposed Action. Beyond the future master planning projects identified in the 2022 Master Plan, only one project was identified at Alvin R. Bush Dam involving stabilizing the spillway wall. Many years of erosion have deteriorated the bedrock at the top of the western spillway wall between the operations access road bridge and spillway entrance. Continued erosion threatens the spillway and Kettle Creek Road. USACE is currently planning a project to stabilize the wall and Kettle Creek Road’s shoulder by constructing a concrete wall similar to the wall currently in place south of the access road bridge. The contract for construction will likely be awarded in FY 2023, with construction likely to begin in FY 2024. Dates are dependent on receipt of sufficient funding. Construction could take several years.

Other potential projects identified during the master planning process in the 2022 Master Plan, within USACE-owned lands, include construction of an alternate access road to the Upper Campground and improvements in the low density recreation lands such as upgrades to restroom facilities, parking areas, wayside exhibits and interpretive signage near the Equestrian campground, and access to wildlife viewing areas. Other potential projects in the vicinity of the study area include planned improvements by Kettle Creek State Park to the Upper Campground, which would fall entirely outside USACE-owned lands. However, these projects are conceptual in nature and implementation would require further analysis under separate NEPA documentation.

Clinton County, Pennsylvania adopted a Comprehensive Plan document in 2014. The 2014 Comprehensive Plan classifies the Alvin R. Bush Dam area as "Forested," and no changes to this land classification were proposed. The 2014 Plan did not identify development activities within the project area.

4.2 ANALYSIS OF CUMULATIVE IMPACTS

Impacts on each resource were analyzed according to how other actions and projects within the region of influence might be affected by the No Action Alternative and Proposed Action. Impacts can vary in degree or magnitude from a slightly noticeable change to a total change in the environment.

As discussed above, minimal growth and development are expected to continue near Alvin R. Bush Dam. The Proposed Action is an administrative action that seeks to update the land classifications at Alvin R. Bush Dam in compliance with ER 1130-2-550 and EP 1130-2-550. No impacts are anticipated on water or biological resources from the implementation of the Proposed Action. Therefore, no cumulative impacts from this administrative action on water, soils, or biological resources are expected when added to the impacts associated with the Proposed Action or No Action Alternatives. Minor, adverse impacts to soils are anticipated from the implementation of the Proposed Action from continued recreational use.

Moderate, beneficial impacts are anticipated on the land use and recreation resources from the implementation of the Proposed Action. Beneficial, cumulative impacts on land use and recreation resources are anticipated since the High Density Recreation and Low Density Recreation land classifications maintain land areas at the project for the purpose of recreation, which would support recreational opportunities in the region.

5 IRRETRIEVABLE AND IRREVERSIBLE COMMITMENT OF RESOURCES

NEPA requires that federal agencies identify “any irreversible and irretrievable commitments of resources which would be involved in the Proposed Action should it be implemented” (42 U.S. Code § 4332). An irreversible commitment of resources occurs when the primary or secondary impacts of an action result in the loss of future options for a resource. Usually, this is when the action affects the use of a nonrenewable resource or it affects a renewable resource that takes a long time to renew. The impacts for this project from the reclassification of land or future master planning projects centered on recreation enhancement and development would not be considered an irreversible commitment because much of the land could be converted back to prior use at a future date. An irretrievable commitment of resources is typically associated with the loss of productivity or use of a natural resource (e.g., loss of production or harvest). No irreversible or irretrievable impacts are anticipated from implementation of the Proposed Action.

6 SUMMARY OF ENVIRONMENTAL CONSEQUENCES

Table 6-1 presents a summary of the environmental consequences by alternative analyzed in this EA. As discussed in Chapter 4, selection of the Proposed Action Alternative would not be anticipated to cause cumulative adverse impacts. Table 6-2 presents conservation measures recommended within Chapter 3.

Table 6-1. Summary of Potential Environmental Effects

Alternative	Impact Type*			Intensity of Impact		
	<i>Beneficial</i>	<i>None/ Negligible</i>	<i>Negative</i>	<i>Minor</i>	<i>Moderate</i>	<i>Significant</i>
Water Resources						
No Action Alternative		x				
Proposed Action Alternative		x				
Soil Resources						
No Action Alternative		x				
Proposed Action Alternative			x	x		
Biological Resources						
No Action Alternative		x				
Proposed Action Alternative		x				
Land Use and Recreation						
No Action Alternative				x		
Proposed Action Alternative	x				x	

*Impacts on resource categories are based on applicable land classification changes. Section 3 describes anticipated impacts from changes to land classification under the Proposed Action alternative.

Table 6-2. Conservation Measures for Future Master Planning Projects

Measure	Resource Protected
Construction and operations of future master planning projects would use best management practices (BMPs) associated with prevention of erosion and control of stormwater runoff. This includes obtaining a National Pollution Discharge Elimination System (NPDES) permit for projects involving earth disturbances exceeding one acre.	Water and Soil Resources
Surface waters and wetlands, if present, would be avoided or permitted through the Section 404 process.	Water Resources
USACE would consider the presence of the 100-year floodplain in design and siting future master planning projects within floodplain areas.	Water Resources
USACE would consider the potential for erosion and occurrence of Prime Farmland soils in design and siting future master planning projects.	Soil Resources

Measure	Resource Protected
Construction and operations of future master planning projects would use BMPs associated with the prevention of impacts to sensitive species recommended by resource agencies during future environmental review of projects proposed in the 2022 Master Plan.	Biological Resources
Impacts to sensitive receptors (e.g., adjacent residences and campers) would be minimized as these activities would be restricted to the daytime and would be temporary in nature	Noise Environment
Per the facility's Integrated Cultural Resources Management Plan, if any human remains or cultural items are found within or adjacent to Alvin R. Bush Dam and Kettle Creek Reservoir that may be demonstrably related to one of the recognized tribal entities, then Public Law 101-601, the Native American Grave Protection and Repatriation Act, would be implemented and the affected group contacted.	Cultural Resources.

Table 6-3 summarizes the compliance of the proposed alternative with environmental protection statutes and other environmental regulations. Based on the evaluation of project impacts described in Section 3, there are no significant impacts from the proposed action, and a Finding of No Significant Impact (FONSI) has been prepared.

Table 6-3. Compliance of the Proposed Action with Environmental Protection Statutes and Other Environmental Requirements

Federal Statutes	Level of Compliance
Anadromous Fish Conservation Act	N/A
Archeological and Historic Preservation Act	N/A
Clean Air Act	N/A
Clean Water Act	N/A
Coastal Barrier Resources Act	N/A
Coastal Zone Management Act	N/A
Comprehensive Environmental Response, Compensation and Liability Act	N/A
Endangered Species Act	Full
Estuary Protection Act	N/A
Farmland Protection Policy Act	N/A
Federal Water Project Recreation Act	N/A
Fish and Wildlife Coordination Act	Full
Land and Water Conservation Fund Act	N/A
Magnuson-Stevens Act	N/A
Marine Mammal Protection Act	N/A
Marine Protection, Research and Sanctuaries Act	N/A
Migratory Bird Treaty Act	Full
National Environmental Policy Act	Full
National Historic Preservation Act	N/A
Noise Control Act	N/A
Resource Conservation and Recovery Act	N/A
Rivers and Harbors Act	N/A
Safe Drinking Water Act	N/A

Federal Statutes	Level of Compliance
Solid Waste Disposal Act	N/A
Toxic Substances Control Act	N/A
Water Resources Planning Act	N/A
Watershed Protection and Flood Prevention Act	N/A
Wetlands Conservation Act	N/A
Wild and Scenic Rivers Act	N/A
Executive Orders (EOs), Memoranda, etc.	
Protection and Enhancement of Cultural Environment (EO 11593)	N/A
Floodplain Management (EO 11988)	Full
Protection of Wetlands (EO 11990)	Full
Environmental Justice in Minority and Low-Income Populations (EO 12898)	Full
Protection of Children from Health Risks and Safety Risks (EO 13045)	N/A
Consultation and Coordination with Indian Tribal Governments (EO 13175)	N/A
Indian Sacred Sites (EO 13007)	N/A
Invasive Species (EO 13112)	Full
Migratory Bird (EO 13186)	Full
Facilitation of Cooperative Conservation (EO 13175)	N/A
Chesapeake Bay Protection and Restoration (EO 13508)	N/A
Prime and Unique Farmlands (CEQ Memorandum, 11 Aug 80)	N/A

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Appendix A: Agency Coordination



DEPARTMENT OF THE ARMY
CORPS OF ENGINEERS, BALTIMORE DISTRICT
2 HOPKINS PLAZA
BALTIMORE, MD 21201

June 13, 2019

Operations Division

SUBJECT: Coordination for Alvin R. Bush Dam and Kettle Creek Reservoir Master Plan Revision

Dear Coordinating Stakeholders:

In compliance with the National Environmental Policy Act (NEPA), the U.S. Army Corps of Engineers, Baltimore District (USACE), is preparing an Environmental Assessment (EA) for the implementation of a Master Plan for the Alvin R. Bush Dam and Kettle Creek Reservoir. The Master Plan is being updated by the Baltimore District.

The Alvin R. Bush Dam, located on Kettle Creek in Clinton County, Pennsylvania, is maintained by the Baltimore District. The Baltimore District's Operations Division, periodically updates the project's master plan. Details of design, management and administration, and implementation of the project are addressed in the Alvin R. Bush Dam Operation and Maintenance Manual.

The project's original master plan, dated June 1964, was prepared in accordance with House Document 29, 84th Congress, 1st session, as a unit of the comprehensive flood control plan for the protection of communities in the West Branch Susquehanna River Basin. The plan described the manner in which all project lands, waters, forests, and other resources will be conserved, enhanced, developed, managed, and used in the public interest throughout the life of the project. Correspondingly, the plan is a vital tool for responsible stewardship and sustainability of the project's resources for the benefit of present and future generations.

The updated master plan will guide and articulate USACE's responsibilities pursuant to federal laws to preserve, conserve, restore, maintain, manage, and develop the land, water, and associated resources. The master plan is dynamic and flexible based on changing conditions; however, the master plan does not address the specifics of regional water quality, shoreline management, or water level management. Furthermore, the operation and maintenance of project operation facilities is not included in this master plan.

To assist in the development of the EA, we are requesting that you provide information concerning your interests or your organization's area of responsibility or expertise within 30 days from the date of this notice to the address below. A timely review of this information and a written response will be greatly appreciated. Substantive public comments received via the NEPA process will be fully considered by USACE. For continued master plan project updates, information can be found on our website at <https://www.nab.usace.army.mil/ARB-Master-Plan-Revision/>

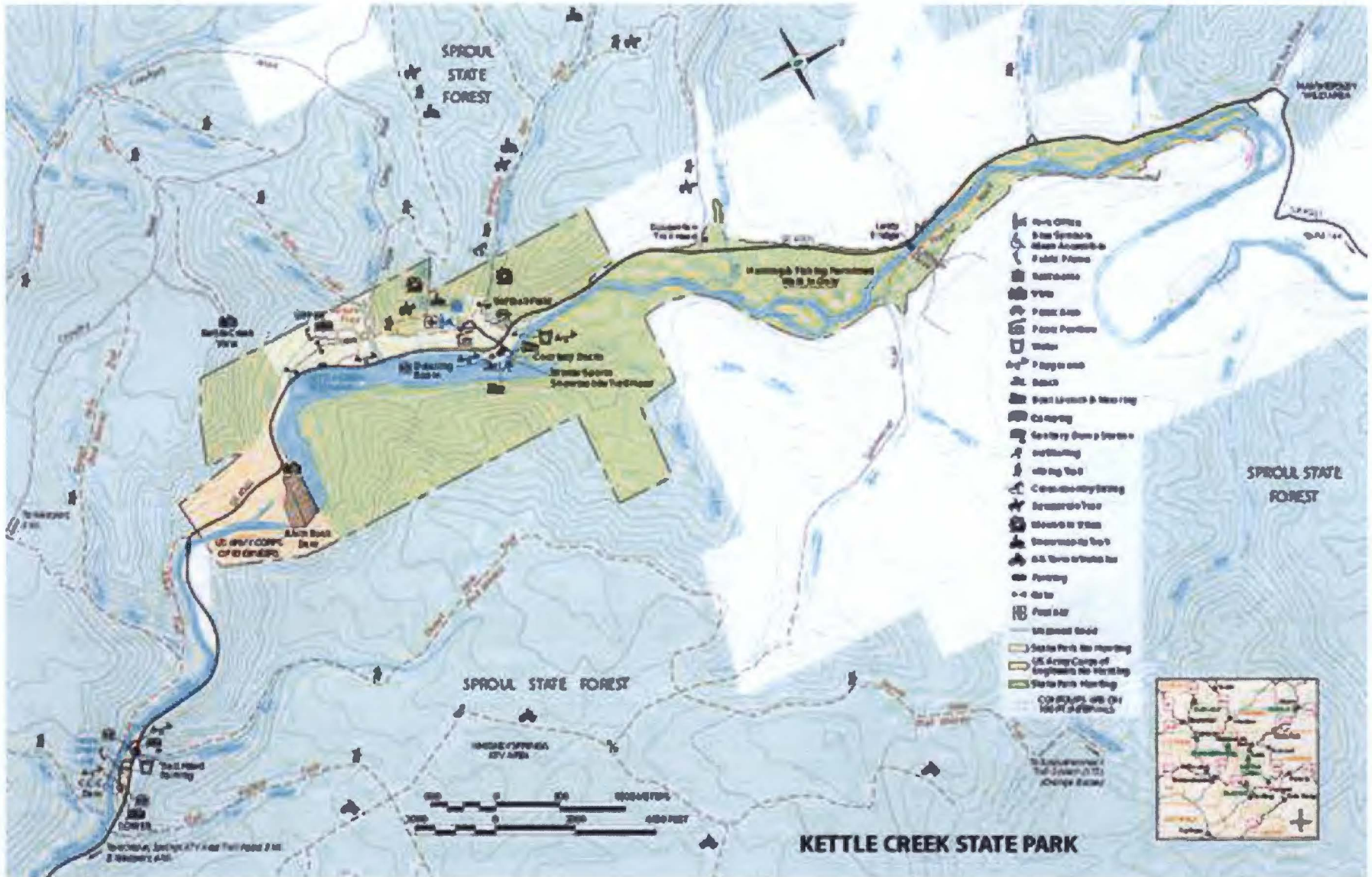
If you have any questions, please contact Andrew Hofmann by email at Andrew.D.Hofmann@usace.army.mil, by telephone at (410) 962-4370, or by mail at U.S. Army Corps of Engineers, Baltimore District, ATTN: CENAB-OPF (Hofmann), 2 Hopkins Plaza, Baltimore, Maryland 21201.

Sincerely,



Steven M. Brown
Chief, Flood Risk Management Branch

Enclosure: Site Map



- Fire Office
- Site Symbols
- Accessible
- Photo Points
- Bathhouse
- View
- Picnic Area
- Picnic Pavilion
- Water
- Dog and
- Dog
- Point of Interest & Viewing
- Camping
- Geology Open & Stable
- outflow
- along the
- Conservation
- Resource Tree
- Shaded in Green
- Shaded in Blue
- U.S. Forest Service
- Parking
- 0-4 mile
- Foot path
- Unimproved Road
- State Park No Hunting
- US Army Corps of Engineers No Hunting
- State Park Hunting
- Contaminated (by 100 ft. Buffer)

KETTLE CREEK STATE PARK

Hofmann, Andrew D CIV USARMY CENAB (USA)

From: noreply@dma.mil
Sent: Monday, July 8, 2019 8:13 PM
To: Hofmann, Andrew D CIV USARMY CENAB (USA)
Subject: Curwensville Lake MP public feedback/question

Name Ian Whitlock
Email ian.a.whitlock@dominionenergy.com
Agency or organization (not required) Dominion Energy
Question, Comment or Feedback Dominion Energy currently maintains a water withdrawal location on Kettle Creek. Withdrawn water is used for daily operations at the nearby Leidy Compressor Station. The water intake is located approximately 7 miles upstream of the Alvin R. Bush Dam and Kettle Creek Reservoir. Dominion Energy plans to sustain the water intake for future Operations. Please keep Dominion Energy updated on any revisions of the Master Plan that may affect our current operations.

HTTP_CMS_CLIENT_IP:
HTTP_X_ARR_LOG_ID: 2c77a01d-634e-45f5-8ac6-8e105e59fd17
HTTP_ORIGIN: Unavailable
HTTP_TRUE_CLIENT_IP: 158.106.48.10

Hofmann, Andrew D CIV USARMY CENAB (USA)

From: Webber, Tina <twebber@pa.gov>
Sent: Wednesday, July 10, 2019 2:50 PM
To: Hofmann, Andrew D CIV USARMY CENAB (USA)
Subject: [Non-DoD Source] C_19820595035F.pdf
Attachments: C_19820595035F.pdf

Thank you for contacting the Pennsylvania State Historic Preservation Office (SHPO) for project review in accordance with state and federal laws. Our response is attached to this email. A hard copy will not follow in the mail unless requested. If this review requires a response, please mail to the address below; we cannot accept electronic submissions. This message is being sent on behalf of the SHPO review staff. If you have any questions about this review, please contact the appropriate reviewer. A list of reviewers by region and discipline is available at:

Blocked<http://www.phmc.pa.gov/Preservation/Project-Review/Pages/Contact-Information.aspx>
<Blocked<http://www.phmc.pa.gov/Preservation/Project-Review/Pages/Contact-Information.aspx>>

If you have questions regarding our review for archaeology, please contact Casey Hanson at chanson@pa.gov <<mailto:chanson@pa.gov>> . If you have questions regarding our review for above ground, please contact Cheryl Nagle at cnagle@pa.gov <<mailto:cnagle@pa.gov>> .

Tina Webber/Clerk Typist II

PHMC/PA State Historic Preservation Office

400 North Street, 2nd Floor/Harrisburg, PA 17120-0093

Phone: (717) 705-4036/Fax: (717) 772-0920

twebber@pa.gov

Pennsylvania has a new statewide historic preservation plan! Check it out <Blocked<https://phmc.info/PresPlan>> and learn how we can work together to make sure #preservationhappenshere <Blocked<https://twitter.com/hashtag/preservationhappenshere>> in Pennsylvania every day.



Pennsylvania State Historic Preservation Office

PENNSYLVANIA HISTORICAL AND MUSEUM COMMISSION

July 10, 2019

Steven M. Brown
US Army Corps of Engineers
Baltimore District
2 Hopkins Plaza
Baltimore, MD 21201

Re: File No. ER 1982-0595-035-F
COE Environmental Assessment: Coordination for Alvin R. Bush Dam & Kettle Creek
Reservoir Master Plan Revision, Renovo, Clinton County

Dear Mr. Brown:

Thank you for submitting information concerning the above referenced project. The Pennsylvania State Historic Preservation Office (PA SHPO) reviews projects in accordance with state and federal laws. Section 106 of the National Historic Preservation Act of 1966, and the implementing regulations (36 CFR Part 800) of the Advisory Council on Historic Preservation, is the primary federal legislation. The Environmental Rights amendment, Article 1, Section 27 of the Pennsylvania Constitution and the Pennsylvania History Code, 37 Pa. Cons. Stat. Section 500 *et seq.* (1988) is the primary state legislation. These laws include consideration of the project's potential effects on both historic and archaeological resources.

Archaeological Resources

Previously recorded archaeological sites, listed below, are located within or adjacent to your project area. These resources could be adversely affected by project activities and have not been evaluated for their eligibility for listing on the National Register of Historic Places. It is our opinion that a Phase I archaeological survey to relocate these known sites and locate other potentially significant sites within the project area should be conducted. Guidelines and instructions for conducting all phases of archaeological survey in Pennsylvania are available on our website <http://www.phmc.pa.gov/Preservation/About/Documents/SHPO-Guidelines-Archaeological-Investigation.pdf>.

P.A.S.S. #36 Cn 0088, 36 Cn 0089, 36 Cn 0090

The PASHPO will keep the information you provided for this submission and any subsequent submission on file. Please provide a copy of this letter and any other project-related correspondence to your state or federal permitting or funding agency.

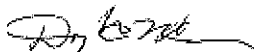
Page 2
July 10, 2019
ER No. 1982-0595-035-F

Above Ground Resources

A preliminary review of this project indicates that there may be National Register-eligible above ground resources in the project area. In order to facilitate the review process, the agency, or applicant acting on their behalf, must conduct surveys to identify these resources before final plans are developed. For more information on survey strategies and methodologies, please consult the *Guidelines for Architectural Investigations in Pennsylvania* and/or other relevant guidelines available here:
<http://www.phmc.pa.gov/Preservation/About/Pages/Forms-Guidance.aspx>.

If you need further information regarding archaeological resources, please consult Casey Hanson at chanson@pa.gov or (717) 772-0923. If you need further information on above ground resources, please consult Cheryl Nagle at chnagle@pa.gov or (717) 772-4519.

Sincerely,



Douglas C. McLearn, Chief
Division of Environmental Review

DCM/tmw



Pennsylvania Fish & Boat Commission

Division of Environmental Services
Centre Region Office
595 E. Rolling Ridge Drive
Bellefonte, PA 16823

July 12, 2019

Mr. Steve M. Brown
Chief, Flood Risk Management Branch
ATTN: CENAB-OPF (Hofmann)
U.S. Army Corps of Engineers, Baltimore District
2 Hopkins Plaza
Baltimore, MD 21201

RE: Coordination for Alvin R. Bush Dam and Kettle Creek Reservoir Master Plan Revision
Public Notice

Dear Mr. Brown:

The Pennsylvania Fish and Boat Commission (PFBC) appreciates the opportunity to comment on the Public Notice for the Alvin R. Bush Dam and Kettle Creek Reservoir Master Plan (MP) Revision and Environmental Assessment (EA). As stated in the Public Notice, the U.S. Army Corps of Engineers (USACE) is in the process of preparing an EA for the implementation of a MP for the Alvin R. Bush Dam and Kettle Creek Reservoir. To assist in the development of the EA, the USACE is requesting information concerning our agencies interests and area of responsibility.

Alvin R. Bush Dam is located on Kettle Creek in Clinton County. Aside from the purpose of flood control, the dam provides fishing and boating recreational opportunities. The PFBC is responsible for managing the fish populations and is involved in habitat improvement projects in the lake. The PFBC is also interested in the water quality impacts of increased or decreased releases from the dam and how that may affect waters downstream.

The PFBC looks forward to and encourages continued cooperation with the U.S. Army Corps of Engineers as this project moves forward. You can contact Jason Detar, Area Fisheries Manager by telephone at (814) 359-5118 or by email at jdetar@pa.gov or you can contact me by telephone at (814) 359-5194 or by email at hsmiles@pa.gov.

Sincerely,

Heather A. Smiles, Chief
Division of Environmental Services

c: J. Detar

Our Mission:

www.fish.state.pa.us

To protect, conserve and enhance the Commonwealth's aquatic resources and provide fishing and boating opportunities.



United States Department of the Interior



FISH AND WILDLIFE SERVICE
Pennsylvania Ecological Services Field Office
110 Radnor Road Suite 101
State College, PA 16801-7987
Phone: (814) 234-4090 Fax: (814) 234-0748
<http://www.fws.gov/northeast/pafo/>

In Reply Refer To:

April 08, 2021

Consultation Code: 05E2PA00-2021-SLI-0108

Event Code: 05E2PA00-2021-E-03414

Project Name: Alvin R. Bush Dam master plan

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. The species list fulfills the requirements of the U.S. Fish and Wildlife Service (Service) under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 *et seq.*).

New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list. 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://](http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/comtow.html)

www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/comtow.html.

Any activity proposed on National Wildlife Refuge lands must undergo a "Compatibility Determination" conducted by the Refuge. Please contact the individual Refuge to discuss any questions or concerns.

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

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:

Pennsylvania Ecological Services Field Office

110 Radnor Road Suite 101
State College, PA 16801-7987
(814) 234-4090

Project Summary

Consultation Code: 05E2PA00-2021-SLI-0108

Event Code: 05E2PA00-2021-E-03414

Project Name: Alvin R. Bush Dam master plan

Project Type: LAND - MANAGEMENT PLANS

Project Description: USACE is developing a new master plan for the Alvin R. Bush Dam and associated Kettle Creek reservoir. No physical changes on the ground are expected to occur as a result of the updated master plan. Rather, land use classifications will be revised to guide future management efforts.

Project Location:

Approximate location of the project can be viewed in Google Maps: <https://www.google.com/maps/@41.39641323887889,-77.92279949325166,14z>



Counties: Clinton County, Pennsylvania

Endangered Species Act Species

There is a total of 3 threatened, endangered, or candidate species on this species list.

Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species.

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries¹, 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.

-
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
Indiana Bat <i>Myotis sodalis</i> There is final critical habitat for this species. The location of the critical habitat is not available. Species profile: https://ecos.fws.gov/ecp/species/5949	Endangered
Northern Long-eared Bat <i>Myotis septentrionalis</i> No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/9045	Threatened

Flowering Plants

NAME	STATUS
Northeastern Bulrush <i>Scirpus ancistrochaetus</i> No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/6715	Endangered

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.



DEPARTMENT OF THE ARMY
CORPS OF ENGINEERS, BALTIMORE DISTRICT
2 HOPKINS PLAZA
BALTIMORE, MD 21201

Planning Division

February 10, 2021

Robert Anderson
Supervisory Fish & Wildlife Biologist
U.S. Fish and Wildlife Service
Pennsylvania Ecological Services Field Office
110 Radnor Road Suite 101
State College, PA 16801-7987

Dear Mr. Anderson;

The U.S. Army Corps of Engineers (USACE) Baltimore District is proposing to update the Master Plan for Alvin R. Bush Dam and Kettle Creek Reservoir, Clinton County, Pennsylvania and associated land management classifications in compliance with USACE regulations and guidance. Project lands (including the lake and surrounding property) occupy 1,872 acres (see enclosure). In conjunction with the Master Plan, USACE is preparing an environmental assessment (EA) in accordance with the National Environmental Policy Act (NEPA) of 1969, as amended, to evaluate the potential effects of proposed Master Plan Revisions.

The purpose of this letter is to initiate consultation with the U.S. Fish and Wildlife Service's Pennsylvania Ecological Services Field Office regarding information on any federally-listed species or critical habitat within the vicinity of the proposed project. USACE is requesting information on protected species at the project for consideration in the Master Plan and any conservation measures USFWS recommends for the protection of species at the project.

Initial search of USFWS records indicate the potential for three federally-protected species: Indiana Bat (*Myotis sodalis*), Northern Long-eared Bat (*Myotis septentrionalis*), and Northeastern Bulrush (*Scirpus ancistrochaetus*). The following Information for Planning and Consultation (IPaC) reports was generated for your reference under the project name "Alvin R. Bush Dam master plan":

- Consultation Code: 05E2PA00-2021-SLI-0108; Event Code: 05E2PA00-E-00244

The Master Plan is intended to serve as a comprehensive land and recreation management plan for the next 15 to 25 years, which reflects changes in outdoor recreation trends, regional land use, population, legislative requirements, USACE management policy, and wildlife habitat that have occurred since the 1964 Master Plan at Alvin R. Bush Dam and Kettle Creek Reservoir. Proposed land use classifications include:

- Project operations: To reflect lands associated with the dam and spillway structures that are operated and maintained for fulfilling the flood risk management mission of Alvin R. Bush Dam;

- High-Density Recreation: To reflect lands that are currently developed for intensive recreational activities and include boat launches, day-use areas, and campgrounds;
- Environmentally Sensitive Areas: To include areas where scientific, ecological, cultural, or aesthetic features have been identified. Typically, limited or no development of public use is allowed on these lands.
- Multiple Resource Management Lands: To designate a predominate use described below, with the understanding that other compatible uses described below may also occur on these lands:
 - Low-Density Recreation: To support low-impact recreational opportunities such as bank fishing, hiking, wildlife viewing, and for access to the shoreline;
 - Vegetative Management: To include an ecosystem-based management approach and is designated for stewardship of forest, prairie, and other native vegetative cover;
 - Future Recreation Area: To include areas that either have site characteristics compatible with potential future development or are currently closed recreation areas;
- Water Surface:
 - Restricted: To include water areas restricted for project operations, safety, and security purposes;
 - Designated No-Wake: To protect environmentally sensitive shoreline areas and recreational water access areas from disturbance, and for public safety; and
 - Open Recreation: To include those waters available for year round or seasonal water-based recreational use.

Alternatives considered within the EA focus on the proposed land use classifications as presented in the Master Plan and the types of future development projects that could occur within the land use classifications. The EA does not consider implementation of specific projects identified within the Master Plan during the master planning process as these projects are conceptual in nature. The USACE would conduct further analysis on projects identified within the master Plan and resources affected once funding is available and detailed project planning and design occur.

We respectfully ask that you provide any information or comments within 30 days to enable us to complete this phase of the project within the scheduled timeframe. Comments and additional information may be directed to Megan Spindler at megan.l.spindler@usace.army.mil or by phone at (410) 207-9987.

Sincerely,



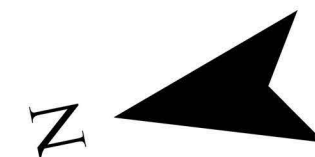
Daniel M. Bierly, P.E.
Chief, Civil Project Development Branch

Enclosure

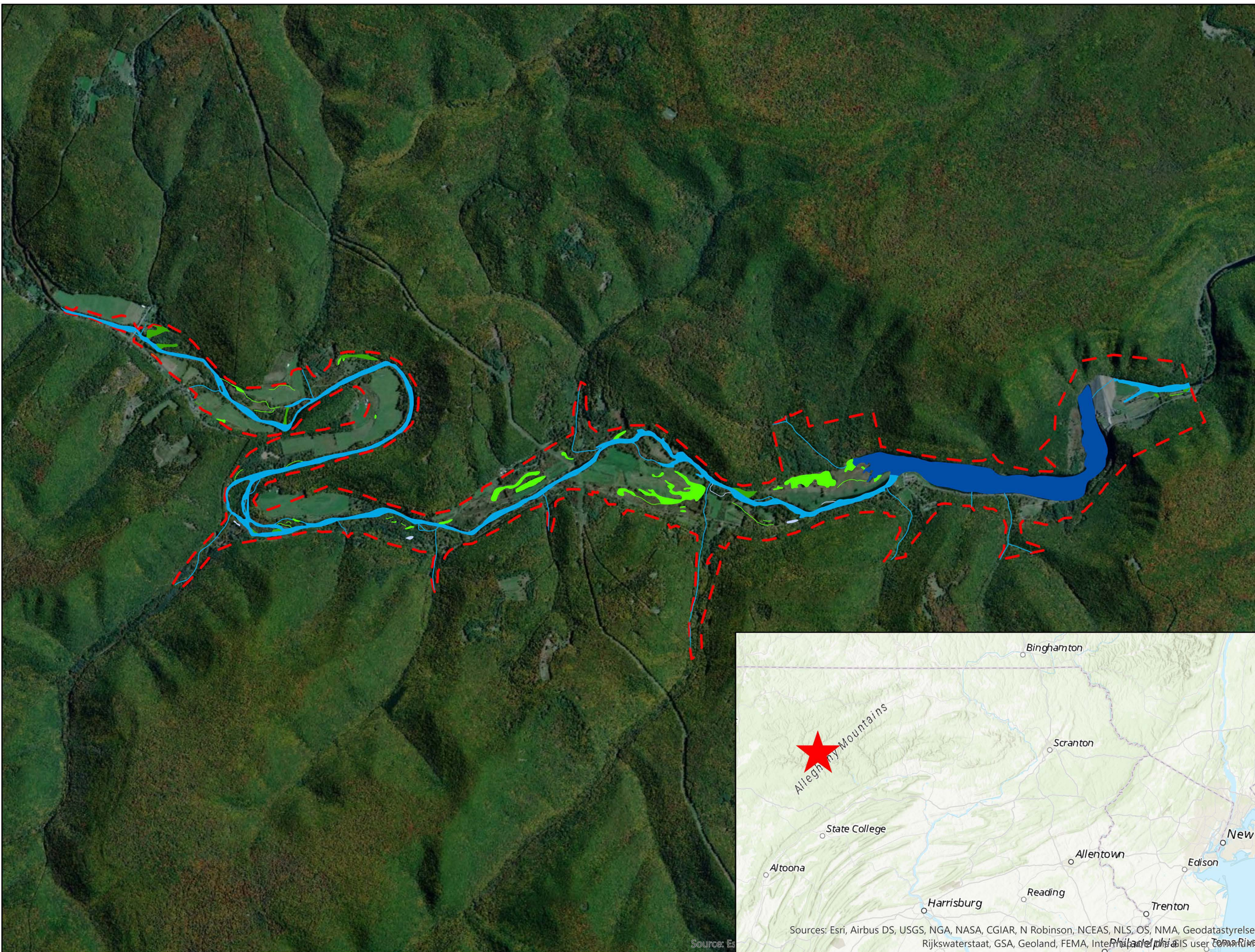


U.S. Army Corps
of Engineers
Baltimore District

Alvin R. Bush Dam Master Plan Update



- Alvin R. Bush Dam Boundary
- Wetland Type**
- Freshwater Emergent Wetland
- Freshwater Forested/Shrub Wetland
- Freshwater Pond
- Lake
- Riverine



Source: Esri, Airbus DS, USGS, NGA, NASA, CGIAR, N Robinson, NCEAS, NLS, OS, NMA, Geodatastyrelsen, Rijkswaterstaat, GSA, Geoland, FEMA, Intermap, Inc., Esri user Community



United States Department of the Interior



FISH AND WILDLIFE SERVICE
Pennsylvania Field Office
110 Radnor Road, Suite 101
State College, Pennsylvania 16801-4850

April 7, 2021

Daniel Bierly
Department of the Army
Corps of Engineers, Baltimore District
2 Hopkins Plaza
Baltimore, MD 21201

RE: USFWS Project #2021-0108

Dear Mr. Bierly:

This responds to your correspondence of February 16, 2021, requesting information about federally listed and proposed endangered and threatened species within the area affected by the proposed Alvin R. Bush Dam and Kettle Creek Reservoir Master Plan Update project located in Leidy Township, Clinton County, Pennsylvania. Your project is within the range of the federally endangered northeastern bulrush (*Scirpus ancistrochaetus*) and Indiana bat (*Myotis sodalis*), and the northern long-eared bat (*Myotis septentrionalis*), federally listed as threatened. The following comments are provided pursuant to the Endangered Species Act of 1973 (87 Stat. 884, as amended; 16 U.S.C. 1531 *et seq.*) to ensure the protection of endangered and threatened species, and the Bald and Golden Eagle Protection Act (54 Stat. 250, as amended; 16 U.S.C. 668-668d).

Northern long-eared bat

The northern long-eared bat hibernates in caves and abandoned mines during the winter months (November through March), uses a variety of upland, wetland and riparian habitats during the spring, summer and fall, and usually roosts in dead or living trees with exfoliating bark, crevices or cavities.

Service promulgated a Final 4(d) Rule in 2016 establishing measures that were determined to be necessary and advisable for the conservation of the northern long-eared bat. We reviewed your project, and determined it is not located within 0.25 mile of a known northern long-eared bat hibernaculum or within 150 feet from a known, occupied maternity roost tree; therefore, any incidental take that may occur is in accordance with the Final 4(d) Rule and is not in violation of the Act. Because this project is authorized, funded, and/or permitted by a Federal agency, consultation under section 7 of the Endangered Species Act is required. The Service completed a nationwide biological opinion that fulfills this requirement, provided the conditions of the Final

4(d) Rule are implemented. The Service created a framework to streamline section 7 consultations when Federal or designated non-Federal representative actions may affect the northern long-eared bat, but do not cause prohibited take. The Corps of Engineers should complete section 7 consultation under the streamlined consultation process by using the Determination Key that is available through our Information for Planning and Consultation (IPaC) website. More information about the framework and instructions for use of the online Determination Key are available here:

<https://www.fws.gov/midwest/endangered/mammals/nleb/s7.html>

Indiana bat

Based on the project description, and the location of the project area, the Service does not anticipate adverse effects to Indiana bats.

Northeastern bulrush

Your project is within the known range of northeastern bulrush. Northeastern bulrush is typically found in ponds, wet depressions, shallow sinkholes, vernal pools, small emergent wetlands, or beaver-influenced wetlands. These wetlands are often located in forested areas and characterized by seasonally variable water levels. Therefore, to conserve northeastern bulrush, project-related activities should avoid direct and indirect effects on wetland surface and groundwater recharge areas. This would include establishment of 300-foot wide upland buffer areas around wetlands, as well as 50-100 foot wide buffers along waterways (perennial and intermittent rivers, streams, creeks and tributaries). When adequately vegetated, these buffers act to filter pollutants and stabilize streambanks. Earth disturbance, spraying or tree-cutting activities (tree felling, skid trails, etc.), should not occur in these wetlands and their buffers.

If you are unable to adopt the buffer restrictions detailed above, we recommend that a qualified botanist with field experience in the identification of this species conduct a thorough survey of all potentially suitable wetland habitat within the proposed project area to determine the presence of the northeastern bulrush before any permits are approved or earth-moving activities begin. Surveys for this species should be conducted between June 1 and September 30, when the flowering/fruitleting culm is present. A survey report should be submitted to the Service for review and comment. A list of botanists skilled in the location and identification of the northeastern bulrush can be found at the following site:

<https://www.fws.gov/northeast/pafo/endangered/surveys.html>

Bald Eagles

Bald eagles (*Haliaeetus leucocephalus*) are known to nest in the vicinity of the project area, with one nest being located within the project area. Consequently, we recommend that you evaluate the project type, size, location and layout in light of the *National Bald Eagle Management Guidelines* to determine whether or not bald eagles might be disturbed as a direct or indirect result of this project. If it appears that disturbance may occur, we recommend that you consider

modifying your project consistent with the *Guidelines*. These guidelines, as well as additional eagle information, are available at <http://www.fws.gov/northeast/EcologicalServices/eagle.html>. To assist you in making a decision regarding impacts to bald eagles, a screening form can be found at https://www.fws.gov/northeast/pafo/bald_eagle_map.html.

If you have additional questions regarding eagle permits, please contact Thomas Wittig, Northeast Regional Bald and Golden Eagle Coordinator at 413-253-8577 or Thomas_Wittig@fws.gov.

This response is based on the information submitted to this office and our knowledge of federally listed species and bald eagle distribution and habitat needs. No field inspection of the project area has been conducted by this office. This correspondence does not authorize take under the Endangered Species Act or any other Authorities.

To avoid potential delays in reviewing your project, please use the above-referenced USFWS project tracking number in any future correspondence regarding this project.

If you have any questions regarding this matter, please contact Nicole Ranalli of my staff at 814-206-7455

Sincerely,



Sonja Jahrsdoerfer
Project Leader

cc:
Megan Spindler, Corps of Engineers

megan.l.spindler@usace.army.mil



United States Department of the Interior



FISH AND WILDLIFE SERVICE
Pennsylvania Ecological Services Field Office
110 Radnor Road Suite 101
State College, PA 16801-7987
Phone: (814) 234-4090 Fax: (814) 234-0748
<http://www.fws.gov/northeast/pafo/>

In Reply Refer To:

April 08, 2021

Consultation code: 05E2PA00-2021-TA-0108

Event Code: 05E2PA00-2021-E-03415

Project Name: Alvin R. Bush Dam master plan

Subject: Verification letter for the 'Alvin R. Bush Dam master plan' 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 Megan Spindler:

The U.S. Fish and Wildlife Service (Service) received on April 08, 2021 your effects determination for the 'Alvin R. Bush Dam master plan' (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:

- Indiana Bat *Myotis sodalis* Endangered
- Northeastern Bulrush *Scirpus ancistrochaetus* Endangered

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.

[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

Alvin R. Bush Dam master plan

2. Description

The following description was provided for the project 'Alvin R. Bush Dam master plan':

USACE is developing a new master plan for the Alvin R. Bush Dam and associated Kettle Creek reservoir. No physical changes on the ground are expected to occur as a result of the updated master plan. Rather, land use classifications will be revised to guide future management efforts.

Approximate location of the project can be viewed in Google Maps: <https://www.google.com/maps/@41.39641323887889,-77.92279949325166,14z>



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

1. PROJECT INFORMATION

Project Name: **Alvin R. Bush Dam Master Plan Update**

Date of Review: **2/16/2021 04:44:13 PM**

Project Category: **Recreation, Pond/lake maintenance (drawdown, plant control, dredging, dam repair)**

Project Area: **1,872.91 acres**

County(s): **Clinton**

Township/Municipality(s): **LEIDY TOWNSHIP**

ZIP Code:

Quadrangle Name(s): **HAMMERSLEY FORK; KEATING**

Watersheds HUC 8: **Middle West Branch Susquehanna**

Watersheds HUC 12: **Lower Kettle Creek; Middle Kettle Creek**

Decimal Degrees: **41.395274, -77.922016**

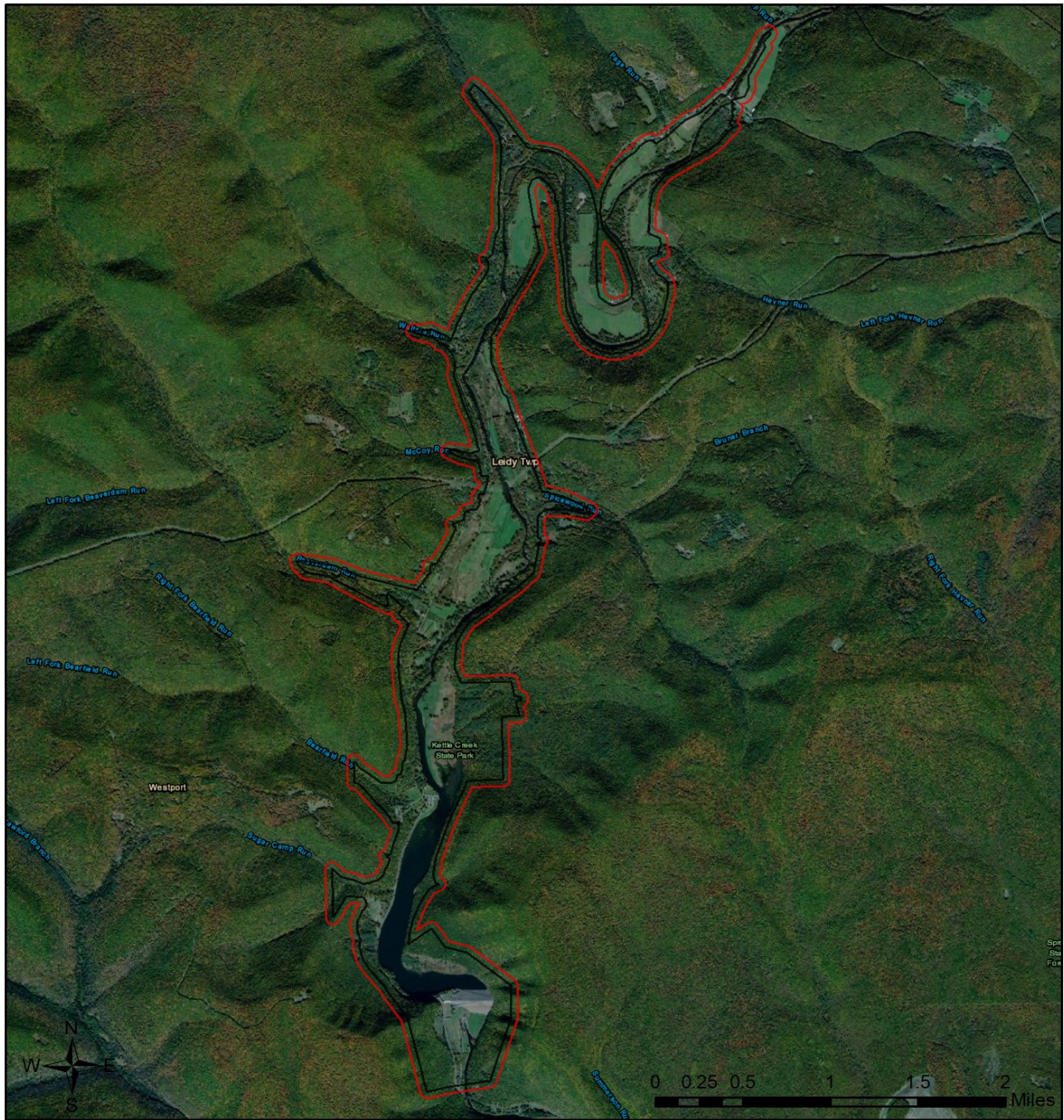
Degrees Minutes Seconds: **41° 23' 42.9850" N, 77° 55' 19.2568" W**

2. SEARCH RESULTS

Agency	Results	Response
PA Game Commission	Potential Impact	FURTHER REVIEW IS REQUIRED, See Agency Response
PA Department of Conservation and Natural Resources	Conservation Measure	No Further Review Required, See Agency Comments
PA Fish and Boat Commission	Conservation Measure	No Further Review Required, See Agency Comments
U.S. Fish and Wildlife Service	Potential Impact	MORE INFORMATION REQUIRED, See Agency Response

As summarized above, Pennsylvania Natural Diversity Inventory (PNDI) records indicate there may be potential impacts to threatened and endangered and/or special concern species and resources within the project area. If the response above indicates "No Further Review Required" no additional communication with the respective agency is required. If the response is "Further Review Required" or "See Agency Response," refer to the appropriate agency comments below. Please see the DEP Information Section of this receipt if a PA Department of Environmental Protection Permit is required.

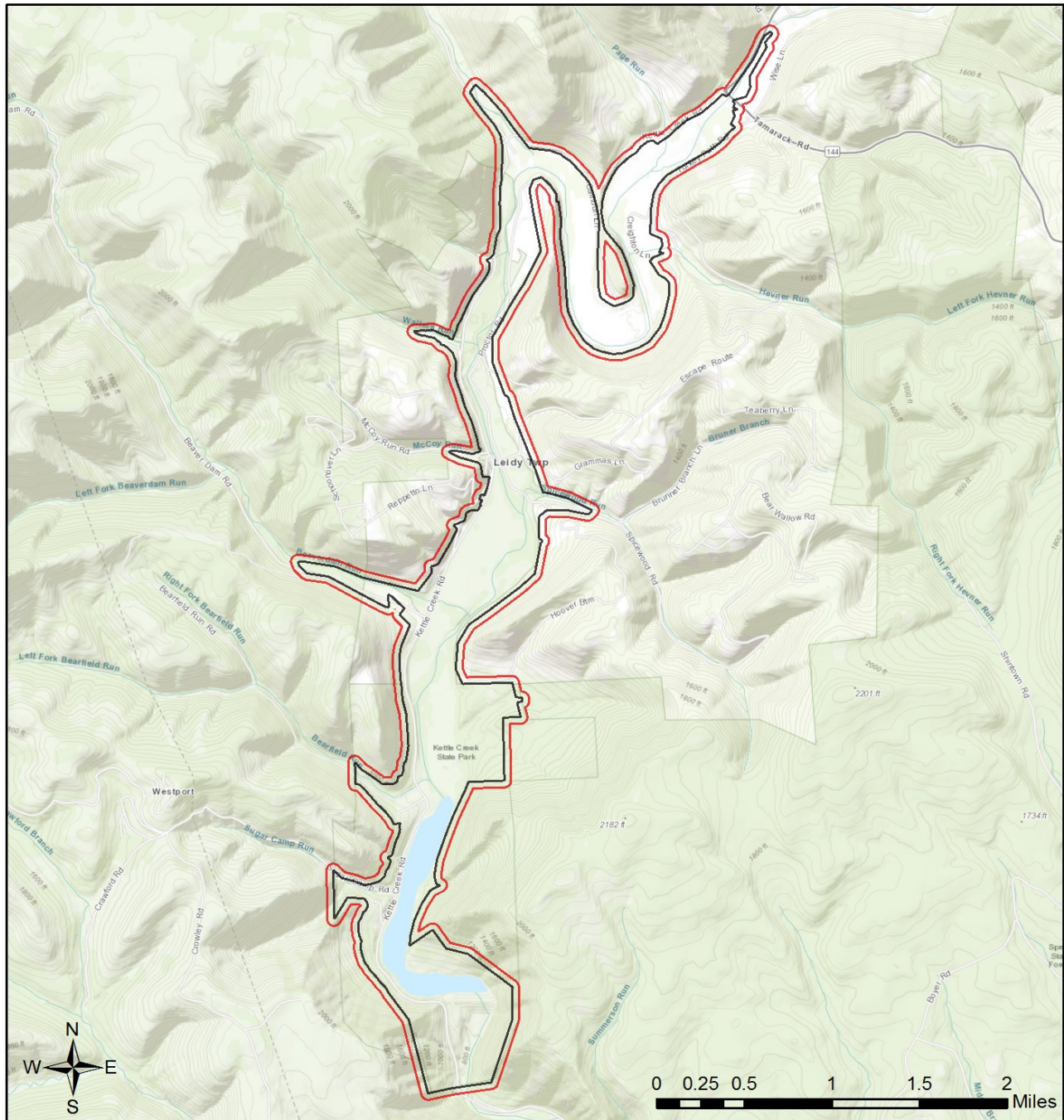
Alvin R. Bush Dam Master Plan Update



- Project Boundary
- Buffered Project Boundary

Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community
Esri, HERE, Garmin, (c) OpenStreetMap contributors, and the GIS user community

Alvin R. Bush Dam Master Plan Update



- Project Boundary
- Buffered Project Boundary

Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community

RESPONSE TO QUESTION(S) ASKED

Q1: Which of the following accurately describes the habitats on and within 650 feet of the project area? "Project area" includes all features of the project (including buildings, roads, utility lines, outfall and intake structures, wells, stormwater retention/detention basins, parking lots, driveways, lawns, etc.), as well as all associated impacts (e.g., temporary staging areas, work areas, temporary road crossings, areas subject to grading or clearing, etc.). Include all areas that will be permanently or temporarily affected -- either directly or indirectly -- by any type of disturbance (e.g., land clearing, grading, tree removal, flooding, etc.).

Your answer is: The project area has not been field investigated to identify and delineate large rocks or boulders, talus or scree, rock outcrops, boulder fields, quarries, caves and associated passages, cliffs, abandoned highwalls from previous surface mining, and abandoned deep mines - OR - it is currently unknown if the project will affect any of these habitats.

3. AGENCY COMMENTS

Regardless of whether a DEP permit is necessary for this proposed project, any potential impacts to threatened and endangered species and/or special concern species and resources must be resolved with the appropriate jurisdictional agency. In some cases, a permit or authorization from the jurisdictional agency may be needed if adverse impacts to these species and habitats cannot be avoided.

These agency determinations and responses are **valid for two years** (from the date of the review), and are based on the project information that was provided, including the exact project location; the project type, description, and features; and any responses to questions that were generated during this search. If any of the following change: 1) project location, 2) project size or configuration, 3) project type, or 4) responses to the questions that were asked during the online review, the results of this review are not valid, and the review must be searched again via the PNDI Environmental Review Tool and resubmitted to the jurisdictional agencies. The PNDI tool is a primary screening tool, and a desktop review may reveal more or fewer impacts than what is listed on this PNDI receipt. The jurisdictional agencies **strongly advise against** conducting surveys for the species listed on the receipt prior to consultation with the agencies.

PA Game Commission

RESPONSE:

Further review of this project is necessary to resolve the potential impact(s). Please send project information to this agency for review (see WHAT TO SEND).

PGC Species: (Note: The Pennsylvania Conservation Explorer tool is a primary screening tool, and a desktop review may reveal more or fewer species than what is listed below.)

Scientific Name	Common Name	Current Status
Neotoma magister	Allegheny Woodrat	Threatened

PA Department of Conservation and Natural Resources

RESPONSE:

Conservation Measure: One or more geologic features of special concern is known on or near your site. There are voluntary options to augment, restore or reduce the impact to these resources. We encourage you to contact the PA Bureau of Topographic and Geologic Survey (jshaulis@pa.gov or 717-702-2037) for more information on the feature and specific recommendations.

DCNR Species: (Note: The Pennsylvania Conservation Explorer tool is a primary screening tool, and a desktop review may reveal more or fewer species than what is listed below. After desktop review, if a botanical survey is required by DCNR, we recommend the DCNR Botanical Survey Protocols, available here:

<https://conservationexplorer.dcnr.pa.gov/content/survey-protocols>)

Scientific Name	Common Name	Current Status	Proposed Status	Survey Window
Meandering channels	Meandering Channels	Special Concern Resource*	Special Concern Resource*	

PA Fish and Boat Commission

RESPONSE:

Conservation Measure: Based on records maintained in the Pennsylvania Natural Diversity Inventory (PNDI) database and Pennsylvania Fish & Boat Commission (PFBC) files, the timber rattlesnake (*Crotalus horridus*) is known from the vicinity of the proposed project site. Timber rattlesnakes occur in the forested, mountainous regions of the Commonwealth. They prefer forested areas to forage for small mammals (e.g., mice and chipmunks) and southerly-facing slopes for hibernating and other thermoregulatory activities. The timber rattlesnake is threatened by habitat loss/alteration, wanton killing, and poaching. Workers responsible for implementing this project should be advised that timber rattlesnakes may be encountered and that avoidance is the best means of minimizing risks to personal safety. It is suggested that safety protocols be implemented for timber rattlesnake encounters and workers should be advised that the timber rattlesnake is a state protected species and is not to be harmed. Killing of timber rattlesnakes is prohibited by the Commission pursuant to 58 Pa. Code Section 79.6.

U.S. Fish and Wildlife Service

RESPONSE:

Information Request: Due to the proximity of this project to a bald eagle nest, it is possible that project activities may disturb bald eagles, which is a form of "take" under the Bald and Golden Eagle Protection Act and may require a permit. The Service has prepared a project screening form to help you determine which specific measures may be necessary to avoid disturbing bald eagles and their nests, based on the type and scope of your proposed project or activity, and its distance from a bald eagle nest. Complete the "Bald Eagle Project Screening Form" (see https://www.fws.gov/northeast/ecologicalservices/pdf/eagle/NE_Bald-Eagle_Project-Screening-Form_rev20200416.pdf) and implement the measures identified on that form. Submit a copy of the completed Screening Form to the appropriate federal or state permitting agencies (e.g., PA DEP).

* Special Concern Species or Resource - Plant or animal species classified as rare, tentatively undetermined or candidate as well as other taxa of conservation concern, significant natural communities, special concern populations (plants or animals) and unique geologic features.

** Sensitive Species - Species identified by the jurisdictional agency as collectible, having economic value, or being susceptible to decline as a result of visitation.

WHAT TO SEND TO JURISDICTIONAL AGENCIES

If project information was requested by one or more of the agencies above, upload* or email* the following information to the agency(s). Instructions for uploading project materials can be found [here](#). This option provides the applicant with the convenience of sending project materials to a single location accessible to all three state agencies. Alternatively, applicants may email or mail their project materials (see AGENCY CONTACT INFORMATION). For projects showing "Potential Impacts" with USFWS, please send project information to that agency by email IR1_ESPenn@fws.gov (preferred) or regular mail.

Check-list of Minimum Materials to be submitted:

___ Project narrative with a description of the overall project, the work to be performed, current physical characteristics of the site and acreage to be impacted.

___ A map with the project boundary and/or a basic site plan (particularly showing the relationship of the project to the physical features such as wetlands, streams, ponds, rock outcrops, etc.)

In addition to the materials listed above, USFWS REQUIRES the following

___ **SIGNED** copy of a Final Project Environmental Review Receipt

The inclusion of the following information may expedite the review process.

___ Color photos keyed to the basic site plan (i.e. showing on the site plan where and in what direction each photo was taken and the date of the photos)

___ Information about the presence and location of wetlands in the project area, and how this was determined (e.g., by a qualified wetlands biologist), if wetlands are present in the project area, provide project plans showing the location of all project features, as well as wetlands and streams.

4. DEP INFORMATION

The Pa Department of Environmental Protection (DEP) requires that a signed copy of this receipt, along with any required documentation from jurisdictional agencies concerning resolution of potential impacts, be submitted with applications for permits requiring PNDI review. Two review options are available to permit applicants for handling PNDI coordination in conjunction with DEP's permit review process involving either T&E Species or species of special concern. Under sequential review, the permit applicant performs a PNDI screening and completes all coordination with the appropriate jurisdictional agencies prior to submitting the permit application. The applicant will include with its application, both a PNDI receipt and/or a clearance letter from the jurisdictional agency if the PNDI Receipt shows a Potential Impact to a species or the applicant chooses to obtain letters directly from the jurisdictional agencies. Under concurrent review, DEP, where feasible, will allow technical review of the permit to occur concurrently with the T&E species consultation with the jurisdictional agency. The applicant must still supply a copy of the PNDI Receipt with its permit application. The PNDI Receipt should also be submitted to the appropriate agency according to directions on the PNDI Receipt. The applicant and the jurisdictional agency will work together to resolve the potential impact(s). See the DEP PNDI policy at <https://conservationexplorer.dcnr.pa.gov/content/resources>.

5. ADDITIONAL INFORMATION

The PNDI environmental review website is a preliminary screening tool. There are often delays in updating species status classifications. Because the proposed status represents the best available information regarding the conservation status of the species, state jurisdictional agency staff give the proposed statuses at least the same consideration as the current legal status. If surveys or further information reveal that a threatened and endangered and/or special concern species and resources exist in your project area, contact the appropriate jurisdictional agency/agencies immediately to identify and resolve any impacts.

For a list of species known to occur in the county where your project is located, please see the species lists by county found on the PA Natural Heritage Program (PNHP) home page (www.naturalheritage.state.pa.us). Also note that the PNDI Environmental Review Tool only contains information about species occurrences that have actually been reported to the PNHP.

6. AGENCY CONTACT INFORMATION

PA Department of Conservation and Natural Resources

Bureau of Forestry, Ecological Services Section
400 Market Street, PO Box 8552
Harrisburg, PA 17105-8552
Email: RA-HeritageReview@pa.gov

PA Fish and Boat Commission

Division of Environmental Services
595 E. Rolling Ridge Dr., Bellefonte, PA 16823
Email: RA-FBPACENOTIFY@pa.gov

U.S. Fish and Wildlife Service

Pennsylvania Field Office
Endangered Species Section
110 Radnor Rd; Suite 101
State College, PA 16801
Email: IR1_ESPenn@fws.gov
NO Faxes Please

PA Game Commission

Bureau of Wildlife Habitat Management
Division of Environmental Planning and Habitat Protection
2001 Elmerton Avenue, Harrisburg, PA 17110-9797
Email: RA-PGC_PNDI@pa.gov
NO Faxes Please

7. PROJECT CONTACT INFORMATION

Name: _____
Company/Business Name: _____
Address: _____
City, State, Zip: _____
Phone: (____) _____ Fax: (____) _____
Email: _____

8. CERTIFICATION

I certify that ALL of the project information contained in this receipt (including project location, project size/configuration, project type, answers to questions) is true, accurate and complete. In addition, if the project type, location, size or configuration changes, or if the answers to any questions that were asked during this online review change, I agree to re-do the online environmental review.

applicant/project proponent signature

date

Spindler, Megan L CIV USARMY CENAB (US)

From: Shaulis, James <jshaulis@pa.gov>
Sent: Monday, March 22, 2021 4:59 PM
To: Spindler, Megan L CIV USARMY CENAB (US)
Cc: Reese, Stuart; Hand, Kristen; Schmid, Katherine; Ebersole, Craig
Subject: [Non-DoD Source] RE: [External] Alvin R. Bush Dam Master Plan Update
Attachments: BUSH PNDI_Submission.pdf; The Bunk_1A .docx

Megan,

The geologic features of special concern you were alerted to through the PNDI are geoheritage sites known as “**The Bunk**” which is an elongated knob like feature and the ancient Kettle Creek meander bend or “**Oxbow Bend**” that surrounds it (see attached word doc). It appears to be that these features are in the flood control area of the Bush Dam. As long as there are no plans to excavate this area there shouldn’t be any reason to be concerned about impacting them.

Thank you for the opportunity to allow us to comment on this matter.

Sincerely,
Jim Shaulis

From: Spindler, Megan L CIV USARMY CENAB (US) [mailto:Megan.L.Spindler@usace.army.mil]
Sent: Friday, March 19, 2021 3:20 PM
To: Shaulis, James <jshaulis@pa.gov>
Subject: [External] Alvin R. Bush Dam Master Plan Update

ATTENTION: This email message is from an external sender. Do not open links or attachments from unknown sources. To report suspicious email, forward the message as an attachment to CWOPA_SPAM@pa.gov.

Good afternoon –

The U.S. Army Corps of Engineers is in the process of creating a revised Master Plan for the Alvin R. Bush Dam and Kettle Creek Reservoir and an Environmental Assessment for the Master Plan. The project was submitted for review through the Pennsylvania Natural Diversity Inventory (PNDI) website. The project receipt indicates that there may be one or more geologic features of special concern on or near the site, and to contact your office for more information. I have attached the information submitted through PNDI for your reference. Please note, the primary purpose of the master plan update is to update terminology associated with land use classifications, and there will be no construction activities completed at this time. We mention future planned activities in the Master Plan, but any future activities will require their own review.

If you have any comments or conservation measures to recommend, please let me know, and if you have any questions don’t hesitate to reach out.

Thank you!
Megan Spindler

Environmental Geology Report 7
1979

OUTSTANDING SCENIC GEOLOGICAL FEATURES OF PENNSYLVANIA



Alan R. Geyer

Pennsylvania Department of Environmental Resources
Bureau of Topographic and Geologic Survey

William H. Bolles

Pennsylvania Department of Education
Bureau of Curriculum Services

Library
Topographic and Geologic Survey
Harrisburg, Pa.

Park, Luzerne County

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL RESOURCES
BUREAU OF
TOPOGRAPHIC AND GEOLOGIC SURVEY
Arthur A. Socolow, State Geologist

106. THE BUNK

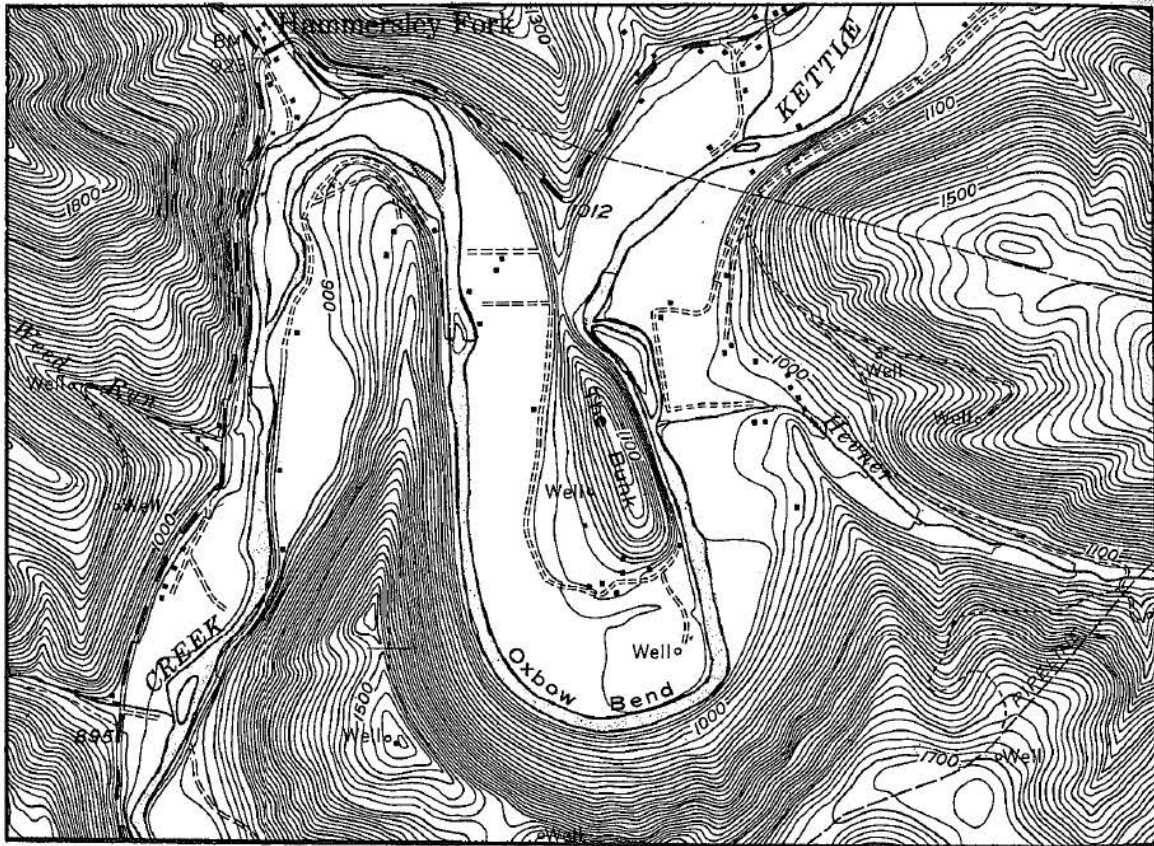
COUNTY: Clinton

TOWNSHIP: Leidy

QUADRANGLE: Hammersley Fork

LOCATION: Along Kettle Creek, 1 mile south of the village of Hammersley Fork and Pa. Route 144.

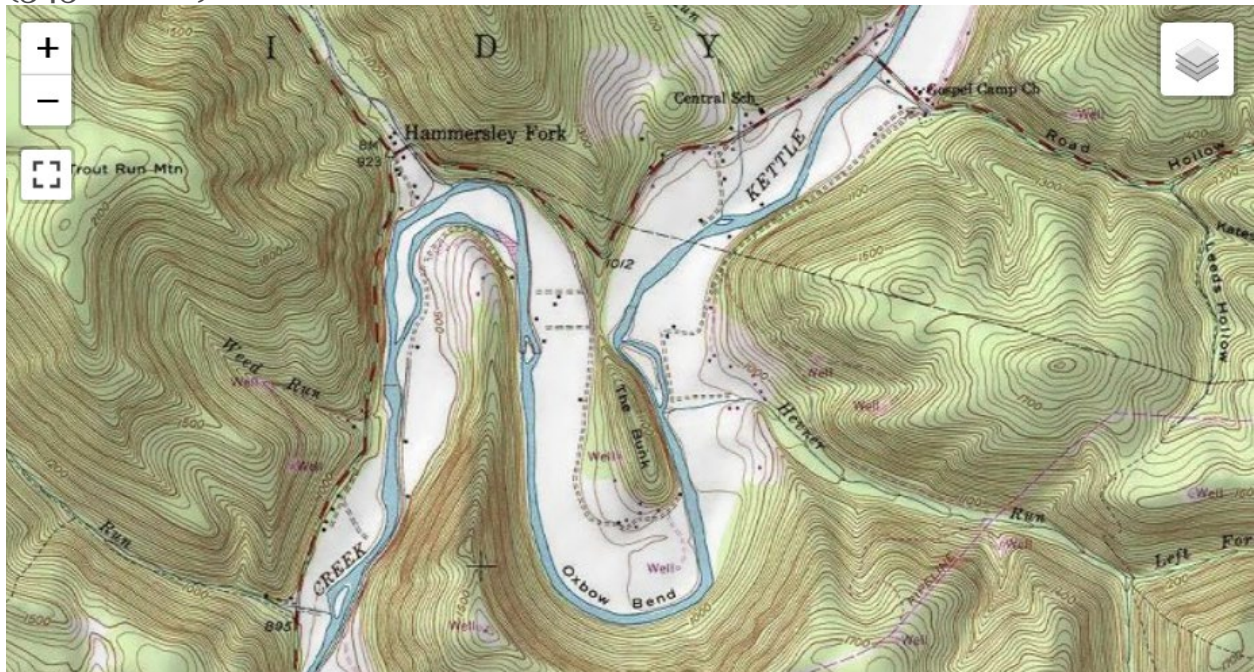
REMARKS: An ancient meander of Kettle Creek eroded the land within the meander into the shape of a built-in bed or bunk. The bend area of the meander resembles an oxbow and is known as **Oxbow Bend** (107).



1. The Bunk in Clinton County PA (Hammersley Fork Area)

Map and location information for **The Bunk** in **Pennsylvania**: **The Bunk** is one of the Summits in **Clinton County, PA** and can be found on the Hammersley Fork USGS topographic quad map. The GPS coordinates are 41.4220095 (latitude), -77.9088843 (longitude) and the approximate elevation is 1,132 feet (345 meters) above sea level

Map and location information for The Bunk in Pennsylvania: The Bunk is one of the Summits in Clinton County, PA and can be found on the Hammersley Fork USGS topographic quad map. The GPS coordinates are 41.4220095 (latitude), -77.9088843 (longitude) and the approximate elevation is 1,132 feet (345 meters) above sea level.







June 14, 2021

Ms. Megan Spindler
USACOE
2 Hopkins Plaza
Baltimore, MD 21201

Project Search ID: PNDI-720283
PNDI Receipt: *project_receipt_alvin_r_bush_dam_master_p_720283_FINAL_1.pdf*
Re: Alvin R. Bush Dam Master Plan Update
Leidy Township, Clinton County, PA

Dear Ms. Spindler,

Thank you for submitting the Pennsylvania Natural Diversity Inventory (PNDI) Environmental Review Receipt *project_receipt_alvin_r_bush_dam_master_p_720283_FINAL_1.pdf* for review. The Pennsylvania Game Commission (PGC) screened this project for potential impacts to species and resources of concern under PGC responsibility, which includes birds and mammals only.

No Impact Anticipated

PNDI records indicate species or resources of concern are located in the vicinity of the project. However, based on the information you submitted concerning the nature of the project, the immediate location, and our detailed resource information, the PGC has determined that no impact is likely. Therefore, no further coordination with the PGC will be necessary for this project at this time.

This response represents the most up-to-date summary of the PNDI data files and is valid for two (2) years from the date of this letter. An absence of recorded information does not necessarily imply actual conditions on site. Should project plans change or additional information on listed or proposed species become available, this determination may be reconsidered.

Should the proposed work continue beyond the period covered by this letter, please resubmit the project to this agency as an "Update" (including an updated PNDI receipt, project narrative and accurate map). If the proposed work has not changed and no additional information concerning listed species is found, the project will be cleared for PNDI requirements under this agency for two additional years.

This finding applies to impacts to birds and mammals only. To complete your review of state and federally-listed threatened and endangered species and species of special concern, please be sure

that the U.S. Fish and Wildlife Service, the PA Department of Conservation and Natural Resources, and/or the PA Fish and Boat Commission have been contacted regarding this project as directed by the online PNDI ER Tool found at www.naturalheritage.state.pa.us.

Sincerely,



Tracey Librandi Mumma
Division of Environmental Planning & Habitat Protection
Bureau of Wildlife Habitat Management
Phone: 717-787-4250, Extension 73614
Fax: 717-787-6957
E-mail: tlibrandi@pa.gov

A PNHP Partner



TLM/tlm

